

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K**

**Annual report pursuant to Section 13 or 15(d) of the
Securities Exchange Act of 1934 for the fiscal year ended December 31, 2019**

Commission File Number 001-15811

MARKEL CORPORATION

(Exact name of registrant as specified in its charter)

A Virginia Corporation

IRS Employer Identification No. 54-1959284

4521 Highwoods Parkway, Glen Allen, Virginia 23060-6148

(Address of principal executive offices) (Zip code)

Registrant's telephone number, including area code: (804) 747-0136

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

Title of each class	Trading Symbol(s)	Name of exchange on which registered
Common Stock, no par value	MKL	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 ☒ 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 ☒

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

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

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

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

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

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

The aggregate market value of the shares of the registrant's Common Stock held by non-affiliates as of June 30, 2019 was approximately \$14,711,000,000.

The number of shares of the registrant's Common Stock outstanding at February 4, 2020: 13,782,159.

Documents Incorporated By Reference: The portions of the registrant's Proxy Statement for the Annual Meeting of Shareholders scheduled to be held on May 11, 2020, referred to in Part III.

Index and Cross References-Form 10-K Annual Report

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BUSINESS OVERVIEW

Markel Corporation is a diverse financial holding company serving a variety of niche markets. Our principal business markets and underwrites specialty insurance products. We believe that our specialty product focus and niche market strategy enable us to develop expertise and specialized market knowledge. We seek to differentiate ourselves from competitors by our expertise, service, continuity and other value-based considerations. We also own interests in various businesses that operate outside of the specialty insurance marketplace. Our financial goals are to earn consistent underwriting and operating profits and superior investment returns to build shareholder value.

Our business is comprised of the following types of operations:

- Underwriting - our underwriting operations are comprised of our risk-bearing insurance and reinsurance operations
- Investing - our investing activities are primarily related to our underwriting operations
- Markel Ventures - our Markel Ventures operations include our controlling interests in a diverse portfolio of businesses that operate outside of the specialty insurance marketplace
- Insurance-linked securities - our insurance-linked securities operations include investment fund managers that offer a variety of investment products, including insurance-linked securities, catastrophe bonds, insurance swaps and weather derivatives
- Program services - our program services business serves as a fronting platform that provides other insurance entities access to the United States (U.S.) property and casualty insurance market

Underwriting

Specialty Insurance and Reinsurance

The specialty insurance market differs significantly from the standard market. In the standard market, insurance rates and forms are highly regulated, products and coverages are largely uniform with relatively predictable exposures and companies tend to compete for customers on the basis of price. In contrast, the specialty market provides coverage for hard-to-place risks that generally do not fit the underwriting criteria of standard carriers.

Competition in the specialty insurance market tends to focus less on price than in the standard insurance market and more on other value-based considerations, such as availability, service and expertise. While specialty market exposures may have higher perceived insurance risks than their standard market counterparts, we seek to manage these risks to achieve higher financial returns. To reach our financial and operational goals, we must have extensive knowledge and expertise in our chosen markets. Many of our larger accounts are considered on an individual basis where customized forms and tailored solutions are employed.

By focusing on the distinctive risk characteristics of our insureds, we have been able to identify a variety of niche markets where we can add value with our specialty product offerings. Examples of niche insurance markets that we have targeted include wind and earthquake-exposed commercial properties, liability coverage for highly specialized professionals, equine-related risks, classic cars, credit and surety-related risks, lender services and marine, energy and environmental-related activities. Our market strategy in each of these areas of specialization is tailored to the unique nature of the loss exposure, coverage and services required by insureds. In each of our niche markets, we assign teams of experienced underwriters and claims specialists who provide a full range of insurance services.

We also participate in the reinsurance market in certain classes of reinsurance product offerings. In the reinsurance market, our clients are other insurance companies, or cedents. We typically write our reinsurance products in the form of treaty reinsurance contracts, which are contractual arrangements that provide for automatic reinsuring of a type or category of risk underwritten by cedents. Generally, we participate on reinsurance treaties with a number of other reinsurers, each with an allocated portion of the treaty, with the terms and conditions of the treaty being substantially the same for each participating reinsurer. With treaty reinsurance contracts, we do not separately evaluate each of the individual risks assumed under the contracts and are largely dependent on the individual underwriting decisions made by the cedent. Accordingly, we review and analyze the cedent's risk management and underwriting practices in deciding whether to provide treaty reinsurance and in pricing of treaty reinsurance contracts.

Our reinsurance products are written on both a quota share and excess of loss basis. Quota share contracts require us to share the losses and expenses in an agreed proportion with the cedent. Excess of loss contracts require us to indemnify the cedent against all or a specified portion of losses and expenses in excess of a specified dollar or percentage amount. In both types of contracts, we may provide a ceding commission to the cedent.

We distinguish ourselves in the reinsurance market by the expertise of our underwriting teams, our access to global reinsurance markets, our ability to offer large lines and our ability to customize reinsurance solutions to fit our client's needs. Our reinsurance product offerings include coverage for general liability, professional liability, property, workers' compensation and credit and surety risks.

Markets

In the U.S., we write business in the excess and surplus lines (E&S) and specialty admitted insurance and reinsurance markets. In 2018, the E&S market represented \$50 billion, or 7%, of the \$678 billion U.S. property and casualty industry.⁽¹⁾ In 2018, we were the second largest E&S writer in the U.S. as measured by direct premium writings.⁽¹⁾

Our E&S insurance operations are conducted through Evanston Insurance Company (Evanston), an Illinois domiciled insurance company. The majority of our specialty admitted insurance operations are conducted through Markel Insurance Company (MIC), domiciled in Illinois; Markel American Insurance Company (MAIC), domiciled in Virginia; FirstComp Insurance Company (FCIC), domiciled in Nebraska; and Essentia Insurance Company (Essentia), domiciled in Missouri. Our specialty admitted operations also include Suretec Insurance Company (SIC), State National Insurance Company, Inc. (SNIC) and National Specialty Insurance Company (NSIC), all of which are domiciled in Texas, and Suretec Indemnity Company (SINC), which is domiciled in California. Our U.S. reinsurance operations are conducted through Markel Global Reinsurance Company (Markel Global Re), a Delaware-domiciled reinsurance company.

We participate in the London insurance market primarily through Markel Capital Limited (Markel Capital) and Markel International Insurance Company Limited (MIICL). Markel Capital is the corporate capital provider for Markel Syndicate 3000, through which our Lloyd's of London (Lloyd's) operations are conducted. Markel Syndicate 3000 is managed by Markel Syndicate Management Limited. Markel Capital and MIICL are headquartered in London, England and have offices across the United Kingdom (U.K.), Europe, Canada, Latin America, Asia Pacific and the Middle East through which we are able to offer insurance and reinsurance. The London insurance market produced approximately \$71 billion of gross written premium in 2018, of which \$45 billion was produced by Lloyd's syndicates.^(2,3) In 2018, our share of the London market was approximately 2% as measured by gross written premiums.

In Bermuda, we write business in the worldwide insurance and reinsurance markets. The Bermuda property and casualty insurance and reinsurance market produced \$82 billion of gross written premium in 2017.⁽⁴⁾ In 2017, our share of the Bermuda market was approximately 1% as measured by gross written premiums in our underwriting operations. We conduct our Bermuda underwriting operations through Markel Bermuda Limited (Markel Bermuda), which is registered as a Class 4 insurer and Class C long-term insurer under the insurance laws of Bermuda.

We also write business through Markel Insurance SE (MISE), a regulated insurance carrier located in Munich, Germany. In anticipation of the U.K.'s exit from the European Union (E.U.), which occurred on January 31, 2020, we established MISE in 2018. From its offices in Germany, MISE transacts business in E.U. member states and throughout the European Economic Area (EEA). MISE has established branches in Ireland, the Netherlands, Spain, Switzerland and the U.K. In order to maintain access to E.U. business for Lloyd's syndicates, the Society of Lloyd's has organized an insurance company in Brussels, Belgium, which supplements, or serves as an alternative to, MISE for access to E.U. markets. For further discussion regarding the exit of the U.K. from the E.U., and its potential impacts to us, see the Risk Factor titled "The exit of the United Kingdom from the European Union could have a material adverse effect on us."

While we operate in various other markets, substantially all of our gross written premiums in 2019 are written from our platforms in the United States, United Kingdom, Bermuda and Germany.

(1) Market Segment Report - U.S. Surplus Lines, A.M. Best (September 13, 2019).

(2) London Company Market Statistics Report, International Underwriting Association (October 2019).

(3) Lloyd's Annual Report 2018.

(4) Bermuda Monetary Authority 2018 Annual Report.

Our reinsurance operations, which include our operations based in the U.S., the U.K. and Bermuda, as described above, made us the 38th largest reinsurer in 2018, as measured by worldwide gross reinsurance premium writings.⁽¹⁾

In 2019, 19% of gross premium writings from our underwriting operations related to foreign risks (i.e., coverage for risks or cedents located outside of the U.S.), of which 36% were from the U.K. and 12% were from Canada. There were no other individual foreign countries from which premium writings were material. Premium writings are attributed to individual countries based upon location of risk or cedent. See note 8(d) of the notes to consolidated financial statements for additional information.

Most of our business is placed through insurance and reinsurance brokers and retail insurance agents. Some of our insurance business is also placed through managing general agents, third parties who have been granted authority to bind risks on our behalf in accordance with underwriting guidelines we prescribe. We seek to develop and capitalize on relationships with insurance and reinsurance brokers, insurance and reinsurance companies, large global corporations and financial intermediaries to develop and underwrite business. A significant volume of premium for the property and casualty insurance and reinsurance industry is produced through a small number of large insurance and reinsurance brokers. In 2019, the top three independent brokers accounted for 28% of gross premiums written in our underwriting segments. See note 8(d) of the notes to consolidated financial statements for additional information. Additionally, a significant portion of the reinsurance contracts securitized through our insurance-linked securities operations, for the benefit of third party investors, are placed through these top three independent brokers.

Competition

We compete with numerous domestic and international insurance companies and reinsurers, Lloyd's syndicates, risk retention groups, insurance buying groups, risk securitization programs, alternative capital sources and alternative self-insurance mechanisms. We also compete with new companies that continue to be formed to enter the insurance and reinsurance markets, particularly companies with new or "disruptive" technologies or business models. Competition may take the form of lower prices, broader coverages, greater product flexibility, higher coverage limits, higher quality services or higher ratings by independent rating agencies. In all of our markets, we compete on the basis of overall financial strength, ratings assigned by independent rating agencies, development of specialty products to satisfy well-defined market needs and by maintaining relationships with agents, brokers and insureds who rely on our expertise. This expertise is our principal means of competing. We offer a diverse portfolio of products, each with its own distinct competitive environment, which requires us to be responsive to changes in market conditions for individual product lines. With each of our products, we seek to write business that produces underwriting profits by competing with innovative ideas, appropriate pricing, expense control and quality service to policyholders, agents and brokers.

Few barriers exist to prevent insurers and reinsurers from entering our markets within the property and casualty industry. Market conditions and capital capacity influence the degree of competition at any point in time. 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 insurers. During periods of reduced underwriting capacity, pricing and policy terms and conditions are generally more favorable for insurers. Historically, the performance of the property and casualty reinsurance and insurance industries has tended to fluctuate in cyclical periods of price competition and excess underwriting capacity, followed by periods of high premium rates and shortages of underwriting capacity. At any given time, our portfolio of insurance products could be experiencing varying combinations of these characteristics. This cyclical market pattern can be more pronounced in the specialty insurance and reinsurance markets in which we compete than the standard insurance market.

Following the high level of natural catastrophes that occurred in 2017 and 2018, and based on general market conditions, we have seen more favorable rates, particularly on our catastrophe-exposed and loss-affected business. We are also seeing improved pricing on many of our other product lines, the primary exception being workers' compensation, where we continue to see rate decreases given favorable experience in recent years.

We routinely review the pricing of our major product lines and will continue to pursue price increases in 2020, when possible. However, when we believe the prevailing market price will not support our underwriting profit targets, the business is not written. As a result of our underwriting discipline, gross premium volume may vary when we alter our product offerings to maintain or improve underwriting profitability.

(1) Market Segment Report - Global Reinsurance, A.M. Best (August 29, 2019).

Underwriting Philosophy

By focusing on market niches where we have underwriting expertise, we seek to earn consistent underwriting profits, which are a key component of our strategy. The property and casualty insurance industry commonly defines underwriting profit or loss as earned premiums net of losses and loss adjustment expenses and underwriting, acquisition and insurance expenses. We believe that the ability to achieve consistent underwriting profits demonstrates knowledge and expertise, commitment to superior customer service and the ability to manage insurance risk. We use underwriting profit or loss as a basis for evaluating our underwriting performance.

The combined ratio is a measure of underwriting performance and represents the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums. A combined ratio less than 100% indicates an underwriting profit, while a combined ratio greater than 100% reflects an underwriting loss. In 2019, our combined ratio was 94%. See Management's Discussion & Analysis of Financial Condition and Results of Operations for further discussion of our underwriting results.

Underwriting Segments

Our chief operating decision maker allocates resources to and assesses the performance of our ongoing underwriting operations on a global basis in the following two segments: Insurance and Reinsurance. In determining how to monitor and report our underwriting results, we consider many factors, including the nature of the insurance product sold, the type of account written and the type of customer served.

The Insurance segment includes all direct business and facultative placements and the Reinsurance segment includes all treaty reinsurance. Results for lines of business discontinued prior to, or in conjunction with, acquisitions, including development on asbestos and environmental loss reserves and the results attributable to the run-off of life and annuity reinsurance business, are monitored separately and are not included in a reportable segment.

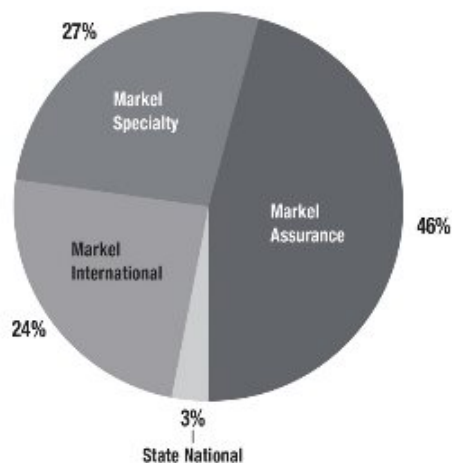
See note 8 of the notes to consolidated financial statements for additional segment reporting disclosures.

Markel Corporation
2019 Gross Premium Volume (\$6.4 billion)



Insurance Segment

Our Insurance segment includes both hard-to-place risks written outside of the standard market on an E&S basis and unique and hard-to-place risks that must be written on an admitted basis due to marketing and regulatory reasons. Business in this segment is written through our Markel Assurance, Markel Specialty, Markel International and State National divisions. The State National division was created as a result of the acquisition of State National Companies, Inc. (State National) in November 2017. The State National division's collateral protection underwriting business is included in the Insurance segment and its program services business is not included in a reportable segment.



Our Insurance segment reported gross premium volume of \$5.3 billion, earned premiums of \$4.1 billion and an underwriting profit of \$309.8 million in 2019.

Markel Assurance Division

The Markel Assurance division writes commercial and Fortune 1000 accounts for brokers located in the U.S., Bermuda, Ireland and the U.K. In the U.S. accounts are written on an E&S basis and on an admitted basis when a risk must remain with the admitted insurance company for marketing and regulatory reasons. The E&S market focuses on hard-to-place risks and loss exposures that generally cannot be written in the standard market. U.S. insurance regulations generally require an E&S account to be declined by admitted carriers before an E&S company may write the business. E&S eligibility allows our insurance subsidiaries to underwrite unique loss exposures with more flexible policy forms and unregulated premium rates. This typically results in coverages that are more restrictive and more expensive than coverages in the standard market. The Markel Assurance division also writes complex, Fortune 1000 accounts on an admitted basis. Our business that is written in the admitted market is likewise focused on risks that, although unique and hard-to-place, can still be written in the standard market.

Markel Assurance business is primarily written through wholesale brokers, retail brokers and surplus lines general agents who have limited quoting and binding authority. Admitted business produced by this division is written primarily through MAIC, which is authorized to write business in all 50 states, the District of Columbia and Puerto Rico. Business written on a non-admitted basis and in the E&S market is primarily written through Evanston, which is authorized to write business in all 50 states and the District of Columbia, Guam, Puerto Rico and the U.S. Virgin Islands, as well as Markel Bermuda, MISE and MIICL.

Markel Specialty Division

The Markel Specialty division writes program insurance and other specialty coverages for well-defined niche markets, primarily on an admitted basis. Our business written in the admitted market focuses on risks that, although unique and hard-to-place in the standard market, must remain with an admitted insurance company for marketing and regulatory reasons. Hard-to-place risks written in the admitted market cover insureds engaged in similar, but highly specialized, activities that require a total insurance program not otherwise available from standard insurers or insurance products that are overlooked by large admitted carriers. The admitted market is subject to more state regulation than the E&S market, particularly with regard to rate and form filing requirements, restrictions on the ability to exit lines of business, premium tax payments and membership in various state associations, such as state guaranty funds and assigned risk plans.

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Business written in the Markel Specialty division is primarily written by retail insurance agents who have very limited or no underwriting authority. We also utilize managing general agents, who have broader underwriting authority, for certain of our product lines. Agents are carefully selected and agency business is controlled through regular audits and pre-approvals. Certain products and programs are marketed directly to consumers or distributed through wholesale producers. Personal lines coverages included in this segment are marketed directly to the consumer using direct mail, internet and telephone promotions, as well as relationships with various motorcycle and boat manufacturers, dealers and associations.

The majority of the business produced by this division is written through MIC, Essentia and MAIC. MIC and Essentia, which specializes in coverage for classic cars and boats, are licensed to write property and casualty insurance in all 50 states and the District of Columbia.

Markel International Division

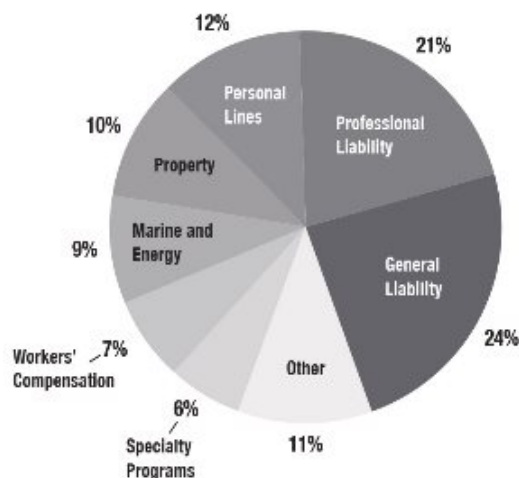
The Markel International division writes business worldwide from our London and Munich-based platforms, which include branch offices around the world. This includes Markel Syndicate 3000, through which our Lloyd's operations are conducted, MIICL and MISE. The London insurance market is known for its ability to provide innovative, tailored coverage and capacity for unique and hard-to-place risks. Hard-to-place risks in the London market are generally distinguishable from standard risks due to the complexity or significant size of the risk. It is primarily a broker market, which means that insurance brokers bring most of the business to the market. Risks written in the Markel International division are written on either a direct basis or a subscription basis, the latter of which means that loss exposures brought into the market are typically insured by more than one insurance company or Lloyd's syndicate, often due to the high limits of insurance coverage required. When we write business in the subscription market, we prefer to participate as lead underwriter in order to control underwriting terms, policy conditions and claims handling. Through our Munich-based platform, the Markel International division operates a global network of branches that focus on specialty commercial risks in their respective local markets.

State National Division

The State National division writes collateral protection insurance, which insures personal automobiles and other vehicles held as collateral for loans made by credit unions, banks and specialty finance companies through its lender services product line on both an admitted and non-admitted basis. This business is primarily written on SNIC and NSIC, which are licensed to write property and casualty insurance in all 50 states and the District of Columbia.

The following chart displays the types of products written in our Insurance segment.

Insurance Segment
2019 Gross Premium Volume (\$5.3 billion)



General Liability product offerings include a variety of primary and excess liability coverages targeting apartments and office buildings, retail stores, contractors, consultants, construction professionals, financial service professionals, professional practices, social welfare organizations and medical products, as well as businesses in the life sciences, energy, medical, healthcare, pharmaceutical, recreational, transportation, heavy industrial and hospitality industries. Specific products include excess and umbrella products, products liability products, environmental liability products and casualty facultative reinsurance written for individual casualty risks.

Professional liability coverages include unique solutions for highly specialized professions, including architects and engineers, lawyers, accountants, agents and brokers, service technicians and consultants. We offer claims-made medical malpractice coverage for doctors and dentists; claims-made professional liability coverage to individual healthcare providers such as therapists, pharmacists, physician assistants and nurse anesthetists; and coverages for medical facilities and other allied healthcare risks such as clinics, laboratories, pharmacies and senior living facilities. Other professional liability coverages include errors and omissions, union liability, professional indemnity, intellectual property, executive liability for financial institutions and Fortune 1000 companies and management liability. Additionally, we offer cyber liability products, which provide coverage primarily for data breach and privacy liability, data breach loss to insureds and electronic media coverage.

Personal lines products provide first and third party coverages for classic cars, motorcycles and a variety of personal watercraft, including vintage boats, high performance boats and yachts and recreational vehicles, such as motorcycles, snowmobiles and ATVs. Based on the seasonal nature of much of our personal lines business, we generally will experience higher claims activity during the second and third quarters of the year. Additionally, property coverages are offered for mobile homes, dwellings and homeowners that do not qualify for standard homeowner's coverage. Other products offered include special event protection and pet health coverage.

Property coverages consist principally of fire, allied lines (including windstorm, hail and water damage) and other specialized property coverages, including catastrophe-exposed property risks such as earthquake and wind on both a primary and excess basis. Catastrophe-exposed property risks are typically lower frequency and higher severity in nature than more standard property risks. Our property coverages are exposed to windstorm losses that, based on the seasonal nature of those events, are more likely to occur in the third and fourth quarters of the year. Our property risks range from small, single-location accounts to large, multi-state, multi-location, multi-national accounts on a worldwide basis. Other types of property products include inland marine products, railroad-related products and specie coverage for fine art on exhibition and in private collections.

Marine and energy products include a portfolio of coverages for cargo, energy, hull, liability, war and terrorism risks. The cargo product line is an international transit-based book providing coverage for many types of cargo. Energy coverage includes all aspects of oil and gas activities. Hull coverages consist of coverage for physical damage to ocean-going tonnage, yachts and mortgagees' interests. Liability coverage provides for a broad range of energy liabilities, as well as traditional marine exposures including charterers, terminal operators and ship repairers. War coverage includes protections for the hulls of ships and aircraft, and other related interests, against war and associated perils. Terrorism coverage provides for property damage and business interruption related to political violence including war and civil war.

Workers' compensation products provide wage replacement and medical benefits to employees injured in the course of employment and target main-street, service and artisan contractor businesses, retail stores and restaurants.

Specialty programs business included in this segment is offered on a standalone or package basis and generally targets specialized commercial markets and customer groups. Targeted groups include youth and recreation oriented organizations and camps, child care operators, schools, social service organizations, museums and historic homes, performing arts organizations, senior living facilities and wineries. Other specialty programs business written in this segment includes general agent programs that use managing general agents to offer single source admitted and non-admitted programs for a specific class or line of business, first and third party coverages for medical transport, small fishing ventures, charters, utility boats and boat rentals and property and liability coverages for small to medium-sized commercial risks, including farms, zoos and animal boarding, breeding and training facilities.

Other product lines within the Insurance segment include credit and surety products and collateral protection insurance.

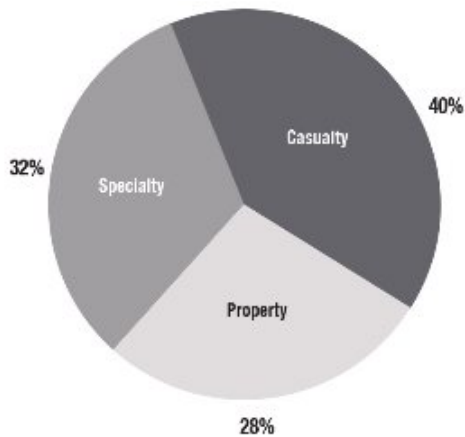
Reinsurance Segment

Our Reinsurance segment includes property, casualty and specialty treaty reinsurance products offered to other insurance and reinsurance companies globally through the broker market. Our treaty reinsurance offerings include both quota share and excess of loss reinsurance and are typically written on a participation basis, which means each reinsurer shares proportionally in the business ceded under the reinsurance treaty written. Our reinsurance products may include features such as contractual provisions that require our cedent to share in a portion of losses resulting from ceded risks, may require payment of additional premium amounts if we incur greater losses than those projected at the time of the execution of the contract, may require reinstatement premium to restore the coverage after there has been a loss occurrence or may provide for experience refunds if the losses we incur are less than those projected at the time the contract is executed. Substantially all of our reinsurance product offerings are underwritten by our Global Reinsurance division. The Global Reinsurance division operates from platforms in the U.S., Bermuda and the U.K. Business written in the Global Reinsurance division is produced primarily through Markel Global Re, which is licensed or accredited to provide reinsurance in all 50 states and the District of Columbia. The Global Reinsurance division also writes business through Markel Bermuda and Markel Syndicate 3000.

Our Reinsurance segment reported gross premium volume of \$1.1 billion, earned premiums of \$903.6 million and an underwriting loss of \$40.0 million in 2019.

The following chart displays the types of products written in our Reinsurance segment.

Reinsurance Segment
2019 Gross Premium Volume (\$1.1 billion)



Our casualty treaty reinsurance programs are written on a quota share and excess of loss basis and include general liability, professional liability, medical malpractice and environmental impairment liability. General liability reinsurance includes umbrella and excess casualty products that are written worldwide. Our professional liability reinsurance programs are offered worldwide and consist of directors and officers liability, including publicly traded, private, and non-profit companies in both commercial and financial institution arenas; lawyers errors and omissions for small, medium and large-sized law firms; accountants errors and omissions for small and medium-sized firms; technology errors and omissions and cyber liability focusing on network security and privacy exposures. Medical malpractice reinsurance products are offered in the United States and include coverage for physician, surgeon, hospital and long term care medical malpractice writers. Environmental treaty reinsurance provides coverage for pollution legal liability, contractors pollution and professional liability exposures on both a nationwide and regional basis within the U.S.

Specialty treaty reinsurance products offered in the Reinsurance segment include structured and whole turnover credit, political risk, mortgage and contract and commercial surety reinsurance programs covering worldwide exposures, public entity reinsurance products, workers' compensation excess of loss and quota share treaties, whole account, marine and agriculture reinsurance products. Our mortgage products offer coverage for private mortgage insurers in the U.S., Australia and Europe. Our public entity reinsurance products offer customized programs for government risk pools, including counties, municipalities, schools, public housing authorities and special districts (e.g., water, sewer, parks) located in the U.S. Types of coverage for public entities include general liability, environmental impairment liability, cyber and errors and omissions. Our workers' compensation business includes standard and catastrophe exposed workers' compensation business. Marine reinsurance products include offshore and onshore marine and energy risks on a worldwide basis, including hull, cargo and liability. Agriculture reinsurance covers multi-peril crop insurance, hail and related exposures, for risks located in the U.S. and Canada.

Property treaty products are offered on an excess of loss and quota share basis for catastrophe, per risk and retrocessional exposures worldwide. Our catastrophe exposures are generally written on an excess of loss basis and target both personal and commercial lines of business providing coverage for losses from natural disasters, including hurricanes, wind storms and earthquakes. We also reinsure individual property risks such as buildings, structures, equipment and contents and provide coverage for both personal lines and commercial property exposures. Our retrocessional products provide coverage for all types of underlying exposures and geographic zones. A significant portion of the property treaty business covers U.S. exposures, with the remainder coming from international property exposures. Our property products are exposed to windstorm losses that, based on the seasonal nature of those events, are more likely to occur in the third and fourth quarters of the year.

Ceded Reinsurance

Within our underwriting operations, we purchase reinsurance and retrocessional reinsurance to manage our net retention on individual risks and overall exposure to losses, while providing us with the ability to offer policies with sufficient limits to meet policyholder needs. See "Program Services" section below for an overview of ceded reinsurance within our program services business, which is managed separately from our underwriting operations.

In a reinsurance transaction, an insurance company transfers, or cedes, all or part of its exposure in return for a premium. In a retrocessional reinsurance transaction, a reinsured exposure is further ceded to another reinsurer. We purchase reinsurance and retrocessional reinsurance coverage for our catastrophe-exposed policies to ensure that our net retained catastrophe risk is within our corporate tolerances. Beginning in late 2018, we shifted from buying proportional catastrophe reinsurance or retrocessional reinsurance coverages towards excess of loss catastrophe coverages in both our Insurance and Reinsurance segments. On other product lines for which we purchase reinsurance or retrocessional reinsurance, we are also beginning to shift from purchasing coverages related to specific lines of business towards enterprise-wide coverages. Both of these changes allow us to retain more of our profitable business while continuing to manage volatility within our underwriting results. As a result of these changes, we are retaining more gross premium volume and have lower ceding commissions within our underwriting segments. Net retention of gross premium volume in our underwriting segments was 84% in 2019 and 83% in 2018.

Our ceded reinsurance and retrocessional contracts do not legally discharge us from our primary liability for the full amount of the policies, and we will be required to pay the loss and bear collection risk if the reinsurer fails to meet its obligations under the reinsurance agreement. We attempt to minimize credit exposure to reinsurers through adherence to internal ceded reinsurance guidelines. We manage our exposures so that no exposure to any one reinsurer is material to our ongoing business. To participate in our reinsurance program, prospective companies generally must: (i) maintain an A.M. Best Company (Best) or Standard & Poor's (S&P) rating of "A" (excellent) or better; (ii) maintain minimum capital and surplus of \$500 million and (iii) provide collateral for recoverables in excess of an individually established amount. In addition, certain foreign reinsurers for our U.S. insurance operations must provide collateral equal to 100% of recoverables, with the exception of reinsurers who have been granted certified or authorized status by an insurance company's state of domicile. Our credit exposure to Lloyd's syndicates is managed through individual and aggregate exposure thresholds.

When appropriate, we pursue reinsurance commutations that involve the termination of ceded reinsurance and retrocessional reinsurance contracts. Our commutation strategy related to ceded reinsurance and retrocessional contracts is to reduce credit exposure and eliminate administrative expenses associated with the run-off of ceded reinsurance placed with certain reinsurers.

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The following table displays balances recoverable from our ten largest reinsurers by group from our underwriting operations at December 31, 2019. The contractual obligations under reinsurance and retrocessional contracts are typically with individual subsidiaries of the group or syndicates at Lloyd's and are not typically guaranteed by other group members or syndicates at Lloyd's. Reinsurance recoverable balances are shown before consideration of balances owed to reinsurers and any potential rights of offset, any collateral held by us and allowances for bad debts. These ten reinsurance groups represent approximately 62% of our \$2.5 billion reinsurance recoverables balance attributed to our underwriting operations, before considering allowances for bad debts.

Reinsurance Group	A.M. Best Rating	Reinsurance Recoverable
<i>(dollars in thousands)</i>		
Fairfax Financial Group	A	\$ 240,708
RenaissanceRe Holdings Ltd.	A+	222,244
AXIS Capital Holdings Limited	A+	177,019
Lloyd's of London	A	171,306
Munich Re Group	A+	158,406
EXOR S.p.A.	A+	150,993
Alleghany Corporation	A+	123,637
Swiss Re Group	A+	113,014
Liberty Mutual Holding Company	A	99,046
Everest Re Group	A+	95,990
Reinsurance recoverables for ten largest reinsurers		1,552,363
Total reinsurance recoverables		\$ 2,522,992

Reinsurance and retrocessional treaties are generally purchased on an annual or biennial basis and are subject to renegotiations at renewal. In most circumstances, the reinsurer remains responsible for all business produced before termination. Treaties typically contain provisions concerning ceding commissions, required reports to reinsurers, responsibility for taxes, arbitration in the event of a dispute and provisions that allow us to demand that a reinsurer post letters of credit or assets as security if a reinsurer becomes an unauthorized reinsurer under applicable regulations or if its rating falls below an acceptable level.

See note 11 of the notes to consolidated financial statements and Management's Discussion & Analysis of Financial Condition and Results of Operations for additional information about our ceded reinsurance programs and exposures.

Investments

Our business strategy recognizes the importance of both consistent underwriting and operating profits and superior investment returns to build shareholder value. We rely on sound underwriting practices to produce investable funds while minimizing underwriting risk. The majority of our investable assets come from premiums paid by policyholders. Policyholder funds are invested predominantly in high-quality government, municipal and corporate bonds that generally match the duration and currency of our loss reserves. The balance, comprised of shareholder funds, is available to be invested in equity securities, which over the long run, have produced higher returns relative to fixed maturity investments. When purchasing equity securities, we seek to invest in profitable companies, with honest and talented management, that exhibit reinvestment opportunities and capital discipline, at reasonable prices. We intend to hold these investments over the long term. Substantially all of our investment portfolio is managed by company employees.

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We evaluate our investment performance by analyzing net investment income and net investment gains (losses) as well as our taxable equivalent total investment return, which is a non-GAAP financial measure. Taxable equivalent total investment return includes items that impact net income, such as coupon interest on fixed maturities, dividends on equity securities and investment gains or losses, as well as changes in unrealized gains or losses on available-for-sale securities, which do not impact net income. Certain items that are included in net investment income have been excluded from the calculation of taxable equivalent total investment return, such as amortization and accretion of premiums and discounts on our fixed maturity portfolio, to provide a comparable basis for measuring our investment return against industry investment returns. The calculation of taxable equivalent total investment return also includes the current tax benefit associated with income on certain investments that is either taxed at a lower rate than the statutory income tax rate or is not fully included in U.S. taxable income. We believe the taxable equivalent total investment return is a better reflection of the economics of our decision to invest in certain asset classes. We do not lower the quality of our investment portfolio in order to enhance or maintain yields. We focus on long-term total investment return, understanding that the level of investment gains or losses and unrealized gains or losses on available-for-sale securities may vary from one period to the next.

The following table summarizes our investment performance.

<i>(dollars in thousands)</i>	Years Ended December 31,				
	2019	2018	2017	2016	2015
Net investment income	\$ 451,888	\$ 434,215	\$ 405,709	\$ 373,230	\$ 353,213
Net investment gains (losses) ⁽¹⁾	\$ 1,601,722	\$ (437,596)	\$ (5,303)	\$ 65,147	\$ 106,480
Change in net unrealized investment gains	\$ 381,890	\$ (299,446)	\$ 1,125,440	\$ 342,111	\$ (457,584)
Investment yield ⁽²⁾	3.0%	2.7%	2.6%	2.4%	2.3%

⁽¹⁾ Effective January 1, 2018, we adopted Financial Accounting Standards Board Accounting Standards Update (ASU) No. 2016-01. As a result, equity securities are no longer classified as available-for-sale with unrealized gains and losses recognized in other comprehensive income; rather, all changes in the fair value of equity securities are now recognized in net income. Prior periods have not been restated to conform to the current presentation.

⁽²⁾ Investment yield reflects net investment income as a percentage of monthly average invested assets at amortized cost.

We believe our investment performance is best analyzed from the review of taxable equivalent total investment return over several years. The following table presents taxable equivalent total investment return before and after the effects of foreign currency movements.

Annual Taxable Equivalent Total Investment Returns

	Years Ended December 31,					Five-Year Annual Return	Ten-Year Annual Return
	2019	2018	2017	2016	2015		
Equities	30.0%	(3.5)%	25.5%	13.5%	(2.5)%	11.7%	15.2%
Fixed maturities, cash and short-term investments ⁽¹⁾	6.5%	1.3 %	3.4%	2.4%	1.6 %	3.0%	3.9%
Total portfolio, before foreign currency effect	14.4%	(0.7)%	9.2%	5.0%	0.5 %	5.5%	6.7%
Total portfolio	14.6%	(1.0)%	10.2%	4.4%	(0.7)%	5.3%	6.4%
Invested assets, end of year (in millions)	\$ 22,258	\$ 19,238	\$ 20,570	\$ 19,059	\$ 18,181		

⁽¹⁾ Includes cash and cash equivalents and restricted cash and cash equivalents.

The following table reconciles investment yield to taxable equivalent total investment return.

	Years Ended December 31,				
	2019	2018	2017	2016	2015
Investment yield ⁽¹⁾	3.0 %	2.7 %	2.6 %	2.4 %	2.3 %
Adjustment of investment yield from amortized cost to fair value	(0.7)%	(0.6)%	(0.5)%	(0.4)%	(0.4)%
Net amortization of net premium on fixed maturities	0.4 %	0.4 %	0.4 %	0.4 %	0.5 %
Net investment gains (losses) and change in net unrealized investment gains on available-for-sale securities	10.3 %	(3.4)%	5.9 %	2.3 %	(2.0)%
Taxable equivalent effect for interest and dividends ⁽²⁾	0.2 %	0.1 %	0.4 %	0.4 %	0.4 %
Other ⁽³⁾	1.4 %	(0.2)%	1.4 %	(0.7)%	(1.5)%
Taxable equivalent total investment return	14.6 %	(1.0)%	10.2 %	4.4 %	(0.7)%

(1) Investment yield reflects net investment income as a percentage of monthly average invested assets at amortized cost.

(2) Adjustment to tax-exempt interest and dividend income to reflect a taxable equivalent basis.

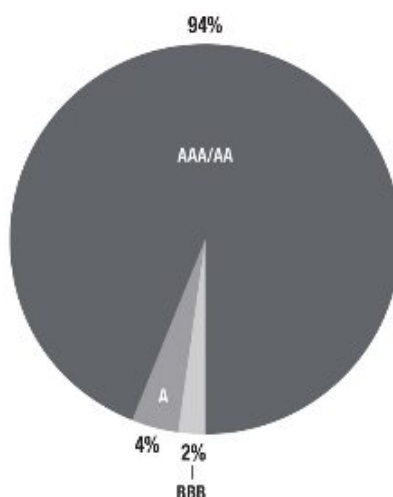
(3) Adjustment to reflect the impact of changes in foreign currency exchange rates and time-weighting the inputs to the calculation of taxable equivalent total investment return.

We monitor our investment portfolio to ensure that credit risk does not exceed prudent levels. S&P and Moody's provide corporate and municipal debt ratings based on their assessments of the credit quality of an obligor with respect to a specific obligation. S&P's ratings range from "AAA" (capacity to pay interest and repay principal is extremely strong) to "D" (debt is in payment default). Securities with ratings of "BBB" or higher are referred to as investment grade securities. Debt rated "BB" and below is regarded by S&P as having predominantly speculative characteristics with respect to capacity to pay interest and repay principal. Moody's ratings range from "Aaa" to "C" with ratings of "Baa" or higher considered investment grade.

Our fixed maturity portfolio has an average rating of "AA," with 98% rated "A" or better by at least one nationally recognized rating organization. Our policy is to invest in investment grade securities and to minimize investments in fixed maturities that are unrated or rated below investment grade. At December 31, 2019, less than 1% of our fixed maturity portfolio was unrated or rated below investment grade. Our fixed maturity portfolio includes securities issued with financial guaranty insurance. We purchase fixed maturities based on our assessment of the credit quality of the underlying assets without regard to insurance.

The following chart presents our fixed maturity portfolio, at estimated fair value, by rating category at December 31, 2019.

2019 Credit Quality of Fixed Maturity Portfolio (\$10.0 billion)



See "Market Risk Disclosures" in Management's Discussion & Analysis of Financial Condition and Results of Operations for additional information about investments.

Markel Ventures

Through our wholly owned subsidiary Markel Ventures, Inc. (Markel Ventures), we own interests in various businesses that operate outside of the specialty insurance marketplace. These businesses are viewed by management as separate and distinct from our insurance operations. Local management teams oversee the day-to-day operations of these companies, while strategic decisions, including investment and capital allocation decisions, are made by our senior management team.

Our strategy in making these investments is similar to our strategy for purchasing equity securities. We seek to invest in profitable companies, with honest and talented management, that exhibit reinvestment opportunities and capital discipline, at reasonable prices. We intend to own the businesses acquired for a long period of time.

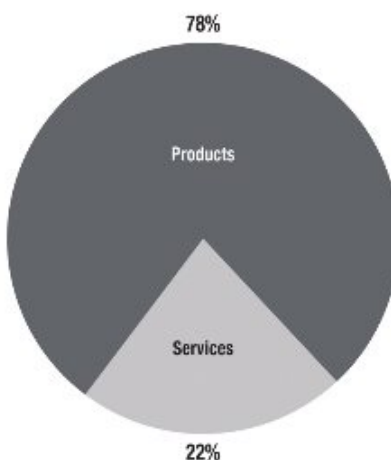
Our chief operating decision maker allocates resources to and assesses the performance of these various businesses in the aggregate as the Markel Ventures segment. This segment includes a diverse portfolio of businesses from different industries that offer various types of products and services to businesses and consumers. See note 8 of the notes to consolidated financial statements for additional segment reporting disclosures.

During the last three years, our Markel Ventures operations have expanded through acquisitions of majority interests in various businesses, including the Costa Farms companies, Brahmin Leather Works, LLC and VSC Fire & Security, Inc. See note 2 of the notes to consolidated financial statements for additional details related to these acquisitions.

In 2019, our Markel Ventures operations reported revenues of \$2.1 billion, operating income of \$168.4 million, net income to shareholders of \$92.9 million and earnings before interest, income taxes, depreciation and amortization (EBITDA) of \$263.9 million. We use Markel Ventures EBITDA, which is a non-GAAP financial measure, as an operating performance measure in conjunction with revenues, operating income and net income. See "Markel Ventures" in Management's Discussion & Analysis of Financial Condition and Results of Operations for more information on EBITDA.

The following chart displays the types of offerings within our Markel Ventures segment.

Markel Ventures Segment
2019 Operating Revenues (\$2.1 billion)



Our Markel Ventures products group is comprised of businesses that manufacture or produce equipment, transportation-related products, and consumer and building products. For example, types of products offered by businesses in this group include equipment used in baking systems and food processing, over-the-road car haulers and laminated oak and composite wood flooring used in the trucking industry as well as ornamental plants and residential homes.

Our Markel Ventures services group is comprised of businesses that provide healthcare, consulting and others types of services to businesses and consumers. For example, types of services offered by businesses in this group include management and technology consulting, behavioral healthcare and retail intelligence.

The demand for certain of our Markel Ventures products and services is seasonal, with variations in revenues throughout the year depending on the industry, and cyclical based on certain larger economic trends and activity.

The majority of our businesses in this segment are headquartered across the U.S., with subsidiaries of certain businesses located outside of the U.S. This segment offers a wide range of products and services across many markets and encounters a variety of competitors that vary by product line, end market and geographic area. Each business within the segment has several main competitors and numerous smaller ones in most of their end markets and geographic areas. Examples of the end markets include U.S. consumer markets for healthcare, U.S. and international markets for retail, food service, food production, automobile transporters, governments, and truck trailers, as well as U.S. based businesses in a variety of industries including the banking, financial services, and energy industries.

Insurance-Linked Securities

Our insurance-linked securities (ILS) operations are comprised of our Nephila and run-off Markel CATCo operations, as further described below. We receive management fees for investment and insurance management services provided through these operations based on the net asset value of the accounts managed, and for certain funds, incentive fees based on the annual performance of the funds managed. Through our Nephila operations, we also provide managing general agent services and receive commissions based on the direct written premiums of the insurance contracts placed. Total revenues from our insurance-linked securities operations for the year ended December 31, 2019 were \$225.6 million, which are included in services and other revenues in our consolidated statement of income and comprehensive income.

Nephila

In November 2018, we completed the acquisition of all of the outstanding shares of Nephila Holdings Ltd. (together with its subsidiaries, Nephila). Through its subsidiaries, Nephila primarily serves as an insurance and investment fund manager headquartered in Bermuda that offers a broad range of investment products, including insurance-linked securities, catastrophe bonds, insurance swaps and weather derivatives.

Nephila serves as the investment manager to several Bermuda, Ireland and U.S. based private funds (the Nephila Funds). To provide access for the Nephila Funds to the insurance, reinsurance and weather markets, Nephila also acts as an insurance manager to certain Bermuda Class 3 and 3A reinsurance companies and Lloyd's Syndicate 2357 (Syndicate 2357) (collectively, the Nephila Reinsurers). The results of the Nephila Reinsurers are attributed to the Nephila Funds primarily through derivative transactions between these entities. Neither the Nephila Funds nor the Nephila Reinsurers are subsidiaries of Markel Corporation, and as such, these entities are not included in our consolidated financial statements. As of December 31, 2019, Nephila's net assets under management were \$10.4 billion.

See note 17 of the notes to consolidated financial statements for further details regarding our Nephila operations.

Markel CATCo

Our Markel CATCo operations are conducted through Markel CATCo Investment Management Ltd. (MCIM). MCIM is an insurance-linked securities investment fund manager headquartered in Bermuda and, through 2019, was focused on building and managing highly diversified, collateralized retrocession and reinsurance portfolios covering global property catastrophe risks. MCIM serves as the insurance manager for Markel CATCo Re Ltd. (Markel CATCo Re), a Bermuda Class 3 reinsurance company, and as the investment manager for Markel CATCo Reinsurance Fund Ltd., a Bermuda exempted mutual fund company comprised of multiple segregated accounts (Markel CATCo Funds). MCIM also serves as the investment manager to CATCo Reinsurance Opportunities Fund Ltd. (CROF), a limited liability closed-end Bermuda exempted mutual fund company listed on a market operated by the London Stock Exchange and on the Bermuda Stock Exchange. CROF invests substantially all of its assets in Markel CATCo Reinsurance Fund Ltd.

In July 2019, MCIM announced it would cease accepting new investments in the Markel CATCo Funds and would not write any new business in Markel CATCo Re. Both the Markel CATCo Funds and Markel CATCo Re have been placed into run-off, returning capital to investors as it becomes available. For further details regarding developments within our Markel CATCo operations, see note 20 of the notes to consolidated financial statements.

As of December 31, 2019, MCIM's net assets under management were \$2.8 billion, a portion of which is attributable to our investments in the Markel CATCo Funds. As of December 31, 2019, the fair value of our investments in the Markel CATCo Funds and CROF totaled \$50.6 million, which is included in equity securities on our consolidated balance sheet.

See note 16 and note 17 of the notes to consolidated financial statements for further details regarding our Markel CATCo operations.

Lodgepine

In 2019, we established Lodgepine Capital Management Limited (Lodgepine), our new retrocessional insurance-linked securities fund manager in Bermuda. Lodgepine's initial product offering will be Lodgepine Fund Limited, a property catastrophe retrocessional investment fund, which is expected to launch in 2020. We have committed to invest up to \$100 million in Lodgepine Fund Limited. Lodgepine Fund Limited initially plans to subscribe to a portfolio of retrocessional reinsurance, which includes contracts written in our Reinsurance segment.

Program Services

Following the acquisition of State National in 2017, our operations expanded to include a program services business, which is provided through our State National division. Our program services business generates fee income, in the form of ceding (program service) fees, by offering issuing carrier capacity to both specialty general agents and other producers who sell, control and administer books of insurance business that are supported by third parties that assume reinsurance risk, including Syndicate 2357. These reinsurers are domestic and foreign insurers and institutional risk investors (capacity providers) that want to access specific lines of U.S. property and casualty insurance business. Fronting refers to business in which we write insurance on behalf of a general agent or capacity provider and then cede the risk under these policies to the capacity provider in exchange for ceding fees.

Through our program services business, we write a wide variety of insurance products, principally including general liability insurance, commercial liability insurance, commercial multi-peril insurance, property insurance and workers compensation insurance. Program services business written through our State National division is separately managed from our underwriting divisions, which write similar products, in order to protect our program services customers and eliminate internal competition for this business. Our program services business is primarily written through SNIC, NSIC and City National Insurance Company (CNIC), all of which are domiciled in Texas, and United Specialty Insurance Company (USIC) and Independent Specialty Insurance Company (ISIC), which are domiciled in Delaware. SNIC, NSIC, CNIC, USIC and ISIC are licensed to write property and casualty insurance in all 50 states and the District of Columbia. USIC is also eligible to write business in the U.S. Virgin Islands. Many of our programs are arranged with the assistance of brokers that are seeking to provide customized insurance solutions for specialty insurance business that requires an A.M. Best "A" rated carrier. Our specialized business model relies on third party producers or capacity providers to provide the infrastructure associated with providing policy administration, claims handling, cash handling, underwriting, or other traditional insurance company services. We believe there are relatively few active competitors in the fronting business. We compete primarily on the basis of price, customer service, geographic coverage, financial strength ratings, licenses, reputation, business model and experience.

Total revenues attributed to our program services business for the year ended December 31, 2019 were \$108.8 million. Our program services business generated \$2.3 billion of gross written premium volume for the year ended December 31, 2019.

In our program services business, we generally enter into a 100% quota share reinsurance agreement whereby we cede to the capacity provider substantially all of our gross liability under all policies issued by and on behalf of us by the producer. The capacity provider is generally entitled to 100% of the net premiums received on policies reinsured, less the ceding fee to us, the commission paid to the producer and premium taxes on the policies. In connection with writing this business, we also enter into agency agreements with both the producer and the capacity provider whereby the producer and capacity provider are generally required to deal directly with each other to develop business structures and terms to implement and maintain the ongoing contractual relationship. In a number of cases, the producer and capacity provider for a program are part of the same organization or are otherwise affiliated. As a result of our contract design, substantially all of the underwriting risk and operational risk inherent in the arrangement is borne by the capacity provider. The capacity provider assumes and is liable for substantially all losses incurred in connection with the risks under the reinsurance agreement, including judgments and settlements. Our contracts with capacity providers do not legally discharge us from our primary liability for the full amount of the policies, and we will be required to pay the loss and bear collection risk if the capacity provider fails to meet its obligations under the reinsurance agreement. As a result, we remain exposed to the credit risk of capacity providers, or the risk that one of our capacity providers becomes insolvent or otherwise unable or unwilling to pay policyholder claims. We mitigate this credit risk generally by either selecting well capitalized, highly rated authorized capacity providers or requiring that the capacity provider post substantial collateral to secure the reinsured risks.

Although we reinsure substantially all of the risks inherent in our program services business, we have certain programs that contain limits on our reinsurers' obligations to us that expose us to underwriting risk, including loss ratio caps, aggregate reinsurance limits or exclusion of the credit risk of producers. Under certain programs, including one program with Syndicate 2357, an unconsolidated affiliate, we also bear underwriting risk for annual aggregate agreement year losses in excess of a limit that we believe is highly unlikely to be exceeded. See note 17 of the notes to consolidated financial statements for further details regarding our program with Syndicate 2357.

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The following table displays balances recoverable from our ten largest reinsurers by group for our program services business, based on gross reinsurance recoverable balances at December 31, 2019. The contractual obligations under reinsurance and retrocessional contracts are typically with individual subsidiaries of the group or syndicates at Lloyd's and are not typically guaranteed by other group members or syndicates at Lloyd's. Reinsurance recoverable balances are shown before consideration of balances owed to reinsurers and any potential rights of offset, and allowances for bad debts. These ten reinsurance groups represent 71% of our \$2.9 billion reinsurance recoverables balance attributed to our program services business, before considering allowances for bad debts.

Reinsurance Group	A.M. Best Rating	Gross Reinsurance Recoverable	Collateral Applied (1)	Net Reinsurance Recoverable
<i>(dollars in thousands)</i>				
Fosun International Holdings Ltd.	A-	\$ 631,205	\$ 631,088	\$ 117
Lloyd's of London (2)	A	454,791	—	454,791
Knight Insurance Company Ltd.	B++	379,454	379,454	—
James River Group Holdings, Ltd.	A	192,953	192,953	—
RenaissanceRe Holdings Ltd.	A+	140,749	777	139,972
Enstar Group Limited	A-	70,654	24,217	46,437
Everest Re Group	A+	61,999	—	61,999
Greenlight Capital Re, Ltd.	A-	55,907	55,907	—
Qatar Insurance Company S.A.Q.	A	54,737	54,737	—
MS&AD Insurance Group Holdings, Inc.	A+	52,680	52,680	—
Reinsurance recoverables for ten largest gross reinsurers		<u>2,095,129</u>	<u>1,391,813</u>	<u>703,316</u>
Total reinsurance recoverables		<u>\$ 2,936,569</u>	<u>\$ 1,940,691</u>	<u>\$ 995,878</u>

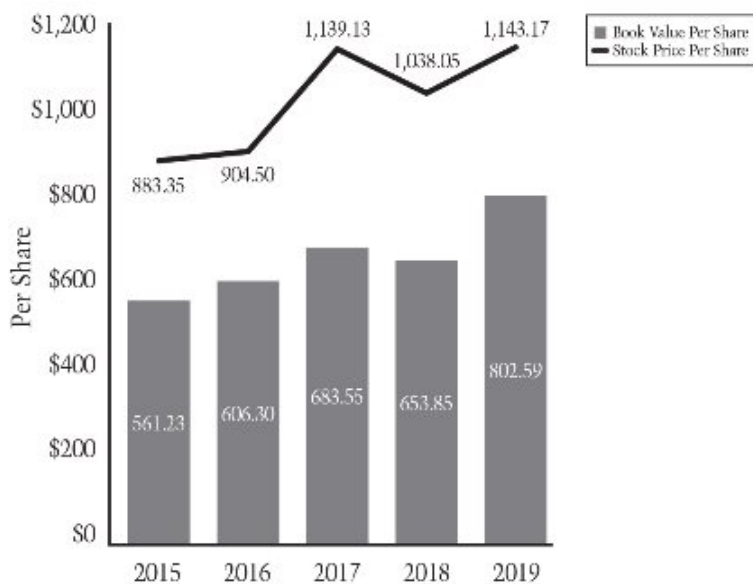
(1) Collateral is applied to each reinsurer, up to the amount of the gross recoverable, to determine the net recoverables presented in this table. As of December 31, 2019, we were the beneficiary of letters of credit, trust accounts and funds withheld totaling \$1.7 billion collateralizing reinsurance recoverable balances from our top 10 reinsurers and \$2.4 billion for our total reinsurance recoverables balance, which in some instances, exceeds the balance of the related reinsurance recoverable.

(2) Net reinsurance recoverable from Lloyd's of London includes \$219.5 million attributable to Syndicate 2357, an unconsolidated affiliate.

Shareholder Value

Our financial goals are to earn consistent underwriting and operating profits and superior investment returns to build shareholder value. We measure financial success by our ability to grow book value per share and the market price per share of our stock, or total shareholder return, at high rates of return over a long period of time. To mitigate the effects of short-term volatility, we generally use five-year time periods to measure ourselves. Growth in book value per share is an important measure of our success because it includes all underwriting, operating and investing results. For the year ended December 31, 2019, book value per share increased 23% primarily due to net income to shareholders of \$1.8 billion and a \$298.0 million increase in net unrealized gains on investments, net of taxes. Over the past five years, we have grown book value per share at a compound annual rate of 8% to \$802.59 per share at December 31, 2019. Growth in total shareholder value is also an important measure of our success, as a significant portion of our operations are not recorded at fair value or otherwise captured in book value. For the year ended December 31, 2019, our stock price per share increased 10%. Over the past five years, our stock price per share increased at a compound annual rate of 11%.

The following graph presents book value per share and stock price per share for the past five years as of December 31.



Regulatory Environment

We are subject to extensive state, federal and international regulation and supervision in the jurisdictions in which we do business. Regulations vary from jurisdiction to jurisdiction. Additionally, as a company with publicly-traded securities, we are also subject to certain legal and regulatory requirements applicable generally to public companies, including the rules and regulations of the U.S. Securities and Exchange Commission (SEC) and the New York Stock Exchange relating to reporting and disclosure, accounting and financial reporting, corporate governance and other matters.

The following is a summary of significant regulations that apply to our businesses, but it is not intended to be a comprehensive review of every regulation to which we are subject. For information regarding risks associated with regulations applicable to us, see “Item 1A - Risk Factors.”

U.S. Insurance Regulation

State Regulation

Overview. Our U.S. insurance subsidiaries are subject to varying degrees of regulation and supervision by the states and other jurisdictions in which they do business. In the U.S., authority for the regulation, supervision and administration of the business of insurance in each state is generally delegated to a state insurance commissioner who oversees a regulatory body responsible for the supervision of the business of insurance. Through this authority, state regulatory authorities have broad regulatory, supervisory and administrative powers relating to: solvency standards; corporate conduct; market conduct activities; regulating unfair trade and claims practices; licensing of insurers; licensing and appointment of agents; approval of forms and policies used; the nature of, and limitations on, insurers' investments; the form and content of annual statements and other reports on the financial condition of insurers; and establishment of loss reserves. States also regulate various aspects of the contractual relationships between insurers and independent agents. In addition, the National Association of Insurance Commissioners (NAIC), comprised of the insurance commissioners of each U.S. jurisdiction, develops or amends model statutes and regulations that, in turn, most states adopt.

Group Supervision - Global Supervisory College; Global Common Framework. Regulators within and outside the U.S. are increasingly coordinating the regulation of multinational insurers by conducting a supervisory college. A supervisory college is a forum of the regulators having jurisdictional authority over an insurance holding company's worldwide insurance subsidiaries. The supervisory college meets with executive management to evaluate the insurance group on both a group-wide and legal-entity basis, particularly with respect to its financial data, business strategies, enterprise risk management and corporate governance. The Illinois Department of Insurance is our lead insurance regulator for purposes of conducting our supervisory college.

The NAIC and state insurance regulators, as well as regulators in countries where we have operations, are currently working with the International Association of Insurance Supervisors to develop a global common framework (ComFrame) for the supervision of internationally active insurance groups (IAIGs). If adopted, ComFrame would require the designation of a group-wide supervisor (regulator) for each IAIG and would impose a group capital requirement that would be applied to an IAIG in addition to the current legal entity capital requirements imposed by state and international insurance regulators. In response to ComFrame, the NAIC revised the model Insurance Holding Company System Regulatory Act to allow state insurance regulators in the U.S. to be designated as group-wide supervisors for U.S. based IAIGs. Additionally, the NAIC is developing a group capital standard that would be applied to U.S. based insurance groups.

Holding Company Statutes. In addition to regulatory supervision of our U.S. insurance subsidiaries, we are subject to state statutes governing insurance holding company systems. Typically, those statutes require that we periodically file information with the appropriate state insurance commissioner, including information concerning our capital structure, ownership, financial condition, dividend payments and other material transactions with affiliates, and general business operations. These statutes also require approval of changes in control of an insurer or an insurance holding company. Generally, "control" for these purposes is defined as ownership or voting power of 10% or more of a company's voting shares. Additional requirements include group-level reporting, submission of an annual enterprise risk report by a regulated insurance company's ultimate controlling person and providing information regarding an insurer's non-insurer affiliates.

Risk Based Capital Requirements. The NAIC uses a risk based capital (RBC) formula that is designed to measure the capital of an insurer taking into account the company's investments and products. These requirements provide a formula which, for property and casualty insurance companies, establishes capital thresholds for four categories of risk: asset risk, insurance risk, interest rate risk and business risk. At December 31, 2019, the capital and surplus of each of our U.S. insurance subsidiaries was above the minimum regulatory thresholds. See note 21 of the notes to consolidated financial statements.

Financial Exams. State insurance regulators also prescribe the form and content of statutory financial statements, perform periodic financial examinations of insurers, set minimum reserve and loss ratio requirements, establish standards for permissible types and amounts of investments and require minimum capital and surplus levels. These statutory capital and surplus requirements include RBC rules promulgated by the NAIC.

Statutory Accounting Principles. Each of our U.S. insurance company subsidiaries is required to file detailed quarterly and annual reports, including financial statements, in accordance with prescribed statutory accounting rules, with regulatory officials in the jurisdictions in which they conduct business. The quarterly and annual financial reports filed with the states utilize statutory accounting principles (SAP) that are different from U.S. GAAP. As a basis of accounting, SAP was developed to monitor and regulate the solvency of insurance companies. In developing SAP, insurance regulators were primarily concerned with assuring an insurer's ability to pay all its current and future obligations to policyholders. As a result, statutory accounting focuses on conservatively valuing the assets and liabilities of insurers, generally in accordance with standards specified by the insurer's domiciliary state. The values for assets, liabilities and equity reflected in financial statements prepared in accordance with U.S. GAAP are usually different from those reflected in financial statements prepared under SAP.

Own Risk and Solvency Assessment and Enterprise Risk Management. We must submit an Own Risk and Solvency Assessment Summary Report (ORSA) annually to our lead insurance regulator. The ORSA is a confidential internal assessment of the material and relevant risks associated with an insurer's current business plan and the sufficiency of capital resources to support those risks. In addition, we must file an annual enterprise risk report with our lead insurance regulator. The report must identify the material risks within the insurance holding company system that could pose enterprise risk to the U.S. insurance subsidiaries.

Rates and Form Filings. The policy forms and various premium rates of our U.S. admitted insurance subsidiaries are subject to regulation in every state in which they conduct business. In many states, rates and policy forms must be filed with the applicable insurance regulator prior to their use, and in some states, rates and forms must be affirmatively approved by the applicable insurance regulator prior to use.

Dividends. The laws of the domicile states of our U.S. insurance subsidiaries govern the amount of dividends that may be paid to our holding company, Markel Corporation. Generally, statutes in the domicile states of our insurance subsidiaries require prior approval for payment of extraordinary, as opposed to ordinary, dividends. See note 21 of the notes to consolidated financial statements.

Market Conduct. State insurance laws and regulations include numerous provisions governing trade practices and the marketplace activities of insurers, including provisions governing marketing and sales practices, data security, policyholder services, claims management, anti-fraud controls and complaint handling. State regulatory authorities generally enforce these provisions through periodic market conduct examinations.

Investment Regulation. Investments by our U.S. insurance companies must comply with applicable laws and regulations that prescribe the kind, quality and concentration of investments. In general, these laws and regulations permit investments in federal, state and municipal obligations, corporate bonds, preferred and common equity securities, mortgage loans, real estate and certain other investments, subject to specified limits and certain other qualifications.

Federal Regulation

The U.S. federal government and its regulatory agencies generally do not directly regulate the business of insurance. However, two federal government bodies, the Federal Insurance Office (FIO) and the Financial Stability Oversight Council (FSOC), each created under The Dodd Frank Wall Street Reform and Consumer Protection Act, may impact the regulation of insurance. Although the FIO is prohibited from directly regulating the business of insurance, it has authority to represent the U.S. in international insurance matters and has limited powers to preempt certain types of state insurance laws. The FIO also can recommend to the FSOC that it designate an insurer as an entity posing risks to the U.S. financial stability in the event of the insurer's material financial distress or failure. We have not been so designated. The U.S. federal laws that most affect our day-to-day insurance operations are: the Gramm-Leach-Bliley Act; the Fair Credit Reporting Act; the Health Insurance Portability and Accounting Act of 1996, as amended; the Terrorism Risk Insurance Act of 2002, as amended; anti-money laundering laws and regulations; the Nonadmitted and Reinsurance Reform Act of 2010, as amended; and the rules and regulations of the Office of Foreign Assets Control.

International Insurance Regulation

Overview. Our international insurance operations are subject to regulation and supervision in various jurisdictions. These regulations, which vary depending on the jurisdiction, include, among others, solvency and market conduct regulations; anti-corruption, anti-money laundering, and anti-terrorist financing guidelines, laws and regulations; various privacy, insurance, tax, tariff, trade and sanctions laws and regulations; and corporate, employment, intellectual property and investment laws and regulations. Outside of the U.S., we operate largely in the U.K., Europe and Bermuda, as well as in Canada, Latin America, Asia Pacific and the Middle East, and our businesses are supervised by local regulatory authorities in these jurisdictions.

European Regulation. We are subject to regulation by the Prudential Regulatory Authority and Financial Conduct Authority in respect of our U.K. insurance businesses. We are also subject to regulation by the Federal Financial Supervisory Authority, better known by its abbreviation BaFin, in respect of our German insurance carrier.

Our U.K. and German insurance businesses are subject to both the E.U.'s General Data Protection Regulation (GDPR) and Solvency II. GDPR came into effect in May 2018, and requires businesses operating in the E.U. to comply with conditions for processing personal data. Solvency II came into effect in January 2016, and requires our U.K. and German businesses to maintain certain capital standards and publish risk-related information in the form of a Solvency and Financial Condition Report.

Bermuda Regulation. The insurance industry in Bermuda is regulated by the Bermuda Monetary Authority (BMA). Under the Bermuda Insurance Act 1978, and related regulations and standards of the BMA, each Bermuda insurance company is subject to, among other things: licensing, capital, surplus and liquidity requirements; solvency standards; restrictions on dividends and distributions; and periodic examinations of the company and its financial condition. In addition, each insurance company must obtain prior approval of ownership and transfer of shares and maintain a principal office and appoint and maintain a principal representative in Bermuda. The BMA also requires that each insurance company contract for local services, such as corporate secretary, insurance manager and registered representative services, at market rates.

ILS Regulation

Our insurance-linked securities operations are subject to regulation and supervision by various regulatory authorities, both in the U.S. and internationally. Certain of our ILS subsidiaries are organized and regulated as follows:

- registered with the SEC as an investment adviser under the Investment Advisers Act of 1940, as amended,
- registered with the U.S. Commodity Futures Trading Commission as a commodity pool operator or a commodity trading advisor under the Commodity Exchange Act, as amended, or
- registered with the BMA as an insurance manager under the Bermuda Insurance Act.

Certain other ILS subsidiaries serve as the investment manager to one or more private funds that are registered with the BMA under the Investment Funds Act of 2006, as amended, or the Segregated Accounts Companies Act 2000, as amended. In addition, these operations include business relationships with certain U.S., U.K. and Bermuda insurance companies that are subject to U.S. and international insurance regulation as described above in this "Regulatory Environment" section.

As a result, subsidiaries involved in our ILS operations are subject to regulations that may impose substantive and material restrictions and requirements on their operations, including, among other things: disclosure of information about our businesses and conflicts of interests to clients; maintenance of written policies and procedures; maintenance of extensive books and records; restrictions on the types of fees we may charge, including performance fees; restrictions on solicitation arrangements; requirements regarding engaging in transactions with clients; maintenance of an effective compliance program; and other restrictions and requirements applicable to custody of client assets, client privacy, advertising, pay-to-play prohibitions and cybersecurity; as well as possible sanctions, disciplinary actions or other penalties for non-compliance.

Markel Ventures Regulation

Our Markel Ventures businesses are subject to a wide variety of U.S. federal, state, and local laws and regulations, as well as international laws and regulations applicable to their international operations. Specifically, the most significant of these laws and regulations cover the following areas: safety, health, employment, the environment, transportation, U.S. and international trade, anti-corruption, data privacy and security and government contracts.

Ratings

Financial stability and strength are important purchase considerations of policyholders, cedents and insurance agents and brokers. Because an insurance premium paid today purchases coverage for losses that might not be paid for many years, the financial viability of the insurer is of critical concern. Various independent rating agencies provide information and assign ratings to assist buyers in their search for financially sound insurers. Rating agencies periodically re-evaluate assigned ratings based upon changes in the insurer's operating results, financial condition or other significant factors influencing the insurer's business. Changes in assigned ratings could have an adverse impact on an insurer's ability to write new business.

Best assigns financial strength ratings (FSRs) to property and casualty insurance companies based on quantitative criteria such as profitability, leverage and liquidity, as well as qualitative assessments such as the spread of risk, the adequacy and soundness of ceded reinsurance, the quality and estimated market value of assets, the adequacy of loss reserves and surplus and the competence, experience and integrity of management. Best's FSRs range from "A++" (superior) to "F" (in liquidation).

Eighteen of our nineteen insurance subsidiaries are rated by Best. All eighteen of our insurance subsidiaries rated by Best have been assigned an FSR of "A" (excellent). Our Lloyd's syndicate is part of a group rating for the Lloyd's overall market, which has been assigned an FSR of "A" (excellent) by Best.

Nine of our nineteen insurance subsidiaries are rated by S&P. All nine of our insurance subsidiaries rated by S&P have been assigned an FSR of "A" (strong). Our Lloyd's syndicate is part of a group rating for the Lloyd's overall market, which has been assigned an FSR of "A+" (strong) by S&P.

Five of our nineteen insurance subsidiaries are rated by Moody's Corporation (Moody's). All five insurance subsidiaries rated by Moody's have been assigned an FSR of "A2" (good).

Risk Factors

A wide range of factors could materially affect our future prospects and performance. The matters addressed under "Safe Harbor and Cautionary Statement," "Critical Accounting Estimates" and "Market Risk Disclosures" in Management's Discussion and Analysis of Financial Condition and Results of Operations and other information included or incorporated in this report describe many of the significant risks that could affect our operations and financial results. We are also subject to the following risks.

Headings and sub-headings for the Risk Factors below are for reference purposes only and are not intended to limit or affect in any way the meaning or scope of each Risk Factor.

Risks Primarily Related to Our Insurance Operations

Loss Exposures

We may experience losses or disruptions from catastrophes. As a company with significant property and casualty insurance underwriting operations, we may experience losses from man-made or natural catastrophes. Catastrophes include, but are not limited to, windstorms, hurricanes, earthquakes, tornadoes, hail, severe winter weather and wildfires and may include pandemics and events related to terrorism and political unrest. While we employ catastrophe modeling tools in our underwriting process, we cannot predict how severe a potential catastrophe will be before it occurs. The extent of losses from catastrophes is a function of the total amount of losses incurred, the number of insureds affected, the frequency and severity of the events, the effectiveness of our catastrophe risk management program and the adequacy of our reinsurance coverage. Most catastrophes occur over a small geographic area; however, some catastrophes may produce significant damage in large, heavily populated areas. In addition, catastrophes may have a material adverse effect on the investment management and incentive fees earned by our ILS operations and returns on our investments in ILS funds. Catastrophes also may result in significant disruptions in our insurance and other operations, as well as loss of income and assets. If climate change results in an increase in the frequency and severity of weather-related catastrophes, we may experience additional catastrophe-related losses or disruptions, which may be material.

The failure of any of the methods we employ to manage our loss exposures could have a material adverse effect on us. We seek to manage our loss exposures in a variety of ways, including adhering to maximum limitations on policies written in defined geographical zones, limiting program size for each client, establishing per risk and per occurrence limitations for each event, employing coverage restrictions and following prudent underwriting guidelines for each program written. We also seek to manage our loss exposures through geographic diversification. Underwriting is a matter of judgment, involving assumptions about matters that are inherently unpredictable and beyond our control, and for which historical experience and probability analysis may not provide sufficient guidance. One or more future events could result in claims that substantially exceed our expectations, which could have a material adverse effect on our results of operations and financial condition. In addition, we seek to manage our loss exposures by policy terms, coverage exclusions and choice of legal forum. Disputes relating to coverage and choice of legal forum also arise. As a result, various provisions of our policies, such as choice of forum, or coverage limitations or exclusions, may not be enforceable in the manner we intend and some or all of our methods to manage loss exposures may prove ineffective.

The effects of emerging claim and coverage issues on our business are uncertain. As industry practices and legal, judicial, social and other environmental conditions change, unexpected and unintended issues related to claims and coverage may emerge. These issues may have a material adverse effect on our business by either broadening coverage beyond our underwriting intent or by increasing the number or size of claims. In some instances, these changes may not become apparent until after we have issued insurance or reinsurance contracts that are affected by the changes. As a result, the full extent of liability under our insurance or reinsurance contracts may not be known for many years after a contract is issued. For example, many states have recently extended the statute of limitations for certain victims of sexual abuse. This may result in a higher frequency of claims over a more extended reporting period than originally expected.

We use analytical models to assist our decision making in key areas such as pricing, reserving and capital modeling and actual results may differ materially from the model outputs and related analyses. We use various modeling techniques and data analytics (e.g., scenarios, predictive and stochastic modeling, and forecasting) to analyze and estimate exposures, loss trends and other risks associated with our insurance and ILS businesses. This includes both proprietary and third-party modeled outputs and related analyses to assist us in, among other things, decision-making related to underwriting, pricing, capital allocation, reserving, investing, reinsurance and catastrophe risk. We incorporate numerous assumptions and forecasts about the future level and variability of policyholder behavior, loss frequency and severity, interest rates, equity markets, inflation, capital requirements, and currency exchange rates, among others. The modeled outputs and related analyses from both proprietary models and third party models are subject to various assumptions, uncertainties, model design errors, complexities and the inherent limitations of any statistical analysis, including those arising from the use of historical internal and industry data and assumptions.

In addition, the modeled outputs and related analyses may from time to time contain inaccuracies, perhaps in material respects, including as a result of inaccurate inputs or applications thereof (whether due to data error, human error or otherwise). Consequently, actual results may differ materially from our modeled results. Our profitability and financial condition substantially depend on the extent to which our actual experience is consistent with assumptions we use in our models and ultimate model outputs. If, based upon these models or other factors, we misprice our products or fail to appropriately estimate the risks we are exposed to, our business, results of operations and financial condition may be materially adversely affected.

Loss Reserves

Our results may be affected because actual insured or reinsured losses differ from our loss reserves. Significant periods of time often elapse between the occurrence of an insured or reinsured loss, the reporting of the loss to us and our payment of that loss. To recognize liabilities for unpaid losses, we establish reserves as balance sheet liabilities representing estimates of amounts needed to pay reported and unreported losses and the related loss adjustment expenses. The process of estimating loss reserves is a difficult and complex exercise involving many variables and subjective judgments. This process may also become more difficult if we experience a period of rising inflation. As part of the reserving process, we review historical data and consider the impact of such factors as:

- trends in claim frequency and severity,
- changes in operations,
- emerging economic and social trends,
- trends in insurance rates,
- inflation or deflation, and
- changes in the regulatory and litigation environments.

This process assumes that past experience, adjusted for the effects of current developments and anticipated trends, is an appropriate basis for predicting future events. There is no precise method, however, for evaluating the impact of any specific factor on the adequacy of reserves, and actual results will differ from original estimates. As part of the reserving process, we regularly review our loss reserves and make adjustments as necessary. Future increases in loss reserves for our underwriting operations will, and for our programs services operations may, result in additional charges to earnings, which may be material.

In addition, reinsurance reserves are subject to greater uncertainty than insurance reserves primarily because a reinsurer relies on (i) the original underwriting decisions and claims decisions made by ceding companies and (ii) information and data from ceding companies. As a result, we are subject to the risk that our ceding companies may not have adequately evaluated the risks reinsured by us and the premiums ceded may not adequately compensate us for the risks we assume. In addition, reinsurance reserves may be less reliable than insurance reserves because there is generally a longer lapse of time from the occurrence of the event to the reporting of the loss or benefit to the reinsurer and ultimate resolution or settlement of the loss.

Changes in the assumptions and estimates used in establishing reserves for our life and annuity reinsurance book could result in material increases in our estimated loss reserves for such business. Our run-off life and annuity reinsurance book exposes us to mortality risk, which is the risk that the level of death claims may differ from that which we assumed in establishing the reserves for our life and annuity reinsurance contracts. Some of our life and annuity reinsurance contracts expose us to longevity risk, which is the risk that an insured person will live longer than expected when the reserves were established, or morbidity risk, which is the risk that an insured person will become critically ill or disabled. Our reserving process for the life and annuity reinsurance book is designed with the objective of establishing appropriate reserves for the risks we assumed. Among other things, this process relies heavily on analysis of mortality, longevity and morbidity trends, lapse rates, interest rates and expenses. As of December 31, 2019, our reserves for life and annuity benefits totaled \$985.7 million.

We expect mortality, morbidity, longevity, and lapse experience to fluctuate somewhat from period to period, but believe they should remain reasonably predictable over a period of many years. Mortality, longevity, morbidity or lapse experience that is less favorable than the mortality, longevity, morbidity or lapse rates that we used in establishing the reserves for a reinsurance agreement will negatively affect our net income because the reserves we originally set for the risks we assumed may not be sufficient to cover the future claims and expense payments. Furthermore, even if the total benefits paid over the life of the contract do not exceed the expected amount, unexpected increases in the incidence of deaths or illness can result in changes to our assumptions in a given reporting period, adversely affecting our net income in any particular reporting period. Fluctuations in interest rates will impact the performance of our investments related to our life and annuity reinsurance book. If there are changes to any of the above factors to the point where a reserve deficiency exists, a charge to earnings will be recorded, which may have a material adverse effect on our results of operations and financial condition.

Ceded Reinsurance

We may be unable to purchase reinsurance protection on terms acceptable to us, or we may be unable to collect on reinsurance we purchase. Our underwriting operations purchase reinsurance and retrocessional reinsurance to manage our net retention on individual risks and mitigate the volatility of losses on our results of operations and financial condition, while providing us with the ability to offer policies with sufficient limits to meet policyholder needs. In addition, we reinsure substantially all of the risks inherent in our program services business, however, we have certain programs that contain limits on our reinsurers' obligations to us that expose us to underwriting risk, including loss ratio caps, aggregate reinsurance limits or exclusion of the credit risk of producers. See note 11 of the notes to consolidated financial statements for information about ceded reinsurance for our program services businesses.

The ceding of insurance does not legally discharge us from our primary liability for the full amount of the policies. Reliance on reinsurance recoveries may create credit risk as a result of the reinsurer's inability or unwillingness to pay reinsurance claims when due. We generally select well capitalized and highly rated reinsurers and in certain instances we require reinsurers to post substantial collateral to secure the reinsured risks. Deterioration in the credit quality of existing reinsurers or disputes over the terms of reinsurance could result in charges to earnings, which may have a material adverse effect on our results of operations and financial condition. In addition, collateral may not be sufficient to cover the reinsurer's obligation to us, and we may not be able to cause the reinsurer to deliver additional collateral.

As of December 31, 2019, we were the beneficiary of letters of credit, trust accounts and funds withheld in the aggregate amount of \$2.9 billion, collateralizing \$5.4 billion in reinsurance recoverables. The remaining unsecured reinsurance recoverables are ceded to highly-rated, well capitalized reinsurers. Our reinsurance recoverables are based on estimates, and our actual liabilities may exceed the amount we are able to recover from our reinsurers or any collateral securing the liabilities. The failure of a reinsurer to meet its obligations to us, whether due to insolvency, dispute or other unwillingness or inability to pay, or due to our inability to access sufficient collateral to cover our liabilities, could have a material adverse effect on our results of operations and financial condition.

The availability and cost of reinsurance are determined by market conditions beyond our control. There is no guarantee that our desired amounts of reinsurance or retrocessional reinsurance will be available in the marketplace in the future. In addition, available capacity may not be on terms we deem appropriate or acceptable or with companies with whom we want to do business. This could have a material adverse effect on our results of operations and financial condition.

Market Competition

Competition in the insurance and reinsurance markets could reduce our underwriting profits. Insurance and reinsurance markets are highly competitive. We compete on an international and regional basis with major U.S., Bermuda, European, and other international insurers and reinsurers and with underwriting syndicates, some of which have greater financial, marketing, and management resources than we do, have greater access to “big data,” and may be able to offer a wider range of, or more sophisticated, commercial and personal lines products. Recent industry consolidation, including business combinations among insurance and other financial services companies, has resulted in larger competitors with even greater financial resources. In addition, capital market participants have created alternative products that are intended to compete with reinsurance products.

Similar to other industries, the insurance industry is undergoing rapid and significant technological and other change. There is increasing focus by traditional insurance industry participants, technology companies, “InsurTech” start-up companies and others on using technology and innovation to simplify and improve the customer experience, increase efficiencies, redesign products, alter business models and effect other potentially disruptive changes in the insurance industry. If we do not anticipate, keep pace with and adapt to technological and other changes impacting the insurance industry, it will harm our ability to compete, decrease the value of our products to customers, and materially and adversely affect our business. Furthermore, innovation, technological change and changing customer preferences in the markets in which we operate also pose other risks to our businesses. For example, they could result in increasing our service, administrative, policy acquisition or general expenses as we seek to distinguish our products and services from those of our competitors or otherwise keep up with such innovation and changes.

Increased competition could result in fewer submissions, lower premium rates, and less favorable policy terms and conditions, which could reduce our underwriting profits and have a material adverse effect on our results of operations and financial condition.

The historical cyclicity in the property and casualty insurance industry could have a material adverse effect on our ability to improve or maintain underwriting profits or to grow or maintain premium volume. The insurance and reinsurance markets have historically been cyclical, characterized by extended periods of intense price competition due to excessive underwriting capacity, and more recently alternative sources of capital, as well as brief periods when shortages of capacity permitted more favorable rate levels. Among our competitive strengths have been our specialty product focus and our niche market strategy. These strengths also make us vulnerable in periods of intense competition to actions by other insurance companies who seek to write additional premiums without appropriate regard for underwriting profitability. At times it could be very difficult for us to grow or maintain premium volume levels without sacrificing underwriting profits. If we are not successful in maintaining rates or achieving rate increases, it may be difficult for us to improve or maintain underwriting profits or to grow or maintain premium volume levels.

Insurance Operations

Our efforts to develop new products, expand in targeted markets or improve business processes and workflows may not be successful and may increase or create new risks. From time to time, to protect and grow market share or improve our efficiency, we invest in strategic initiatives to:

- develop products that insure risks we have not previously insured, include new coverages or change coverage terms;
- change commission terms;
- change our underwriting processes;
- improve business processes and workflow to increase efficiencies and productivity and to enhance the experience of our customers and producers;
- expand distribution channels; and
- enter geographic markets where we previously have had relatively little or no market share.

We may not be successful in these efforts, and even if we are successful, they may increase or create the following risks, among others:

- demand for new products or expansion into new markets may not meet our expectations;
- new products and expansion into new markets may increase or change our risk exposures, and the data and models we use to manage those exposures may not be as effective as those we use in existing markets or with existing products;
- models underlying automated underwriting and pricing decisions may not be effective;
- efforts to develop new products or markets or to change commission terms may create or increase distribution channel conflicts;
- in connection with the conversion of existing policyholders to a new product, some policyholders' pricing may increase while the pricing for other policyholders may decrease, the net impact of which could negatively impact retention and profit margins; and
- changes to our business processes or workflow, including the use of new technologies, may give rise to execution risk.

These efforts may require us to make substantial expenditures, which may negatively impact results in the near term, and if not successful, could materially and adversely affect our results of operations.

We depend on a few brokers for a large portion of our revenues and the loss of business provided by any one of them could have a material adverse effect on us. We market our insurance and reinsurance worldwide through insurance and reinsurance brokers. For the year ended December 31, 2019, our top three independent brokers represented 28% of the gross premiums written by our underwriting operations. 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 insurance companies and senior debt are rated by various rating agencies, and a downgrade or potential downgrade in one or more of these ratings could have a material adverse effect on us. Financial strength ratings are an important factor in establishing the competitive position of insurance and reinsurance companies. Our senior debt ratings also affect the availability and cost of capital. Certain of our insurance and reinsurance company subsidiaries and our senior debt securities are rated by various rating agencies. Our financial strength and debt ratings are subject to periodic review, and are subject to revision or withdrawal at any time. The financial strength ratings of our insurance subsidiaries are significantly influenced by their statutory surplus amounts and leverage and capital adequacy ratios and other financial metrics. Rating agencies may implement changes to their ratings methodologies or internal models that have the effect of increasing or decreasing the amount of capital our insurance subsidiaries must hold or restrict how the company may deploy its capital in order to maintain its current ratings. For example, for certain of our insurance subsidiaries, rating agencies may take into account in their calculations the collateral provided to us by reinsurers. A change in this practice could adversely impact our ratings. We cannot be sure that we will be able to retain our current or any future ratings. If our ratings are reduced from their current levels by one or more rating agencies, our competitive position in our target markets within the insurance industry could suffer and it would be more difficult for us to market our products. A ratings downgrade could result in a substantial loss of business as policyholders and ceding company clients move to other companies with higher claims-paying and financial strength ratings. In addition, a downgrade could trigger contract provisions that allow cedents to terminate their reinsurance contracts on terms disadvantageous to us or require us to collateralize our obligations through trusts or letters of credit. A ratings downgrade could also have a material adverse effect on our liquidity, including the availability of our letter of credit facilities, and limit our access to capital markets, increase our cost of borrowing or issuing debt and require us to post collateral.

The amount of capital that our insurance subsidiaries have and must hold to maintain their financial strength and credit ratings and meet other requirements can vary significantly from time to time and is sensitive to a number of factors, some of which are outside of our control. Capital requirements for our insurance subsidiaries are prescribed by the applicable insurance regulators, while rating agencies establish requirements that inform ratings for our insurance subsidiaries and senior debt securities. Projecting surplus and the related capital requirements is complex and requires making assumptions regarding how our business will perform within the broader macroeconomic environment. Insurance regulators and rating agencies evaluate company capital through financial models that calculate minimum capitalization requirements based on risk-based capital formulas for property and casualty insurance groups and their subsidiaries. In any particular year, capital levels and risk-based capital requirements may increase or decrease depending on a variety of factors including the mix of business written by our insurance subsidiaries and correlation or diversification in the business profile, the amount of additional capital our insurance subsidiaries must hold to support business growth, the value of securities in our investment portfolio, changes in interest rates and foreign currency exchange rates, as well as changes to the regulatory and rating agency models used to determine our required capital. In addition, the NAIC is developing a group capital calculation for U.S. based global insurance groups, and expects to implement a new standard in 2020. Even though it is not intended to be a prescribed capital requirement, this calculation could have an impact on the amount of group capital we are required to hold and how it is allocated.

Insurance Regulation

Our insurance subsidiaries are subject to supervision and regulation that may have a material adverse effect on our operations and financial condition. Our insurance subsidiaries are subject to supervision and regulation by the regulatory authorities in the various jurisdictions in which they conduct business, including state, national and international insurance regulators. Regulatory authorities have broad regulatory, supervisory and administrative powers relating to, among other things, data protection and data privacy, solvency standards, licensing, coverage requirements, policy rates and forms and the form and content of financial reports. Regulatory and legislative authorities continue to implement enhanced or new regulatory requirements, in certain instances intended to prevent future financial crises or otherwise assure the stability of financial institutions. Regulatory authorities also may seek to exercise their supervisory or enforcement authority in new or more extensive ways, such as imposing increased capital requirements. These actions, if they occur, could affect the competitive market and the way we conduct our business and manage our capital and could result in lower revenues and higher costs. As a result, such actions could have a material effect on our results of operations and financial condition.

Regulators may challenge our use of fronting arrangements in states in which our capacity providers are not licensed. Our program services business enters into fronting arrangements with general agents and domestic and foreign insurers that want to access specific U.S. property and casualty insurance business in states in which the capacity providers are not licensed or are not authorized to write particular lines of insurance. Some state insurance regulators may object to these fronting arrangements. In certain states, an insurance commissioner has the authority to prohibit an authorized insurer from acting as an issuing carrier for an unauthorized insurer. In addition, insurance departments in states in which there is no such statutory or regulatory prohibition, could deem the assuming insurer to be transacting insurance business without a license and the issuing carrier to be aiding and abetting the unauthorized sale of insurance.

If regulators in any of the states where we conduct our fronting business were to prohibit or limit those arrangements, we would be prevented or limited from conducting that business for which a capacity provider is not authorized in those states, unless and until the capacity provider is able to obtain the necessary licenses. This could have a material adverse effect on our results of operations and financial condition.

Risks Primarily Related to Our Investments and Access to Capital

Changes in Economic Conditions

Our investment results may be impacted by changes in interest rates, U.S. and international monetary and fiscal policies as well as broader economic conditions. We receive premiums from customers for insuring their risks. We invest these funds until they are needed to pay policyholder claims. Fluctuations in the value of our investment portfolio can occur as a result of changes in interest rates and U.S. and international fiscal, monetary and trade policies as well as broader economic conditions (including, for example, equity market conditions and significant inflation or deflation). Although we attempt to take measures to manage the risks of investing in these changing environments, we may not be able to mitigate our sensitivity to them effectively. Despite our mitigation efforts, which include duration and currency targets for asset portfolios, compliance monitoring of these targets and means to reasonably and effectively match asset duration and currency to the duration and currency of the loss reserves, changes in interest rates and U.S. and international fiscal, monetary and trade policies as well as broader economic conditions could have a material adverse effect on our investment results.

We invest a significant portion of our shareholders' equity in equity securities, which may result in significant variability in our investment results and net income and may have a material adverse effect on shareholders' equity. Additionally, our equity investment portfolio is concentrated, and declines in the value of these significant investments could have a material adverse effect on our financial results. Equity securities were 69% and 63% of our shareholders' equity at December 31, 2019 and 2018, respectively. Equity securities have historically produced higher returns than fixed maturities over long periods of time; however, investing in equity securities may result in significant variability in investment returns from one period to the next. In volatile financial markets, we could experience significant declines in the fair value of our equity investment portfolio, which would result in a material decrease in net income and shareholders' equity. Our equity portfolio is concentrated in particular issuers and industries and, as a result, a decline in the fair value of these concentrated investments also could result in a material decrease in net income and shareholders' equity. A material decrease in shareholders' equity may have a material adverse effect on our ability to carry out our business plans.

Access to Capital

We may require additional capital in the future, which may not be available or may only be available on unfavorable terms. To the extent that cash flows generated by our operations are insufficient to fund future operating requirements, or that our capital position is adversely impacted by a decline in the fair value of our investment portfolio, losses from catastrophe events or otherwise, we may need to raise additional funds through financings or curtail our growth. We also may be required to liquidate fixed maturities or equity securities, which may result in realized investment losses. Any further sources of capital, including capacity needed for letters of credit, if available at all, may be on terms that are unfavorable to us. Our access to additional sources of capital will depend on a variety of factors, such as market conditions, the general availability of credit, the availability of credit to the industries in which we operate, our results of operations, financial condition, credit ratings and credit capacity, as well as pending litigation or regulatory investigations. Our ability to borrow under our revolving credit facility and letter of credit facilities is contingent on our compliance with the covenants and other requirements under those facilities. Similarly, our access to capital may be impaired if regulatory authorities or rating agencies take negative actions against us. Our inability to obtain adequate capital when needed could have a negative impact on our ability to invest in, or take advantage of opportunities to expand, our businesses, such as possible acquisitions or the creation of new ventures, and inhibit our ability to refinance our existing indebtedness on terms acceptable to us. Any of these effects could have a material adverse effect on our results of operations and financial condition.

Our failure to comply with covenants and other requirements under our revolving credit facility, senior debt and other indebtedness could have a material adverse effect on us. The agreements and indentures relating to our revolving credit facility, senior debt and other indebtedness, including letter of credit facilities used by certain of our insurance subsidiaries, contain covenants and other requirements. If we fail to comply with those covenants or requirements, the lenders, noteholders or counterparties under those agreements and indentures could declare a default and demand immediate repayment of all amounts owed to them. In addition, where applicable, our lenders may cancel their commitments to lend or issue letters of credit or require us to pledge additional or a different type of collateral. A default under one debt agreement may also put us at risk of a cross-default under other debt agreements or other arrangements. Any of these effects could have a material adverse effect on our results of operations and financial condition.

Our liquidity and our ability to make payments on debt or other obligations depend on the receipt of funds from our subsidiaries. We are a holding company, and as a result, our cash flow and our ability to service our debt and pay our other obligations depend upon the earnings of our subsidiaries and on the distribution of earnings, loans or other payments by our subsidiaries to us. The payment of dividends by our insurance subsidiaries, which account for a significant portion of our operating cash flows, may require prior regulatory notice or approval or may be restricted by capital requirements imposed by regulatory authorities. Similarly, our insurance subsidiaries may require capital contributions from us to satisfy their capital requirements. In addition, our reinsurance contracts typically allow the cedent, upon a reduction in an insurance company's capital in excess of specified amounts, to terminate its contract on terms disadvantageous to us or to exercise other remedies that may adversely affect us. Those contract provisions may have the effect of limiting distributions by our insurance subsidiaries to us.

Risks Primarily Related to Our ILS Operations

We may be exposed to risk in connection with our management of third party capital. Some of our operating subsidiaries may owe certain legal duties and obligations to third party investors. A failure to fulfill any of those duties or obligations could result in significant liabilities, penalties or other losses, and harm our businesses and results of operations. In addition, third party investors may decide not to renew their investments in the funds we manage, which could materially impact the financial condition of those funds, and could, in turn, have a material adverse effect on our results of operations and financial condition. Moreover, we may not be able to maintain or raise additional third party capital for the funds we manage or for potential new funds and therefore we may forego existing or potential fee income and other income generating opportunities.

Developments at our Markel CATCo operations could have a material adverse effect on us. The U.S. Department of Justice, U.S. Securities and Exchange Commission and Bermuda Monetary Authority are conducting inquiries into loss reserves recorded in late 2017 and early 2018 at Markel CATCo Re (the Markel CATCo Inquiries). Subsequently, several related putative class actions were filed against Markel Corporation and certain present or former officers and directors alleging violations of the federal securities laws relating to the matters that are the subject of the Markel CATCo Inquiries. Those actions were consolidated and were voluntarily dismissed. See “Legal Proceedings” in this report and note 20 of the notes to consolidated financial statements for more information regarding the Markel CATCo Inquiries and other matters related to Markel CATCo. The Markel CATCo Inquiries and the related matters, as well as other matters of which we are currently unaware, could result in additional claims, litigation, investigations, enforcement actions or proceedings. For example, additional litigation may be filed by investors in the Markel CATCo Funds. We also could become subject to increased regulatory scrutiny, investigations or proceedings in any of the jurisdictions where we operate. If any regulatory authority takes action against us or we enter into an agreement to settle a matter, we may incur sanctions or be required to pay substantial fines or implement remedial measures that could prove costly or disruptive to our businesses and operations. An unfavorable outcome in one or more of these matters, and others we cannot anticipate, could have a material adverse effect on our results of operations and financial condition. In addition, we may take steps to mitigate potential risks or liabilities that may arise from the Markel CATCo Inquiries and related developments, and some of those steps may have a material impact on our results of operations or financial condition. Even if an unfavorable outcome does not materialize, these matters, and actions we may take in response, could have an adverse impact on our reputation, limit our access to capital markets and result in substantial expense and disruption.

Risks Related to All of Our Operations

Legal and Regulatory Risks

The legal and regulatory requirements applicable to our businesses are extensive. Failure to comply could have a material adverse effect on us. Each of our businesses is highly dependent on the ability to engage on a daily basis in a large number of financial and operational activities, including, among others, insurance underwriting, claim processing, investment activities, the management of third party capital and providing products and services to businesses and consumers, many of which are highly complex. These activities are subject to internal guidelines and policies, as well as legal and regulatory standards, including, among others, those related to privacy, anti-corruption, anti-bribery and global finance and investments and insurance matters. Our continued expansion into new businesses and markets has brought about additional requirements. While we believe that we have adopted appropriate risk management and compliance programs, compliance risks will continue to exist, particularly as we become subject to new rules and regulations. Failure to comply with, or to obtain, appropriate authorizations or exemptions under any applicable laws and regulations 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. Any such failure could also subject us to fines, penalties, equitable relief and changes to our business practices. In addition, a failure to comply could result in defaults under our senior unsecured debt agreements or credit facilities or damage our businesses or our reputation.

Compliance with applicable laws and regulations is time consuming and personnel-intensive. Shareholder activism, the current political environment, and the current high level of government intervention and regulatory reform may lead to substantial new regulations and compliance obligations. Any changes in, or the enactment of new, applicable laws and regulations may increase the complexity of the regulatory environment in which we operate, which could materially increase our direct and indirect compliance costs and other expenses of doing business, and have a material adverse effect on our results of operations and financial condition.

Losses from legal and regulatory actions may have a material adverse effect on us. From time to time we may be involved in various legal actions, including at times multi-party or class action litigation, some of which involve claims for substantial or indeterminate amounts. A significant unfavorable outcome in one or more of these actions could have a material adverse effect on our results of operations and financial condition. We are also involved from time to time in various regulatory actions, investigations and inquiries, including market conduct exams by insurance regulatory authorities. If a regulatory authority takes action against us or we enter into a consent order or agreement to settle a matter, a regulatory authority has the option to require us to pay substantial fines or implement remedial measures that could prove costly or disruptive to our businesses and operations. Even if an unfavorable outcome does not materialize, these matters could have an adverse impact on our reputation and result in substantial expense and disruption. See note 20 of the notes to consolidated financial statements and "Legal Proceedings."

We are subject to laws and regulations relating to economic and trade sanctions and bribery and corruption, the violation of which could have a material adverse effect on us. We are required to comply with the economic and trade sanctions and embargo programs administered by the U.S. Department of the Treasury's Office of Foreign Assets Control and similar multi-national bodies and governmental agencies worldwide, as well as applicable anti-corruption laws and anti-bribery and regulations of the U.S., the U.K. and other jurisdictions where we operate. A violation of a sanction, embargo program, or anti-corruption law, could subject us, and individual employees, to a regulatory enforcement action as well as significant civil and criminal penalties. In addition, a violation could result in defaults under our outstanding indebtedness or credit facilities or damage our businesses or our reputation. Those penalties or defaults, or damage to our businesses or reputation, could have a material adverse effect on our results of operations and financial condition. In some cases the requirements and limitations applicable to the global operations of U.S. companies and their affiliates are more restrictive than, and may even conflict with, those applicable to non-U.S. companies and their affiliates, which also could have a material adverse effect on our results of operations and financial condition.

Employee error and misconduct may be difficult to detect and prevent and may result in significant losses. There have been a number of cases involving misconduct by employees in a broad range of industries in recent years, and we run the risk of misconduct by our employees. Instances of fraud, illegal acts, errors, failure to document transactions properly or to obtain proper internal authorization, or failure to comply with regulatory requirements or our internal policies may result in losses. It is not always possible to deter or prevent employee errors or misconduct, and the controls that we have in place to prevent and detect this activity may not be effective in all cases.

Global Operations

We manage our global operations through a network of business entities, which could result in inconsistent management, governance and oversight practices. We manage our global operations through a network of business entities throughout the U.S., Bermuda, the U.K., Europe, Canada, Latin America, Asia Pacific and the Middle East. These business entities are managed by executives, and supported by shared and centralized services, primarily at the holding company level; however, for certain of our businesses subsidiary-level management is responsible for day-to-day operations, profitability, personnel decisions, the growth of the business, and legal and regulatory compliance, including adherence to applicable local laws. Operating through subsidiary-level management can make it difficult for us to implement strategic decisions and coordinated procedures throughout our global operations. In addition, some of our business entities operate with management, sales, and support personnel that may be insufficient to support growth in their respective locations and industries, without significant central oversight and coordination. We continue to enhance our operating, governance and oversight procedures to effectively support, and improve transparency throughout, our global operations and network of business entities; however, our operating strategy nonetheless could result in inconsistent management, governance, and oversight practices, which may have a material adverse effect on our results of operations and financial condition.

We have substantial international operations and investments, which expose us to increased political, operational and economic risks. A substantial portion of our revenues and income is derived from our operations and investments outside the U.S., including from the U.K., Bermuda, Europe, Canada, Latin America, Asia Pacific and the Middle East. Our international operations and investments expose us to increased political, operational and economic risks. Deterioration or volatility in foreign and international financial markets or general economic and political conditions could adversely affect our operating results, financial condition and liquidity. Concerns about the economic conditions, capital markets, political and economic stability and solvency of certain countries may contribute to global market volatility. Political changes in the jurisdictions where we operate and elsewhere, some of which may be disruptive, can also interfere with our customers and our activities in a particular location. Our international operations also may be subject to a number of additional risks, particularly in emerging economies, including restrictions such as price controls, capital controls, currency exchange limits, ownership limits and other restrictive or anti-competitive governmental actions or requirements, which could have a material adverse effect on our businesses.

General economic, market or industry conditions could lead to investment losses, adverse effects on our businesses and limit our access to the capital markets. General economic and market conditions and industry specific conditions, including extended economic recessions or expansions; prolonged periods of slow economic growth; inflation or deflation; fluctuations and volatility in foreign currency exchange rates, commodity and energy prices and interest rates; volatility in the credit and capital markets; the imposition of tariffs and other changes in international trade regulation and other factors, could lead to: substantial realized and unrealized investment losses in future periods; declines in demand for, or increased frequency and severity of claims made under, our insurance products; disruptions in global supply chains and increased costs of inputs for our products and services; reduced demand for our services and the products we sell and distribute; and limited or no access to the capital markets. Any of these impacts could have a material adverse effect on our results of operations, financial condition, debt and financial strength ratings or our insurance subsidiaries' capital.

The exit of the United Kingdom from the European Union could have a material adverse effect on us. On June 23, 2016, the U.K. voted to exit the E.U. (Brexit). The effects of Brexit will depend in part on agreements, if any, the U.K. makes to retain access to E.U. markets. A Withdrawal Agreement was agreed between the U.K. government and the E.U. in October 2019 and was approved by the U.K. Parliament on January 23, 2020. Under the Withdrawal Agreement, the U.K. left the E.U. on January 31, 2020. The effect of the Withdrawal Agreement is that E.U. laws continue to have effect in the U.K. during a transition period until December 31, 2020. The final terms of the future relationship between the U.K. and the E.U. remain to be negotiated. Ultimately, all Brexit terms also must be ratified by the legislative bodies of the 27 E.U. member states.

The U.K.'s exit from the E.U., and negotiations regarding the future terms of trade between the U.K. and the E.U., could continue to contribute to instability in global financial markets, including foreign currency markets, and adversely affect European and worldwide economic or market conditions. Significant uncertainties remain related to the political, monetary and economic impacts of Brexit, including related tax, accounting and financial reporting implications. Brexit could also lead to legal and regulatory uncertainty and potentially a large number of new and divergent national laws and regulations, including new tax rules, as the U.K. determines which E.U. laws to replace or replicate. These impacts, combined with the legal and regulatory uncertainty, may adversely affect our operations and also may result in increased claims arising from the impact on our policyholders. For example, in the absence of an agreement or a waiver for cross border data transfers, many U.K. and E.U. companies, including our U.K. and E.U. based operations, may not be able to comply with E.U. data privacy laws immediately after the transition period ends on December 31, 2020.

Without a Brexit agreement on future terms of trade, U.K. based insurers may be prohibited from administering policies for, or paying claims to, EEA policyholders post Brexit. In order to provide certainty for its EEA policyholders, MIICL transferred its legacy EEA exposures, claims and policies to MISE. This transfer was approved by the U.K. High Court and became effective on March 29, 2019. Lloyd's also has commenced its transfer of legacy EEA exposures. That transfer is expected to be completed prior to December 31, 2020, however there is no assurance that approval of that transfer will be granted or on what terms and conditions. Lloyd's has indicated that it intends to honor contractual commitments, including the payment of valid claims, and expects that its approach will be respected by EEA regulators pending the completion of its transfer of legacy EEA exposures. The European Insurance and Occupational Pensions Authority has issued its recommendation to E.U. member states that they adopt legislation to permit the orderly run-off of legacy EEA exposures, claims and policies by U.K. insurers. While some E.U. member states have adopted such legislation, no E.U. member state is obligated to do so, and the terms of any such legislation may vary significantly among the E.U. member states. Without an orderly run-off regime for legacy business in every E.U. member state, Lloyd's, and in turn, Syndicate 3000, may be impaired in running-off business, including paying claims, in the E.U. member states.

Any of these effects of Brexit, and others we cannot anticipate, could have a material adverse effect on our results of operations and financial condition.

Acquisitions, Integration and Retention

We may not find suitable acquisition candidates or new ventures. As part of our growth strategy, we continue to evaluate possible acquisition transactions on an ongoing basis, and at any given time we may be engaged in discussions with respect to possible acquisitions and new ventures. We may not be able to identify suitable acquisition targets or ventures, any such transactions may not be financed or completed on acceptable terms and our future acquisitions or ventures may not be successful.

The integration of acquired companies may not be as successful as we anticipate. We have completed, and expect to complete, acquisitions in an effort to achieve profitable growth in our underwriting and other insurance operations and to create additional value on a diversified basis in our Market Ventures operations. Acquisitions present operational, strategic and financial risks, as well as risks associated with liabilities arising from the previous operations of the acquired companies. We also must make decisions about the degree to which we integrate acquisitions into our existing businesses, operations and systems, and over what timeframe. Those decisions may adversely affect how successfully the acquired businesses perform, both in the short term and in the long term. All of these risks are magnified in the case of a large acquisition. Integration of the operations and personnel of acquired companies may prove more difficult than anticipated, which may result in failure to achieve financial objectives associated with the acquisition or diversion of management attention. In addition, integration of formerly privately-held companies into the management and internal control and financial reporting systems of a publicly-held company presents additional risks. See note 2 of the notes to consolidated financial statements for information about our recent acquisitions.

Impairment in the value of our goodwill or other intangible assets could have a material adverse effect on our operating results and financial condition. As of December 31, 2019, goodwill and intangible assets totaled \$4.0 billion and represented 37% of shareholders' equity. We record goodwill and intangible assets at fair value upon the acquisition of a business. Goodwill represents the excess of amounts paid to acquire businesses over the fair value of the net assets acquired. Goodwill and indefinite-lived intangible assets are evaluated for impairment annually, or more frequently if events or circumstances indicate that their carrying value may not be recoverable. Declines in operating results, divestitures, sustained market declines and other factors that impact the fair value of a reporting unit could result in an impairment of goodwill or intangible assets and, in turn, a charge to net income. Such a charge could have a material adverse effect on our results of operations or financial condition. Developments that adversely affect the future cash flows or earnings of an acquired business may cause the goodwill or intangible assets recorded for it to be impaired. See note 6 of the notes to consolidated financial statements.

The loss of one or more key executives or an inability to attract and retain qualified personnel could have a material adverse effect on us. 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 have a material adverse effect on our ability to conduct or grow our business.

Information Technology Systems and Third-Party Systems and Service Providers

Information technology systems that we use could fail or suffer a security breach, which could have a material adverse effect on us or result in the loss of regulated or sensitive information. Our businesses are dependent upon the operational effectiveness and security of our enterprise systems and those maintained by third parties. Among other things, we rely on these systems to interact with producers, insureds, customers, clients, and other third parties, to perform actuarial and other modeling functions, to underwrite business, to prepare policies and process premiums, to process claims and make claims payments, to prepare internal and external financial statements and information, as well as to engage in a wide variety of other business activities. A significant failure of our enterprise systems, or those of third parties upon which we may rely, whether because of a natural disaster, network outage or a cyber-attack on those systems, could compromise our personal, confidential and proprietary information as well as that of our customers and business partners, impede or interrupt our business operations and could result in other negative consequences, including remediation costs, loss of revenue, additional regulatory scrutiny and fines, litigation and monetary and reputational damages. Although we have implemented controls and take protective actions to reduce the risk of an enterprise failure and protect against a security breach, such measures may be insufficient to prevent, or mitigate the effects of, a natural disaster, network outage or a cyber-attack on our systems that could result in liability to us, cause our data to be corrupted or stolen and cause us to commit resources, management time and money to prevent or correct those failures.

In addition, we are subject to numerous data privacy laws and regulations enacted in the jurisdictions in which we do business. A misuse or mishandling of confidential or proprietary information being sent to or received from a client, employee or third party could damage our businesses or our reputation or result in significant monetary damages, regulatory enforcement actions, fines and criminal prosecution in one or more jurisdictions. For example, under the European General Data Protection Regulation there are significant new punishments for non-compliance which could result in a penalty of up to 4% of a firm's global annual revenue. In addition, a violation of data privacy laws and regulations could result in defaults under our outstanding indebtedness or credit facilities. Those monetary damages, penalties, regulatory or legal actions or defaults, or the damage to our businesses or reputation, could have a material adverse effect on our results of operations and financial condition. Third parties to whom we outsource certain functions are also subject to these risks, and their failure to adhere to these laws and regulations also could damage our businesses or reputation or result in regulatory intervention, which could have a material adverse effect on our results of operations and financial condition.

Further, we routinely transmit, receive and store personal, confidential and proprietary information by email and other electronic means. Although we attempt to protect this confidential and proprietary information, we may be unable to do so in all cases, especially with customers, business partners and other third parties who may not have or use appropriate controls to protect confidential information.

While we maintain cyber risk insurance providing first party and third party coverages, that insurance may not cover all costs associated with the consequences of personal and confidential and proprietary information being compromised. A material cyber security breach could have a material adverse effect on our results of operations and financial condition.

Outsourced providers may perform poorly, breach their obligations to us or expose us to enhanced risks. We outsource certain business functions to third-party providers, and these providers may not perform as anticipated or may fail to adhere to the obligations owed to us. For example, certain of our business units rely on relationships with a number of third-party administrators under contracts pursuant to which these third-party administrators manage and pay claims on our behalf and advise us with respect to case reserves. In these relationships, we rely on controls incorporated in the provisions of the administration agreement, as well as on the administrator's internal controls, to manage the claims process within our prescribed parameters. In addition, certain of our business units use managing general agents, general agents and other producers to write and administer business on our behalf within prescribed underwriting authorities. Although we monitor these administrators, agents, producers and other service providers on an ongoing basis, our monitoring efforts may not be adequate, or our service providers could exceed their authorities or otherwise breach obligations owed to us, which could result in operational disruption, reputational damage and regulatory intervention and otherwise have a material adverse effect on our results of operation and financial condition.

In addition, 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 may be adversely affected.

Employees

At December 31, 2019, we had approximately 18,600 employees, of whom approximately 14,000 were employed within our Market Ventures operations.

SELECTED FINANCIAL DATA (dollars in millions, except per share data) ⁽¹⁾

	2019	2018	2017	2016
Results of Operations				
Earned premiums	\$ 5,050	\$ 4,712	\$ 4,248	\$ 3,866
Net investment income	452	434	406	373
Products revenues	1,610	1,498	951	885
Services and other revenues	813	635	462	422
Total operating revenues ⁽²⁾	9,526	6,841	6,062	5,612
Net income (loss) to shareholders ⁽²⁾	1,790	(128)	395	456
Comprehensive income (loss) to shareholders	2,094	(376)	1,175	667
Diluted net income (loss) per share	\$ 129.07	\$ (9.55)	\$ 25.81	\$ 31.27
Financial Position				
Total investments, cash and cash equivalents and restricted cash and cash equivalents (invested assets)	\$ 22,258	\$ 19,238	\$ 20,570	\$ 19,059
Total assets	37,474	33,306	32,805	25,875
Unpaid losses and loss adjustment expenses	14,729	14,276	13,584	10,116
Senior long-term debt and other debt	3,534	3,010	3,099	2,575
Shareholders' equity	11,071	9,081	9,504	8,461
Common shares outstanding (at year end, in thousands)	13,794	13,888	13,904	13,955
OPERATING PERFORMANCE MEASURES ^(1,3)				
Operating Data				
Book value per common share outstanding	\$ 802.59	\$ 653.85	\$ 683.55	\$ 606.30
5-Year CAGR in book value per share ⁽⁴⁾	8%	7 %	11%	11%
Closing stock price	\$ 1,143.17	\$ 1,038.05	\$ 1,139.13	\$ 904.50
5-Year CAGR in closing stock price ⁽⁴⁾	11%	12 %	21%	17%
Ratio Analysis				
U.S. GAAP combined ratio ⁽⁵⁾	94%	98 %	105%	92%
Investment yield ⁽⁶⁾	3%	3 %	3%	2%
Taxable equivalent total investment return ⁽⁷⁾	15%	(1)%	10%	4%
Investment leverage ⁽⁸⁾	2.0	2.1	2.2	2.3
Debt to capital	24%	25 %	25%	23%

⁽¹⁾ Reflects the acquisition of Alterra Capital Holdings Limited effective May 1, 2013, which included the issuance of equity totaling \$2.3 billion.

⁽²⁾ In accordance with the provisions of ASU No. 2016-01, beginning January 1, 2018, all changes in the fair value of equity securities are recognized in net income.

⁽³⁾ Operating Performance Measures provide a basis for management to evaluate our performance. The method we use to compute these measures may differ from the methods used by other companies. See further discussion of management's evaluation of these measures in Management's Discussion & Analysis of Financial Condition and Results of Operations.

⁽⁴⁾ CAGR—compound annual growth rate.

⁽⁵⁾ The U.S. GAAP combined ratio measures the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums.

⁽⁶⁾ Investment yield reflects net investment income as a percentage of monthly average invested assets at amortized cost.

⁽⁷⁾ See "Investing Results" in Management's Discussion & Analysis of Financial Condition and Results of Operations for detail regarding the calculation of taxable equivalent total investment return.

⁽⁸⁾ Investment leverage represents total invested assets divided by shareholders' equity.

SELECTED FINANCIAL DATA (dollars in millions, except per share data) ⁽¹⁾

	2015	2014	2013	2012
Results of Operations				
Earned premiums	\$ 3,824	\$ 3,841	\$ 3,232	\$ 2,147
Net investment income	353	363	317	282
Products revenues	872	681	550	367
Services and other revenues	215	203	161	172
Total operating revenues ⁽²⁾	5,370	5,134	4,323	3,000
Net income to shareholders ⁽²⁾	583	321	281	253
Comprehensive income to shareholders	233	936	459	504
Diluted net income per share	\$ 41.74	\$ 22.27	\$ 22.48	\$ 25.89
Financial Position				
Total investments, cash and cash equivalents and restricted cash and cash equivalents (invested assets)	\$ 18,181	\$ 18,638	\$ 17,612	\$ 9,333
Total assets	24,939	25,198	23,956	12,557
Unpaid losses and loss adjustment expenses	10,252	10,404	10,262	5,371
Senior long-term debt and other debt	2,239	2,251	2,256	1,493
Shareholders' equity	7,834	7,595	6,674	3,889
Common shares outstanding (at year end, in thousands)	13,959	13,962	13,986	9,629
OPERATING PERFORMANCE MEASURES ^(1,3)				
Operating Data				
Book value per common share outstanding	\$ 561.23	\$ 543.96	\$ 477.16	\$ 403.85
5-Year CAGR in book value per share ⁽⁴⁾	11 %	14%	17%	9 %
Closing stock price	\$ 883.35	\$ 682.84	\$ 580.35	\$ 433.42
5-Year CAGR in closing stock price ⁽⁴⁾	18 %	15%	14%	(2)%
Ratio Analysis				
U.S. GAAP combined ratio ⁽⁵⁾	89 %	95%	97%	97 %
Investment yield ⁽⁶⁾	2 %	2%	3%	4 %
Taxable equivalent total investment return ⁽⁷⁾	(1)%	7%	7%	9 %
Investment leverage ⁽⁸⁾	2.3	2.5	2.6	2.4
Debt to capital	22 %	23%	25%	28 %

⁽¹⁾ Reflects the acquisition of Alterra Capital Holdings Limited effective May 1, 2013, which included the issuance of equity totaling \$2.3 billion.

⁽²⁾ In accordance with the provisions of ASU No. 2016-01, beginning January 1, 2018, all changes in the fair value of equity securities are recognized in net income.

⁽³⁾ Operating Performance Measures provide a basis for management to evaluate our performance. The method we use to compute these measures may differ from the methods used by other companies. See further discussion of management's evaluation of these measures in Management's Discussion & Analysis of Financial Condition and Results of Operations.

⁽⁴⁾ CAGR—compound annual growth rate.

⁽⁵⁾ The U.S. GAAP combined ratio measures the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums.

⁽⁶⁾ Investment yield reflects net investment income as a percentage of monthly average invested assets at amortized cost.

⁽⁷⁾ See "Investing Results" in Management's Discussion & Analysis of Financial Condition and Results of Operations for detail regarding the calculation of taxable equivalent total investment return.

⁽⁸⁾ Investment leverage represents total invested assets divided by shareholders' equity.

	2011	2010	5-Year CAGR ⁽⁴⁾	10-Year CAGR ⁽⁴⁾
Results of Operations				
Earned premiums	\$ 1,979	\$ 1,731	6%	11%
Net investment income	264	273	4%	6%
Products revenues	215	156	19%	35%
Services and other revenues	136	30	32%	61%
Total operating revenues ⁽²⁾	2,630	2,225	13%	16%
Net income to shareholders ⁽²⁾	142	267		
Comprehensive income to shareholders	252	431		
Diluted net income per share	\$ 14.60	\$ 27.27		
Financial Position				
Total investments, cash and cash equivalents and restricted cash and cash equivalents (invested assets)	\$ 8,728	\$ 8,224	4%	11%
Total assets	11,532	10,826	8%	14%
Unpaid losses and loss adjustment expenses	5,399	5,398	7%	10%
Senior long-term debt and other debt	1,294	1,016		
Shareholders' equity	3,388	3,172	8%	15%
Common shares outstanding (at year end, in thousands)	9,621	9,718		
OPERATING PERFORMANCE MEASURES ^(1,3)				
Operating Data				
Book value per common share outstanding	\$ 352.10	\$ 326.36	8%	11%
5-Year CAGR in book value per share ⁽⁴⁾	9 %	13%		
Closing stock price	\$ 414.67	\$ 378.13	11%	13%
5-Year CAGR in closing stock price ⁽⁴⁾	(3)%	4%		
Ratio Analysis				
U.S. GAAP combined ratio ⁽⁵⁾	102 %	97%		
Investment yield ⁽⁶⁾	4 %	4%		
Taxable equivalent total investment return ⁽⁷⁾	7 %	8%		
Investment leverage ⁽⁸⁾	2.6	2.6		
Debt to capital	28 %	24%		

(1) Reflects the acquisition of Alterra Capital Holdings Limited effective May 1, 2013, which included the issuance of equity totaling \$2.3 billion.

(2) In accordance with the provisions of ASU No. 2016-01, beginning January 1, 2018, all changes in the fair value of equity securities are recognized in net income.

(3) Operating Performance Measures provide a basis for management to evaluate our performance. The method we use to compute these measures may differ from the methods used by other companies. See further discussion of management's evaluation of these measures in Management's Discussion & Analysis of Financial Condition and Results of Operations.

(4) CAGR—compound annual growth rate.

(5) The U.S. GAAP combined ratio measures the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums.

(6) Investment yield reflects net investment income as a percentage of monthly average invested assets at amortized cost.

(7) See "Investing Results" in Management's Discussion & Analysis of Financial Condition and Results of Operations for detail regarding the calculation of taxable equivalent total investment return.

(8) Investment leverage represents total invested assets divided by shareholders' equity.

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING



Management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) under the Securities Exchange Act of 1934. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

Management does not expect that its internal control over financial reporting will prevent all error and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Internal control over financial reporting is a process that involves human diligence and compliance and is subject to lapses in judgment and breakdowns resulting from human failures. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. The design of any system of internal control over financial reporting also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

Under the supervision and with the participation of management, including the Co-Principal Executive Officers and the Principal Financial Officer, we evaluated the effectiveness of our internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our evaluation, we have concluded that we maintained effective internal control over financial reporting as of December 31, 2019.

KPMG LLP, our independent registered public accounting firm, has issued an attestation report on the effectiveness of the Company's internal control over financial reporting as of December 31, 2019, which is included herein.

A handwritten signature in dark ink, appearing to read "Tom S Gayner".

Thomas S. Gayner
Co-Chief Executive Officer

(Co-Principal Executive Officer)

A handwritten signature in dark ink, appearing to read "Richard R. Whitt, III".

Richard R. Whitt, III
Co-Chief Executive Officer

(Co-Principal Executive Officer)

A handwritten signature in dark ink, appearing to read "Jeremy A. Noble".

Jeremy A. Noble
Senior Vice President and Chief Financial Officer

(Principal Financial Officer)

February 21, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM



To the Shareholders and Board of Directors
Markel Corporation:

Opinion on Internal Control Over Financial Reporting

We have audited Markel Corporation and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2019 and 2018, the related consolidated statements of income (loss) and comprehensive income (loss), changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes (collectively, the consolidated financial statements), and our report dated February 21, 2020 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

KPMG LLP

Richmond, Virginia
February 21, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM



To the Shareholders and Board of Directors
Markel Corporation:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Markel Corporation and subsidiaries (the Company) as of December 31, 2019 and 2018, the related consolidated statements of income (loss) and comprehensive income (loss), changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have 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, 2019, 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 21, 2020 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed its method of accounting for investments in equity securities as of January 1, 2018 due to the adoption of Accounting Standards Update No. 2016-01, *Financial Instruments-Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities*.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated 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 consolidated 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 consolidated 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 consolidated 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 consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgment. The communication of a critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Evaluation of the estimation of the liability for unpaid losses and loss adjustment expenses for the Company's underwriting operations

As described in Note 10, the Company has recorded a liability for unpaid losses and loss adjustment expenses (loss reserves) of \$14.7 billion as of December 31, 2019, of which \$11.8 billion represents loss reserves for the Company's underwriting operations. The Company's actuaries use established actuarial methods and patterns of past claims activity to estimate ultimate losses to be paid. The actuarial point estimate represents the actuaries' estimate of the most likely amount that will ultimately be paid to settle the losses that have occurred at a particular point in time. Loss reserves are established at the Company's best estimate, which is generally higher than the actuarial point estimate for its underwriting operations.

We identified the evaluation of the estimation of loss reserves for the Company's underwriting operations as a critical audit matter. The assessment of actuarial methods and key assumptions about future claim reporting and payment patterns, which were used to estimate ultimate losses, required specialized actuarial skills and knowledge. In addition, the Company's best estimate incorporated additional or different perspectives from its actuaries on certain subjective factors, such as credibility and timeliness of claims information received from third parties, economic and social inflation, judicial decisions, changes in law, and other internal and external factors that affect loss development. The evaluation of these perspectives and their impact on certain assumptions utilized by the Company to estimate the loss reserves required subjective auditor judgment.

The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Company's loss reserving process, including internal controls related to methods and assumptions used to derive the actuarial point estimate and the Company's best estimate of loss reserves for its underwriting operations. We also involved actuarial professionals with specialized skills and knowledge, who assisted in:

- Assessing the Company's actuarial methodologies by comparing to generally accepted actuarial methodologies;
- Evaluating whether certain assumptions about future claims reporting and payment patterns used to determine the Company's actuarial point estimate are consistent with the Company's historical loss reporting and payment patterns;
- Developing an independent range of consolidated loss reserves by:
 - Developing independent actuarial estimates for certain product lines with long-tail loss reporting and payment patterns using the Company's underlying historical claims and policy data, as well as industry loss reporting and payment data for workers' compensation lines;
 - Assessing the Company's actuarial analyses, including their actuarial methods and assumptions discussed above, for certain remaining product lines comprised of those with smaller balances or shorter tail loss reporting and payment patterns; and
- Evaluating the movement of the Company's best estimate within our independently calculated range of consolidated loss reserves between reporting periods.

KPMG LLP

We have served as the Company's auditor since 1980.

Richmond, Virginia
February 21, 2020

MARKEL CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

	December 31,	
	2019	2018
	<i>(dollars in thousands)</i>	
ASSETS		
Investments, at estimated fair value:		
Fixed maturities, available-for-sale (amortized cost of \$9,448,840 in 2019 and \$9,950,773 in 2018)	\$ 9,970,909	\$ 10,043,188
Equity securities (cost of \$3,266,735 in 2019 and \$2,971,856 in 2018)	7,590,755	5,720,945
Short-term investments, available-for-sale (estimated fair value approximates cost)	1,196,248	1,077,696
Total Investments	18,757,912	16,841,829
Cash and cash equivalents	3,072,807	2,014,168
Restricted cash and cash equivalents	427,546	382,264
Receivables	1,847,802	1,692,526
Reinsurance recoverables	5,432,712	5,221,947
Deferred policy acquisition costs	566,042	474,513
Prepaid reinsurance premiums	1,415,857	1,331,022
Goodwill	2,308,548	2,237,975
Intangible assets	1,738,474	1,726,196
Other assets	1,906,115	1,383,823
Total Assets	\$ 37,473,815	\$ 33,306,263
LIABILITIES AND EQUITY		
Unpaid losses and loss adjustment expenses	\$ 14,728,676	\$ 14,276,479
Life and annuity benefits	985,729	1,001,453
Unearned premiums	4,057,727	3,611,028
Payables to insurance and reinsurance companies	406,720	337,326
Senior long-term debt and other debt (estimated fair value of \$3,907,000 in 2019 and \$3,030,000 in 2018)	3,534,183	3,009,577
Other liabilities	2,504,802	1,796,036
Total Liabilities	26,217,837	24,031,899
Redeemable noncontrolling interests	177,562	174,062
Commitments and contingencies		
Shareholders' equity:		
Common stock	3,404,919	3,392,993
Retained earnings	7,457,176	5,782,310
Accumulated other comprehensive income (loss)	208,772	(94,650)
Total Shareholders' Equity	11,070,867	9,080,653
Noncontrolling interests	7,549	19,649
Total Equity	11,078,416	9,100,302
Total Liabilities and Equity	\$ 37,473,815	\$ 33,306,263

See accompanying notes to consolidated financial statements.

MARKEL CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF INCOME (LOSS) AND COMPREHENSIVE INCOME (LOSS)

	Years Ended December 31,		
	2019	2018	2017
<i>(dollars in thousands, except per share data)</i>			
OPERATING REVENUES			
Earned premiums	\$ 5,049,793	\$ 4,712,060	\$ 4,247,978
Net investment income	451,888	434,215	405,709
Net investment gains (losses):			
Other-than-temporary impairment losses	—	—	(7,589)
Net realized investment gains (losses), excluding other-than-temporary impairment losses	(1,482)	(11,974)	47,174
Change in fair value of equity securities	1,603,204	(425,622)	(44,888)
Net investment gains (losses)	1,601,722	(437,596)	(5,303)
Products revenues	1,609,586	1,497,523	951,012
Services and other revenues	813,202	635,083	462,263
Total Operating Revenues	9,526,191	6,841,285	6,061,659
OPERATING EXPENSES			
Losses and loss adjustment expenses	2,891,190	2,820,715	2,865,761
Underwriting, acquisition and insurance expenses	1,878,093	1,777,511	1,589,464
Products expenses	1,455,245	1,413,248	850,449
Services and other expenses	675,679	474,924	458,621
Amortization of intangible assets	148,638	115,930	80,758
Impairment of goodwill and intangible assets	—	199,198	—
Total Operating Expenses	7,048,845	6,801,526	5,845,053
Operating Income	2,477,346	39,759	216,606
Interest expense	(171,687)	(154,212)	(132,451)
Net foreign exchange gains (losses)	(2,265)	106,598	3,140
Loss on early extinguishment of debt	(17,586)	—	—
Income (Loss) Before Income Taxes	2,285,808	(7,855)	87,295
Income tax (expense) benefit	(486,346)	(122,498)	313,463
Net Income (Loss)	\$ 1,799,462	\$ (130,353)	\$ 400,758
Net (income) loss attributable to noncontrolling interests	(8,996)	2,173	(5,489)
Net Income (Loss) to Shareholders	\$ 1,790,466	\$ (128,180)	\$ 395,269
OTHER COMPREHENSIVE INCOME (LOSS)			
Change in net unrealized gains on available-for-sale investments, net of taxes:			
Net holding gains (losses) arising during the period	\$ 299,125	\$ (241,325)	\$ 787,339
Reclassification adjustments for net gains (losses) included in net income (loss)	(1,148)	7,849	(24,296)
Change in net unrealized gains on available-for-sale investments, net of taxes	297,977	(233,476)	763,043
Change in foreign currency translation adjustments, net of taxes	382	(16,495)	10,449
Change in net actuarial pension loss, net of taxes	5,042	2,341	6,259
Total Other Comprehensive Income (Loss)	303,401	(247,630)	779,751
Comprehensive Income (Loss)	\$ 2,102,863	\$ (377,983)	\$ 1,180,509
Comprehensive (income) loss attributable to noncontrolling interests	(8,975)	2,213	(5,535)
Comprehensive Income (Loss) to Shareholders	\$ 2,093,888	\$ (375,770)	\$ 1,174,974
NET INCOME (LOSS) PER SHARE			
Basic	\$ 129.25	\$ (9.55)	\$ 25.89
Diluted	\$ 129.07	\$ (9.55)	\$ 25.81

See accompanying notes to consolidated financial statements.

MARKEL CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

<i>(in thousands)</i>	Common Shares	Common Stock	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total Shareholders' Equity	Noncontrolling Interests	Total Equity	Redeemable Noncontrolling Interests
December 31, 2016	13,955	\$ 3,368,666	\$ 3,526,395	\$ 1,565,866	\$ 8,460,927	\$ 6,484	\$ 8,467,411	\$ 73,678
Net income (loss)			395,269	—	395,269	(895)	394,374	6,384
Other comprehensive income			—	779,705	779,705	—	779,705	46
Comprehensive Income (Loss)					1,174,974	(895)	1,174,079	6,430
Issuance of common stock	58	552	—	—	552	—	552	—
Repurchase of common stock	(109)	—	(110,838)	—	(110,838)	—	(110,838)	—
Restricted stock awards expensed	—	15,881	—	—	15,881	—	15,881	—
Acquisition of Costa Farms	—	—	—	—	—	—	—	66,600
Adjustment of redeemable noncontrolling interests	—	—	(33,738)	—	(33,738)	—	(33,738)	33,738
Purchase of noncontrolling interest	—	(2,955)	—	—	(2,955)	(8,330)	(11,285)	(6,179)
Other	—	(310)	(345)	—	(655)	174	(481)	(7,998)
December 31, 2017	13,904	3,381,834	3,776,743	2,345,571	9,504,148	(2,567)	9,501,581	166,269
Cumulative effect of adoption of ASU No. 2014-09, net of taxes			325	—	325	—	325	—
Cumulative effect of adoption of ASU No. 2016-01, net of taxes			2,595,484	(2,595,484)	—	—	—	—
Cumulative effect of adoption of ASU No. 2018-02			(402,853)	402,853	—	—	—	—
January 1, 2018	13,904	3,381,834	5,969,699	152,940	9,504,473	(2,567)	9,501,906	166,269
Net loss			(128,180)	—	(128,180)	(1,175)	(129,355)	(998)
Other comprehensive loss			—	(247,590)	(247,590)	—	(247,590)	(40)
Comprehensive Loss					(375,770)	(1,175)	(376,945)	(1,038)
Issuance of common stock	32	2	—	—	2	—	2	—
Repurchase of common stock	(48)	—	(54,007)	—	(54,007)	—	(54,007)	—
Restricted stock awards expensed	—	16,191	—	—	16,191	—	16,191	—
Acquisition of Brahmin	—	—	—	—	—	—	—	19,670
Acquisition of Nephila	—	—	—	—	—	23,392	23,392	—
Adjustment of redeemable noncontrolling interests	—	—	(4,828)	—	(4,828)	—	(4,828)	4,828
Purchase of noncontrolling interest	—	(4,986)	—	—	(4,986)	—	(4,986)	(7,104)
Other	—	(48)	(374)	—	(422)	(1)	(423)	(8,563)
December 31, 2018	13,888	3,392,993	5,782,310	(94,650)	9,080,653	19,649	9,100,302	174,062
Net income (loss)			1,790,466	—	1,790,466	(7,820)	1,782,646	16,816
Other comprehensive income (loss)			—	303,422	303,422	—	303,422	(21)
Comprehensive Income (Loss)					2,093,888	(7,820)	2,086,068	16,795
Issuance of common stock	16	43	—	—	43	—	43	—
Repurchase of common stock	(110)	—	(116,307)	—	(116,307)	—	(116,307)	—
Restricted stock awards expensed	—	16,000	—	—	16,000	—	16,000	—
Adjustment to Nephila purchase price allocation	—	—	—	—	—	(8,250)	(8,250)	—
Adjustment of redeemable noncontrolling interests	—	—	1,105	—	1,105	—	1,105	(1,105)
Purchase of noncontrolling interest	—	(4,219)	—	—	(4,219)	—	(4,219)	(4,542)
Other	—	102	(398)	—	(296)	3,970	3,674	(7,648)
December 31, 2019	13,794	\$ 3,404,919	\$ 7,457,176	\$ 208,772	\$ 11,070,867	\$ 7,549	\$ 11,078,416	\$ 177,562

See accompanying notes to consolidated financial statements.

MARKEL CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2019	2018	2017
	(dollars in thousands)		
OPERATING ACTIVITIES			
Net income (loss)	\$ 1,799,462	\$ (130,353)	\$ 400,758
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Deferred income tax expense (benefit)	323,385	2,729	(324,090)
Depreciation and amortization	269,239	227,846	203,871
Net investment losses (gains)	(1,601,722)	437,596	5,303
Net foreign exchange losses (gains)	2,265	(106,598)	(3,140)
Impairment of goodwill and intangible assets	—	199,198	—
Increase in receivables	(103,982)	(27,961)	(38,259)
Increase in deferred policy acquisition costs	(93,015)	(15,585)	(67,923)
Increase in unpaid losses and loss adjustment expenses, net	226,263	298,796	619,305
Decrease in life and annuity benefits	(52,159)	(50,541)	(55,647)
Increase in unearned premiums, net	354,116	62,879	197,706
Increase (decrease) in payables to insurance and reinsurance companies	65,460	(4,313)	(40,761)
Increase (decrease) in income taxes payable	36,938	53,730	(35,968)
Increase (decrease) in accrued expenses	24,432	(23,756)	(71,669)
Increase (decrease) in other liabilities	(9,528)	(5,637)	45,051
Other	32,966	(25,173)	23,992
Net Cash Provided By Operating Activities	1,274,120	892,857	858,529
INVESTING ACTIVITIES			
Proceeds from sales of fixed maturities and equity securities	353,918	419,199	577,650
Proceeds from maturities, calls and prepayments of fixed maturities	772,336	551,808	1,129,895
Cost of fixed maturities and equity securities purchased	(955,970)	(1,545,913)	(1,176,281)
Net change in short-term investments	(95,867)	1,101,636	234,743
Cost of equity method investments	(257,663)	(8,864)	(13,023)
Additions to property and equipment	(123,376)	(106,593)	(74,652)
Acquisitions, net of cash acquired	(245,332)	(1,175,211)	(1,431,712)
Other	16,795	(33,301)	8,923
Net Cash Used By Investing Activities	(535,159)	(797,239)	(744,457)
FINANCING ACTIVITIES			
Additions to senior long-term debt and other debt	1,645,182	206,949	664,657
Repayment of senior long-term debt and other debt	(1,103,674)	(289,199)	(259,972)
Premiums and fees related to early extinguishment of debt	(27,073)	—	—
Repurchases of common stock	(116,307)	(54,007)	(110,838)
Payment of contingent consideration	(14,113)	(15,914)	(5,018)
Purchase of noncontrolling interests	(9,754)	(13,523)	(18,334)
Distributions to noncontrolling interests	(8,992)	(9,164)	(7,899)
Other	(5,952)	(4,127)	(6,281)
Net Cash Provided (Used) By Financing Activities	359,317	(178,985)	256,315
Effect of foreign currency rate changes on cash, cash equivalents, restricted cash and restricted cash equivalents	5,643	(21,047)	45,295
Increase (decrease) in cash, cash equivalents, restricted cash and restricted cash equivalents	1,103,921	(104,414)	415,682
Cash, cash equivalents, restricted cash and restricted cash equivalents at beginning of year	2,396,432	2,500,846	2,085,164
CASH, CASH EQUIVALENTS, RESTRICTED CASH AND RESTRICTED CASH EQUIVALENTS AT END OF YEAR	\$ 3,500,353	\$ 2,396,432	\$ 2,500,846

See accompanying notes to consolidated financial statements.

MARKEL CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Summary of Significant Accounting Policies

Markel Corporation is a diverse financial holding company serving a variety of niche markets. Markel Corporation's principal business markets and underwrites specialty insurance products. Through its wholly owned subsidiary, Markel Ventures, Inc. (Markel Ventures), Markel Corporation also owns interests in various businesses that operate outside of the specialty insurance marketplace.

a) Basis of Presentation. The accompanying consolidated financial statements have been prepared in accordance with United States (U.S.) generally accepted accounting principles (GAAP) and include the accounts of Markel Corporation and its consolidated subsidiaries, as well as any variable interest entities (VIEs) that meet the requirements for consolidation (the Company). All significant intercompany balances and transactions have been eliminated in consolidation. The Company consolidates the results of its Markel Ventures subsidiaries on a one-month lag, with the exception of significant transactions or events that occur during the intervening period. Certain prior year amounts have been reclassified to conform to the current presentation.

b) Use of Estimates. The preparation of financial statements in accordance with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities. Management periodically reviews its estimates and assumptions. Quarterly reviews include evaluating the adequacy of reserves for unpaid losses and loss adjustment expenses, life and annuity reinsurance benefit reserves and litigation contingencies. Estimates and assumptions for goodwill and intangible assets are reviewed in conjunction with an acquisition, and goodwill and indefinite-lived intangible assets are reassessed at least annually for impairment. Actual results may differ materially from the estimates and assumptions used in preparing the consolidated financial statements.

c) Investments. Available-for-sale investments and equity securities are recorded at estimated fair value. Unrealized gains and losses on available-for-sale investments, net of income taxes, are included in accumulated other comprehensive income in shareholders' equity. The Company completes a detailed analysis each quarter to assess whether the decline in the fair value of any available-for-sale investment below its cost basis is deemed other-than-temporary.

Premiums and discounts are amortized or accreted over the lives of the related fixed maturities as an adjustment to the yield using the effective interest method. Dividend and interest income are recognized when earned. Realized investment gains or losses are included in earnings. Realized gains or losses from sales of available-for-sale investments are derived using the first-in, first-out method on the trade date.

Effective January 1, 2018, the Company adopted Financial Accounting Standards Board (FASB) Accounting Standards Update (ASU) No. 2016-01, *Financial Instruments (Topic 825): Recognition and Measurement of Financial Assets and Financial Liabilities*. Upon adoption of the ASU, equity securities are no longer classified as available-for-sale and unrealized gains and losses on equity securities, net of income taxes, are included in earnings. In accordance with the provisions of the ASU, prior periods have not been restated to conform to the new presentation.

Investments accounted for under the equity method of accounting are recorded at cost within other assets on the consolidated balance sheets and subsequently increased or decreased by the Company's proportionate share of the net income or loss of the investee. The Company records its proportionate share of net income or loss of the investee in net investment income. The Company records its proportionate share of other comprehensive income or loss of the investee as a component of other comprehensive income. Dividends or other equity distributions in excess of the Company's cumulative equity in earnings of the investee are recorded as a reduction of the investment. The Company reviews equity method investments for impairment when events or circumstances indicate that a decline in the fair value of the investment below its carrying value is other-than-temporary.

d) Cash and Cash Equivalents. The Company considers all investments with original maturities of 90 days or less to be cash equivalents. The carrying value of the Company's cash and cash equivalents approximates fair value.

- e) Restricted Cash and Cash Equivalents.** Cash and cash equivalents that are restricted as to withdrawal or use are recorded as restricted cash and cash equivalents. The carrying value of the Company's restricted cash and cash equivalents approximates fair value.
- f) Receivables.** Receivables include amounts receivable from agents, brokers and insureds, which represent premiums that are both currently due and amounts not yet due on insurance and reinsurance policies. Premiums for insurance policies are generally due at inception. Premiums for reinsurance policies generally become due over the period of coverage based on the policy terms. The Company monitors the credit risk associated with premiums receivable, taking into consideration the fact that in certain instances credit risk may be reduced by the Company's right to offset loss obligations or unearned premiums against premiums receivable. Amounts deemed uncollectible are charged to net income in the period they are determined. Changes in the estimate of reinsurance premiums written will result in an adjustment to premiums receivable in the period they are determined. Receivables also include amounts receivable from contracts with customers, which represent the Company's unconditional right to consideration for satisfying the performance obligations outlined in the contract.
- g) Reinsurance Recoverables.** Amounts recoverable from reinsurers are estimated in a manner consistent with the claim liability associated with the reinsured business. Allowances are established for amounts deemed uncollectible and reinsurance recoverables are recorded net of these allowances. The Company evaluates the financial condition of its reinsurers and monitors concentration risk to minimize its exposure to significant losses from individual reinsurers.
- h) Deferred Policy Acquisition Costs.** Costs directly related to the acquisition of insurance premiums are deferred and amortized over the related policy period, generally one year. The Company only defers acquisition costs incurred that are related directly to the successful acquisition of new or renewal insurance contracts, including commissions to agents and brokers and premium taxes. Commissions received related to reinsurance premiums ceded are netted against broker commissions in determining acquisition costs eligible for deferral. To the extent that future policy revenues on existing policies are not adequate to cover related costs and expenses, deferred policy acquisition costs are charged to earnings. The Company does not consider anticipated investment income in determining whether a premium deficiency exists.
- i) Goodwill and Intangible Assets.** Goodwill and intangible assets are recorded as a result of business acquisitions. Goodwill represents the excess of the amount paid to acquire a business over the net fair value of assets acquired and liabilities assumed at the date of acquisition. Indefinite-lived and other intangible assets are recorded at fair value as of the acquisition date. The determination of the fair value of certain assets acquired and liabilities assumed involves significant judgment and the use of valuation models and other estimates, which require assumptions that are inherently subjective. Goodwill and indefinite-lived intangible assets are tested for impairment at least annually. The Company completes an annual test during the fourth quarter of each year based upon the results of operations through September 30. Intangible assets with definite lives are amortized using the straight-line method over their estimated useful lives, generally five to 20 years, and are reviewed for impairment when events or circumstances indicate that their carrying value may not be recoverable.
- j) Property and Equipment.** Property and equipment is maintained primarily by certain of the Company's Market Ventures businesses and are stated at cost less accumulated depreciation and amortization. Depreciation and amortization of property and equipment are calculated using the straight-line method over the estimated useful lives of the respective assets. Property and equipment, net of accumulated depreciation and amortization, was \$588.6 million and \$551.5 million as of December 31, 2019 and 2018, respectively, and is included in other assets on the Company's consolidated balance sheets.
- k) Leases.** Following the adoption of FASB ASU No. 2016-02, *Leases (Topic 842)*, effective January 1, 2019, the present value of future lease payments for the Company's leases with terms greater than 12 months are included on the consolidated balance sheet as lease liabilities and right-of-use lease assets.

The Company's lease portfolio primarily consists of operating leases for real estate. Total expected lease payments are based on the lease payments specified in the contract and the stated term, including any options to extend or terminate that the Company is reasonably certain to exercise. The Company has elected the practical expedient to account for lease components and any associated non-lease components within a contract as a single lease component, and therefore allocates all of the expected lease payments to the lease component.

The lease liability, which represents the Company's obligation to make lease payments arising from the contract, is calculated based on the present value of expected lease payments over the remaining lease term, discounted using the Company's collateralized incremental borrowing rate at the commencement date. The lease liability is then adjusted for any prepaid rent, lease incentives received or capitalized initial direct costs to determine the lease asset, which represents the Company's right to use the underlying asset for the lease term. Lease liabilities and lease assets are included in other liabilities and other assets, respectively, on the Company's consolidated balance sheet.

Total lease costs are primarily comprised of rental expense for operating leases. Rental expense is recognized on a straight line basis over the lease term and includes amortization of the right-of-use lease asset and imputed interest on the lease liability. Rental expense attributable to the Company's underwriting operations is included in underwriting, acquisition and insurance expenses and rental expense attributable to the Company's other operations is included in products expenses and services and other expenses in the consolidated statements of income and comprehensive income.

l) Inventories. Inventories are maintained at certain of the Company's Markel Ventures businesses and consist primarily of raw materials, work-in-process and finished goods. Inventories are generally valued using the first-in-first-out method and stated at the lower of cost or net realizable value. Inventories were \$303.1 million and \$298.7 million as of December 31, 2019 and 2018, respectively, and are included in other assets on the Company's consolidated balance sheets.

m) Redeemable Noncontrolling Interests. The Company owns controlling interests in various companies through its Markel Ventures operations. In some cases, the Company has the option to acquire the remaining equity interests, and the remaining equity interests have the option to sell their interests to the Company, in the future. The redemption value of the remaining equity interests is generally based on the respective company's earnings in specified periods preceding the redemption date. The redeemable noncontrolling interests generally are or become redeemable through 2023.

The Company recognizes changes in the redemption value that exceed the carrying value of redeemable noncontrolling interests to retained earnings as if the balance sheet date were also the redemption date. Changes in the redemption value also result in an adjustment to net income to shareholders in the calculation of basic and diluted net income per share.

n) Income Taxes. The Company records deferred income taxes to reflect the net tax effect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and their tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in years in which those temporary differences are expected to be recovered or settled. Deferred tax assets are reduced by a valuation allowance when management believes it is more likely than not that some, or all, of the deferred tax assets will not be realized. The Company recognizes the tax benefit from an uncertain tax position taken or expected to be taken in income tax returns only if it is more likely than not that the tax position will be sustained upon examination by tax authorities, based on the technical merits of the position. Tax positions that meet the more likely than not threshold are then measured using a probability weighted approach, whereby the largest amount of tax benefit that is greater than 50% likely of being realized upon ultimate settlement is recognized. The Company recognizes interest and penalties related to uncertain tax positions in income tax expense.

o) Unpaid Losses and Loss Adjustment Expenses. Unpaid losses and loss adjustment expenses on the Company's property and casualty insurance business are based on evaluations of reported claims and estimates for losses and loss adjustment expenses incurred but not reported. Estimates for losses and loss adjustment expenses incurred but not reported are based on reserve development studies, among other things. Recorded reserves are estimates, and the ultimate liability may be greater or less than the estimates.

p) Life and Annuity Benefits. The Company has a run-off block of life and annuity reinsurance contracts that subject the Company to mortality, longevity and morbidity risks. The assumptions used to determine policy benefit reserves are generally locked-in for the life of the contract unless an unlocking event occurs. To the extent existing policy reserves, together with the present value of future gross premiums and expected investment income earned thereon, are not adequate to cover the present value of future benefits, settlement and maintenance costs, the locked-in assumptions are revised to current best estimate assumptions and a charge to earnings for life and annuity benefits is recognized at that time. Because of the assumptions and estimates used in establishing reserves for life and annuity benefit obligations and the long-term nature of these reinsurance contracts, the ultimate liability may be greater or less than the estimates. Results attributable to the run-off of life and annuity reinsurance business are included in services and other revenues and services and other expenses in the Company's consolidated statements of income and comprehensive income.

q) Revenue Recognition.

Property and Casualty Premiums

Insurance premiums written are generally recorded at the inception of a policy and earned on a pro rata basis over the policy period, typically one year. The cost of reinsurance ceded is initially recorded as prepaid reinsurance premiums and is amortized over the reinsurance contract period in proportion to the amount of insurance protection provided. Premiums ceded are netted against premiums written. For multi-year contracts where insurance premiums are payable in annual installments, written premiums are recorded at the inception of the contract based on management's best estimate of total premiums to be received. For contracts where the cedent has the ability to unilaterally commute or cancel coverage within the term of the policy, premiums are generally recorded on an annual basis or up to the contract cancellation point. The remaining premiums are estimated and included as written at each successive anniversary date within the multi-year term.

Assumed reinsurance premiums are recorded at the inception of each contract based upon contract terms and information received from cedents and brokers and are earned on a pro rata basis over the coverage period, or for multi-year contracts, in proportion with the underlying risk exposure to the extent there is variability in the exposure through the coverage period. Changes in reinsurance premium estimates are expected and may result in significant adjustments in any period. These estimates change over time as additional information regarding changes in underlying exposures is obtained. Any subsequent differences arising on such estimates are recorded as premiums written in the period they are determined and are earned on a pro rata basis over the coverage period. The Company uses the periodic method to account for assumed reinsurance from foreign reinsurers. The Company's foreign reinsurers provide sufficient information to record foreign assumed business in the same manner as the Company records assumed business from U.S. reinsurers.

Certain contracts that the Company writes provide for reinstatement of coverage. Reinstatement premiums are the premiums for the restoration of the insurance or reinsurance limit of a contract to its full amount after a loss occurrence by the insured or reinsured. The Company accrues for reinstatement premiums resulting from losses recorded. Such accruals are based upon contractual terms and management judgment is involved with respect to the amount of losses recorded. Changes in estimates of losses recorded on contracts with reinstatement premium features will result in changes in reinstatement premiums based on contractual terms. Reinstatement premiums are recognized at the time losses are recorded and are generally earned on a pro rata basis over the coverage period.

Other Revenues

Effective January 1, 2018, the Company adopted ASU No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*, and related amendments, which created a new comprehensive revenue recognition standard, FASB Accounting Standards Codification (ASC) 606, *Revenue from Contracts with Customers*, that serves as a single source of revenue guidance for contracts with customers unless those contracts are within the scope of other standards, such as insurance contracts. ASC 606 is not applicable to the Company's insurance premium revenues or revenues from its investment portfolio but is applicable to most of the Company's other revenues, as described below.

Other revenues primarily relate to the Company's Market Ventures operations and consist of revenues from the sale of products and services. Revenues are recognized when, or as, control of the promised goods or services is transferred to the Company's customers, in an amount that reflects the consideration the Company expects to be entitled to in exchange for those goods or services. All contracts with customers either have an original expected length of one year or less or the Company recognizes revenue at the amount for which it has a right to invoice for the products delivered or services performed. Certain customers may receive volume rebates or credits for products and services, which are accounted for as variable consideration. The Company estimates these amounts based on the expected amount to be provided to the customer and reduces revenues recognized by a corresponding amount. The Company does not expect significant changes to its estimates of variable consideration over the term of the contracts.

Payment terms for products and services vary by the type of product or service offered and the location of the customer, and payment is typically received at or shortly after the point of sale. For certain products, the Company requires partial payment in the form of a deposit before the products are delivered to the customer, which is included in other liabilities on the Company's consolidated balance sheets.

Products revenues are primarily generated from the sale of equipment used in baking systems, portable dredges, over-the-road transportation equipment, flooring for the trucking industry, ornamental plants and residential homes. Most of the Company's product revenues are recognized when the products are shipped to the customer or the products arrive at the agreed upon destination with the end customer. Some of the Company's contracts include multiple performance obligations. For such arrangements, revenues are allocated to each performance obligation based on the relative standalone selling price, which is derived from amounts stated in the contract.

Services revenues are primarily generated by delivering healthcare services, retail intelligence and consulting services. Service revenues are generally recognized over the term of the contracts based on hours incurred or as services are provided.

Investment management fee income in the Company's insurance-linked securities operations is recognized over the period in which investment management services are provided and is calculated and recognized monthly based on the net asset value of the accounts managed. For certain accounts, the Company is also entitled to participate, on a fixed-percentage basis, in any net income generated in excess of an agreed-upon threshold as established by the underlying investment management agreements. In general, net income is calculated at the end of each calendar year and incentive fees are payable annually. Incentive fee income is recognized at the conclusion of the contractual performance period, when the uncertainty related to performance has been resolved.

Program services fees, or ceding fees, received in exchange for providing access to the U.S. property and casualty insurance market are based on the gross premiums written on behalf of general agent and capacity provider clients. Ceding fees are earned in a manner consistent with the recognition of the gross premiums earned on the underlying insurance policies, generally on a pro rata basis over the terms of the underlying policies reinsured.

r) Program Services. In connection with its program services business, the Company enters into contractual agreements with both producing general agents and reinsurers, whereby the general agents and reinsurers are typically obligated to each other for payment of insurance amounts, including premiums, commissions and losses. To the extent these funds are not the obligation of the Company and are settled directly between the general agent and the reinsurer, no receivables or payables are recorded for these amounts. All obligations of the Company's insurance subsidiaries owed to or on behalf of their policyholders are recorded by the Company and, to the extent appropriate, offsetting reinsurance recoverables are recorded.

s) Stock-based Compensation. Stock-based compensation expense is generally recognized as part of underwriting, acquisition and insurance expenses over the requisite service period. Stock-based compensation expense, net of taxes, was \$24.6 million in 2019, \$13.0 million in 2018 and \$11.9 million in 2017.

t) Foreign Currency Transactions. The U.S. Dollar is the Company's reporting currency and the primary functional currency of its foreign underwriting operations. The functional currencies of the Company's other foreign operations are the currencies of the primary economic environments in which the majority of their business is transacted.

Foreign currency transaction gains and losses are the result of exchange rate changes on transactions denominated in currencies other than the functional currency at each foreign entity. Monetary assets and liabilities are remeasured to the functional currency at current exchange rates, with resulting gains and losses included in net foreign exchange gains within net income. Non-monetary assets and liabilities are remeasured to the functional currency at historic exchange rates. Available-for-sale securities are recorded at fair value with resulting gains and losses, including the portion attributable to movements in exchange rates, included in the change in net unrealized gains on available-for-sale investments, net of taxes within other comprehensive income. While we attempt to naturally hedge our exposure to foreign currency fluctuations by matching assets and liabilities in the same currencies, there is a financial statement mismatch between the gains or losses recorded in net income related to insurance reserves denominated in non-functional currencies and the gains or losses recorded in other comprehensive income related to the available-for-sale securities held in non-functional currencies supporting the reserves.

Assets and liabilities of foreign operations denominated in a functional currency other than the U.S. Dollar are translated into the U.S. Dollar at current exchange rates, with resulting gains or losses included, net of taxes, in the change in foreign currency translation adjustments within other comprehensive income.

Historically, the Company also designated certain additional currencies, including the British Pound Sterling, the Euro, and the Canadian Dollar, as functional currencies within its foreign underwriting operations that were deemed to contain distinct and separable operations in those foreign economic environments. However, over time the Company's foreign underwriting operations have evolved and are now managed on a global basis. Effective January 1, 2018, management reassessed its functional currency determination as required by ASC 830, *Foreign Currency Matters*, and concluded that its foreign underwriting operations have evolved to function as an extension, or integral component, of the Company's global underwriting operations, and are no longer deemed to contain distinct and separable operations. As a result, more foreign currency denominated transactions are designated as non-functional, with related remeasurement gains and losses included in net income. The change in the Company's functional currency determination has been applied on a prospective basis in accordance with ASC 830. Therefore, any translation gains and losses that were previously recorded in accumulated other comprehensive income through December 31, 2017 remain unchanged through December 31, 2019.

- u) Derivative Financial Instruments.** Derivative instruments, including derivative instruments resulting from hedging activities, are measured at fair value and recognized as either assets or liabilities on the consolidated balance sheets. The changes in fair value of derivatives are recognized in earnings.
- v) Comprehensive Income.** Comprehensive income represents all changes in equity that result from recognized transactions and other economic events during the period. Other comprehensive income refers to revenues, expenses, gains and losses that under U.S. GAAP are included in comprehensive income but excluded from net income, such as unrealized gains or losses on available-for-sale investments, foreign currency translation adjustments and changes in net actuarial pension loss.
- w) Net Income Per Share.** Basic net income per share is computed by dividing adjusted net income to shareholders by the weighted average number of common shares outstanding during the year. Diluted net income per share is computed by dividing adjusted net income to shareholders by the weighted average number of common shares and dilutive potential common shares outstanding during the year.
- x) Variable Interest Entities.** The Company determines whether it has relationships with entities defined as VIEs in accordance with ASC 810, *Consolidation*. Under this guidance, a VIE is consolidated by the variable interest holder that is determined to be the primary beneficiary.

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

The primary beneficiary is defined as the variable interest holder that is determined to have the controlling financial interest as a result of having both (a) the power to direct the activities of a VIE that most significantly impact the economic performance of the VIE and (b) the obligation to absorb losses or right to receive benefits from the VIE that could potentially be significant to the VIE.

The Company determines whether an entity is a VIE at the inception of its variable interest in the entity and upon the occurrence of certain reconsideration events. The Company continually reassesses whether it is the primary beneficiary of VIEs in which it holds a variable interest.

y) Recent Accounting Pronouncements.*Accounting Standards Adopted in 2019*

Effective January 1, 2019, the Company adopted FASB ASU No. 2016-02, *Leases (Topic 842)* and several other ASUs that were issued as amendments to ASU No. 2016-02, which require lessees to record most leases in their balance sheets as a lease liability with a corresponding right-of-use asset, but continue to recognize the related rent expense within net income. The Company elected to apply the optional transition method, under which an entity initially applies the new lease standard to existing leases at the beginning of the period of adoption. The Company continues to apply the previous guidance to 2018 and prior periods. The Company also elected the package of practical expedients permitted under the transition guidance within the new standard, which, among other things, allowed companies to carry forward their historical lease classification. As a result of adopting ASU No. 2016-02, the Company recorded a right-of-use lease asset and a lease liability of \$243.7 million and \$264.6 million, respectively as of January 1, 2019. ASU No. 2016-02 also requires expanded lease disclosures, which are included in note 7. Adoption of this standard did not have a material impact on the Company's results of operations or cash flows.

The following ASU issued by the FASB is relevant to the Company's operations and was adopted effective January 1, 2019. This ASU did not have a material impact on the Company's financial position, results of operations or cash flows:

- ASU No. 2017-08, *Receivables—Nonrefundable Fees and Other Costs (Subtopic 310-20): Premium Amortization on Purchased Callable Debt Securities*

Accounting Standards Not Yet Adopted

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. The FASB subsequently issued several ASUs as amendments to ASU No. 2016-13. The standard replaces the current incurred loss model used to measure impairment losses with a current expected credit loss (CECL) model for financial instruments measured at amortized cost, including reinsurance recoverables and trade receivables. For available-for-sale fixed maturities, which are measured at fair value, the ASU requires entities to record impairments as an allowance, rather than a reduction of the amortized cost, as is currently required under the other-than-temporary impairment model. ASU No. 2016-13 becomes effective for the Company during the first quarter of 2020 and will be applied using a modified retrospective approach through a cumulative-effect adjustment to retained earnings as of January 1, 2020. Application of the CECL model will not impact the Company's investment portfolio, none of which is measured at amortized cost, but will impact certain of the Company's other financial assets, including its reinsurance recoverables and receivables. The adjustment to retained earnings at January 1, 2020 will not be material. Upon adoption of this ASU, any impairment losses on the Company's available-for-sale fixed maturities will be recorded as an allowance, subject to reversal, rather than as a reduction in amortized cost. None of these changes are expected to have a material impact on the Company's financial position, results of operations or cash flows.

In August 2018, the FASB issued ASU No. 2018-12, *Financial Services—Insurance (Topic 944): Targeted Improvements to the Accounting for Long-Duration Contracts*. The ASU requires insurance entities with long duration contracts to: (1) review and, if there is a change, update the assumptions used to measure cash flows at least annually, as well as update the discount rate assumption at each reporting date; (2) measure all market risk benefits associated with deposit (or account balance) contracts at fair value; and (3) disclose liability rollforwards and information about significant inputs, judgments, assumptions and methods used in measurement, including changes thereto and the effect of those changes on measurement. In November 2019, the FASB issued ASU No. 2019-09, *Financial Services—Insurance (Topic 944): Effective Date*, which deferred the effective date of ASU No. 2018-12 for the Company until the first quarter of 2022. ASU No. 2018-12 will, among other things, impact the discount rate used in estimating reserves for the Company's life and annuity reinsurance portfolio, which is in runoff. Currently, the discount rate assumption is locked-in for the life of the contracts, unless there is a loss recognition event. The Company is currently evaluating ASU No. 2018-12 to determine the impact that adopting this standard will have on its consolidated financial statements.

In August 2018, the FASB issued ASU No. 2018-15, *Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*. The ASU aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software and hosting arrangements that include an internal-use software license. The ASU requires an entity to expense the implementation costs of a hosting arrangement that is a service contract over the term of the hosting arrangement. Currently, such costs are generally expensed as incurred. ASU No. 2018-15 becomes effective for the Company during the first quarter of 2020 and will be applied on a prospective basis. Adoption of this ASU is not expected to have a material impact on the Company's financial position, results of operations or cash flows.

The following ASUs issued by the FASB are also relevant to the Company's operations and are not yet effective. These ASUs are not expected to have a material impact on the Company's financial position, results of operations or cash flows:

- ASU No. 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*
- ASU No. 2018-14, *Compensation—Retirement Benefits—Defined Benefit Plans—General (Subtopic 715-20): Disclosure Framework—Changes to the Disclosure Requirements for Defined Benefit Plans*
- ASU No. 2018-17, *Consolidation (Topic 810): Targeted Improvements to Related Party Guidance for Variable Interest Entities*
- ASU No. 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*

2. Acquisitions

VSC Fire & Security, Inc.

In November 2019, the Company acquired VSC Fire & Security, Inc. (VSC), a provider of comprehensive fire protection, life safety, and low voltage solutions to retailers, commercial campuses, healthcare facilities, and government properties throughout the southeastern United States. Total consideration for the acquisition was \$225.0 million, which included cash consideration of \$204.0 million. Total consideration also includes the estimated fair value of contingent consideration the Company expects to pay in 2021 based on VSC's earnings, as defined in the purchase agreement. The purchase price was preliminarily allocated to the acquired assets and liabilities of VSC based on estimated fair value at the acquisition date. The Company preliminarily recognized goodwill of \$118.9 million, which is primarily attributable to expected future earnings and cash flow potential of VSC. The majority of the goodwill recognized is expected to be deductible for income tax purposes. The Company also preliminarily recognized other intangible assets of \$70.5 million, which includes \$54.0 million of customer relationships, \$14.0 million of trade names and \$2.5 million of other intangible assets, which are expected to be amortized over a weighted average period of 12 years, 12 years and 8 years, respectively. Results attributable to VSC will be included in the Company's Market Ventures segment.

The Company has not completed the process of determining the fair value of the assets acquired and liabilities assumed. These valuations are required to be completed within the measurement period, which cannot exceed 12 months from the acquisition date. As a result, the fair value recorded for these items is a provisional estimate and may be subject to adjustment. Once completed, any adjustments resulting from the valuations may impact the individual amounts recorded for assets acquired and liabilities assumed, as well as the residual goodwill.

The Hagerty Group, LLC

In June 2019, the Company acquired a minority ownership interest in The Hagerty Group, LLC (Hagerty Group), a company that primarily operates as a managing general agent under the names Hagerty Insurance Agency and Hagerty Classic Marine Insurance Agency (collectively, Hagerty). Hagerty Group also includes Hagerty Re, a Bermuda Class 3 reinsurance company. Hagerty Group is a leading automotive lifestyle brand and provider of specialty insurance to automobile enthusiasts. Total consideration for the Company's investment was \$212.5 million. The Company's investment in Hagerty Group is accounted for under the equity method and is included in other assets on the Company's consolidated balance sheet.

Essentia Insurance Company, one of the Company's insurance subsidiaries, is the exclusive insurance underwriter for Hagerty in the U.S., and a portion of this insurance is ceded to Hagerty Re. Gross written premiums attributable to Hagerty for the year ended December 31, 2019 were \$422.1 million, of which \$202.1 million were ceded to Hagerty Re.

Brahmin Leather Works, LLC

In October 2018, the Company acquired 90% of Brahmin Leather Works, LLC (Brahmin), a Massachusetts-based privately held creator of fashion leather handbags. Total consideration for the acquisition was \$192.9 million, which included cash consideration of \$172.3 million. Total consideration also includes the estimated fair value of contingent consideration the Company expects to pay based on Brahmin's earnings as defined in the purchase agreement, for the period of 2019 through 2021.

As of December 31, 2018, the purchase price was preliminarily allocated to the acquired assets and liabilities of Brahmin based on estimated fair value at the acquisition date. During 2019, the Company completed the process of determining the fair value of the assets and liabilities acquired with Brahmin. The Company recognized goodwill of \$63.8 million, which is primarily attributable to expected future earnings and cash flow potential of Brahmin. The majority of the goodwill recognized is deductible for income tax purposes. The Company also recognized other intangible assets of \$93.3 million, which includes \$57.0 million of customer relationships, \$35.0 million of trade names and \$1.3 million of other intangible assets, which are being amortized over a weighted average period of 16 years, 16 years and 8 years, respectively. The Company also recognized redeemable noncontrolling interests of \$19.6 million. Results attributable to Brahmin are included in the Company's Market Ventures segment.

Nephila Holdings Ltd.

In November 2018, the Company acquired all of the outstanding shares of Nephila Holdings Ltd. (Nephila), a Bermuda-based investment fund manager offering a broad range of investment products, including insurance-linked securities, catastrophe bonds, insurance swaps and weather derivatives. Nephila generates revenue primarily through management and incentive fees. Total consideration for the acquisition was \$974.4 million, all of which was cash consideration.

As of December 31, 2018, the purchase price was preliminarily allocated to the acquired assets and liabilities of Nephila based on estimated fair values at the acquisition date. During 2019, the Company completed the process of determining the fair value of the assets and liabilities acquired with Nephila. The Company recognized goodwill of \$434.2 million, which is primarily attributable to expected future earnings and cash flow potential of Nephila. None of the goodwill recognized is deductible for income tax purposes. The Company also recognized other intangible assets of \$551.0 million, which includes \$468.0 million of investment management agreements, \$32.0 million of broker relationships, \$27.0 million of technology and \$24.0 million of trade names, which are being amortized over a weighted average period of 17 years, 12 years, 6 years and 14 years, respectively. The Company also recognized noncontrolling interests of \$15.1 million attributable to certain consolidated subsidiaries of Nephila that are not wholly-owned. Nephila operates as a separate business unit and its operating results are not included in a reportable segment.

SureTec Financial Corp.

In April 2017, the Company completed the acquisition of SureTec Financial Corp. (SureTec), a Texas-based privately held surety company primarily offering contract, commercial and court bonds. Results attributable to this acquisition are included in the Insurance segment.

Total consideration for this acquisition was \$246.9 million, which included cash consideration of \$225.6 million. Total consideration also includes the estimated fair value of contingent consideration the Company expects to pay based on SureTec's earnings, as defined in the merger agreement, for the years 2017 through 2020. The purchase price was allocated to the acquired assets and liabilities of SureTec based on estimated fair values on the acquisition date. The Company recognized goodwill of \$70.4 million, which is primarily attributable to synergies that are expected to result upon integration of SureTec into the Company's insurance operations. None of the goodwill recognized is deductible for income tax purposes. The Company also recognized other intangible assets of \$103.0 million, which includes \$92.0 million of agent relationships to be amortized over a weighted average period of 15 years.

Costa Farms Companies

In August 2017, the Company acquired 81% of the holding company for the Costa Farms companies (Costa Farms), a Florida-based privately held grower of house and garden plants. Under the terms of the acquisition agreement, the Company has the option to acquire the remaining equity interests and the remaining equity interests have the option to sell their interests to the Company in the future. The redemption value of the remaining equity interests is generally based on Costa Farm's earnings in specified periods preceding the redemption date. Total consideration for the purchase was \$417.2 million, which included cash consideration of \$387.9 million. Total consideration also included \$29.3 million of contingent consideration, which represented the Company's initial estimate of the fair value of the contingent consideration the Company expected to pay based on Costa Farms' earnings, as defined in the purchase agreement, annually through 2021. Subsequent changes in the Company's expectation of the contingent consideration obligation are recorded as operating expenses in the consolidated statements of income and comprehensive income. Operating expenses for the year ended December 31, 2017 included \$19.0 million related to an increase in the Company's estimate of the contingent consideration obligation, which now reflects the maximum amount of contingent consideration payable under the purchase agreement. The purchase price was allocated to the acquired assets and liabilities of Costa Farms based on estimated fair values at the acquisition date. The Company recognized goodwill of \$186.2 million, which is primarily attributable to expected future earnings and cash flow potential of Costa Farms. The majority of the goodwill recognized is deductible for income tax purposes. The Company also recognized other intangible assets of \$192.0 million, which includes \$161.0 million of customer relationships and \$31.0 million of trade names, which are expected to be amortized over a weighted average period of 17 years and nine years, respectively. The Company also recognized redeemable non-controlling interests of \$66.6 million. Results attributable to this acquisition are included in the Company's Market Ventures segment.

State National Companies, Inc.

In November 2017, the Company completed its acquisition of 100% of the issued and outstanding common stock of State National Companies, Inc. (State National), a Texas-based leading specialty provider of property and casualty insurance that includes both fronting services and collateral protection insurance coverage. Pursuant to the terms of the merger agreement, State National stockholders received \$21.00 cash for each outstanding share of State National common stock (other than certain performance-based restricted shares that did not vest in connection with the transaction). Total consideration for this acquisition was \$918.8 million, all of which was cash consideration.

The purchase price was allocated to the acquired assets and liabilities of State National based on estimated fair values at the acquisition date. The Company recognized goodwill of \$379.2 million, none of which is deductible for income tax purposes. The goodwill is attributable to the Company's ability to achieve future revenue growth from new customers and the continued enhancement of State National's existing technology. Goodwill is also attributable to State National's assembled workforce and synergies associated with the integration of State National into the Company's insurance operations and investing activities. The Company also recognized intangible assets of \$370.5 million, including indefinite lived intangible assets of \$32.0 million for insurance licenses. The other intangible assets of \$338.5 million included \$289.0 million of customer relationships, \$22.5 million of trade names and \$27.0 million of technology, which are being amortized over a weighted average period of 13 years, 13 years and 9 years, respectively. Results attributable to State National's collateral protection insurance coverages are included in the Insurance segment. Results attributable to State National's program services business are not included in a reportable segment.

3. Investments

a) The following tables summarize the Company's available-for-sale investments. Commercial and residential mortgage-backed securities include securities issued by U.S. government-sponsored enterprises and U.S. government agencies. The net unrealized holding gains in the tables below are presented before taxes and any reserve deficiency adjustments for life and annuity benefit reserves. See note 12.

	December 31, 2019			
	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Estimated Fair Value
<i>(dollars in thousands)</i>				
Fixed maturities:				
U.S. Treasury securities	\$ 282,305	\$ 2,883	\$ (402)	\$ 284,786
U.S. government-sponsored enterprises	318,831	23,949	(200)	342,580
Obligations of states, municipalities and political subdivisions	3,954,779	235,915	(812)	4,189,882
Foreign governments	1,415,639	135,763	(9,398)	1,542,004
Commercial mortgage-backed securities	1,761,777	57,450	(1,382)	1,817,845
Residential mortgage-backed securities	855,641	32,949	(517)	888,073
Asset-backed securities	11,042	28	(22)	11,048
Corporate bonds	848,826	47,551	(1,686)	894,691
Total fixed maturities	9,448,840	536,488	(14,419)	9,970,909
Short-term investments	1,194,953	1,355	(60)	1,196,248
Investments, available-for-sale	\$ 10,643,793	\$ 537,843	\$ (14,479)	\$ 11,167,157

	December 31, 2018			
	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Estimated Fair Value
<i>(dollars in thousands)</i>				
Fixed maturities:				
U.S. Treasury securities	\$ 248,286	\$ 308	\$ (1,952)	\$ 246,642
U.S. government-sponsored enterprises	357,765	5,671	(4,114)	359,322
Obligations of states, municipalities and political subdivisions	4,285,068	96,730	(28,868)	4,352,930
Foreign governments	1,482,826	98,356	(21,578)	1,559,604
Commercial mortgage-backed securities	1,691,572	3,154	(44,527)	1,650,199
Residential mortgage-backed securities	886,501	6,170	(12,499)	880,172
Asset-backed securities	19,614	7	(213)	19,408
Corporate bonds	979,141	13,234	(17,464)	974,911
Total fixed maturities	9,950,773	223,630	(131,215)	10,043,188
Short-term investments	1,080,027	443	(2,774)	1,077,696
Investments, available-for-sale	\$ 11,030,800	\$ 224,073	\$ (133,989)	\$ 11,120,884

b) The following tables summarize gross unrealized investment losses on available-for-sale investments by the length of time that securities have continuously been in an unrealized loss position.

	December 31, 2019					
	Less than 12 months		12 months or longer		Total	
	Estimated Fair Value	Gross Unrealized Holding Losses	Estimated Fair Value	Gross Unrealized Holding Losses	Estimated Fair Value	Gross Unrealized Holding Losses
<i>(dollars in thousands)</i>						
Fixed maturities:						
U.S. Treasury securities	\$ 36,862	\$ (361)	\$ 46,518	\$ (41)	\$ 83,380	\$ (402)
U.S. government-sponsored enterprises	24,148	(197)	2,868	(3)	27,016	(200)
Obligations of states, municipalities and political subdivisions	127,836	(702)	6,830	(110)	134,666	(812)
Foreign governments	162,907	(3,393)	159,888	(6,005)	322,795	(9,398)
Commercial mortgage-backed securities	202,530	(1,126)	33,853	(256)	236,383	(1,382)
Residential mortgage-backed securities	11,706	(66)	58,162	(451)	69,868	(517)
Asset-backed securities	—	—	3,632	(22)	3,632	(22)
Corporate bonds	41,847	(1,287)	40,274	(399)	82,121	(1,686)
Total fixed maturities	607,836	(7,132)	352,025	(7,287)	959,861	(14,419)
Short-term investments	3,316	(60)	—	—	3,316	(60)
Total	\$ 611,152	\$ (7,192)	\$ 352,025	\$ (7,287)	\$ 963,177	\$ (14,479)

At December 31, 2019, the Company held 201 available-for-sale securities with a total estimated fair value of \$963.2 million and gross unrealized losses of \$14.5 million. Of these 201 securities, 122 securities had been in a continuous unrealized loss position for one year or longer and had a total estimated fair value of \$352.0 million and gross unrealized losses of \$7.3 million. The Company does not intend to sell or believe it will be required to sell these available-for-sale securities before recovery of their amortized cost.

	December 31, 2018					
	Less than 12 months		12 months or longer		Total	
	Estimated Fair Value	Gross Unrealized Holding Losses	Estimated Fair Value	Gross Unrealized Holding Losses	Estimated Fair Value	Gross Unrealized Holding Losses
<i>(dollars in thousands)</i>						
Fixed maturities:						
U.S. Treasury securities	\$ 2,922	\$ (83)	\$ 156,352	\$ (1,869)	\$ 159,274	\$ (1,952)
U.S. government-sponsored enterprises	88,854	(1,923)	96,337	(2,191)	185,191	(4,114)
Obligations of states, municipalities and political subdivisions	656,573	(12,455)	453,736	(16,413)	1,110,309	(28,868)
Foreign governments	419,764	(14,461)	84,776	(7,117)	504,540	(21,578)
Commercial mortgage-backed securities	653,410	(10,128)	709,971	(34,399)	1,363,381	(44,527)
Residential mortgage-backed securities	276,777	(3,685)	242,949	(8,814)	519,726	(12,499)
Asset-backed securities	1,645	(11)	17,030	(202)	18,675	(213)
Corporate bonds	313,164	(10,965)	222,761	(6,499)	535,925	(17,464)
Total fixed maturities	2,413,109	(53,711)	1,983,912	(77,504)	4,397,021	(131,215)
Short-term investments	197,643	(2,774)	—	—	197,643	(2,774)
Total	\$ 2,610,752	\$ (56,485)	\$ 1,983,912	\$ (77,504)	\$ 4,594,664	\$ (133,989)

At December 31, 2018, the Company held 1,005 securities with a total estimated fair value of \$4.6 billion and gross unrealized losses of \$134.0 million. Of these 1,005 securities, 541 securities had been in a continuous unrealized loss position for one year or longer and had a total estimated fair value of \$2.0 billion and gross unrealized losses of \$77.5 million.

The Company completes a detailed analysis each quarter to assess whether the decline in the fair value of any investment below its cost basis is deemed other-than-temporary. All available-for-sale securities with unrealized losses are reviewed. The Company considers many factors in completing its quarterly review of securities with unrealized losses for other-than-temporary impairment, including the length of time and the extent to which fair value has been below cost and the financial condition and near-term prospects of the issuer.

For fixed maturities, the Company considers whether it intends to sell the security or if it is more likely than not that it will be required to sell the security before recovery, the implied yield-to-maturity, the credit quality of the issuer and the ability to recover all amounts outstanding when contractually due. For fixed maturities where 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 recovery of its amortized cost, a decline in fair value is considered to be other-than-temporary and is recognized in net income based on the fair value of the security at the time of assessment, resulting in a new cost basis for the security. If the decline in fair value of a fixed maturity below its amortized cost is considered to be other-than-temporary based upon other considerations, the Company compares the estimated present value of the cash flows expected to be collected to the amortized cost of the security. The extent to which the estimated present value of the cash flows expected to be collected is less than the amortized cost of the security represents the credit-related portion of the other-than-temporary impairment, which is recognized in net income, resulting in a new cost basis for the security. Any remaining decline in fair value represents the non-credit portion of the other-than-temporary impairment, which is recognized in other comprehensive income.

c) The amortized cost and estimated fair value of fixed maturities at December 31, 2019 are shown below by contractual maturity.

<i>(dollars in thousands)</i>	Amortized Cost	Estimated Fair Value
Due in one year or less	\$ 337,917	\$ 333,759
Due after one year through five years	1,256,079	1,289,760
Due after five years through ten years	2,157,624	2,274,569
Due after ten years	3,068,760	3,355,855
	6,820,380	7,253,943
Commercial mortgage-backed securities	1,761,777	1,817,845
Residential mortgage-backed securities	855,641	888,073
Asset-backed securities	11,042	11,048
Total fixed maturities	\$ 9,448,840	\$ 9,970,909

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, and the lenders may have the right to put the securities back to the borrower. Based on expected maturities, the estimated average duration of fixed maturities at December 31, 2019 was 5.9 years.

d) The following table presents the components of net investment income.

<i>(dollars in thousands)</i>	Years Ended December 31,		
	2019	2018	2017
Interest:			
Municipal bonds (tax-exempt)	\$ 71,351	\$ 80,016	\$ 87,768
Municipal bonds (taxable)	72,818	73,058	70,771
Other taxable bonds	162,861	159,329	145,085
Short-term investments, including overnight deposits	50,425	48,765	26,772
Dividends on equity securities	100,222	90,840	82,096
Income (loss) from equity method investments	4,368	(1,924)	11,076
Other	5,338	881	(828)
	467,383	450,965	422,740
Investment expenses	(15,495)	(16,750)	(17,031)
Net investment income	\$ 451,888	\$ 434,215	\$ 405,709

e) The following table presents net investment gains (losses) and the change in net unrealized gains included in other comprehensive income (loss).

<i>(dollars in thousands)</i>	Years Ended December 31,		
	2019	2018	2017
Realized gains:			
Sales and maturities of fixed maturities	\$ 6,851	\$ 4,221	\$ 5,525
Sales of equity securities ⁽¹⁾	—	—	40,113
Sales and maturities of short-term investments	1,457	1,604	—
Other	400	1,281	6,644
Total realized gains	8,708	7,106	52,282
Realized losses:			
Sales and maturities of fixed maturities	(2,848)	(5,768)	(1,983)
Sales of equity securities ⁽¹⁾	—	—	(1,830)
Sales and maturities of short-term investments	(2,999)	(10,545)	(699)
Other-than-temporary impairments	—	—	(7,589)
Other	(4,343)	(2,767)	(596)
Total realized losses	(10,190)	(19,080)	(12,697)
Net realized investment gains (losses)	(1,482)	(11,974)	39,585
Change in fair value of equity securities: ⁽¹⁾			
Equity securities sold during the period	38,291	20,177	6,989
Equity securities held at the end of the period	1,564,913	(445,799)	(51,877)
Change in fair value of equity securities ⁽¹⁾	1,603,204	(425,622)	(44,888)
Net investment gains (losses)	\$ 1,601,722	\$ (437,596)	\$ (5,303)
Change in net unrealized gains included in other comprehensive income (loss):			
Fixed maturities	\$ 429,654	\$ (297,158)	\$ 89,741
Equity securities ⁽¹⁾	—	—	1,035,793
Short-term investments	3,626	(2,288)	(94)
Reserve deficiency adjustment for life and annuity benefit reserves (see note 12)	(51,390)	—	—
Net increase (decrease)	\$ 381,890	\$ (299,446)	\$ 1,125,440

⁽¹⁾ Effective January 1, 2018, the Company adopted ASU No. 2016-01. As a result, equity securities are no longer classified as available-for-sale with unrealized gains and losses recognized in other comprehensive income; rather, all changes in the fair value of equity securities are now recognized in net income. Prior periods have not been restated to conform to the current presentation. Prior to adopting ASU No. 2016-01, the Company recorded certain investments in equity securities at estimated fair value with changes in fair value recorded in net income.

f) Total restricted assets are included on the Company's consolidated balance sheets as follows.

<i>(dollars in thousands)</i>	December 31,	
	2019	2018
Investments	\$ 4,134,164	\$ 4,781,566
Restricted cash and cash equivalents	427,546	382,264
Total	\$ 4,561,710	\$ 5,163,830

The following table presents the components of restricted assets.

<i>(dollars in thousands)</i>	December 31,	
	2019	2018
Assets held in trust or on deposit to support underwriting activities	\$ 4,155,621	\$ 4,780,613
Assets pledged as security for letters of credit	406,089	383,217
Total	\$ 4,561,710	\$ 5,163,830

g) At December 31, 2019 and 2018, investments in securities issued by the U.S. Treasury, U.S. government agencies and U.S. government-sponsored enterprises were the only investments in any one issuer that exceeded 10% of shareholders' equity.

At December 31, 2019, the Company's ten largest equity holdings represented \$3.0 billion, or 39%, of the equity portfolio. Investments in the property and casualty insurance industry represented \$1.2 billion, or 16%, of the equity portfolio at December 31, 2019. Investments in the property and casualty insurance industry included a \$721.8 million investment in the common stock of Berkshire Hathaway Inc.

4. Fair Value Measurements

ASC 820, *Fair Value Measurements and Disclosures*, establishes a three-level hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The fair value hierarchy gives the highest priority to quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). If the inputs used to measure the assets or liabilities fall within different levels of the hierarchy, the classification is based on the lowest level input that is significant to the fair value measurement of the asset or liability.

Classification of assets and liabilities within the hierarchy considers the markets in which the assets and liabilities are traded and the reliability and transparency of the assumptions used to determine fair value. The hierarchy requires the use of observable market data when available. The levels of the hierarchy are defined as follows:

Level 1 - Inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities traded in active markets.

Level 2 - Inputs to the valuation methodology include quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, inputs other than quoted prices that are observable for the asset or liability and market-corroborated inputs.

Level 3 - Inputs to the valuation methodology are unobservable for the asset or liability and are significant to the fair value measurement.

In accordance with ASC 820, the Company determines fair value based on the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. In determining fair value, the Company uses various methods, including the market, income and cost approaches. The Company uses valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs. The following section describes the valuation methodologies used by the Company to measure assets and liabilities at fair value, including an indication of the level within the fair value hierarchy in which each asset or liability is generally classified.

Available-for-sale investments and equity securities. Available-for-sale investments and equity securities are recorded at fair value on a recurring basis. Available-for-sale investments include fixed maturities and short-term investments. Short-term investments include certificates of deposit, commercial paper, discount notes and treasury bills with original maturities of one year or less. Fair value for available-for-sale investments and equity securities are determined by the Company after considering various sources of information, including information provided by a third party pricing service. The pricing service provides prices for substantially all of the Company's fixed maturities and equity securities. In determining fair value, the Company generally does not adjust the prices obtained from the pricing service. The Company obtains an understanding of the pricing service's valuation methodologies and related inputs, which include, but are not limited to, reported trades, benchmark yields, issuer spreads, bids, offers, duration, credit ratings, estimated cash flows and prepayment speeds. The Company validates prices provided by the pricing service by reviewing prices from other pricing sources and analyzing pricing data in certain instances.

The Company has evaluated the various types of securities in its investment portfolio to determine an appropriate fair value hierarchy level based upon trading activity and the observability of market inputs. Level 1 investments include those traded on an active exchange, such as the New York Stock Exchange. Level 2 investments include U.S. Treasury securities, U.S. government-sponsored enterprises, municipal bonds, foreign government bonds, commercial mortgage-backed securities, residential mortgage-backed securities, asset-backed securities and corporate debt securities. Level 3 investments include the Company's investments in certain insurance-linked securities funds managed by Markel CATCo Investment Management Ltd. (MCIM), a consolidated subsidiary, that are not traded on an active exchange, as further described and defined in note 16 (the Markel CATCo Funds), and are valued using unobservable inputs.

Fair value for available-for-sale investments and equity securities is measured based upon quoted prices in active markets, if available. Due to variations in trading volumes and the lack of quoted market prices, fixed maturities are classified as Level 2 investments. The fair value of fixed maturities is normally derived through recent reported trades for identical or similar securities, making adjustments through the reporting date based upon available market observable data described above. If there are no recent reported trades, the fair value of fixed maturities may be derived through the use of matrix pricing or model processes, where future cash flow expectations are developed based upon collateral performance and discounted at an estimated market rate. Significant inputs used to determine the fair value of obligations of states, municipalities and political subdivisions, corporate bonds and obligations of foreign governments include reported trades, benchmark yields, issuer spreads, bids, offers, credit information and estimated cash flows. Significant inputs used to determine the fair value of commercial mortgage-backed securities, residential mortgage-backed securities and asset-backed securities include the type of underlying assets, benchmark yields, prepayment speeds, collateral information, tranche type and volatility, estimated cash flows, credit information, default rates, recovery rates, issuer spreads and the year of issue.

Due to the significance of unobservable inputs required in measuring the fair value of the Company's investments in the Markel CATCo Funds, these investments are classified as Level 3 within the fair value hierarchy. The fair value of the securities are derived using their reported net asset value (NAV) as the primary input, as well as other observable and unobservable inputs as deemed necessary by management. Management has obtained an understanding of the inputs, assumptions, process and controls used to determine NAV, which is calculated by an independent third party. Unobservable inputs to the NAV calculations include assumptions around premium earnings patterns and loss reserve estimates for the underlying securitized reinsurance contracts in which the Markel CATCo Funds invest. Significant unobservable inputs used in the valuation of these investments include an adjustment to include the fair value of the equity that was issued by one of the Markel CATCo Funds in exchange for notes receivable, rather than cash, which is excluded from NAV. The determination of fair value of the securities also considers external market data, including the trading price relative to its NAV of CATCo Reinsurance Opportunities Fund Ltd., a comparable security traded on a market operated by the London Stock Exchange and on the Bermuda Stock Exchange. In July 2019, the Markel CATCo Funds were placed into run-off and capital is being returned to investors as it becomes available. However, due to the significant loss events on the underlying securitized reinsurance contracts in 2017 and 2018, portions of the Company's investments may be restricted up to three years.

The Company's valuation policies and procedures for Level 3 investments are determined by management. Fair value measurements are analyzed quarterly to ensure the change in fair value from prior periods is reasonable relative to management's understanding of the underlying investments, recent market trends and external market data.

Senior long-term debt and other debt. Senior long-term debt and other debt is carried at amortized cost with the estimated fair value disclosed on the consolidated balance sheets. Senior long-term debt and other debt is classified as Level 2 within the fair value hierarchy due to variations in trading volumes and the lack of quoted market prices. Fair value for senior long-term debt and other debt is generally derived through recent reported trades for identical securities, making adjustments through the reporting date, if necessary, based upon available market observable data including U.S. Treasury securities and implied credit spreads. Significant inputs used to determine the fair value of senior long-term debt and other debt include reported trades, benchmark yields, issuer spreads, bids and offers.

The following tables present the balances of assets measured at fair value on a recurring basis by level within the fair value hierarchy.

<i>(dollars in thousands)</i>	December 31, 2019			
	Level 1	Level 2	Level 3	Total
Assets:				
Investments:				
Fixed maturities, available-for-sale:				
U.S. Treasury securities	\$ —	\$ 284,786	\$ —	\$ 284,786
U.S. government-sponsored enterprises	—	342,580	—	342,580
Obligations of states, municipalities and political subdivisions	—	4,189,882	—	4,189,882
Foreign governments	—	1,542,004	—	1,542,004
Commercial mortgage-backed securities	—	1,817,845	—	1,817,845
Residential mortgage-backed securities	—	888,073	—	888,073
Asset-backed securities	—	11,048	—	11,048
Corporate bonds	—	894,691	—	894,691
Total fixed maturities, available-for-sale	—	9,970,909	—	9,970,909
Equity securities:				
Insurance, banks and other financial institutions	2,463,190	—	45,992	2,509,182
Industrial, consumer and all other	5,081,573	—	—	5,081,573
Total equity securities	7,544,763	—	45,992	7,590,755
Short-term investments, available-for-sale	1,093,799	102,449	—	1,196,248
Total investments	\$ 8,638,562	\$ 10,073,358	\$ 45,992	\$ 18,757,912

<i>(dollars in thousands)</i>	December 31, 2018			
	Level 1	Level 2	Level 3	Total
Assets:				
Investments:				
Fixed maturities, available-for-sale:				
U.S. Treasury securities	\$ —	\$ 246,642	\$ —	\$ 246,642
U.S. government-sponsored enterprises	—	359,322	—	359,322
Obligations of states, municipalities and political subdivisions	—	4,352,930	—	4,352,930
Foreign governments	—	1,559,604	—	1,559,604
Commercial mortgage-backed securities	—	1,650,199	—	1,650,199
Residential mortgage-backed securities	—	880,172	—	880,172
Asset-backed securities	—	19,408	—	19,408
Corporate bonds	—	974,911	—	974,911
Total fixed maturities, available-for-sale	—	10,043,188	—	10,043,188
Equity securities:				
Insurance, banks and other financial institutions	1,876,811	—	53,728	1,930,539
Industrial, consumer and all other	3,790,406	—	—	3,790,406
Total equity securities	5,667,217	—	53,728	5,720,945
Short-term investments, available-for-sale	981,616	96,080	—	1,077,696
Total investments	\$ 6,648,833	\$ 10,139,268	\$ 53,728	\$ 16,841,829

The following table summarizes changes in Level 3 investments measured at fair value on a recurring basis.

<i>(dollars in thousands)</i>	2019	2018
Equity securities, beginning of period	\$ 53,728	\$ 168,809
Purchases	500	28,900
Sales	(9,448)	(35,335)
Net investment gains (losses) on Level 3 investments	1,212	(108,646)
Transfers into Level 3	—	—
Transfers out of Level 3	—	—
Equity securities, end of period	\$ 45,992	\$ 53,728

Net investment gains (losses) on Level 3 investments related to the Company's investments in the Markel CATCo Funds primarily resulted from changes in the NAV of these funds in 2019 and 2018.

There were no transfers into or out of Level 1 and Level 2 during 2019 or 2018.

Except as disclosed in note 2, the Company did not have any assets or liabilities measured at fair value on a non-recurring basis during the years ended December 31, 2019 and 2018.

5. Receivables

The following table presents the components of receivables.

	December 31,	
	2019	2018
<i>(dollars in thousands)</i>		
Amounts receivable from agents, brokers and insureds	\$ 1,424,881	\$ 1,327,549
Trade accounts receivable	259,062	226,282
Other	182,582	154,273
	1,866,525	1,708,104
Allowance for doubtful receivables	(18,723)	(15,578)
Receivables	\$ 1,847,802	\$ 1,692,526

6. Goodwill and Intangible Assets

The following table presents a rollforward of the components of goodwill by reportable segment.

<i>(dollars in thousands)</i>	Insurance	Reinsurance	Markel Ventures	Other ⁽¹⁾	Total
January 1, 2018	\$ 771,821	\$ 122,745	\$ 424,981	\$ 457,917	\$ 1,777,464
Acquisitions (see note 2)	—	—	73,174	474,901	548,075
Impairment of goodwill	—	—	—	(91,910)	(91,910)
Foreign currency movements and other adjustments ⁽²⁾	(1,637)	—	(817)	6,800	4,346
December 31, 2018 ⁽³⁾	\$ 770,184	\$ 122,745	\$ 497,338	\$ 847,708	\$ 2,237,975
Acquisitions (see note 2)	—	—	118,878	—	118,878
Foreign currency movements and other adjustments ⁽²⁾	1,263	—	(9,439)	(40,129)	(48,305)
December 31, 2019 ⁽³⁾	\$ 771,447	\$ 122,745	\$ 606,777	\$ 807,579	\$ 2,308,548

(1) Amounts included in Other reflect the Company's operations that are not included in a reportable segment.

(2) Foreign currency movements and other adjustments includes adjustments to goodwill resulting from changes to the preliminary purchase price allocation, if any, for acquisitions that occurred in the prior year.

(3) As of December 31, 2019 and 2018, goodwill was net of accumulated impairment losses of \$139.2 million, of which \$91.9 million was in Other and \$47.3 million was in Markel Ventures.

Goodwill and indefinite-lived intangible assets are tested for impairment at least annually. The Company completes an annual test during the fourth quarter of each year based upon the results of operations through September 30. There was no impairment of goodwill during 2019 or 2017. Total impairment of goodwill for the year ended December 31, 2018 was \$91.9 million.

During 2018, the Company recorded a goodwill and intangible asset impairment charge at MCIM totaling \$179.0 million. In light of governmental inquiries into loss reserves recorded in late 2017 and early 2018 at Markel CATCo Re Ltd. (Markel CATCo Re), an unconsolidated subsidiary managed by MCIM, and taking into consideration the departure of two senior MCIM executives and special redemption rights that were offered to investors in the Markel CATCo Funds, as defined in note 16, the Company concluded MCIM's ability to maintain or raise capital had been adversely impacted. As a result, the Company performed an assessment of the recoverability of goodwill and intangible assets at the MCIM reporting unit as of December 31, 2018. As a result of the assessment, the Company reduced the carrying value of the goodwill and intangible assets of the MCIM reporting unit to zero, which resulted in a goodwill impairment charge of \$91.9 million and an intangible asset impairment charge of \$87.1 million, both of which were recorded to impairment of goodwill and intangible assets in the consolidated statement of loss and comprehensive loss for the year ended December 31, 2018. The intangible asset charge primarily related to intangible assets associated with MCIM's investment management agreements with the Markel CATCo Funds. In July 2019, MCIM announced it would cease accepting new investments in the Markel CATCo Funds and would not write any new business in Markel CATCo Re. Both the Markel CATCo Funds and Markel CATCo Re have been placed into run-off, returning capital to investors as it becomes available. See note 20 for further details.

The following table presents a rollforward of the components of net intangible assets.

<i>(dollars in thousands)</i>	Underwriting ⁽¹⁾	Markel Ventures	Other ⁽²⁾	Total
January 1, 2018	\$ 537,957	\$ 400,589	\$ 417,135	\$ 1,355,681
Acquisitions (see note 2)	1,538	85,736	521,071	608,345
Amortization of intangible assets	(44,464)	(40,208)	(31,258)	(115,930)
Impairment of intangible assets	(4,431)	(14,904)	(87,953)	(107,288)
Foreign currency movements and other adjustments ⁽³⁾	(1,512)	244	(13,344)	(14,612)
December 31, 2018	\$ 489,088	\$ 431,457	\$ 805,651	\$ 1,726,196
Acquisitions (see note 2)	41,506	71,629	—	113,135
Amortization of intangible assets	(39,667)	(41,973)	(66,998)	(148,638)
Foreign currency movements and other adjustments ⁽³⁾	(6,767)	12,009	42,539	47,781
December 31, 2019	\$ 484,160	\$ 473,122	\$ 781,192	\$ 1,738,474

- (1) Amounts included in Underwriting reflect the intangible assets associated with the Company's underwriting segments, which are not allocated between the Insurance and Reinsurance segments.
- (2) Amounts included in Other reflect the Company's operations that are not included in a reportable segment.
- (3) Foreign currency movements and other adjustments include adjustments to intangible assets resulting from changes to the preliminary purchase price allocation, if any, for acquisitions that occurred in the prior year.

Amortization of intangible assets is estimated to be \$150.2 million for 2020, \$146.3 million for 2021, \$142.9 million for 2022, \$141.0 million for 2023 and \$139.1 million for 2024. Indefinite-lived intangible assets were \$92.4 million at both December 31, 2019 and 2018.

For the year ended December 31, 2019, the Company acquired \$113.1 million of intangible assets, all of which is amortizable over a weighted average period of 11 years. The definite-lived intangible assets acquired during 2019 include customer relationships, trade names and other intangible assets, which are expected to be amortized over a weighted average period of 12, 12 and 10 years, respectively.

The following table presents the components of intangible assets.

<i>(dollars in thousands)</i>	December 31,			
	2019		2018	
	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Customer relationships	\$ 1,021,427	\$ (267,580)	\$ 953,739	\$ (204,261)
Investment management agreements	468,000	(33,345)	441,000	—
Broker relationships	206,249	(89,234)	204,367	(78,559)
Trade names	208,959	(68,961)	193,154	(62,827)
Technology	113,389	(60,611)	109,208	(47,090)
Agent relationships	92,000	(16,355)	92,000	(10,175)
Insurance licenses	74,635	—	74,635	—
Renewal rights	21,449	(19,366)	21,053	(18,272)
Other	151,978	(64,160)	107,441	(49,217)
Total	\$ 2,358,086	\$ (619,612)	\$ 2,196,597	\$ (470,401)

7. Leases

The Company's leases primarily consist of operating leases for real estate and have remaining terms of up to 15 years. Total lease costs for operating leases were \$62.7 million for the year ended December 31, 2019. Total rental expense was \$52.9 million and \$44.6 million for the years ended December 31, 2018 and 2017, respectively, which was prior to adoption of ASU 2016-02. See note 1(y).

The following table summarizes details for the Company's operating leases recorded on the consolidated balance sheet as of December 31, 2019.

(dollars in thousands)

Right-of-use lease assets	\$	232,717
Lease liabilities	\$	262,139
Weighted average remaining lease term		8.5 years
Weighted average discount rate		3.3%

The table below summarizes maturities of the Company's operating lease liabilities as of December 31, 2019, which reconciles to total lease liabilities included in other liabilities on the Company's consolidated balance sheet.

<u>Years Ending December 31,</u>	<u><i>(dollars in thousands)</i></u>
2020	\$ 49,529
2021	45,463
2022	39,519
2023	34,095
2024	26,989
2025 and thereafter	107,410
Total lease payments	303,005
Less imputed interest	(40,866)
Total operating lease liabilities	<u>\$ 262,139</u>

8. Segment Reporting Disclosures

The chief operating decision maker reviews the Company's ongoing underwriting operations on a global basis in the following two segments: Insurance and Reinsurance. In determining how to allocate resources and assess the performance of its underwriting results, management considers many factors, including the nature of the insurance product sold, the type of account written and the type of customer served. The Insurance segment includes all direct business and facultative placements written within the Company's underwriting operations. The Reinsurance segment includes all treaty reinsurance written within the Company's underwriting operations. All investing activities related to the Company's insurance operations are included in the Investing segment.

The chief operating decision maker reviews and assesses Markel Ventures' performance in the aggregate, as a single operating segment. The Markel Ventures segment primarily consists of controlling interests in a diverse portfolio of businesses that operate in various industries.

The Company's other operations include the results of the Company's insurance-linked securities operations and program services business, as well as the results of its legal and professional consulting services. Other operations also include results for lines of business discontinued prior to, or in conjunction with, acquisitions, including development on asbestos and environmental loss reserves and results attributable to the run-off of life and annuity reinsurance business, which are monitored separately from the Company's ongoing underwriting operations. For purposes of segment reporting, none of these other operations are considered to be reportable segments.

Segment profit for each of the Company's underwriting segments is measured by underwriting profit. The property and casualty insurance industry commonly defines underwriting profit as earned premiums net of losses and loss adjustment expenses and underwriting, acquisition and insurance expenses. Underwriting profit does not replace operating income or net income computed in accordance with U.S. GAAP as a measure of profitability. Underwriting profit or loss provides a basis for management to evaluate the Company's underwriting performance. Segment profit for the Investing segment is measured by net investment income and net investment gains. Segment profit for the Markel Ventures segment is measured by operating income.

For management reporting purposes, the Company allocates assets to its underwriting operations and to its Investing and Markel Ventures segments and certain of its other operations, including its program services and insurance-linked securities operations. Underwriting assets include assets attributed to the Company's Insurance and Reinsurance segments, discontinued underwriting lines of business, as well as assets that are not specifically allocated to the Company's other operations. Underwriting and investing assets are not allocated to the Company's underwriting segments since the Company does not manage its assets by underwriting segment. The Company does not allocate capital expenditures for long-lived assets to either of its underwriting segments for management reporting purposes.

a) The following tables summarize the Company's segment disclosures.

	Year Ended December 31, 2019					
<i>(dollars in thousands)</i>	Insurance	Reinsurance	Investing	Markel Ventures (1)	Other (2)	Consolidated
Gross premium volume	\$ 5,320,253	\$ 1,114,153	\$ —	\$ —	\$ 2,345,565	\$ 8,779,971
Net written premiums	4,444,702	964,947	—	—	2,422	5,412,071
Earned premiums	4,144,073	903,587	—	—	2,133	5,049,793
Losses and loss adjustment expenses:						
Current accident year	(2,730,971)	(695,470)	—	—	—	(3,426,441)
Prior accident years	462,124	64,768	—	—	8,359	535,251
Amortization of policy acquisition costs	(860,917)	(239,579)	—	—	—	(1,100,496)
Other operating expenses	(704,531)	(73,305)	—	—	239	(777,597)
Underwriting profit (loss)	309,778	(39,999)	—	—	10,731	280,510
Net investment income	—	—	451,152	736	—	451,888
Net investment gains	—	—	1,601,722	—	—	1,601,722
Products revenues	—	—	—	1,609,586	—	1,609,586
Services and other revenues	—	—	—	444,698	368,504	813,202
Products expenses	—	—	—	(1,455,245)	—	(1,455,245)
Services and other expenses	—	—	—	(389,385)	(286,294)	(675,679)
Amortization of intangible assets (3)	—	—	—	(41,973)	(106,665)	(148,638)
Segment profit (loss)	\$ 309,778	\$ (39,999)	\$ 2,052,874	\$ 168,417	\$ (13,724)	\$ 2,477,346
Interest expense						(171,687)
Net foreign exchange losses						(2,265)
Loss on early extinguishment of debt						(17,586)
Income before income taxes						\$ 2,285,808
U.S. GAAP combined ratio (4)	93%	104%			NM (5)	94%

(1) Products expenses and services and other expenses for the Markel Ventures segment include depreciation expense of \$53.6 million for the year ended December 31, 2019.

(2) Other represents the total profit (loss) attributable to the Company's operations that are not included in a reportable segment as well as any amortization of intangible assets and impairment of goodwill and intangible assets that are not allocated to a reportable segment.

(3) Segment profit for the Markel Ventures segment includes amortization of intangible assets attributable to Markel Ventures. Amortization of intangible assets is not allocated to the Company's underwriting segments.

(4) The U.S. GAAP combined ratio is a measure of underwriting performance and represents the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums.

(5) NM - Ratio is not meaningful

	Year Ended December 31, 2018					
<i>(dollars in thousands)</i>	Insurance	Reinsurance	Investing	Markel Ventures (1)	Other (2)	Consolidated
Gross premium volume	\$ 4,749,166	\$ 1,050,870	\$ —	\$ —	\$ 2,064,433	\$ 7,864,469
Net written premiums	3,904,773	882,285	—	—	520	4,787,578
Earned premiums	3,783,939	928,574	—	—	(453)	4,712,060
Losses and loss adjustment expenses:						
Current accident year	(2,596,057)	(775,642)	—	—	—	(3,371,699)
Prior accident years	502,260	42,982	—	—	5,742	550,984
Amortization of policy acquisition costs	(770,183)	(239,120)	—	—	—	(1,009,303)
Other operating expenses	(691,186)	(75,081)	—	—	(1,941)	(768,208)
Underwriting profit (loss)	228,773	(118,287)	—	—	3,348	113,834
Net investment income	—	—	433,702	513	—	434,215
Net investment losses	—	—	(437,596)	—	—	(437,596)
Products revenues	—	—	—	1,497,523	—	1,497,523
Services and other revenues	—	—	—	414,542	220,541	635,083
Products expenses	—	—	—	(1,413,248)	—	(1,413,248)
Services and other expenses	—	—	—	(366,739)	(108,185)	(474,924)
Amortization of intangible assets (3)	—	—	—	(40,208)	(75,722)	(115,930)
Impairment of goodwill and intangible assets	—	—	—	(14,904)	(184,294)	(199,198)
Segment profit (loss)	\$ 228,773	\$ (118,287)	\$ (3,894)	\$ 77,479	\$ (144,312)	\$ 39,759
Interest expense						(154,212)
Net foreign exchange gains						106,598
Loss before income taxes						\$ (7,855)
U.S. GAAP combined ratio (4)	94%	113%			NM (5)	98%

(1) Products expenses and services and other expenses for the Markel Ventures segment include depreciation expense of \$52.2 million for the year ended December 31, 2018.

(2) Other represents the total profit (loss) attributable to the Company's operations that are not included in a reportable segment as well as any amortization of intangible assets that is not allocated to a reportable segment.

(3) Segment profit for the Markel Ventures segment includes amortization of intangible assets attributable to Markel Ventures. Amortization of intangible assets is not allocated to the Company's underwriting segments.

(4) The U.S. GAAP combined ratio is a measure of underwriting performance and represents the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums.

(5) NM - Ratio is not meaningful

	Year Ended December 31, 2017					
<i>(dollars in thousands)</i>	Insurance	Reinsurance	Investing	Markel Ventures ⁽¹⁾	Other ⁽²⁾	Consolidated
Gross premium volume	\$ 4,141,201	\$ 1,112,101	\$ —	\$ —	\$ 253,658	\$ 5,506,960
Net written premiums	3,439,796	978,160	—	—	(169)	4,417,787
Earned premiums	3,314,033	934,114	—	—	(169)	4,247,978
Losses and loss adjustment expenses:						
Current accident year	(2,442,344)	(924,879)	—	—	—	(3,367,223)
Prior accident years	500,627	(7,803)	—	—	8,638	501,462
Amortization of policy acquisition costs	(675,470)	(218,883)	—	—	—	(894,353)
Other operating expenses	(611,749)	(82,567)	—	—	(795)	(695,111)
Underwriting profit (loss)	85,097	(300,018)	—	—	7,674	(207,247)
Net investment income	—	—	405,377	332	—	405,709
Net investment losses	—	—	(5,303)	—	—	(5,303)
Products revenues	—	—	—	951,012	—	951,012
Services and other revenues	—	—	—	382,268	79,995	462,263
Products expenses	—	—	—	(850,449)	—	(850,449)
Services and other expenses	—	—	—	(336,484)	(122,137)	(458,621)
Amortization of intangible assets ⁽³⁾	—	—	—	(31,429)	(49,329)	(80,758)
Segment profit (loss)	\$ 85,097	\$ (300,018)	\$ 400,074	\$ 115,250	\$ (83,797)	\$ 216,606
Interest expense						(132,451)
Net foreign exchange gains						3,140
Income before income taxes						\$ 87,295
U.S. GAAP combined ratio ⁽⁴⁾	97%	132%			NM ⁽⁵⁾	105%

(1) Products expenses and services and other expenses for the Markel Ventures segment include depreciation expense of \$41.7 million for the year ended December 31, 2017.

(2) Other represents the total profit (loss) attributable to the Company's operations that are not included in a reportable segment as well as any amortization of intangible assets and impairment of goodwill and intangible assets that are not allocated to a reportable segment.

(3) Segment profit for the Markel Ventures segment includes amortization of intangible assets attributable to Markel Ventures. Amortization of intangible assets is not allocated to the Company's underwriting segments.

(4) The U.S. GAAP combined ratio is a measure of underwriting performance and represents the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums.

(5) NM - Ratio is not meaningful

b) The following table summarizes deferred policy acquisition costs, unearned premiums and unpaid losses and loss adjustment expenses.

<i>(dollars in thousands)</i>	Deferred Policy Acquisition Costs	Unearned Premiums	Unpaid Losses and Loss Adjustment Expenses
December 31, 2019			
Insurance segment	\$ 392,774	\$ 2,356,875	\$ 8,119,046
Reinsurance segment	173,268	677,260	3,395,459
Other underwriting	—	—	298,062
Total Underwriting	566,042	3,034,135	11,812,567
Program services and other	—	1,023,592	2,916,109
Total	\$ 566,042	\$ 4,057,727	\$ 14,728,676
December 31, 2018			
Insurance segment	\$ 315,363	\$ 2,031,140	\$ 7,947,772
Reinsurance segment	159,150	630,435	3,425,751
Other underwriting	—	—	386,329
Total Underwriting	474,513	2,661,575	11,759,852
Program services and other	—	949,453	2,516,627
Total	\$ 474,513	\$ 3,611,028	\$ 14,276,479

c) The following table summarizes earned premiums by major product grouping.

<i>(dollars in thousands)</i>	Years Ended December 31,		
	2019	2018	2017
Insurance segment:			
General liability	\$ 1,039,617	\$ 889,543	\$ 764,956
Professional liability	814,587	701,867	628,878
Property	364,830	369,116	365,513
Marine and energy	391,464	376,747	312,282
Personal lines	378,522	374,543	382,761
Programs	294,418	288,398	273,954
Workers' compensation	349,770	329,690	319,679
Other products	510,865	454,035	266,010
Total Insurance	4,144,073	3,783,939	3,314,033
Reinsurance segment:			
Property	201,486	233,195	321,178
Casualty	408,368	360,739	327,912
Specialty	293,733	334,640	285,024
Total Reinsurance	903,587	928,574	934,114
Other	2,133	(453)	(169)
Total earned premiums	\$ 5,049,793	\$ 4,712,060	\$ 4,247,978

The Company does not manage products at this level of aggregation. The Company offers a diverse portfolio of products and manages these products in logical groupings within each underwriting segment.

d) The following table summarizes the Company's gross written premiums by country. Gross written premiums are attributed to individual countries based upon location of risk or cedent.

<i>(dollars in thousands)</i>	Years Ended December 31,					
	2019	% of Total	2018	% of Total	2017	% of Total
United States	\$ 5,172,074	81%	\$ 4,587,486	79%	\$ 4,163,753	79%
United Kingdom	458,370	7	471,818	8	374,941	7
Canada	151,606	2	127,546	2	132,018	3
Other countries	652,277	10	612,146	11	582,395	11
Total Underwriting	6,434,327	100%	5,798,996	100%	5,253,107	100%
United States - Program services and other	2,345,644		2,065,473		253,853	
Total	\$ 8,779,971		\$ 7,864,469		\$ 5,506,960	

Most of the Company's gross written premiums are placed through insurance and reinsurance brokers. During the years ended December 31, 2019, 2018 and 2017, the Company's top three independent brokers accounted for 28%, 25% and 27% of gross premiums written in the Company's underwriting segments. During the years ended December 31, 2019, 2018 and 2017, the top three independent brokers accounted for 17%, 13% and 14%, respectively, of gross premiums written in the Insurance segment and 82%, 76% and 78%, respectively, of gross premiums written in the Reinsurance segment.

e) During the years ended December 31, 2019, 2018 and 2017, Markel Ventures segment revenues attributable to U.S. operations were 90%, 88%, and 85%, respectively, of total Markel Ventures segment revenues.

f) The following table reconciles segment assets to the Company's consolidated balance sheets.

<i>(dollars in thousands)</i>	December 31,		
	2019	2018	2017
Segment assets:			
Investing	\$ 22,129,633	\$ 19,100,790	\$ 20,317,160
Underwriting	6,621,639	6,451,984	6,828,048
Markel Ventures	2,550,835	2,124,506	1,900,728
Total segment assets	31,302,107	27,677,280	29,045,936
Other operations	6,171,708	5,628,983	3,759,080
Total assets	\$ 37,473,815	\$ 33,306,263	\$ 32,805,016

9. Products, Services and Other Revenues

The amount of revenues from contracts with customers for the years ended December 31, 2019, 2018 and 2017 was \$2.2 billion, \$1.9 billion and \$1.3 billion, respectively.

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The following table disaggregates revenues from contracts with customers by type, all of which are included in products revenues and services and other revenues in the consolidated statements of income (loss) and comprehensive income (loss).

<i>(dollars in thousands)</i>	Years Ended December 31,								
	2019			2018			2017		
	Markel Ventures	Other	Total	Markel Ventures	Other	Total	Markel Ventures	Other	Total
Products	\$ 1,558,265	\$ —	\$ 1,558,265	\$ 1,452,332	\$ —	\$ 1,452,332	\$ 902,739	\$ —	\$ 902,739
Services	392,680	97,447	490,127	367,572	33,236	400,808	339,430	34,746	374,176
Investment management	—	150,864	150,864	—	91,527	91,527	—	28,740	28,740
Total revenues from contracts with customers	1,950,945	248,311	2,199,256	1,819,904	124,763	1,944,667	1,242,169	63,486	1,305,655
Program services and other fronting	—	116,376	116,376	—	94,118	94,118	—	14,487	14,487
Other	103,339	3,817	107,156	92,161	1,660	93,821	91,111	2,022	93,133
Total	\$ 2,054,284	\$ 368,504	\$ 2,422,788	\$ 1,912,065	\$ 220,541	\$ 2,132,606	\$ 1,333,280	\$ 79,995	\$ 1,413,275

The following table presents receivables and customer deposits related to our contracts with customers.

<i>(dollars in thousands)</i>	December 31, 2019	December 31, 2018
Receivables	\$ 263,904	\$ 247,532
Customer deposits	\$ 60,623	\$ 48,238

10. Unpaid Losses and Loss Adjustment Expenses

a) The following table presents a reconciliation of consolidated beginning and ending reserves for losses and loss adjustment expenses.

<i>(dollars in thousands)</i>	Years Ended December 31,		
	2019	2018	2017
Net reserves for losses and loss adjustment expenses, beginning of year	\$ 9,214,443	\$ 8,964,945	\$ 8,108,717
Effect of foreign currency rate changes on beginning of year balance	18,857	(69,119)	110,079
Adjusted net reserves for losses and loss adjustment expenses, beginning of year	9,233,300	8,895,826	8,218,796
Incurring losses and loss adjustment expenses:			
Current accident year	3,426,441	3,371,699	3,367,223
Prior accident years	(535,307)	(551,040)	(497,627)
Total incurred losses and loss adjustment expenses	2,891,134	2,820,659	2,869,596
Payments:			
Current accident year	671,208	666,515	671,112
Prior accident years	1,979,032	1,835,027	1,513,580
Total payments	2,650,240	2,501,542	2,184,692
Effect of foreign currency rate changes on current year activity	1,067	(500)	3,752
Net reserves for losses and loss adjustment expenses of acquired insurance companies	—	—	57,493
Net reserves for losses and loss adjustment expenses, end of year	9,475,261	9,214,443	8,964,945
Reinsurance recoverables on unpaid losses	5,253,415	5,062,036	4,619,336
Gross reserves for losses and loss adjustment expenses, end of year	\$ 14,728,676	\$ 14,276,479	\$ 13,584,281

In 2019, underwriting results included \$100.4 million of underwriting loss from Hurricane Dorian and Typhoons Faxai and Hagibis (2019 Catastrophes). The underwriting loss on the 2019 Catastrophes was comprised of \$114.0 million of net losses and loss adjustment expenses partially offset by \$13.6 million of net assumed reinstatement premiums. The net losses and loss adjustment expenses on the 2019 Catastrophes were net of ceded losses of \$62.5 million.

Incurred losses and loss adjustment expenses in 2019 included \$535.3 million of favorable development on prior years' loss reserves, which included \$431.0 million of favorable development on the Company's general liability, workers' compensation, professional liability and marine and energy product lines within the Insurance segment and property and whole account product lines within the Reinsurance segment. Favorable development within the Company's Insurance segment was primarily driven by lower loss severity than originally anticipated and a net decrease in open claims. Favorable development within the Company's Reinsurance segment was largely driven by lower than expected incurred and paid losses on reported claims.

In 2018, underwriting results included \$287.3 million of underwriting loss from Hurricanes Florence and Michael, Typhoon Jebi and wildfires in California (2018 Catastrophes). The underwriting loss on the 2018 Catastrophes was comprised of \$292.8 million of net losses and loss adjustment expenses partially offset by \$5.4 million of net assumed reinstatement premiums. The net losses and loss adjustment expenses on the 2018 Catastrophe for the year ended December 31, 2018 were net of ceded losses of \$244.1 million.

Incurred losses and loss adjustment expenses in 2018 included \$551.0 million of favorable development on prior years' loss reserves, which included \$424.1 million of favorable development on the Company's general liability, workers' compensation, professional liability and marine and energy product lines within the Insurance segment and credit and surety and marine and energy product lines within the Reinsurance segment. Favorable development within the Company's Insurance segment was primarily driven by lower claim frequency and lower loss severity than originally anticipated. Favorable development within the Company's Reinsurance segment was largely driven by lower than expected incurred and paid losses on reported claims.

In 2017, underwriting results included \$565.3 million of underwriting loss from Hurricanes Harvey, Irma, Maria and Nate as well as the earthquakes in Mexico and wildfires in California (2017 Catastrophes). The underwriting loss on the 2017 Catastrophes was comprised of \$585.4 million of net losses and loss adjustment expenses partially offset by \$20.1 million of net assumed reinstatement premiums. The net losses and loss adjustment expenses on the 2017 Catastrophes for the year ended December 31, 2017 were net of ceded losses of \$490.3 million.

Incurred losses and loss adjustment expenses in 2017 included \$497.6 million of favorable development on prior years' loss reserves, which included \$422.9 million of favorable development on the Company's general liability, marine and energy, professional liability, and workers' compensation product lines as well as personal lines business within the Insurance segment and property product lines within the Reinsurance segment. The favorable development within the Company's Insurance segment was primarily driven by favorable case incurred loss development and lower loss severity than originally anticipated. Favorable development within the Company's Reinsurance segment was due in part to lower than expected development on reported events, favorable claims settlements and lower than expected claims activity. The favorable development in 2017 was partially offset by \$85.0 million of adverse development on the auto product line within the Reinsurance segment, resulting from a decrease in the discount rate, known as the Ogden Rate, used to calculate lump sum awards in United Kingdom (U.K.) bodily injury cases.

In 2017, the Company recorded net reserves for losses and loss adjustment expenses of \$57.5 million as a result of acquisitions completed during the year. All acquired net reserves were recorded at fair value as part of the Company's purchase accounting. See note 2 for a discussion of the Company's acquisitions.

In 2017, the Company recognized a previously deferred gain of \$3.9 million, which is included in losses and loss adjustment expenses in the consolidated statement of income and comprehensive income. This amount is excluded from the prior years' incurred losses and loss adjustment expenses for 2017 in the above table as the deferred gain was included in other liabilities on the consolidated balance sheet as of December 31, 2016, rather than unpaid losses and loss adjustment expenses.

The Company uses a variety of techniques to establish the liabilities for unpaid losses and loss adjustment expenses based upon estimates of the ultimate amounts payable. The Company maintains reserves for specific claims incurred and reported (case reserves) and reserves for claims incurred but not reported (IBNR reserves), which include expected development on reported claims. The Company does not discount its reserves for losses and loss adjustment expenses to reflect estimated present value, except for reserves held for a runoff book of U.K. motor business. Additionally, reserves assumed in connection with an acquisition are recorded at fair value at the acquisition date. The fair value adjustment includes an adjustment to reflect the acquired reserves for losses and loss adjustment expenses at present value plus a risk premium, the net of which is amortized to losses and loss adjustment expenses within the consolidated statements of income.

As of any balance sheet date, all claims have not yet been reported, and some claims may not be reported for many years. As a result, the liability for unpaid losses and loss adjustment expenses includes significant estimates for incurred but not reported claims.

There is normally a time lag between when a loss event occurs and when it is actually reported to the Company. The actuarial methods that the Company uses to estimate losses have been designed to address the lag in loss reporting as well as the delay in obtaining information that would allow the Company to more accurately estimate future payments. There is also a time lag between cedents establishing case reserves and re-estimating their reserves, and notifying the Company of the new or revised case reserves. As a result, the reporting lag is more pronounced in reinsurance contracts than in the insurance contracts due to the reliance on ceding companies to report their claims. On reinsurance transactions, the reporting lag will generally be 60 to 90 days after the end of a reporting period, but can be longer in some cases. Based on the experience of the Company's actuaries and management, loss development factors and trending techniques are selected to mitigate the difficulties caused by reporting lags. The loss development and trending factor selections are evaluated at least annually and updated using cedent specific and industry data.

IBNR reserves are based on the estimated ultimate cost of settling claims, including the effects of inflation and other social and economic factors, using past experience adjusted for current trends and any other factors that would modify past experience. IBNR reserves are generally calculated by subtracting paid losses and loss adjustment expenses and case reserves from estimated ultimate losses and loss adjustment expenses. IBNR reserves were 65% of total unpaid losses and loss adjustment expenses at December 31, 2019 compared to 64% at December 31, 2018.

In establishing liabilities for unpaid losses and loss adjustment expenses, the Company's actuaries estimate an ultimate loss ratio, by accident year or policy year, for each product line with input from underwriting and claims personnel. For product lines in which loss reserves are established on a policy year basis, the Company has developed a methodology to convert from policy year to accident year for financial reporting purposes. In estimating an ultimate loss ratio for a particular line of business, the actuaries may use one or more actuarial reserving methods and select from these a single point estimate. To varying degrees, these methods include detailed statistical analysis of past claim reporting, settlement activity, claim frequency and severity, policyholder loss experience, industry loss experience and changes in market conditions, policy forms and exposures. Greater judgment may be required when new product lines are introduced or when there have been changes in claims handling practices, as the statistical data available may be insufficient. These estimates also reflect implicit and explicit assumptions regarding the potential effects of external factors, including economic and social inflation, judicial decisions, changes in law, general economic conditions and recent trends in these factors. Management believes the process of evaluating past experience, adjusted for the effects of current developments and anticipated trends, is an appropriate basis for predicting future events.

Estimates for losses from widespread catastrophic events are based on claims received to date, detailed policy and reinsurance contract level reviews, industry loss estimates and output from both industry and proprietary models. Due to the inherent uncertainty in estimating such losses, these estimates are subject to variability, which increases with the severity and complexity of the underlying event. As additional claims are reported and paid, and industry loss estimates are revised, the Company incorporates this new information into its analysis and adjusts its estimate of ultimate losses and loss adjustment expenses. For example, both the gross and net losses on the 2019, 2018 and 2017 Catastrophes as of December 31, 2019 represent the Company's best estimates based upon information currently available. For the 2019 Catastrophes, these estimates are still dependent on broad assumptions about coverage, liability and reinsurance. While the Company believes the reserves for the 2019, 2018 and 2017 Catastrophes as of December 31, 2019 are adequate, it continues to closely monitor reported claims and will adjust estimates of gross and net losses as new information becomes available.

Loss reserves are established at management's best estimate, which is generally higher than the corresponding actuarially calculated point estimate. The actuarial point estimate represents the actuaries' estimate of the most likely amount that will ultimately be paid to settle the losses that have occurred at a particular point in time; however, there is inherent uncertainty in the point estimate as it is the expected value in a range of possible reserve estimates. In some cases, actuarial analyses, which are based on statistical analysis, cannot fully incorporate all of the subjective factors that affect development of losses. In other cases, management's perspective of these more subjective factors may differ from the actuarial perspective. Subjective factors where management's perspective may differ from that of the actuaries include: the credibility and timeliness of claims information received from third parties, economic and social inflation, judicial decisions, changes in law, changes in underwriting or claims handling practices, general economic conditions, the risk of moral hazard and other current and developing trends within the insurance and reinsurance markets, including the effects of competition. As a result, the actuarially calculated point estimates for each of line of business represents starting points for management's quarterly review of loss reserves.

Inherent in the Company's reserving practices is the desire to establish loss reserves that are more likely redundant than deficient. As such, the Company seeks to establish loss reserves that will ultimately prove to be adequate. As part of the Company's acquisition of insurance operations, to the extent the reserving philosophy of the acquired business differs from the Company's reserving philosophy, the post-acquisition loss reserves will be strengthened until total loss reserves are consistent with the Company's target level of confidence. Furthermore, the Company's philosophy is to price its insurance products to make an underwriting profit. Management continually attempts to improve its loss estimation process by refining its ability to analyze loss development patterns, claim payments and other information, but uncertainty remains regarding the potential for adverse development of estimated ultimate liabilities.

Management currently believes the Company's gross and net reserves are adequate. However, there is no precise method for evaluating the impact of any significant factor on the adequacy of reserves, and actual results will differ from original estimates.

b) The following tables present undiscounted loss development information, by accident year, for the Company's Insurance and Reinsurance segments, including cumulative incurred and paid losses and allocated loss adjustment expenses, net of reinsurance, as well as the corresponding amount of IBNR reserves as of December 31, 2019. This level of disaggregation is consistent with how the Company analyzes loss reserves for both internal and external reporting purposes. The loss development information for the years ended December 31, 2012 through 2018 is presented as supplementary information. Incurred losses in both our Insurance and Reinsurance segments generally remain outstanding more than eight years; however, data prior to 2012 is not practically available by segment as a result of a change in the Company's reportable segments in 2014. Additionally, reserves for the Company's international operations are determined on a policy year basis and historical data prior to 2012 does not exist by accident year. All amounts included in the tables below related to transactions denominated in a foreign currency have been translated into U.S. Dollars using the exchange rates in effect at December 31, 2019.

The difference between the segment loss development implied by the tables for the year ended December 31, 2019 and actual losses and loss adjustment expenses on prior accident years for the Insurance and Reinsurance segments for the year ended December 31, 2019 is primarily attributed to the fact that amounts presented in these tables exclude amounts attributed to the 2011 and prior accident years. Favorable development on 2011 and prior accident years for the year ended December 31, 2019 totaled \$46.9 million, or 10% of total incurred losses and loss adjustment expenses on prior accident years, for the Insurance segment. Favorable development on 2011 and prior accident years for the year ended December 31, 2019 totaled \$43.0 million for the Reinsurance segment. For the Reinsurance segment, this favorable development was primarily due lower than expected paid and incurred losses on reported claims within the segment's whole account product line, on the 2006 to 2008 accident years, and on its professional liability product lines across multiple accident years. Within the Company's professional liability product lines, the favorable development on 2011 and prior accident years was largely offset by an increase in losses and loss adjustment expenses on the 2017 and 2018 accident years as a result of net favorable premium adjustments in 2019, for which the related incurred losses were attributed to the 2017 and 2018 accident years.

The remaining difference between the segment loss development implied by the tables for the year ended December 31, 2019 and actual losses and loss adjustment expenses on prior accident years is attributed to the fact that amounts presented in these tables exclude unallocated loss adjustment expenses and exclude amounts attributable to reserve discounting and fair value adjustments recorded in conjunction with acquisitions, as well as differences in the presentation of foreign currency movements, as described above, none of which are material to the Insurance or Reinsurance segments.

The Insurance segment table below also includes claim frequency information, by accident year. The Company defines a claim as a single claim incident, per policy, which may include multiple claimants and multiple coverages on a single policy. Claim counts include claims closed without a payment as well as claims where the Company is monitoring to determine if an exposure exists, even if a reserve has not been established.

All of the business contained within the Company's Reinsurance segment represents treaty business that is assumed from other insurance or reinsurance companies, for which the Company does not have access to the underlying claim counts. Further, this business includes both quota share and excess of loss treaty reinsurance, through which only a portion of each reported claim results in losses to the Company. As such, the Company has excluded claim count information from the Reinsurance segment disclosures.

In 2013, the Company completed the acquisition of Alterra Capital Holdings Limited (Alterra), the results of which are included in both of the Company's reportable segments. Ultimate incurred losses and loss adjustment expenses, net of reinsurance as of December 31, 2013 include outstanding liabilities for losses and loss adjustment expenses of Alterra as of the acquisition date, by accident year, and not in any prior periods. Pre-acquisition data is not available by segment and accident year due in part to the impact of significant intercompany reinsurance contracts. Additionally, Alterra reserves were historically determined on a policy year basis and pre-acquisition data does not exist in a format that can be used to determine accident year. Following the acquisition, ongoing business attributable to Alterra was integrated with the Company's other insurance operations and is not separately tracked.

Insurance Segment

<i>(dollars in millions)</i>	Ultimate Incurred Losses and Allocated Loss Adjustment Expenses, Net of Reinsurance								Total of Incurred-but-Not-Reported Liabilities, Net of Reinsurance	Cumulative Number of Reported Claims <i>(in thousands)</i>	
	Unaudited										
	As of December 31,										As of December 31,
Accident Year	2012	2013	2014	2015	2016	2017	2018	2019	December 31, 2019		
2012	\$ 1,370.8	\$ 1,613.2	\$ 1,491.6	\$ 1,430.2	\$ 1,397.8	\$ 1,364.1	\$ 1,350.7	\$ 1,330.5	\$ 101.3	128	
2013		1,738.0	1,698.2	1,528.4	1,464.9	1,418.1	1,372.0	1,329.3	126.7	88	
2014			1,866.0	1,700.1	1,632.2	1,574.2	1,525.7	1,505.3	138.6	80	
2015				1,786.6	1,714.2	1,591.7	1,537.3	1,505.4	197.1	85	
2016					1,875.3	1,872.1	1,770.8	1,716.5	297.3	90	
2017						2,330.8	2,198.9	2,076.2	422.4	124	
2018							2,457.3	2,354.8	904.0	173	
2019								2,582.3	1,639.8	181	
Total								\$ 14,400.3			

Accident Year	Cumulative Paid Losses and Allocated Loss Adjustment Expenses, Net of Reinsurance							
	Unaudited							As of December 31,
	As of December 31,							
	2012	2013	2014	2015	2016	2017	2018	
2012	\$ 233.8	\$ 568.6	\$ 781.5	\$ 939.5	\$ 1,055.0	\$ 1,119.8	\$ 1,153.2	\$ 1,180.1
2013		271.8	572.1	780.0	950.5	1,038.9	1,101.3	1,125.1
2014			332.3	659.2	896.5	1,064.7	1,170.5	1,255.3
2015				322.8	666.0	877.7	1,041.9	1,151.9
2016					372.5	753.7	983.7	1,169.8
2017						438.8	992.8	1,286.7
2018							496.7	1,027.8
2019								527.9
Total								\$ 8,724.6
All outstanding liabilities for unpaid losses and loss adjustment expenses before 2012, net of reinsurance								365.7
Total liabilities for unpaid losses and loss adjustment expenses, net of reinsurance								\$ 6,041.4

Ultimate incurred losses and allocated loss adjustment expenses as of December 31, 2013 for the Insurance segment include \$256.5 million and \$313.4 million of losses and loss adjustment expenses on the 2012 and 2013 accident years, respectively, attributable to Alterra. Cumulative paid losses and allocated loss adjustment expenses as of December 31, 2013 include \$36.8 million and \$29.5 million of paid losses and allocated loss adjustment expenses on the 2012 and 2013 accident years, respectively, attributable to the acquired Alterra reserves and post-acquisition Alterra business. Cumulative paid losses and allocated loss adjustment expenses and cumulative reported claims for the 2012 and 2013 accident years exclude any claims paid or closed prior to the acquisition.

Variability in claim counts is primarily attributable to claim counts associated with a personal lines product with high claim frequency and low claim severity. Cumulative reported claims for the 2012, 2013, 2017, 2018 and 2019 accident years include 66 thousand, 17 thousand, 24 thousand, 54 thousand and 78 thousand, respectively, of claim counts associated with this product. The Company did not write this business from 2014 to 2016. The related net incurred losses and allocated loss adjustment expenses are not material to the Insurance segment.

Reinsurance Segment

<i>(dollars in millions)</i> Accident Year	Ultimate Incurred Losses and Allocated Loss Adjustment Expenses, Net of Reinsurance								Total of Incurred- but-Not-Reported Liabilities, Net of Reinsurance December 31, 2019
	Unaudited								
	As of December 31,								
	2012	2013	2014	2015	2016	2017	2018	2019	
2012	\$ 73.0	\$ 551.7	\$ 508.7	\$ 486.6	\$ 457.8	\$ 456.2	\$ 448.0	\$ 445.1	\$ 42.4
2013		588.0	580.3	548.3	534.7	544.8	507.5	489.4	42.7
2014			577.4	564.5	536.4	581.2	559.1	535.4	87.7
2015				527.9	514.0	532.4	523.5	511.9	143.4
2016					522.1	532.1	530.6	529.3	126.6
2017						905.3	938.1	943.1	276.1
2018							759.2	792.5	373.4
2019								678.2	483.1
Total								\$ 4,924.9	

Accident Year	Cumulative Paid Losses and Allocated Loss Adjustment Expenses, Net of Reinsurance							
	Unaudited							As of December 31,
	As of December 31,							
	2012	2013	2014	2015	2016	2017	2018	
2012	\$ 4.1	\$ 64.7	\$ 129.1	\$ 184.3	\$ 232.0	\$ 264.4	\$ 289.5	\$ 309.5
2013		71.3	155.7	209.9	268.9	301.9	331.9	351.0
2014			98.0	158.1	226.4	274.5	311.8	346.0
2015				63.8	133.4	207.2	258.5	306.2
2016					79.7	170.4	241.5	298.3
2017						158.0	359.5	481.5
2018							87.5	256.7
2019								54.1
Total								\$ 2,403.3
All outstanding liabilities for unpaid losses and loss adjustment expenses before 2012, net of reinsurance								553.5
Total liabilities for unpaid losses and loss adjustment expenses, net of reinsurance								\$ 3,075.1

Ultimate incurred losses and allocated loss adjustment expenses as of December 31, 2013 for the Reinsurance segment include \$476.2 million and \$537.5 million of losses and loss adjustment expenses on the 2012 and 2013 accident years, respectively, attributable to Alterra. Cumulative paid losses and allocated loss adjustment expenses as of December 31, 2013 include \$52.7 million and \$68.7 million of paid losses and allocated loss adjustment expenses on the 2012 and 2013 accident years, respectively, attributable to the acquired Alterra reserves and post-acquisition Alterra business. Cumulative paid losses and allocated loss adjustment expenses for the 2012 and 2013 accident years exclude any claims paid prior to the acquisition.

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The following table presents supplementary information about average historical claims duration as of December 31, 2019 based on the cumulative incurred and paid losses and allocated loss adjustment expenses presented above.

Unaudited	Average Annual Percentage Payout of Incurred Losses by Age (in Years), Net of Reinsurance							
	1	2	3	4	5	6	7	8
Insurance	20.8%	23.5%	14.8%	11.5%	7.4%	5.1%	2.2%	2.0%
Reinsurance	12.1%	16.5%	13.2%	10.8%	8.4%	6.6%	4.8%	4.5%

The following table reconciles the net incurred and paid loss development tables to the liability for losses and loss adjustment expenses on the consolidated balance sheet.

<i>(dollars in thousands)</i>	December 31, 2019
Net outstanding liabilities	
Insurance segment	\$ 6,041,424
Reinsurance segment	3,075,109
Other underwriting	134,299
Program services and other	2,224
Liabilities for unpaid losses and loss adjustment expenses, net of reinsurance	9,253,056
Reinsurance recoverable on unpaid losses	
Insurance segment	1,838,552
Reinsurance segment	349,124
Other underwriting	155,714
Program services and other	2,910,025
Total reinsurance recoverable on unpaid losses	5,253,415
Unallocated loss adjustment expenses	264,029
Unamortized discount, net of acquisition fair value adjustments, included in unpaid losses and loss adjustment expenses	(41,824)
	222,205
Total gross liability for unpaid losses and loss adjustment expenses	\$ 14,728,676

c) The Company has exposure to asbestos and environmental (A&E) claims primarily resulting from policies written by acquired insurance operations before their acquisition by the Company. The Company's exposure to A&E claims originated from umbrella, excess and commercial general liability insurance policies and assumed reinsurance contracts that were written on an occurrence basis from the 1970s to mid-1980s. Exposure also originated from claims-made policies that were designed to cover environmental risks provided that all other terms and conditions of the policy were met. A&E claims include property damage and clean-up costs related to pollution, as well as personal injury allegedly arising from exposure to hazardous materials. Development on A&E loss reserves is monitored separately from the Company's ongoing underwriting operations and is not included in a reportable segment.

At December 31, 2019, A&E reserves were \$234.2 million and \$74.4 million on a gross and net basis, respectively. At December 31, 2018, A&E reserves were \$247.7 million and \$83.0 million on a gross and net basis, respectively.

The Company's reserves for losses and loss adjustment expenses related to A&E exposures represent management's best estimate of ultimate settlement values based on statistical analysis of these reserves by the Company's actuaries. A&E exposures are subject to significant uncertainty due to potential loss severity and frequency resulting from the uncertain and unfavorable legal climate. A&E reserves could be subject to increases in the future, however, management believes the Company's gross and net A&E reserves at December 31, 2019 are adequate.

11. Reinsurance

In reinsurance and retrocession transactions, an insurance or reinsurance company transfers, or cedes, all or part of its exposure in return for a premium. The ceding of insurance does not legally discharge the Company from its primary liability for the full amount of the policies, and the Company will be required to pay the loss and bear collection risk if the reinsurer fails to meet its obligations under the reinsurance or retrocessional agreement. A credit risk exists with ceded reinsurance to the extent that any reinsurer is unable to meet the obligations assumed under the reinsurance or retrocessional contracts. Allowances are established for amounts deemed uncollectible.

Within its underwriting operations, the Company uses reinsurance and retrocessional reinsurance to manage its net retention on individual risks and overall exposure to losses while providing it with the ability to offer policies with sufficient limits to meet policyholder needs. The Company evaluates the financial condition of its reinsurers and monitors concentration of credit risk arising from its exposure to individual reinsurers. To further reduce credit exposure to reinsurance recoverable balances, the Company has received collateral, including letters of credit and trust accounts, from certain reinsurers. Collateral related to these reinsurance agreements is available, without restriction, when the Company pays losses covered by the reinsurance agreements.

Within the Company's underwriting operations, at December 31, 2019 and 2018, balances recoverable from the ten largest reinsurers, by group, represented 62% and 61%, respectively, of reinsurance recoverables before considering reinsurance allowances and collateral. At December 31, 2019, the largest reinsurance balance was due from Fairfax Financial Group and represented 10% of reinsurance recoverables before considering reinsurance allowances and collateral.

Within the Company's program services business, the Company generally enters into 100% quota share reinsurance agreements whereby the Company cedes to the capacity provider (reinsurer) substantially all of its gross liability under all policies issued by and on behalf of the Company by the general agent. However, there are certain programs that contain limits on the reinsurers' obligations to the Company that expose the Company to underwriting risk, including loss ratio caps, exclusions of the credit risk of producers and aggregate reinsurance limits that the Company believes are unlikely to be exceeded. The Company also remains exposed to the credit risk of the reinsurer, or the risk that one of its reinsurers becomes insolvent or otherwise unable or unwilling to pay policyholder claims. This credit risk is generally mitigated by either selecting well capitalized, highly rated authorized capacity providers or requiring that the capacity provider post substantial collateral to secure the reinsured risks.

Within the Company's program services business, at December 31, 2019 and 2018, balances recoverable from the ten largest reinsurers, by group, represented 71% and 75%, respectively, of reinsurance recoverables before considering reinsurance allowances and collateral. At December 31, 2019, the largest reinsurance balance was due from Fosun International Holdings Ltd. and represented 21% of reinsurance recoverables before considering reinsurance allowances and collateral.

The following tables summarize the effect of reinsurance and retrocessional reinsurance on premiums written and earned.

<i>(dollars in thousands)</i>	Year Ended December 31, 2019			
	Direct	Assumed	Ceded	Net Premiums
Underwriting:				
Written	\$ 5,084,641	\$ 1,349,686	\$ (1,024,097)	\$ 5,410,230
Earned	\$ 4,767,836	\$ 1,289,375	\$ (1,008,970)	\$ 5,048,241
Program services and other:				
Written	2,256,747	88,897	(2,343,803)	1,841
Earned	2,194,671	78,778	(2,271,897)	1,552
Consolidated:				
Written	\$ 7,341,388	\$ 1,438,583	\$ (3,367,900)	\$ 5,412,071
Earned	\$ 6,962,507	\$ 1,368,153	\$ (3,280,867)	\$ 5,049,793

		Year Ended December 31, 2018			
<i>(dollars in thousands)</i>		Direct	Assumed	Ceded	Net Premiums
Underwriting:					
Written	\$	4,562,256	\$ 1,236,740	\$ (1,013,406)	\$ 4,785,590
Earned	\$	4,384,562	\$ 1,291,032	\$ (964,549)	\$ 4,711,045
Program services and other:					
Written		2,022,548	42,925	(2,063,485)	1,988
Earned		1,850,656	28,581	(1,878,222)	1,015
Consolidated:					
Written	\$	6,584,804	\$ 1,279,665	\$ (3,076,891)	\$ 4,787,578
Earned	\$	6,235,218	\$ 1,319,613	\$ (2,842,771)	\$ 4,712,060
		Year Ended December 31, 2017			
<i>(dollars in thousands)</i>		Direct	Assumed	Ceded	Net Premiums
Underwriting:					
Written	\$	3,919,602	\$ 1,333,505	\$ (835,320)	\$ 4,417,787
Earned	\$	3,777,335	\$ 1,286,043	\$ (815,400)	\$ 4,247,978
Program services and other:					
Written		252,865	988	(253,853)	—
Earned		291,287	1,352	(292,639)	—
Consolidated:					
Written	\$	4,172,467	\$ 1,334,493	\$ (1,089,173)	\$ 4,417,787
Earned	\$	4,068,622	\$ 1,287,395	\$ (1,108,039)	\$ 4,247,978

Substantially all of the premium written and earned in the Company's program services and other fronting operations for the years ended December 31, 2019, 2018 and 2017 was ceded. The percentage of consolidated ceded earned premiums to gross earned premiums was 39%, 38% and 21% for the years ended December 31, 2019, 2018 and 2017, respectively. The percentage of consolidated assumed earned premiums to net earned premiums was 27%, 28% and 30% for the years ended December 31, 2019, 2018 and 2017, respectively.

Substantially all of the incurred losses and loss adjustment expenses in the Company's program services and other fronting operations, which totaled \$1.6 billion and \$1.3 billion for the years ended December 31, 2019 and 2018, respectively, were ceded.

The following table summarizes the effect of reinsurance and retrocessional reinsurance on losses and loss adjustment expenses in the Company's underwriting operations.

		Years ended December 31,		
<i>(dollars in thousands)</i>		2019	2018	2017
Gross	\$	3,447,186	\$ 3,530,790	\$ 3,722,604
Ceded		(556,618)	(710,568)	(856,843)
Net losses and loss adjustment expenses	\$	2,890,568	\$ 2,820,222	\$ 2,865,761

12. Life and Annuity Benefits

The following table presents life and annuity benefits.

	December 31,	
	2019	2018
<i>(dollars in thousands)</i>		
Life	\$ 125,094	\$ 122,798
Annuities	813,476	827,773
Accident and health	47,159	50,882
Total	\$ 985,729	\$ 1,001,453

Life and annuity benefits are compiled on a reinsurance contract-by-contract basis and are discounted using standard actuarial techniques and cash flow models. Since the development of the life and annuity reinsurance reserves is based upon cash flow projection models, the Company must make estimates and assumptions based on cedent experience, industry mortality tables, and expense and investment experience, including a provision for adverse deviation. The assumptions used to determine policy benefit reserves are generally locked-in for the life of the contract unless an unlocking event occurs. Loss recognition testing is performed to determine if existing policy benefit reserves, together with the present value of future gross premiums and expected investment income earned thereon, are adequate to cover the present value of future benefits, settlement and maintenance costs. If the existing policy benefit reserves are not sufficient, the locked-in assumptions are revised to current best estimate assumptions and a charge to earnings for life and annuity benefits is recognized at that time.

Life and annuity benefits are also adjusted to the extent unrealized gains on the investments supporting the policy benefit reserves would result in a reserve deficiency if those gains were realized. During 2019, the Company recognized a reserve deficiency resulting from a decrease in the market yield on the investment portfolio supporting the policy benefit reserves by increasing life and annuity benefits by \$51.4 million and decreasing the change in net unrealized holding gains included in other comprehensive income by a corresponding amount. As of December 31, 2019, the cumulative adjustment to life and annuity benefits attributable to unrealized gains on the underlying investment portfolio totaled \$51.4 million. No adjustment was required for the years ended December 31, 2018 or 2017.

Because of the assumptions and estimates used in establishing the Company's reserves for life and annuity benefit obligations and the long-term nature of these reinsurance contracts, the ultimate liability may be greater or less than the estimates. The average discount rate for the life and annuity benefit reserves was 2.3% as of December 31, 2019.

As of December 31, 2019, the largest life and annuity benefits reserve for a single contract was 32.8% of the total.

None of the annuities included in life and annuity benefits on the consolidated balance sheet are subject to discretionary withdrawal.

13. Senior Long-Term Debt and Other Debt

The following table summarizes the Company's senior long-term debt and other debt.

<i>(dollars in thousands)</i>	December 31,	
	2019	2018
7.125% unsecured senior notes, due September 30, 2019, interest payable semi-annually, net of unamortized discount of \$0 in 2019 and \$142 in 2018	\$ —	\$ 234,640
6.25% unsecured senior notes, due September 30, 2020, interest payable semi-annually, net of unamortized premium of \$0 in 2019 and \$17,213 in 2018	—	367,213
5.35% unsecured senior notes, due June 1, 2021, interest payable semi-annually, net of unamortized discount of \$0 in 2019 and \$499 in 2018	—	249,417
4.90% unsecured senior notes, due July 1, 2022, interest payable semi-annually, net of unamortized discount of \$705 in 2019 and \$978 in 2018	349,181	348,864
3.625% unsecured senior notes, due March 30, 2023, interest payable semi-annually, net of unamortized discount of \$653 in 2019 and \$855 in 2018	249,226	248,988
3.50% unsecured senior notes, due November 1, 2027, interest payable semi-annually, net of unamortized discount of \$2,013 in 2019 and \$2,298 in 2018	297,402	297,035
3.35% unsecured senior notes, due September 17, 2029, interest payable semi-annually, net of unamortized discount of \$2,410 in 2019	297,125	—
7.35% unsecured senior notes, due August 15, 2034, interest payable semi-annually, net of unamortized discount of \$1,005 in 2019 and \$1,074 in 2018	128,788	128,715
5.0% unsecured senior notes, due March 30, 2043, interest payable semi-annually, net of unamortized discount of \$5,207 in 2019 and \$5,431 in 2018	244,505	244,269
5.0% unsecured senior notes, due April 5, 2046, interest payable semi-annually, net of unamortized discount of \$6,421 in 2019 and \$6,664 in 2018	492,761	492,486
4.30% unsecured senior notes, due November 1, 2047, interest payable semi-annually, net of unamortized discount of \$4,126 in 2019 and \$4,278 in 2018	295,154	294,975
5.0% unsecured senior notes, due May 20, 2049, interest payable semi-annually, net of unamortized discount of \$7,684 in 2019	591,010	—
4.15% unsecured senior notes, due September 17, 2050, interest payable semi-annually, net of unamortized discount of \$5,449 in 2019	493,759	—
Other debt, at various interest rates ranging from 1.7% to 6.1%	95,272	102,975
Senior long-term debt and other debt	<u>\$ 3,534,183</u>	<u>\$ 3,009,577</u>

In May 2019, the Company issued \$600 million of 5.0% unsecured senior notes due May 20, 2049. Net proceeds to the Company were \$592.2 million, before expenses. In September 2019, the Company used a portion of these proceeds to repay its 7.125% unsecured senior notes due September 30, 2019 (\$234.8 million aggregate principal outstanding at December 31, 2018). The Company expects to use the remainder of the proceeds for general corporate purposes.

In September 2019, the Company issued \$300 million of 3.35% unsecured senior notes due September 17, 2029 and \$500 million of 4.15% unsecured senior notes due September 17, 2050. Net proceeds to the Company were \$297.5 million and \$494.5 million, respectively, before expenses. The Company used a portion of these proceeds to purchase \$125.2 million of principal on its 6.25% unsecured senior notes due September 30, 2020 (2020 Notes) and \$97.8 million of principal on its 5.35% unsecured senior notes due June 1, 2021 (2021 Notes) through a tender offer at a total purchase price of \$130.1 million and \$103.0 million, respectively.

In October 2019, the Company used a portion of the remaining proceeds from the September 2019 issuances to redeem the remaining outstanding balance of \$224.8 million on its 2020 Notes and \$152.2 million on its 2021 Notes for a total purchase price of \$233.4 million and \$160.2 million, respectively. The Company expects to use the remainder of the proceeds for general corporate purposes. In connection with the September 2019 tender offer and purchase described above and the October 2019 redemption, the Company recognized a loss on early extinguishment of debt of \$17.6 million during 2019.

The Company's 7.35% unsecured senior notes due August 15, 2034 are not redeemable. The Company's other unsecured senior notes are redeemable by the Company at any time, subject to payment of a make-whole premium to the noteholders. None of the Company's senior long-term debt is subject to any sinking fund requirements.

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The Company's other debt is primarily associated with its subsidiaries and includes \$70.4 million and \$78.1 million associated with its Markel Ventures subsidiaries as of December 31, 2019 and 2018, respectively. The Markel Ventures debt is non-recourse to the holding company and generally is secured by the assets of those subsidiaries. ParkLand, a subsidiary of the Company, has formed subsidiaries for the purpose of acquiring and financing real estate (the real estate subsidiaries). The assets of certain real estate subsidiaries, which are not material to the Company, are consolidated in accordance with U.S. GAAP but are not available to satisfy the debt and other obligations of the Company or any affiliates other than those real estate subsidiaries.

The estimated fair value of the Company's senior long-term debt and other debt was \$3.9 billion and \$3.0 billion at December 31, 2019 and 2018, respectively.

The following table summarizes the future principal payments due at maturity on senior long-term debt and other debt as of December 31, 2019.

<u>Years Ending December 31,</u>	<i>(dollars in thousands)</i>
2020	\$ 63,519
2021	25,546
2022	356,185
2023	250,428
2024	—
2025 and thereafter	2,879,852
Total principal payments	\$ 3,575,530
Net unamortized discount	(35,673)
Net unamortized debt issuance costs	(5,674)
Senior long-term debt and other debt	\$ 3,534,183

In April 2019, the Company entered into a credit agreement for a new revolving credit facility, which provides up to \$300 million of capacity for future acquisitions, investments and stock repurchases, and for other working capital and general corporate purposes. At the Company's discretion, up to \$200 million of the total capacity may be used for letters of credit. The Company may increase the capacity of the facility by up to \$200 million subject to obtaining commitments for the increase and certain other terms and conditions. The Company pays interest on balances outstanding under the facility and a utilization fee for letters of credit issued under the facility. The Company also pays a commitment fee (0.20% at December 31, 2019) on the unused portion of the facility based on the Company's leverage ratio as calculated under the credit agreement. The credit agreement includes financial covenants that require that the Company not exceed a maximum leverage ratio and maintain a minimum amount of consolidated net worth, as well as other customary covenants and events of default. This facility replaced the Company's previous \$300 million revolving credit facility and is scheduled to expire in April 2024. There were no borrowings outstanding on either credit facility as of December 31, 2019 and 2018.

At December 31, 2019, the Company was in compliance with all covenants contained in its revolving credit facility. To the extent that the Company is not in compliance with its covenants, the Company's access to the revolving credit facility could be restricted.

The Company paid \$169.7 million, \$155.4 million and \$141.3 million in interest on its senior long-term debt and other debt during the years ended December 31, 2019, 2018 and 2017, respectively.

14. Income Taxes

Income (loss) before income taxes includes the following components.

<i>(dollars in thousands)</i>	Years Ended December 31,		
	2019	2018	2017
Domestic operations	\$ 1,664,762	\$ 99,373	\$ 337,704
Foreign operations	621,046	(107,228)	(250,409)
Income (loss) before income taxes	\$ 2,285,808	\$ (7,855)	\$ 87,295

Income tax expense (benefit) includes the following components.

<i>(dollars in thousands)</i>	Years Ended December 31,		
	2019	2018	2017
Current:			
Domestic	\$ 139,597	\$ 77,936	\$ (19,255)
Foreign	23,364	41,833	29,882
Total current tax expense	162,961	119,769	10,627
Deferred:			
Domestic	217,928	(77,255)	(222,427)
Foreign	105,457	79,984	(101,663)
Total deferred tax expense (benefit)	323,385	2,729	(324,090)
Income tax expense (benefit)	\$ 486,346	\$ 122,498	\$ (313,463)

Foreign income tax expense includes U.S. income tax expense on foreign operations, which includes U.S. income tax on the Company's U.K. and Bermuda-based operations, certain of which have elected to be taxed as domestic corporations for U.S. tax purposes. State income tax expense is not material to the consolidated financial statements.

The Company made net income tax payments of \$128.2 million, \$63.1 million and \$70.2 million in 2019, 2018 and 2017, respectively. Income taxes payable were \$64.1 million and \$83.7 million at December 31, 2019 and 2018, respectively, and were included in other liabilities on the consolidated balance sheets. Income taxes receivable were \$6.3 million and \$49.3 million at December 31, 2019 and 2018, respectively, and were included in other assets on the consolidated balance sheets.

In December 2017, the U.S. enacted the Tax Cuts and Jobs Act (TCJA), which made significant modifications to U.S. income tax law, most of which were effective January 1, 2018. As a result, the Company recorded a one-time tax benefit of \$339.9 million in 2017, a portion of which was considered provisional. The one-time benefit from the TCJA was primarily attributable to the remeasurement of the Company's U.S. deferred tax assets and liabilities on temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and their tax bases at the lower enacted U.S. corporation tax rate, partially offset by the tax on the deemed repatriation of foreign earnings. In 2018, the Company completed its determination of the accounting for the TCJA, which resulted in an additional tax benefit of \$5.7 million.

In 2018, the Company decided to elect to treat its two most significant U.K. subsidiaries as domestic corporations for U.S. tax purposes. As a result, the earnings and profits from those subsidiaries are no longer considered to be indefinitely reinvested, and during 2018, the Company recorded a one-time deferred tax charge of \$103.3 million related to the book and tax basis differences attributable to those subsidiaries. For subsidiaries the Company did not elect to treat as domestic corporations for U.S. tax purposes, the Company is subject to the U.S. Global Intangible Low Taxes Income (GILTI) tax. The Company recognizes the impact of the GILTI tax as incurred, and therefore has not recorded deferred taxes on the temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and their tax bases. For the years ended December 31, 2019 and 2018, GILTI tax was not material to the consolidated financial statements.

The following table presents a reconciliation of income taxes computed using the U.S. corporate tax rate to the Company's income tax expense (benefit).

<i>(dollars in thousands)</i>	Years Ended December 31,		
	2019	2018	2017
Income taxes at U.S. corporate tax rate	\$ 480,020	\$ (1,650)	\$ 30,553
Increase (decrease) resulting from:			
Foreign operations	14,718	4,951	37,207
Tax-exempt investment income	(18,430)	(18,927)	(41,565)
Change in tax status of U.K. subsidiaries	(6,658)	103,281	—
Tax credits	(4,104)	(3,617)	(10,236)
Nondeductible loss on investments managed by MCIM	—	26,552	16,231
TCJA	—	(5,699)	(339,899)
Other	20,800	17,607	(5,754)
Income tax expense (benefit)	\$ 486,346	\$ 122,498	\$ (313,463)

The following table presents the components of domestic and foreign deferred tax assets and liabilities.

<i>(dollars in thousands)</i>	December 31,	
	2019	2018
Assets:		
Unpaid losses and loss adjustment expenses	\$ 163,522	\$ 164,497
Unearned premiums recognized for income tax purposes	102,020	85,952
Life and annuity benefits	84,890	78,370
Lease liabilities	55,362	—
Tax credit carryforwards	47,233	39,877
Net operating loss carryforwards	39,429	46,662
Accrued incentive compensation	35,132	30,308
Other differences between financial reporting and tax bases	52,604	39,763
Total gross deferred tax assets	580,192	485,429
Less valuation allowance	(45,544)	(36,286)
Total gross deferred tax assets, net of allowance	534,648	449,143
Liabilities:		
Investments	996,543	590,250
Goodwill and other intangible assets	134,573	124,953
Deferred policy acquisition costs	113,243	89,716
Right-of-use lease assets	49,583	—
Other differences between financial reporting and tax bases	101,426	90,269
Total gross deferred tax liabilities	1,395,368	895,188
Net deferred tax liability	\$ 860,720	\$ 446,045

As of December 31, 2019 and 2018, the Company's consolidated balance sheets included net deferred tax liabilities of \$883.0 million and \$481.9 million, respectively, in other liabilities and net deferred tax assets of \$22.3 million and \$35.9 million, respectively, in other assets.

At December 31, 2019, the Company had tax credit carryforwards of \$47.2 million, all of which the Company expects to utilize before expiration. The earliest any of these credits will expire is 2028.

At December 31, 2019, the Company also had net operating losses of \$33.5 million that can be used to offset future taxable income in the U.S. The Company's ability to use the majority of these losses expires between the years 2028 and 2037. At December 31, 2019, certain branch operations in Europe and a wholly owned subsidiary in Brazil had net operating losses of \$109.3 million that can be used to offset future income in their local jurisdictions. The Company's ability to use \$33.0 million of these losses expires between the years 2020 and 2029. The remaining losses are not subject to expiration. As discussed below, the deferred tax assets related to losses at certain of the Company's subsidiaries and branches are offset by valuation allowances.

At December 31, 2019, the Company had total gross deferred tax assets of \$580.2 million. The Company has a valuation allowance of \$45.5 million to offset gross deferred tax assets primarily attributable to cumulative net operating losses at certain of the Company's subsidiaries and branches. The Company believes that it is more likely than not that it will realize the remaining \$534.6 million of gross deferred tax assets through generating taxable income or the reversal of existing temporary differences attributable to the gross deferred tax liabilities.

At December 31, 2019, the Company did not have any material unrecognized tax benefits. The Company does not anticipate any changes in unrecognized tax benefits during 2020 that would have a material impact on the Company's income tax provision.

The Company is subject to income tax in the U.S. and in foreign jurisdictions. The Internal Revenue Service is currently examining the Company's 2017 U.S. federal income tax return. The Company believes its income tax liabilities were adequate as of December 31, 2019, however, these liabilities could be adjusted as a result of this examination. With few exceptions, the Company is no longer subject to income tax examination by tax authorities for years ended before January 1, 2016.

15. Employee Benefit Plans

a) The Company maintains defined contribution plans for employees of its U.S. insurance operations in accordance with Section 401(k) of the U.S. Internal Revenue Code of 1986. Employees of the Company's Markel Ventures subsidiaries are provided post-retirement benefits under separate defined contribution plans. The Company also provides various defined contribution plans for employees of its international insurance and other operations, which are in line with local market terms and conditions of employment. Expenses relating to the Company's defined contribution plans were \$42.4 million, \$41.8 million and \$36.7 million in 2019, 2018 and 2017, respectively.

b) The Terra Nova Pension Plan is a defined benefit plan that covers certain employees in the Company's international insurance operations who meet the eligibility conditions set out in the plan. The plan has been closed to new participants since 2001, and employees have not accrued benefits for future service in the plan since April 2012. The projected benefit obligations of the Terra Nova Pension Plan as of December 31, 2019 and 2018 were \$191.4 million and \$171.5 million, respectively, and the related fair value of plan assets was \$216.9 million and \$187.0 million, respectively. The corresponding net asset for pension benefits, also referred to as the funded status of the plan, at December 31, 2019 and 2018 was included in other assets on the Company's consolidated balance sheets.

16. Variable Interest Entities

MCIM, a wholly-owned consolidated subsidiary of the Company, is an insurance-linked securities investment fund manager and reinsurance manager headquartered in Bermuda. Results attributable to MCIM are not included in a reportable segment.

MCIM serves as the insurance manager for Markel CATCo Re, a Bermuda Class 3 reinsurance company, and as the investment manager for Markel CATCo Reinsurance Fund Ltd., a Bermuda exempted mutual fund company comprised of multiple segregated accounts (Markel CATCo Funds). The Markel CATCo Funds issue multiple classes of nonvoting, redeemable preference shares to investors and the Markel CATCo Funds are primarily invested in nonvoting preference shares of Markel CATCo Re. The underwriting results of Markel CATCo Re are attributed to the Markel CATCo Funds through those nonvoting preference shares. Voting shares in Markel CATCo Reinsurance Fund Ltd. and Markel CATCo Re are held by MCIM.

The Markel CATCo Funds and Markel CATCo Re are considered VIEs, as their preference shareholders have no voting rights. MCIM has the power to direct the activities that most significantly impact the economic performance of these entities, but does not have a variable interest in any of the entities. Except as described below, the Company is not the primary beneficiary of the Markel CATCo Funds or Markel CATCo Re, and therefore does not consolidate these entities, as the Company's involvement is generally limited to that of an investment or insurance manager, receiving fees that are at market and commensurate with the level of effort required.

The Company is the sole investor in one of the Markel CATCo Funds, the Markel Diversified Fund, and consolidates that fund as its primary beneficiary. Total assets of the Markel Diversified Fund, which are included on the Company's consolidated balance sheets were \$19.6 million and \$28.6 million as of December 31, 2019 and 2018, respectively, and are primarily comprised of an investment in one of the Markel CATCo Funds. The Company also has an investment in another one of the Markel CATCo Funds (\$26.8 million and \$26.2 million as of December 31, 2019 and 2018, respectively). With the exception of the Company's investment in the Markel Diversified Fund, the Company does not have the obligation to absorb losses or the right to receive benefits from its investments in the Markel CATCo Funds that could potentially be significant to the respective fund, and therefore does not consolidate those funds.

The Company's exposure to risk from the unconsolidated Markel CATCo Funds and Markel CATCo Re was historically limited to its investment and any earned but uncollected fees. In 2019, the Company also entered into various reinsurance contracts that were ceded to Markel CATCo Re. See note 17. The Company has not issued any investment performance guarantees to these VIEs or their investors. As of December 31, 2019 and 2018, net assets under management of MCIM for unconsolidated VIEs were \$2.7 billion and \$3.4 billion, respectively. See note 20.

17. Related Party Transactions

The Company engages in certain related party transactions in the normal course of business at arm's length.

Within the Company's insurance-linked securities operations, the Company provides investment and insurance management services through MCIM and Nephila. See note 16 for details regarding operations conducted through MCIM. Nephila serves as the investment manager to several Bermuda, Ireland and U.S. based private funds (the Nephila Funds). To provide access for the Nephila Funds to the insurance, reinsurance and weather markets, Nephila also provides managing general agent services and acts as an insurance manager to certain Bermuda Class 3 and 3A reinsurance companies and Lloyd's Syndicate 2357 (Syndicate 2357) (collectively, the Nephila Reinsurers). The Company receives management fees for investment and insurance management services provided through its insurance-linked securities operations based on the net asset value of the accounts managed, and, for certain funds, incentive fees based on the annual performance of the funds managed. Nephila also receives commissions from the Nephila Reinsurers, which are based on the direct written premiums of the insurance contracts placed. Total revenues from the Company's insurance-linked securities operations for the years ended December 31, 2019, 2018 and 2017 were \$225.6 million, \$91.5 million and \$28.7 million, respectively, of which \$200.8 million, \$90.6 million and \$28.7 million, respectively, were attributed to unconsolidated entities managed by Nephila and MCIM. Other related party transactions with the Company's insurance-linked securities operations are described below.

Nephila

Within the Company's program services business, the Company has a program with Nephila through which the Company writes insurance policies that are ceded to Syndicate 2357 and certain other Nephila Reinsurers. Through this arrangement, Nephila utilizes certain of the Company's licensed insurance companies to write U.S. catastrophe exposed property risk that is then ceded to Nephila Reinsurers. For the years ended December 31, 2019 and 2018, gross premiums written through the Company's program with Nephila were \$425.0 million and \$322.1 million, respectively, all of which were ceded to Nephila Reinsurers. As of December 31, 2019 and 2018, reinsurance recoverables on the consolidated balance sheets included \$238.8 million and \$179.8 million, respectively, due from Nephila Reinsurers.

Under this program, the Company bears underwriting risk for annual aggregate agreement year losses in excess of a limit the Company believes is unlikely to be exceeded. To the extent losses under this program exceed the prescribed limit, the Company is obligated to pay such losses to the cedents without recourse to Nephila Reinsurers. While the Company believes losses under this program are unlikely, those losses, if incurred, could be material to the Company's consolidated results of operations and financial condition.

The Company has also entered into both assumed and ceded reinsurance transactions with the Nephila Reinsurers in the normal course of business, which are not material to the Company's consolidated financial statements.

Markel CATCo

During the first quarter of 2019, the Company entered into various reinsurance contracts with third parties that were ceded to Markel CATCo Re, an unconsolidated subsidiary, in exchange for ceding fees. These reinsurance contracts primarily cover losses for events that occurred during 2019, however, in some instances, coverage is also provided for adverse development on 2018 and prior accident years' loss events. Incurred losses on these contracts are fully ceded to Markel CATCo Re. The loss exposures on these contracts are fully collateralized by Markel CATCo Re up to an amount that the Company believes is unlikely to be exceeded. For the year ended December 31, 2019, the Company earned \$8.8 million of ceding fees attributed to these contracts, which was included in services and other revenues in the Company's consolidated statement of income and other comprehensive income. As of December 31, 2019, the Company's estimate of ultimate incurred losses and loss adjustment expenses on these reinsurance contracts totaled \$4.9 million, all of which was ceded to Markel CATCo Re. The corresponding reinsurance recoverables due from Markel CATCo Re are fully collateralized. Results attributed to these contracts are not included in a reportable segment.

Within the Company's underwriting operations, the Company also enters into reinsurance contracts that are ceded to Markel CATCo Re. Under this program, the Company retains underwriting risk for annual aggregate agreement year losses in excess of a limit the Company believes is unlikely to be exceeded. To the extent losses under this program exceed the prescribed limit, the Company is obligated to pay such losses to the cedents without recourse to Markel CATCo Re. For the years ended December 31, 2019, 2018 and 2017, gross premiums written and ceded to Markel CATCo Re were \$5.5 million, \$10.9 million and \$9.7 million, respectively.

18. Shareholders' Equity

a) The Company had 50,000,000 shares of no par value common stock authorized of which 13,794,142 shares and 13,887,711 shares were issued and outstanding at December 31, 2019 and 2018, respectively. The Company also has 10,000,000 shares of no par value preferred stock authorized, none of which was issued or outstanding at December 31, 2019 or 2018.

In August 2019, the Board of Directors approved a new share repurchase program (the 2019 Program) to replace the previous share repurchase program that was approved by the Board of Directors in May 2018 (the 2018 Program). Consistent with the 2018 Program, the 2019 Program provides for the repurchase of up to \$300 million of common stock and has no expiration date but may be terminated by the Board of Directors at any time.

During the year ended December 31, 2019, the Company repurchased an aggregate of 104,719 shares of common stock at a cost of \$111.6 million, including 73,371 shares repurchased under the 2018 Program at a cost of \$75.8 million, and 31,348 shares repurchased under the 2019 program at a cost of \$35.8 million. In total, the Company repurchased 93,036 shares of common stock under the 2018 Program at a cost of \$97.2 million.

b) Net income (loss) per share was determined by dividing adjusted net income (loss) to shareholders by the applicable weighted average shares outstanding. Basic shares outstanding include restricted stock units that are no longer subject to any contingencies for issuance, but for which the corresponding shares have not been issued. Diluted net income (loss) per share is computed by dividing adjusted net income (loss) to shareholders by the weighted average number of common shares and dilutive potential common shares outstanding during the year.

<i>(in thousands, except per share amounts)</i>	Years Ended December 31,		
	2019	2018	2017
Net income (loss) to shareholders ⁽¹⁾	\$ 1,790,466	\$ (128,180)	\$ 395,269
Adjustment of redeemable noncontrolling interests	1,105	(4,828)	(33,738)
Adjusted net income (loss) to shareholders	\$ 1,791,571	\$ (133,008)	\$ 361,531
Basic common shares outstanding	13,861	13,923	13,964
Dilutive potential common shares from options	—	—	1
Dilutive potential common shares from restricted stock units and restricted stock ⁽²⁾	20	—	41
Diluted shares outstanding	13,881	13,923	14,006
Basic net income (loss) per share	\$ 129.25	\$ (9.55)	\$ 25.89
Diluted net income (loss) per share ⁽²⁾	\$ 129.07	\$ (9.55)	\$ 25.81

- ⁽¹⁾ Effective January 1, 2018, the Company adopted ASU No. 2016-01. As a result, the change in fair value of equity securities is no longer recognized in other comprehensive income; rather, all changes in the fair value of equity securities are now recognized in net income. Prior periods have not been restated to conform to the current presentation.
- ⁽²⁾ The impact of restricted stock units and restricted stock of 25 thousand shares was excluded from the computation of diluted earnings per share for the year ended December 31, 2018 because the effect would have been anti-dilutive.

c) In May 2016, the Company adopted the Markel Corporation 2016 Employee Stock Purchase and Bonus Plan (the 2016 Stock Purchase Plan) which replaced the Company's prior employee stock purchase and bonus plan. The 2016 Stock Purchase Plan provides a method for employees and directors to purchase shares of the Company's common stock on the open market. The plan encourages share ownership by providing for the award of bonus shares to participants equal to 10% of the net increase in the number of shares owned under the plan in a given year, excluding shares acquired through the plan's loan program component (the Loan Program). Under the Loan Program, the Company previously offered subsidized unsecured loans so participants could purchase shares and awarded bonus shares equal to 5% of the shares purchased with a loan. In May 2019, the Loan Program was discontinued and employees may no longer obtain loans from the Company for the purpose of purchasing shares of the Company's common stock under the 2016 Stock Purchase Plan. Outstanding loans continue to follow the original payment schedule until paid in full. The Company authorized 125,000 shares for purchase under the 2016 Stock Purchase Plan, of which 100,471 and 105,283 shares were available for purchase as of December 31, 2019 and 2018, respectively. At December 31, 2019 and 2018, loans outstanding under the plans, which are included in receivables on the consolidated balance sheets, totaled \$18.4 million and \$19.2 million, respectively.

d) In May 2016, the Company adopted the 2016 Equity Incentive Compensation Plan (2016 Compensation Plan), which provides for grants and awards of restricted stock, restricted stock units, performance grants, and other stock based awards to employees and non-employee directors and is administered by the Compensation Committee of the Company's Board of Directors (Compensation Committee). At December 31, 2019, there were 205,686 shares available for future awards under the 2016 Compensation Plan.

Restricted stock units are awarded to certain employees and executive officers based upon meeting performance conditions determined by the Compensation Committee. These awards generally vest at the end of the third year following the year for which the Compensation Committee determines performance conditions have been met. At the end of the vesting period, recipients are entitled to receive one share of the Company's common stock for each vested restricted stock unit. During 2019, the Company awarded 11,418 restricted stock units to employees and executive officers based on performance conditions being met.

Restricted stock units also are awarded to employees to assist the Company in securing or retaining the services of key employees. During 2019, the Company awarded 2,759 restricted stock units to employees as a hiring or retention incentive. These awards generally vest over a three-year period and entitle the recipient to receive one share of the Company's common stock for each vested restricted stock unit.

During 2019, the Company awarded 968 shares of restricted stock to its non-employee directors. The shares awarded to non-employee directors will vest in 2020.

The following table summarizes nonvested share-based awards.

	Number of Awards	Weighted Average Grant-Date Fair Value
Nonvested awards at January 1, 2019	20,873	\$ 1,042.83
Granted	15,145	1,025.81
Vested	(17,391)	1,011.55
Forfeited	(1,053)	1,038.76
Nonvested awards at December 31, 2019	17,574	\$ 1,073.99

The fair value of the Company's share-based awards granted under the 2016 Compensation Plan was determined based on the closing price of the Company's common shares on the grant date. The weighted average grant-date fair value of the Company's share-based awards granted in 2019, 2018 and 2017 was \$1,025.81, \$1,121.68 and \$979.23, respectively. As of December 31, 2019, unrecognized compensation cost related to nonvested share-based awards was \$7.8 million, which is expected to be recognized over a weighted average period of 1.6 years. The fair value of the Company's share-based awards that vested during 2019, 2018 and 2017 was \$17.6 million, \$19.1 million and \$28.8 million, respectively.

19. Other Comprehensive Income

Other comprehensive income includes net holding gains on available-for-sale investments arising during the period, changes in unrealized other-than-temporary impairment losses on fixed maturities arising during the period and reclassification adjustments for net gains included in net income. Other comprehensive income also includes changes in foreign currency translation adjustments and changes in net actuarial pension loss.

The following table presents the change in accumulated other comprehensive income (loss) by component, net of taxes and noncontrolling interests.

<i>(dollars in thousands)</i>	Unrealized Holding Gains on Available-for- Sale Securities	Foreign Currency	Net Actuarial Pension Loss	Total
December 31, 2016	\$ 1,714,930	\$ (84,406)	\$ (64,658)	\$ 1,565,866
Other comprehensive income before reclassifications	787,339	10,403	3,092	800,834
Amounts reclassified from accumulated other comprehensive income	(24,296)	—	3,167	(21,129)
Total other comprehensive income	763,043	10,403	6,259	779,705
December 31, 2017	\$ 2,477,973	\$ (74,003)	\$ (58,399)	\$ 2,345,571
Cumulative effect of adoption of ASU No. 2016-01	(2,597,976)	2,492	—	(2,595,484)
Cumulative effect of adoption of ASU No. 2018-02	401,539	1,314	—	402,853
January 1, 2018	281,536	(70,197)	(58,399)	152,940
Other comprehensive loss before reclassifications	(241,325)	(16,455)	—	(257,780)
Amounts reclassified from accumulated other comprehensive income	7,849	—	2,341	10,190
Total other comprehensive income (loss)	(233,476)	(16,455)	2,341	(247,590)
December 31, 2018	\$ 48,060	\$ (86,652)	\$ (56,058)	\$ (94,650)
Other comprehensive income before reclassifications	299,125	403	2,908	302,436
Amounts reclassified from accumulated other comprehensive loss	(1,148)	—	2,134	986
Total other comprehensive income	297,977	403	5,042	303,422
December 31, 2019	\$ 346,037	\$ (86,249)	\$ (51,016)	\$ 208,772

Effective January 1, 2018, the Company adopted ASU No. 2016-01 and as a result, equity securities are no longer classified as available-for-sale with unrealized gains and losses recognized in other comprehensive income. Rather, changes in the fair value of equity securities are now recognized in net income. Upon adoption of this ASU, cumulative net unrealized gains on equity securities of \$2.6 billion, net of deferred income taxes, were reclassified from accumulated other comprehensive income into retained earnings.

Effective January 1, 2018, the Company adopted ASU No. 2018-02, *Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*, which provided an option to reclassify tax effects remaining in accumulated other comprehensive income as a result of the TCJA to retained earnings. As a result of adopting the ASU, the Company reclassified \$402.9 million of previously recognized deferred taxes from accumulated other comprehensive income into retained earnings as of January 1, 2018.

The following table summarizes the tax expense (benefit) associated with each component of other comprehensive income.

<i>(dollars in thousands)</i>	Years Ended December 31,		
	2019	2018	2017
Change in net unrealized gains on available-for-sale investments:			
Net holding gains (losses) arising during the period	\$ 84,219	\$ (68,056)	\$ 372,469
Reclassification adjustments for net gains (losses) included in net income (loss)	(305)	2,086	(10,072)
Change in net unrealized gains on available-for-sale investments	83,914	(65,970)	362,397
Change in foreign currency translation adjustments	—	1,523	28
Change in net actuarial pension loss	1,348	622	1,284
Total	\$ 85,262	\$ (63,825)	\$ 363,709

The following table presents the details of amounts reclassified from accumulated other comprehensive income (loss) into income (loss), by component.

<i>(dollars in thousands)</i>	Years Ended December 31,		
	2019	2018	2017
Unrealized holding gains on available-for-sale securities:			
Other-than-temporary impairment losses	\$ —	\$ —	\$ (7,589)
Net realized investment gains (losses), excluding other-than-temporary impairment losses	1,453	(9,935)	41,957
Total before income taxes	1,453	(9,935)	34,368
Income taxes	(305)	2,086	(10,072)
Reclassification of unrealized holding gains (losses), net of taxes	\$ 1,148	\$ (7,849)	\$ 24,296
Net actuarial pension loss:			
Underwriting, acquisition and insurance expenses	\$ (6,390)	\$ (2,963)	\$ (3,815)
Income taxes	1,348	622	648
Reclassification of net actuarial pension loss, net of taxes	\$ (5,042)	\$ (2,341)	\$ (3,167)

20. Commitments and Contingencies

Contingencies arise in the normal course of the Company's operations and are not expected to have a material impact on the Company's financial condition or results of operations.

a) Late in the fourth quarter of 2018, the Company was contacted by and received inquiries from the U.S. Department of Justice, U.S. Securities and Exchange Commission and Bermuda Monetary Authority (collectively, Governmental Authorities) into loss reserves recorded in late 2017 and early 2018 at Markel CATCo Re (the Markel CATCo Inquiries), an unconsolidated subsidiary managed by MCIM. As a result, the Company engaged outside counsel to conduct an internal review.

The internal review was completed in April 2019 and found no evidence that MCIM personnel acted in bad faith in exercising business judgment in the setting of reserves and making related disclosures during late 2017 and early 2018. The Company's outside counsel has met with the Governmental Authorities and reported the findings from the internal review. The Markel CATCo Inquiries are ongoing. The Company cannot currently predict the duration, scope or result of the Markel CATCo Inquiries.

During the internal review, the Company discovered violations of Markel policies by two senior executives of MCIM. As a result, these two executives are no longer with the Company. As of December 31, 2017, the Company had accrued incentive and retention compensation for the two executives totaling \$34.9 million which remained unpaid as of December 31, 2018. This amount was reversed in the fourth quarter of 2018 and reflected as a reduction to services and other expenses. All accruals for retention and incentive compensation recorded earlier in 2018 for the two executives were also reversed in the fourth quarter of 2018.

Between January 11, 2019 and March 7, 2019, several related putative class actions were filed in the U.S. District Court for the Southern District of New York against Markel Corporation and certain present or former officers and directors alleging violations of the federal securities laws relating to the matters that are the subject of the Markel CATCo Inquiries. The actions were consolidated. On August 6, 2019, the Markel Securities Litigation was voluntarily dismissed.

On February 21, 2019, Anthony Belisle and Alissa Fredricks, the two senior executives who are no longer with MCIM, each separately filed suit against MCIM and Markel Corporation, which suits were amended on March 29, 2019 and March 28, 2019, respectively. As amended, Mr. Belisle's complaint alleged claims for, among other things, breach of contract, defamation, invasion of privacy, indemnification, intentional interference with contractual relations and deceptive and unfair acts and sought relief of, among other things, \$66.0 million in incentive compensation, enhanced compensatory damages, consequential damages, damages for emotional distress and injury to reputation, exemplary damages and attorneys' fees. In June 2019, MCIM, Markel Corporation, and Mr. Belisle agreed to commence binding arbitration to finally, fully and confidentially resolve the claims and counterclaims alleged in the action, and the Belisle suit was dismissed with prejudice in July 2019. The arbitrators have been selected and the arbitration proceeding has commenced. The Company believes that Mr. Belisle's claims are without merit and any material loss resulting from the Belisle binding arbitration to be remote. As amended, Ms. Fredricks' complaint alleged claims for, among other things, breach of contract, defamation, invasion of privacy, indemnification, intentional interference with contractual relations and deceptive and unfair acts and sought relief of, among other things, \$7.5 million in incentive compensation, consequential damages, damages for emotional distress and injury to reputation, exemplary damages and attorneys' fees. In June 2019, the action filed by Ms. Fredricks was settled by mutual agreement to the satisfaction of all parties.

In December 2018, investors in the Markel CATCo Funds were offered an additional redemption opportunity (the Special Redemption) to redeem any or all shares held as of June 30, 2019. Through both the Special Redemption and the annual redemption for January 1, 2019, substantially all of the capital in the Markel CATCo Funds was tendered for redemption. In July 2019, MCIM announced it would cease accepting new investments in the Markel CATCo Funds and would not write any new business in Markel CATCo Re. Both the Markel CATCo Funds and Markel CATCo Re have been placed into run-off, returning capital to investors as it becomes available. This process is expected to take approximately three years. Payment for the redemptions of shares is an obligation of the Markel CATCo Funds, not Markel Corporation or its subsidiaries.

In connection with the run-off of one of the Markel CATCo Funds, the Company has committed to invest \$90 million in that fund to collateralize risk exposures within the underlying reinsurance contracts in which the fund is invested related to loss events that occur after December 31, 2019 and through the expiration of the reinsurance contracts in 2020. Underwriting results for the 2020 exposures on these contracts will be attributed to the Company through its investment in the fund.

The Markel CATCo Inquiries, as well as other matters related to or arising from the Markel CATCo Inquiries, including matters of which the Company is currently unaware, could result in additional claims, litigation, investigations, enforcement actions or proceedings. For example, additional litigation may be filed by investors in the Markel CATCo Funds. The Company also could become subject to increased regulatory scrutiny, investigations or proceedings in any of the jurisdictions where it operates. If any regulatory authority takes action against the Company or the Company enters into an agreement to settle a matter, the Company may incur sanctions or be required to pay substantial fines or implement remedial measures that could prove costly or disruptive to its businesses and operations. Costs associated with the Company's internal review, including legal and investigation costs, as well as legal costs incurred in connection with any existing or future litigation, are being expensed as incurred.

An unfavorable outcome in one or more of these matters, and others the Company cannot anticipate, could have a material adverse effect on the Company's results of operations and financial condition. In addition, the Company may take further steps to mitigate potential risks or liabilities that may arise from the Markel CATCo Inquiries and related developments and some of those steps may have a material impact on the Company's results of operations or financial condition. Even if an unfavorable outcome does not materialize, these matters, and actions the Company may take in response, could have an adverse impact on the Company's reputation and result in substantial expense and disruption.

b) The Company has reviewed events at one of its Markel Ventures products businesses. Since becoming aware of a matter late in the first quarter of 2018 related to the business's manufacture of products, the Company has conducted an investigation, reviewed the business's operations and developed remediation plans. Upon completion of its review during 2018, the Company recorded an expense of \$33.5 million in its results of operations. This amount represented management's best estimate of amounts considered probable including: remediation costs associated with the manufacture of products, costs associated with the investigation of this matter, a write down of inventory on hand and settlement costs related to pre-existing litigation.

Final resolution of this matter could ultimately result in additional remediation and other costs, the amount of which cannot be estimated at this time, but which could have a material impact on the Company's income before income taxes. However, management does not expect this matter ultimately will have a material adverse effect on the Company's results of operations or financial condition. If a determination is made that additional costs associated with this matter are considered probable, these additional costs will be recognized as an expense in the Company's results of operations. As of December 31, 2019, \$20.2 million remained accrued for ongoing remediation efforts.

c) In 2019, the Company established Lodgepine Capital Management Limited (Lodgepine), its new retrocessional insurance-linked securities fund manager in Bermuda. Lodgepine's initial product offering will be Lodgepine Fund Limited, a property catastrophe retrocessional investment fund, which is expected to launch in 2020. The Company has committed to invest up to \$100 million in Lodgepine Fund Limited.

21. Statutory Financial Information

a) Statutory capital and surplus and statutory net income (loss) for the Company's insurance subsidiaries as of December 31, 2019 and 2018 and for the years ended December 31, 2019, 2018 and 2017, respectively, is summarized below.

Statutory Capital and Surplus

<i>(dollars in thousands)</i>	December 31,	
	2019	2018
United States	\$ 3,673,216	\$ 3,158,828
United Kingdom	\$ 662,151	\$ 621,802
Bermuda	\$ 1,604,184	\$ 1,495,563
Other	\$ 73,643	\$ 74,704

As of December 31, 2019, the Company's actual statutory capital and surplus significantly exceeded the regulatory requirements. As a result, the amount of statutory capital and surplus necessary to satisfy regulatory requirements is not significant in relation to actual statutory capital and surplus.

Statutory Net Income (Loss)

<i>(dollars in thousands)</i>	Years Ended December 31,		
	2019	2018	2017
United States	\$ 419,396	\$ 414,957	\$ 312,828
United Kingdom	\$ 108,759	\$ 40,203	\$ (25,785)
Bermuda	\$ 447,479	\$ (131,411)	\$ (78,070)
Other	\$ (360)	\$ (5,193)	\$ (4,812)

The Solvency II Directive (Solvency II) that governs the calculation of statutory capital and surplus for the Company's U.K. and German insurance subsidiaries does not provide requirements for the calculation of net income. Amounts presented in the table above for the Company's U.K. and German insurance subsidiaries, in which the amount attributable to Germany is included in Other, have been calculated in accordance with U.K. and German GAAP, respectively.

United States

The laws of the domicile states of the Company's U.S. insurance subsidiaries govern the amount of dividends that may be paid to the Company. Generally, statutes in the domicile states of the Company's U.S. insurance subsidiaries require prior approval for payment of extraordinary, as opposed to ordinary, dividends. As of December 31, 2019, the Company's U.S. insurance subsidiaries could pay up to \$561.8 million to the holding company during the following 12 months under the ordinary dividend regulations.

In converting from U.S. statutory accounting principles to U.S. GAAP, typical adjustments include deferral of policy acquisition costs, differences in the calculation of deferred income taxes and the inclusion of net unrealized gains or losses relating to fixed maturities in shareholders' equity. The Company does not use any permitted statutory accounting practices that are different from prescribed statutory accounting practices which impact statutory capital and surplus.

United Kingdom

The Company's U.K. insurance subsidiary, Markel International Insurance Company Limited (MIICL), and its Lloyd's of London (Lloyd's) managing agent, Markel Syndicate Management Limited (MSM), are authorized by the Prudential Regulation Authority (PRA) and regulated by both the PRA and the Financial Conduct Authority (FCA). The PRA oversees compliance with established periodic auditing and reporting requirements, minimum solvency margins and individual capital assessment requirements under Solvency II and imposes dividend restrictions, while both the PRA and the FCA oversee compliance with risk assessment reviews and various other requirements. MIICL is required to give advance notice to the PRA for any transaction or proposed transaction with a connected or related person. MSM is required to satisfy the solvency requirements of Lloyd's. In addition, the Company's U.K. subsidiaries must comply with the United Kingdom Companies Act of 2006, which provides that dividends may only be paid out of profits available for that purpose. Beginning in 2018, earnings of the Company's U.K. insurance subsidiaries are no longer considered indefinitely reinvested for U.S. income tax purposes and, as a result, are available for distribution to the holding company to the extent not otherwise restricted.

Bermuda

The Company's Bermuda insurance subsidiary, Markel Bermuda Limited (Markel Bermuda), is subject to enhanced capital requirements in addition to minimum solvency and liquidity requirements. The enhanced capital requirement is determined by reference to a risk-based capital model that determines a control threshold for statutory capital and surplus by taking into account the risk characteristics of different aspects of the insurer's business. At December 31, 2019, Markel Bermuda satisfied both the enhanced capital requirements and the minimum solvency and liquidity requirements.

Under the Bermuda Insurance Act, Markel Bermuda is prohibited from paying or declaring dividends during a fiscal year if it is in breach of its enhanced capital requirement, solvency margin or minimum liquidity ratio or if the declaration or payment of the dividend would cause a breach of those requirements. If an insurer fails to meet its solvency margin or minimum liquidity ratio on the last day of any financial year, it is prohibited from declaring or paying any dividends during the next financial year without the approval of the Bermuda Monetary Authority (BMA). Further, Markel Bermuda is prohibited from declaring or paying, in any financial year, dividends of more than 25% of its total statutory capital and surplus as set forth in its previous year's statutory balance sheet unless at least seven days before payment of those dividends it files with the BMA an affidavit stating that it will continue to meet its solvency margin and minimum liquidity ratio. Markel Bermuda must obtain the BMA's prior approval for a reduction by 15% or more of the total statutory capital as set forth in its previous year's financial statements. In addition, as a long-term insurer, Markel Bermuda may not declare or pay a dividend to any person other than a policyholder unless the value of the assets in its long-term business fund, as certified by Markel Bermuda's approved actuary, exceeds the liabilities of its long-term business. The amount of the dividend cannot exceed the aggregate of that excess and any other funds legally available for the payment of the dividend. As of December 31, 2019, Markel Bermuda could pay up to \$401.0 million to the holding company during the following 12 months without making any additional filings with the BMA.

Other Jurisdictions

The Company's other foreign subsidiaries, including its German insurance subsidiary, are subject to capital and solvency requirements in their respective jurisdictions of domicile.

b) Lloyd's sets the corporate members' required capital annually based on each syndicates' business plans, rating environment, reserving environment and input arising from Lloyd's discussions with, among others, regulatory and rating agencies. Such required capital is referred to as Funds at Lloyd's (FAL), and comprises cash and investments. The amount of cash and investments held as FAL as of December 31, 2019 was \$899.3 million. Of this amount, \$336.7 million was provided by the holding company and is not available for general use by the Company. The remaining amount, provided by the Company's insurance subsidiaries, is not available for distribution to the holding company. The Company's corporate member may also be required to maintain funds under the control of Lloyd's in excess of its capital requirements and such funds also may not be available for distribution to the holding company.

22. Markel Corporation (Parent Company Only) Financial Information

The following parent company only condensed financial information reflects the financial position, results of operations and cash flows of Markel Corporation.

CONDENSED BALANCE SHEETS

	December 31,	
	2019	2018
	<i>(dollars in thousands)</i>	
ASSETS		
Investments, at estimated fair value:		
Fixed maturities, available-for-sale (amortized cost of \$658,557 in 2019 and \$717,666 in 2018)	\$ 676,307	\$ 717,681
Equity securities (cost of \$1,487,478 in 2019 and \$1,117,363 in 2018)	1,831,333	1,175,120
Short-term investments, available-for-sale (estimated fair value approximates cost)	724,558	451,499
Total Investments	3,232,198	2,344,300
Cash and cash equivalents	737,072	263,043
Restricted cash and cash equivalents	1,077	3,177
Receivables	19,846	19,295
Investments in consolidated subsidiaries	12,239,086	10,697,605
Notes receivable from subsidiaries	60,111	160,111
Income taxes receivable	2,170	21,174
Other assets	347,023	135,722
Total Assets	\$ 16,638,583	\$ 13,644,427
LIABILITIES AND SHAREHOLDERS' EQUITY		
Senior long-term debt	\$ 3,438,910	\$ 2,539,389
Notes payable to subsidiaries ⁽¹⁾	1,835,000	1,895,000
Income taxes payable	18,270	—
Net deferred tax liability	129,835	64,564
Other liabilities	145,701	64,820
Total Liabilities	5,567,716	4,563,773
Total Shareholders' Equity	11,070,867	9,080,654
Total Liabilities and Shareholders' Equity	\$ 16,638,583	\$ 13,644,427

⁽¹⁾ In December 2018, Markel Corporation purchased Markel Global Reinsurance Company, an indirectly owned subsidiary of Markel Corporation, from Alterra USA Holdings Limited, another indirectly owned subsidiary of Markel Corporation, by issuing a \$1.4 billion note payable to subsidiary.

CONDENSED STATEMENTS OF INCOME (LOSS) AND COMPREHENSIVE INCOME (LOSS)

	Years Ended December 31,		
	2019	2018	2017
	(dollars in thousands)		
REVENUES			
Net investment income	\$ 48,845	\$ 32,631	\$ 21,076
Dividends on common stock of consolidated subsidiaries	863,335	749,171	895,920
Net investment gains (losses):			
Net realized investment gains (losses), including other-than-temporary impairment losses	3,848	(3,341)	3,383
Change in fair value of equity securities ⁽¹⁾	293,296	(110,356)	—
Net investment gains (losses)	297,144	(113,697)	3,383
Total Revenues	1,209,324	668,105	920,379
EXPENSES			
Services and other expenses	6,436	6,532	11,708
Interest expense	219,082	145,681	122,151
Net foreign exchange losses (gains)	3,973	(3,391)	—
Loss on early extinguishment of debt	13,656	—	—
Total Expenses	243,147	148,822	133,859
Income Before Equity in Undistributed Earnings of Consolidated Subsidiaries and Income Taxes	966,177	519,283	786,520
Equity in undistributed earnings (losses) of consolidated subsidiaries	851,337	(696,045)	(469,365)
Income tax (expense) benefit	(27,048)	48,582	78,114
Net Income (Loss) to Shareholders ⁽¹⁾	\$ 1,790,466	\$ (128,180)	\$ 395,269
OTHER COMPREHENSIVE INCOME (LOSS) TO SHAREHOLDERS			
Change in net unrealized gains on available-for-sale investments, net of taxes:			
Net holding gains (losses) arising during the period	\$ 14,016	\$ (1,492)	\$ 52,277
Consolidated subsidiaries' net holding gains (losses) arising during the period	285,109	(239,833)	735,062
Reclassification adjustments for net gains (losses) included in net income (loss) to shareholders	(4,591)	2,564	(1,513)
Consolidated subsidiaries' reclassification adjustments for net gains (losses) included in net income (loss) to shareholders	3,443	5,285	(22,783)
Change in net unrealized gains on available-for-sale investments, net of taxes	297,977	(233,476)	763,043
Change in foreign currency translation adjustments, net of taxes	—	—	(2,260)
Consolidated subsidiaries' change in foreign currency translation adjustments, net of taxes	403	(16,455)	12,663
Consolidated subsidiaries' change in net actuarial pension loss, net of taxes	5,042	2,341	6,259
Total Other Comprehensive Income (Loss) to Shareholders	303,422	(247,590)	779,705
Comprehensive Income (Loss) to Shareholders	\$ 2,093,888	\$ (375,770)	\$ 1,174,974

⁽¹⁾ Effective January 1, 2018, the Company adopted ASU No. 2016-01. As a result, equity securities are no longer classified as available-for-sale with unrealized gains and losses recognized in other comprehensive income; rather, all changes in the fair value of equity securities are now recognized in net income. Prior periods have not been restated to conform to the current presentation.

CONDENSED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2019	2018	2017
	(dollars in thousands)		
OPERATING ACTIVITIES			
Net income (loss) to shareholders	\$ 1,790,466	\$ (128,180)	\$ 395,269
Adjustments to reconcile net income (loss) to shareholders to net cash provided (used) by operating activities	(1,530,940)	3,637	(166,132)
Net Cash Provided (Used) By Operating Activities	259,526	(124,543)	229,137
INVESTING ACTIVITIES			
Proceeds from sales of fixed maturities and equity securities	326,564	204,478	20,562
Proceeds from maturities, calls and prepayments of fixed maturities	41,673	34,560	64,705
Cost of fixed maturities and equity securities purchased	(82,332)	(26,336)	(72,910)
Net change in short-term investments	(236,251)	930,876	649,181
Return of capital from subsidiaries	14,865	12,712	45,225
Decrease (increase) in notes receivable due from subsidiaries	100,000	(20,000)	(58)
Capital contributions to subsidiaries	(413,148)	(103,133)	(270,623)
Acquisitions, net of cash acquired	—	(972,619)	(1,153,683)
Cost of equity method investments	(213,100)	(4,917)	—
Other	6,719	(8,652)	(3,661)
Net Cash Provided (Used) By Investing Activities	(455,010)	46,969	(721,262)
FINANCING ACTIVITIES			
Additions to senior long-term debt	1,384,182	—	592,923
Increase (decrease) in notes payable to subsidiaries	(99,839)	47,105	—
Repayment of senior long-term debt	(484,811)	—	—
Premiums and fees related to early extinguishment of debt	(13,248)	—	—
Repurchases of common stock	(116,307)	(54,007)	(110,838)
Other	(2,564)	(70)	(9,848)
Net Cash Provided (Used) By Financing Activities	667,413	(6,972)	472,237
Increase (Decrease) in cash, cash equivalents, restricted cash and restricted cash equivalents	471,929	(84,546)	(19,888)
Cash, cash equivalents, restricted cash and restricted cash equivalents at beginning of year	266,220	350,766	370,654
CASH, CASH EQUIVALENTS, RESTRICTED CASH AND RESTRICTED CASH EQUIVALENTS AT END OF YEAR	\$ 738,149	\$ 266,220	\$ 350,766

23. Quarterly Financial Information (unaudited)

The following table presents the unaudited quarterly results of consolidated operations for 2019, 2018 and 2017.

<i>(dollars in thousands, except per share amounts)</i>	Quarters Ended			
	Mar. 31	June 30	Sept. 30	Dec. 31
2019				
Operating revenues	\$ 2,472,488	\$ 2,439,116	\$ 2,033,058	\$ 2,581,529
Net income ⁽¹⁾	577,513	506,483	203,953	511,513
Net income to shareholders ⁽¹⁾	576,427	497,298	205,637	511,104
Comprehensive income to shareholders	732,245	623,330	250,069	488,244
Net income per share:				
Basic	\$ 42.81	\$ 36.10	\$ 13.97	\$ 36.34
Diluted	\$ 42.76	\$ 36.07	\$ 13.95	\$ 36.26
2018				
Operating revenues	\$ 1,575,471	\$ 1,987,013	\$ 2,235,949	\$ 1,042,852
Net income (loss) ⁽¹⁾	(65,594)	279,587	409,028	(753,374)
Net income (loss) to shareholders ⁽¹⁾	(64,306)	278,231	409,438	(751,543)
Comprehensive income (loss) to shareholders	(174,839)	164,336	315,106	(680,373)
Net income (loss) per share:				
Basic	\$ (4.25)	\$ 20.01	\$ 28.56	\$ (53.88)
Diluted	\$ (4.25)	\$ 19.97	\$ 28.50	\$ (53.88)
2017				
Operating revenues	\$ 1,411,751	\$ 1,481,493	\$ 1,506,148	\$ 1,662,267
Net income (loss) ⁽¹⁾	71,040	151,427	(261,035)	439,326
Net income (loss) to shareholders ⁽¹⁾	69,869	149,660	(259,141)	434,881
Comprehensive income (loss) to shareholders	223,239	342,357	(19,869)	629,247
Net income (loss) per share:				
Basic	\$ 3.91	\$ 10.34	\$ (18.82)	\$ 30.48
Diluted	\$ 3.90	\$ 10.31	\$ (18.82)	\$ 30.39

⁽¹⁾ Effective January 1, 2018, the Company adopted ASU No. 2016-01. As a result, the change in fair value of equity securities is no longer recognized in other comprehensive income; rather, all changes in the fair value of equity securities are now recognized in net income. Prior periods have not been restated to conform to the current presentation.

MANAGEMENT'S DISCUSSION & ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The accompanying consolidated financial statements and related notes have been prepared in accordance with United States (U.S.) generally accepted accounting principles (GAAP) and include the accounts of Markel Corporation and its subsidiaries, as well as any variable interest entities that meet the requirements for consolidation (the Company). For a discussion of our significant accounting policies, see note 1 of the notes to consolidated financial statements.

The following discussion and analysis includes discussion of changes in our results of operations and financial condition from 2018 to 2019 and should be read in conjunction with Selected Financial Data, the consolidated financial statements and related notes and the discussion under "Risk Factors" and "Safe Harbor and Cautionary Statement."

A discussion of changes in our results of operations and financial condition from 2017 to 2018 may be found in Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations in our 2018 Form 10-K, which was filed with the U.S. Securities and Exchange Commission on February 28, 2019.

Our Business

We are a diverse financial holding company serving a variety of niche markets. Our principal business markets and underwrites specialty insurance products. We believe that our specialty product focus and niche market strategy enable us to develop expertise and specialized market knowledge. We seek to differentiate ourselves from competitors by our expertise, service, continuity and other value-based considerations. We also own interests in various businesses that operate outside of the specialty insurance marketplace. Our financial goals are to earn consistent underwriting and operating profits and superior investment returns to build shareholder value.

Our business is comprised of the following types of operations:

- Underwriting - our underwriting operations are comprised of our risk-bearing insurance and reinsurance operations
- Investing - our investing activities are primarily related to our underwriting operations
- Markel Ventures - our Markel Ventures operations include our controlling interests in a diverse portfolio of businesses that operate outside of the specialty insurance marketplace
- Insurance-linked securities - our insurance-linked securities operations include investment fund managers that offer a variety of investment products, including insurance-linked securities, catastrophe bonds, insurance swaps and weather derivatives
- Program services - our program services business serves as a fronting platform that provides other insurance entities access to the U.S. property and casualty insurance market

Underwriting and Investing

Our chief operating decision maker allocates resources to and assesses the performance of our ongoing underwriting operations on a global basis in the following two segments: Insurance and Reinsurance. In determining how to monitor our underwriting results, we consider many factors, including the nature of the insurance product sold, the type of account written and the type of customer served. The Insurance segment includes all direct business and facultative placements written across the Company. The Reinsurance segment includes all treaty reinsurance written across the Company. Results for lines of business discontinued prior to, or in conjunction with, acquisitions, including development on asbestos and environmental loss reserves and the results attributable to the run-off of life and annuity reinsurance business, are monitored separately and are not included in a reportable segment. All investing activities related to our underwriting operations are included in the Investing segment.

Our Insurance segment includes both hard-to-place risks written outside of the standard market on an excess and surplus basis and unique and hard-to-place risks that must be written on an admitted basis due to marketing and regulatory reasons. Risks written in our Insurance segment are written on either a direct basis or a subscription basis, the latter of which means that the loss exposures brought into the market are typically insured by more than one insurance company or Lloyd's of London syndicate. When we write business in the subscription market, we prefer to participate as lead underwriter in order to control underwriting terms, policy conditions and claims handling. The following products are included in this segment: general liability, professional liability, primary and excess of loss property, including catastrophe-exposed property, personal property, workers' compensation, marine and energy liability coverages, specialty program insurance for well-defined niche markets, and liability and other coverages tailored for unique exposures. Business in this segment is written through our Markel Assurance, Markel Specialty, Markel International and State National divisions. The Markel Assurance division writes commercial and Fortune 1000 accounts on an excess and surplus as well as admitted basis. The Markel Specialty division writes program insurance and other specialty coverages for well-defined niche markets, primarily on an admitted basis. The Markel International division writes business worldwide from our London and Munich-based platforms, which include branch offices around the world.

Our Reinsurance segment includes property, casualty and specialty treaty reinsurance products offered to other insurance and reinsurance companies globally through the broker market. Our treaty reinsurance offerings include both quota share and excess of loss reinsurance and are typically written on a participation basis, which means each reinsurer shares proportionally in the business ceded under the reinsurance treaty written. Principal lines of business include: property (including catastrophe-exposed property), professional liability, general liability, credit, surety, auto and workers' compensation. Our reinsurance product offerings are underwritten by our Global Reinsurance division.

Markel Ventures

Through our wholly-owned subsidiary Markel Ventures, Inc. (Markel Ventures), we own interests in various businesses that we monitor and report in the Markel Ventures segment. These businesses are viewed by management as separate and distinct from our insurance operations and are comprised of a diverse portfolio of businesses from different industries that offer various types of products and services to businesses and consumers, predominately in the United States. Our products group is comprised of businesses that manufacture or produce equipment, transportation-related products and consumer and building products. For example, types of products offered by businesses in this group include equipment used in baking systems and food processing, over-the-road car haulers and laminated oak and composite wood flooring used in the trucking industry as well as ornamental plants and residential homes. The services group is comprised of businesses that provide healthcare, consulting and other types of services to businesses and consumers. For example, types of services offered by businesses in this group include management and technology consulting, behavioral healthcare and retail intelligence.

In November 2019, we acquired VSC Fire & Security, Inc. (VSC), a Virginia-based privately held provider of comprehensive fire protection, life safety and low voltage solutions. Results attributable to VSC will be included in our Markel Ventures segment.

In October 2018, we acquired 90% of Brahmin Leather Works (Brahmin), a Massachusetts-based privately held creator of fashion leather handbags. Results attributable to Brahmin are included in our Markel Ventures segment.

Insurance-Linked Securities

Our insurance-linked securities operations are comprised of our Nephila and run-off Markel CATCo operations.

In November 2018, we completed the acquisition of all of the outstanding shares of Nephila Holdings Ltd. (together with its subsidiaries, Nephila). Nephila primarily serves as an insurance and investment fund manager headquartered in Bermuda that offers a broad range of investment products, including insurance-linked securities, catastrophe bonds, insurance swaps and weather derivatives.

Nephila serves as the investment manager to several Bermuda, Ireland and U.S. based private funds (the Nephila Funds). To provide access for the Nephila Funds to the insurance, reinsurance and weather markets, Nephila also provides managing general agent services and acts as an insurance manager to certain Bermuda Class 3 and 3A reinsurance companies and Lloyd's Syndicate 2357 (Syndicate 2357) (collectively, the Nephila Reinsurers). The results of the Nephila Reinsurers are attributed to the Nephila Funds primarily through derivative transactions between these entities. Neither the Nephila Funds nor the Nephila Reinsurers are subsidiaries of Markel Corporation, and as such, these entities are not included in our consolidated financial statements. As of December 31, 2019, Nephila's net assets under management were \$10.4 billion.

Our Markel CATCo operations are conducted through Markel CATCo Investment Management Ltd. (MCIM). MCIM is an insurance-linked securities investment fund manager headquartered in Bermuda and through 2019, was focused on building and managing highly diversified, collateralized retrocession and reinsurance portfolios covering global property catastrophe risks. MCIM serves as the insurance manager for Markel CATCo Re Ltd. (Markel CATCo Re), a Bermuda Class 3 reinsurance company, and as the investment manager for Markel CATCo Reinsurance Fund Ltd., a Bermuda exempted mutual fund company comprised of multiple segregated accounts (Markel CATCo Funds). MCIM also serves as the investment manager to CATCo Reinsurance Opportunities Fund Ltd. (CROF), a limited liability closed-end Bermuda exempted mutual fund company listed on a market operated by the London Stock Exchange and on the Bermuda Stock Exchange. CROF invests substantially all of its assets in Markel CATCo Reinsurance Fund Ltd. Both Markel CATCo Re and the Markel CATCo Funds are unconsolidated subsidiaries of Markel Corporation. As of December 31, 2019, MCIM's net assets under management were \$2.8 billion, a portion of which is attributable to our investments in the Markel CATCo Funds.

In July 2019, MCIM announced it would cease accepting new investments in the Markel CATCo Funds and would not write any new business in Markel CATCo Re. Both the Markel CATCo Funds and Markel CATCo Re have been placed into run-off, returning capital to investors as it becomes available. See note 20 of the notes to consolidated financial statements for further details regarding other developments within our Markel CATCo operations.

In 2019, we established Lodgepine Capital Management Limited (Lodgepine), our new retrocessional insurance-linked securities fund manager in Bermuda. Lodgepine's initial product offering will be Lodgepine Fund Limited, a property catastrophe retrocessional investment fund, which is expected to launch in 2020. We have committed to invest up to \$100 million in Lodgepine Fund Limited. Lodgepine Fund Limited initially plans to subscribe to a portfolio of retrocessional reinsurance, which includes contracts written in our Reinsurance segment.

Program Services

Our program services business is conducted through our State National division and is separately managed from our underwriting operations. Our program services business generates fee income, in the form of ceding (program service) fees, by offering issuing carrier capacity to both specialty general agents and other producers who sell, control, and administer books of insurance business that are supported by third parties that assume reinsurance risk, including Syndicate 2357. Through our program services business, we write a wide variety of insurance products, principally including general liability insurance, commercial liability insurance, commercial multi-peril insurance, property insurance and workers' compensation insurance, substantially all of which is ceded to third parties.

For further discussion of our underwriting, investing, Markel Ventures, insurance-linked securities and program services operations, see the respective sections under Business Overview.

Critical Accounting Estimates

Critical accounting estimates are those estimates that both are important to the portrayal of our financial condition and results of operations and require us to exercise significant judgment. The preparation of financial statements in accordance with U.S. GAAP requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of material contingent assets and liabilities, including litigation contingencies. These estimates, by necessity, are based on assumptions about numerous factors.

We review the adequacy of reserves for unpaid losses and loss adjustment expenses and life and annuity reinsurance benefit reserves quarterly. Estimates and assumptions for goodwill and intangible assets are reviewed in conjunction with acquisitions and goodwill and indefinite-lived intangible assets are reassessed at least annually for impairment. Actual results may differ materially from the estimates and assumptions used in preparing the consolidated financial statements.

Unpaid Losses and Loss Adjustment Expenses

Our consolidated balance sheets included estimated unpaid losses and loss adjustment expenses of \$14.7 billion and reinsurance recoverables on unpaid losses of \$5.3 billion at December 31, 2019 compared to \$14.3 billion and \$5.1 billion, respectively, at December 31, 2018. Included in these balances were unpaid losses and loss adjustment expenses and reinsurance recoverables on unpaid losses attributable to our program services business and other fronting arrangements totaling \$2.9 billion for the year ended December 31, 2019 and \$2.5 billion for the year ended December 31, 2018. Our consolidated balance sheets do not include reserves for losses and loss adjustment expenses attributed to unconsolidated subsidiaries or affiliates that we manage through our insurance-linked securities operations, including Markel CATCo Re and the Nephila Reinsurers.

We accrue liabilities for unpaid losses and loss adjustment expenses based upon estimates of the ultimate amounts payable. We maintain reserves for specific claims incurred and reported (case reserves) and reserves for claims incurred but not reported (IBNR reserves).

Reported claims are in various stages of the settlement process, and the corresponding reserves for reported claims are based upon all information available to us. Case reserves consider our estimate of the ultimate cost to settle the claims, including investigation and defense of lawsuits resulting from the claims, and may be subject to adjustment for differences between costs originally estimated and costs subsequently re-estimated or incurred. Claims are settled based upon their merits, and some claims may take years to settle, especially if legal action is involved.

As of any balance sheet date, all claims have not yet been reported, and some claims may not be reported for many years. As a result, the liability for unpaid losses and loss adjustment expenses includes significant estimates for incurred but not reported claims.

There is normally a time lag between when a loss event occurs and when it is actually reported to us. The actuarial methods that we use to estimate losses have been designed to address the lag in loss reporting as well as the delay in obtaining information that would allow us to more accurately estimate future payments. There is also often a time lag between cedents establishing case reserves and re-estimating their reserves, and notifying us of the new or revised case reserves. As a result, the reporting lag is more pronounced in our reinsurance contracts than in our insurance contracts due to the reliance on ceding companies to report their claims to us. On reinsurance transactions, the reporting lag will generally be 60 to 90 days after the end of a reporting period, but can be longer in some cases. Based on the experience of our actuaries and management, we select loss development factors and trending techniques to mitigate the difficulties caused by reporting lags. At least annually, we evaluate and update our loss development and trending factor selections using cedent specific and industry data.

U.S. GAAP requires that IBNR reserves be based on the estimated ultimate cost of settling claims, including the effects of inflation and other social and economic factors, using past experience adjusted for current trends and any other factors that would modify past experience. IBNR reserves are generally calculated by subtracting paid losses and case reserves from estimated ultimate losses. IBNR reserves were 65% of total unpaid losses and loss adjustment expenses at December 31, 2019 compared to 64% at December 31, 2018.

Each quarter, our actuaries prepare estimates of the ultimate liability for unpaid losses and loss adjustment expenses based on established actuarial methods. Management reviews these estimates, supplements the actuarial analyses with information provided by claims, underwriting and other operational personnel and determines its best estimate of loss reserves, which is recorded in our consolidated financial statements. Our procedures for determining the adequacy of loss reserves at the end of the year are substantially similar to the procedures applied at the end of each interim period.

Any adjustments to reserves resulting from our interim or year-end reviews, including changes in estimates, are recorded as a component of losses and loss adjustment expenses in the period of the change. Reserve changes that increase previous estimates of ultimate claims cost are referred to as unfavorable or adverse development, or reserve strengthening. Reserve changes that decrease previous estimates of ultimate claims cost are referred to as favorable development.

Program Services

For our program services business, case reserves are generally established based on reports received from the general agents or reinsurers with whom we do business. Our actuaries review the case loss reserve data received for sufficiency, consistency with historical data and for consistency with other programs we write that have similar characteristics. IBNR reserves are calculated using either our program experience or, where the program data is not credible, industry experience for similar products or lines of business. Substantially all of the premium written in our program services business is ceded and net reserves for unpaid losses and loss adjustment expenses as of December 31, 2019 and December 31, 2018 were \$2.2 million and \$2.6 million, respectively.

Underwriting

For our insurance operations, we are generally notified of insured losses by our insureds or their brokers. Based on this information, we establish case reserves by estimating the expected ultimate losses from the claim (including any administrative costs associated with settling the claim). Our claims personnel use their knowledge of the specific claim along with internal and external experts, including underwriters, actuaries and legal counsel, to estimate the expected ultimate losses.

For our reinsurance operations, case reserves are generally established based on reports received from ceding companies or their brokers. For excess of loss contracts, we are typically notified of insurance losses on specific contracts and record a case reserve for the estimated expected ultimate losses from the claim. For quota share contracts, we typically receive aggregated claims information and record a case reserve based on that information. As with insurance business, we evaluate this information and estimate the expected ultimate losses.

Our liabilities for unpaid losses and loss adjustment expenses can generally be categorized into two distinct groups, short-tail business and long-tail business. Short-tail business refers to lines of business, such as property, accident and health, automobile, watercraft and marine hull exposures, for which losses are usually known and paid shortly after the loss actually occurs. Long-tail business describes lines of business for which specific losses may not be known and reported for some period and losses take much longer to emerge. Given the time frame over which long-tail exposures are ultimately settled, there is greater uncertainty and volatility in these lines than in short-tail lines of business. Our long-tail coverages consist of most casualty lines, including professional liability, directors' and officers' liability, products liability, general and excess liability and excess and umbrella exposures, as well as workers' compensation insurance. Some factors that contribute to the uncertainty and volatility of long-tail casualty programs, and thus require a significant degree of judgment in the reserving process, include the inherent uncertainty as to the length of reporting and payment development patterns, the possibility of judicial interpretations or legislative changes, including changes in workers' compensation benefit laws, that might impact future loss experience relative to prior loss experience and the potential lack of comparability of the underlying data used in performing loss reserve analyses.

Our ultimate liability may be greater or less than current reserves. Changes in our estimated ultimate liability for loss reserves generally occur as a result of the emergence of unanticipated loss activity, the completion of specific actuarial or claims studies or changes in internal or external factors. We closely monitor new information on reported claims and use statistical analyses prepared by our actuaries to evaluate the adequacy of our recorded reserves. We are required to exercise considerable judgment when assessing the relative credibility of loss development trends. Our philosophy is to establish loss reserves that are more likely redundant than deficient. This means that we seek to establish loss reserves that will ultimately prove to be adequate. As a result, if new information or trends indicate an increase in frequency or severity of claims in excess of what we initially anticipated, we generally respond quickly and increase loss reserves. If, however, frequency or severity trends are more favorable than initially anticipated, we often wait to reduce our loss reserves until we can evaluate experience in additional periods to confirm the credibility of the trend. In addition, for long-tail lines of business, trends develop over longer periods of time, and as a result, we give credibility to these trends more slowly than for short-tail or less volatile lines of business. As part of our acquisition of underwriting operations, to the extent the reserving philosophy of the acquired business is less conservative than our reserving philosophy, the post-acquisition loss reserves will be strengthened until total loss reserves are consistent with our target level of confidence.

In establishing our liabilities for unpaid losses and loss adjustment expenses, our actuaries estimate an ultimate loss ratio, by accident year or policy year, for each of our product lines with input from our underwriting and claims personnel. For product lines in which loss reserves are established on a policy year basis, we have developed a methodology to convert from policy year to accident year for financial reporting purposes. In estimating an ultimate loss ratio for a particular line of business, our actuaries may use one or more actuarial reserving methods and select from these a single point estimate. To varying degrees, these methods include detailed statistical analysis of past claim reporting, settlement activity, claim frequency and severity, policyholder loss experience, industry loss experience and changes in market conditions, policy forms and exposures. The actuarial methods we use include:

Initial Expected Loss Ratio Method – This method multiplies earned premiums by an expected loss ratio. The expected loss ratio is selected utilizing industry data, our historical data, frequency-severity and rate level forecasts and professional judgment.

Paid Loss Development – This method uses historical loss payment patterns to estimate future loss payment patterns. Our actuaries use the historical loss patterns to develop factors that are applied to current paid loss amounts to calculate expected ultimate losses.

Incurred Loss Development – This method uses historical loss reporting patterns to estimate future loss reporting patterns. Our actuaries use the historical loss patterns to develop factors that are applied to current reported losses to calculate expected ultimate losses.

Bornhuetter-Ferguson Paid Loss Development – This method divides the projection of ultimate losses into the portion that has already been paid and the portion that has yet to be paid. The portion that has yet to be paid is estimated as the product of three amounts: the premium earned for the exposure period, the expected loss ratio and the percentage of ultimate losses that are still unpaid. The expected loss ratio is selected by considering historical loss ratios, adjusted for any known changes in pricing, loss trends, adequacy of case reserves, changes in administrative practices and other relevant factors.

Bornhuetter-Ferguson Incurred Loss Development – This method is identical to the Bornhuetter-Ferguson paid loss development method, except that it uses the percentage of ultimate losses that are still unreported, instead of the percentage of ultimate losses that are still unpaid.

Frequency/Severity – Under this method, expected ultimate losses are equal to the product of the expected ultimate number of claims and the expected ultimate average cost per claim. Our actuaries use historical reporting patterns and severity patterns to develop factors that are applied to the current reported amounts to calculate expected ultimate losses.

Outstanding to IBNR Ratio Method – Under this method, IBNR is based on a detailed review of remaining open claims. This method assumes that the estimated future loss development is indicated by the current level of case reserves.

Other Methods – We cannot estimate losses from widespread catastrophic events, such as hurricanes and earthquakes, using the traditional actuarial methods described above. In the initial months after a catastrophic event occurs, our actuaries estimate losses and loss adjustment expenses based on claims received to date, detailed policy and reinsurance contract level reviews, industry loss estimates and output from both industry and proprietary models. The availability of data from these procedures varies depending on the timing of the event relative to the point at which we develop our estimate. We also consider loss experience on historical events that may have similar characteristics to the underlying event. Due to the inherent uncertainty in estimating such losses, these estimates are subject to variability, which increases with the severity and complexity of the underlying event. As additional claims are reported and paid, and industry loss estimates are revised, we incorporate this new information into our analysis and adjust our estimate of ultimate losses and loss adjustment expenses.

Each actuarial method has its own set of assumptions and its own strengths and limitations, with no one method being better than the others in all situations. Our actuaries select the reserving methods that they believe will produce the most reliable estimate for the class of business being evaluated. Greater judgment may be required when we introduce new product lines or when there have been changes in claims handling practices, as the statistical data available may be insufficient. In these instances, we may rely upon assumptions applied to similar lines of business, rely more heavily on industry experience, take into account changes in underwriting guidelines and risk selection or review the impact of changes in claims reserving practices with claims personnel.

A key assumption in most actuarial analyses is that past development patterns will repeat themselves in the future, absent a significant change in internal or external factors that influence the ultimate cost of our unpaid losses and loss adjustment expenses. Our estimates reflect implicit and explicit assumptions regarding the potential effects of external factors, including economic and social inflation, judicial decisions, changes in law, general economic conditions and recent trends in these factors. Our actuarial analyses are based on statistical analysis but also consist of reviewing internal factors that are difficult to analyze statistically, including underwriting and claims handling changes. In some of our markets, and where we act as a reinsurer, the timing and amount of information reported about underlying claims are in the control of third parties. This can also affect estimates and require re-estimation as new information becomes available.

As indicated above, we may use one or more actuarial reserving methods, which incorporate numerous underlying judgments and assumptions, to establish our estimate of ultimate loss reserves. While we use our best judgment in establishing our estimate for loss reserves, applying different assumptions and variables could lead to significantly different loss reserve estimates.

Loss frequency and loss severity are two key measures of loss activity that often result in adjustments to actuarial assumptions relative to ultimate loss reserve estimates. Loss frequency measures the number of claims per unit of insured exposure. When the number of newly reported claims is higher than anticipated, generally speaking, loss reserves are increased. Conversely, loss reserves are generally decreased when fewer claims are reported than expected. Loss severity measures the average size of a claim. When the average severity of reported claims is higher than originally estimated, loss reserves are typically increased. When the average claim size is lower than anticipated, loss reserves are typically decreased. For example, in both of the past two years, we experienced favorable development on prior years' loss reserves in our workers' compensation insurance product lines as a result of decreases in loss severity.

Changes in prior years' loss reserves, including the trends and factors that impacted loss reserve development, as well as the likelihood that such trends and factors could result in future loss reserve development, are discussed in further detail under "Results of Operations."

Loss reserves are established at management's best estimate, which is generally higher than the corresponding actuarially calculated point estimate. The actuarial point estimate represents our actuaries' estimate of the most likely amount that will ultimately be paid to settle the losses that have occurred at a particular point in time; however, there is inherent uncertainty in the point estimate as it is the expected value in a range of possible reserve estimates. In some cases, actuarial analyses, which are based on statistical analysis, cannot fully incorporate all of the subjective factors that affect development of losses. In other cases, management's perspective of these more subjective factors may differ from the actuarial perspective. Subjective factors where management's perspective may differ from that of the actuaries include: the credibility and timeliness of claims information received from third parties, economic and social inflation, judicial decisions, changes in law, changes in underwriting or claims handling practices, general economic conditions, the risk of moral hazard and other current and developing trends within the insurance and reinsurance markets, including the effects of competition. As a result, the actuarially calculated point estimates for each of our lines of business represent starting points for management's quarterly review of loss reserves. Additionally, following an acquisition of insurance operations, to the extent the reserving philosophy of the acquired business is less conservative than our reserving philosophy, the percentage by which management's best estimate exceeds the actuarial point estimate will generally be lower until we build total loss reserves that are consistent with our historic level of confidence. Management's best estimate of net reserves for unpaid losses and loss adjustment expenses exceeded the actuarially calculated point estimate by \$577.5 million, or 6.5%, at December 31, 2019, compared to \$578.1 million, or 6.7%, at December 31, 2018.

The difference between management's best estimate and the actuarially calculated point estimate in both 2019 and 2018 is primarily associated with our long-tail business. Actuarial estimates can underestimate the adverse effects of broader coverage terms, lower prices and excess underwriting capacity because the impact of changes in risk selection and terms and conditions can be difficult to quantify. In addition, the frequency of claims may increase in a recessionary environment. Similarly, the risk an insured will intentionally cause or be indifferent to loss may increase during an economic downturn, and the attention to loss prevention measures may decrease. These subjective factors affect the development of losses and represent instances where management's perspectives may differ from those of our actuaries. As a result, management has attributed less credibility than our actuaries to favorable trends experienced on our long-tail business and has not incorporated these favorable trends into its best estimate to the same extent as the actuaries.

See note 10 of the notes to consolidated financial statements for further details regarding the historical development of reserves for losses and loss adjustment expenses and changes in methodologies and assumptions used to calculate reserves for unpaid losses and loss adjustment expenses.

Management also considers the range, or variability, of reasonably possible losses determined by our actuaries when establishing its best estimate for loss reserves. The actuarial ranges represent our actuaries' estimate of a likely lowest amount and likely highest amount that will ultimately be paid to settle the losses that have occurred at a particular point in time. The range determinations are based on estimates and actuarial judgments and are intended to encompass reasonably likely changes in one or more of the factors that were used to determine the point estimates. Using statistical models, our actuaries establish high and low ends of a range of reasonable reserve estimates for each of our underwriting segments.

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The following table summarizes our reserves for net unpaid losses and loss adjustment expenses and the actuarially established high and low ends of a range of reasonable reserve estimates at December 31, 2019. As described in note 10 of the notes to consolidated financial statements, unpaid losses and loss adjustment expenses attributable to acquisitions are recorded at fair value as of the acquisition date, which generally consists of the present value of the expected net loss and loss adjustment expense payments plus a risk premium. The net loss reserves presented in this table represent our estimated future payments for losses and loss adjustment expenses, whereas the reserves for unpaid losses and loss adjustment expenses included on the consolidated balance sheet include the unamortized portion of fair value adjustments recorded in conjunction with an acquisition.

<i>(dollars in millions)</i>	Net Loss Reserves Held	Low End of Actuarial Range ⁽¹⁾	High End of Actuarial Range ⁽¹⁾
Insurance	\$ 6,256.2	\$ 5,485.8	\$ 6,748.9
Reinsurance	3,033.3	2,314.5	3,374.2
Other	152.8	119.4	172.5

⁽¹⁾ Due to the actuarial methods used to determine the separate ranges for each component of our business, it is not appropriate to aggregate the high or low ends of the separate ranges to determine the high and low ends of the actuarial range on a consolidated basis.

Undue reliance should not be placed on these ranges of estimates as they are only one of many points of reference used by management to determine its best estimate of ultimate losses. Further, actuarial ranges may not be a true reflection of the potential variability between loss reserves estimated at the balance sheet date and the ultimate cost of settling claims. Actuarial ranges are developed based on known events as of the valuation date, while ultimate losses are subject to events and circumstances that are unknown as of the valuation date.

Life and Annuity Benefits

We have a run-off block of life and annuity reinsurance contracts which subject us to mortality, longevity and morbidity risks. The related reserves are compiled by our actuaries on a reinsurance contract-by-contract basis and are computed on a discounted basis using standard actuarial techniques and cash flow models. Since the development of our life and annuity reinsurance reserves is based upon cash flow projection models, we must make estimates and assumptions based on cedent experience, industry mortality tables, and expense and investment experience, including a provision for adverse deviation. The assumptions used to determine policy benefit reserves are generally locked-in for the life of the contract unless an unlocking event occurs. To the extent existing policy reserves, together with the present value of future gross premiums and expected investment income earned thereon, are not adequate to cover the present value of future benefits, settlement and maintenance costs, the locked-in assumptions are revised to current best estimate assumptions and a charge to earnings for life and annuity benefits is recognized at that time. Life and annuity benefits are also adjusted to the extent unrealized gains on the investments supporting the policy benefit reserves would result in a reserve deficiency if those gains were realized.

Our consolidated balance sheets included reserves for life and annuity benefits of \$985.7 million and \$1.0 billion at December 31, 2019 and 2018, respectively. During 2019, the Company recognized a reserve deficiency resulting from a decrease in the market yield on the investment portfolio supporting the policy benefit reserves by increasing life and annuity benefits by \$51.4 million and decreasing the change in net unrealized holding gains included in other comprehensive income by a corresponding amount. As of December 31, 2019, the cumulative adjustment to life and annuity benefits attributable to unrealized gains on the underlying investment portfolio totaled \$51.4 million. No adjustment was required for the year ended December 31, 2018.

Because of the assumptions and estimates used in establishing reserves for life and annuity benefit obligations and the long-term nature of these reinsurance contracts, the ultimate liability may be greater or less than the estimates. The average discount rate for the life and annuity benefit reserves was 2.3% as of December 31, 2019. The accretion of this discount is recognized in the statement of income and comprehensive income within services and other expenses. Invested assets and the related investment income that support the life and annuity reinsurance contracts are reported in the Investing segment. We expect the results from our life and annuity business will continue to reflect losses in future periods due to the accretion of the discount on the life and annuity benefit reserves, which are forecast to pay out over the next 40 to 50 years. Services and other revenues attributable to the life and annuity business represent ongoing premium adjustments on existing contracts.

Goodwill and Intangible Assets

Our consolidated balance sheet as of December 31, 2019 included goodwill and intangible assets of \$4.0 billion. Goodwill and intangible assets are recorded as a result of business acquisitions. Goodwill represents the excess of the amount paid to acquire a business over the net fair value of assets acquired and liabilities assumed at the date of acquisition. Indefinite-lived and other intangible assets are recorded at fair value as of the acquisition date. The determination of the fair value of certain assets acquired, including goodwill and intangible assets, and liabilities assumed involves significant judgment and the use of valuation models and other estimates, which require assumptions that are inherently subjective. During the years ended December 31, 2019 and 2018, we recorded \$232.0 million and \$1.2 billion, respectively, of goodwill and intangible assets in connection with acquisitions.

Intangible assets with definite lives are reviewed for impairment when events or circumstances indicate that their carrying value may not be recoverable. Goodwill and indefinite-lived intangible assets are tested for impairment annually, or when events or circumstances indicate that their carrying value may not be recoverable. A significant amount of judgment is required in performing the annual impairment test, including whether to assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. This assessment serves as a basis for determining whether it is necessary to perform a quantitative impairment test.

We completed our annual test for impairment as of October 1, 2019 based upon results of operations through September 30, 2019 and elected to perform a qualitative assessment for all of our reporting units. When performing the assessment, we considered macroeconomic factors such as industry and market conditions. We also considered reporting unit-specific events, actual financial performance versus expectations and management's future business expectations. As part of our qualitative assessment of certain reporting units with material goodwill, we considered the fact that some of the businesses had been recently acquired in orderly transactions between market participants, and our purchase price represented fair value at acquisition. There were no events since acquisition that had a significant impact on the fair value of these reporting units as of the assessment date.

Based on the results of our qualitative assessment, and because there were no indicators of impairment between the assessment date and December 31, 2019, we believe the fair value of each of our reporting units exceeded its respective carrying amount as of the assessment date and December 31, 2019.

During 2018, we performed an assessment of the recoverability of goodwill and intangible assets at the MCIM reporting unit as of December 31, 2018. Based on the results of the assessment, we reduced the carrying value of the goodwill and intangible assets of the MCIM reporting unit to zero. See note 6 and note 20 of the notes to consolidated financial statements for further details around these impairment charges and other developments in our Markel CATCo operations.

Recent Accounting Pronouncements

See note 1(y) of the notes to consolidated financial statements for discussion of recently issued accounting pronouncements that we have not yet adopted and the expected effects on our consolidated financial position, results of operations and cash flows.

Results of Operations

The following table presents the components of net income (loss) to shareholders and comprehensive income (loss) to shareholders.

<i>(dollars in thousands)</i>	Years Ended December 31,	
	2019	2018
Insurance segment underwriting profit	\$ 309,778	\$ 228,773
Reinsurance segment underwriting loss	(39,999)	(118,287)
Investing segment profit (loss) ⁽¹⁾	2,052,874	(3,894)
Markel Ventures segment profit ⁽²⁾	168,417	77,479
Other operations ⁽³⁾	(13,724)	(144,312)
Interest expense	(171,687)	(154,212)
Net foreign exchange gains (losses)	(2,265)	106,598
Loss on early extinguishment of debt	(17,586)	—
Income tax expense	(486,346)	(122,498)
Net (income) loss attributable to noncontrolling interests	(8,996)	2,173
Net income (loss) to shareholders	1,790,466	(128,180)
Other comprehensive income (loss) to shareholders	303,422	(247,590)
Comprehensive income (loss) to shareholders	\$ 2,093,888	\$ (375,770)

- (1) Net investment income and net investment gains, if any, attributable to Markel Ventures are included in segment profit for Markel Ventures. All other net investment income and net investment gains are included in Investing segment profit (loss).
- (2) Segment profit for the Markel Ventures segment includes amortization of intangible assets attributable to Markel Ventures. Amortization of intangible assets is not allocated to any other reportable segments.
- (3) Other operations includes the results attributable to the Company's operations that are not included in a reportable segment as well as any amortization of intangible assets that is not allocated to a reportable segment.

The change in comprehensive income (loss) to shareholders from 2018 to 2019 was primarily due to net investment gains of \$1.6 billion in 2019 compared to net investment losses of \$437.6 million in 2018. We also experienced an increase in net unrealized gains on available-for-sale investments, net of taxes, of \$298.0 million in 2019 compared to a decrease in net unrealized gains on available-for-sale investments, net of taxes, of \$233.5 million in 2018. The components of net income (loss) to shareholders and comprehensive income (loss) to shareholders are discussed in further detail under "Underwriting Results," "Premiums," "Investing Results," "Markel Ventures," "Other Operations," "Interest Expense, Loss on Early Extinguishment of Debt and Income Taxes" and "Comprehensive Income (Loss) to Shareholders."

Underwriting Results

Underwriting profits are a key component of our strategy to build shareholder value. We believe that the ability to achieve consistent underwriting profits demonstrates knowledge and expertise, commitment to superior customer service and the ability to manage insurance risk. The property and casualty insurance industry commonly defines underwriting profit or loss as earned premiums net of losses and loss adjustment expenses and underwriting, acquisition and insurance expenses. We use underwriting profit or loss and the combined ratio as a basis for evaluating our underwriting performance. The combined ratio is a measure of underwriting performance and represents the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums. The combined ratio is the sum of the loss ratio and the expense ratio. A combined ratio less than 100% indicates an underwriting profit, while a combined ratio greater than 100% reflects an underwriting loss. The loss ratio represents the relationship of incurred losses and loss adjustment expenses to earned premiums. The expense ratio represents the relationship of underwriting, acquisition and insurance expenses to earned premiums.

The following table presents selected data from our underwriting operations.

<i>(dollars in thousands)</i>	Years Ended December 31,	
	2019	2018
Gross premium volume ⁽¹⁾	\$ 6,436,168	\$ 5,800,984
Net written premiums	\$ 5,412,071	\$ 4,787,578
Net retention ⁽¹⁾	84%	83%
Earned premiums	\$ 5,049,793	\$ 4,712,060
Losses and loss adjustment expenses	\$ 2,891,190	\$ 2,820,715
Underwriting, acquisition and insurance expenses	\$ 1,878,093	\$ 1,777,511
Underwriting profit	\$ 280,510	\$ 113,834

U.S. GAAP Combined Ratios

Insurance	93%	94%
Reinsurance	104%	113%
Consolidated	94%	98%

(1) Gross premium volume and net retention for the years ended December 31, 2019 and 2018 exclude \$2.3 billion and \$2.1 billion, respectively, of written premiums attributable to our program services business and other fronting arrangements that were ceded.

The consolidated combined ratio was 94% in 2019 compared to 98% in 2018. The decrease in the consolidated combined ratio was attributable to lower catastrophe losses in 2019 compared to 2018. Underwriting results in 2019 included \$100.4 million, or two points, of underwriting loss from Hurricane Dorian and Typhoons Faxai and Hagibis (2019 Catastrophes). Underwriting results in 2018 included \$287.3 million, or six points, of underwriting loss from Hurricanes Florence and Michael, Typhoon Jebi and wildfires in California (2018 Catastrophes).

The following table summarizes, by segment, the components of the underwriting losses related to the 2019 and 2018 Catastrophes.

<i>(dollars in thousands)</i>	Years Ended December 31,					
	2019			2018		
	2019 Catastrophes			2018 Catastrophes		
	Insurance	Reinsurance	Consolidated	Insurance	Reinsurance	Consolidated
Losses and loss adjustment expenses	\$ 8,317	\$ 105,644	\$ 113,961	\$ 105,265	\$ 187,490	\$ 292,755
Ceded (assumed) reinstatement premiums	—	(13,552)	(13,552)	5,142	(10,583)	(5,441)
Underwriting loss	\$ 8,317	\$ 92,092	\$ 100,409	\$ 110,407	\$ 176,907	\$ 287,314
Impact on combined ratio	—%	10%	2%	3%	19%	6%

The net losses and loss adjustment expenses on the 2019 and 2018 Catastrophes were net of ceded losses of \$62.5 million and \$244.1 million, respectively. Both the gross and net losses on the 2019 and 2018 Catastrophes as of December 31, 2019 represent our best estimates based upon information currently available. Our estimates for these losses are based on claims received to date, detailed policy and reinsurance contract level reviews, industry loss estimates and output from both industry and proprietary models. For the 2019 Catastrophes, these estimates are still dependent on broad assumptions about coverage, liability and reinsurance. While we believe our reserves for the 2019 and 2018 Catastrophes as of December 31, 2019 are adequate, we continue to closely monitor reported claims and will adjust our estimates of gross and net losses as new information becomes available. The net losses and loss adjustment expenses for the 2019 and 2018 Catastrophes were within our risk tolerance for events of this magnitude.

Excluding the impact of the 2019 and 2018 Catastrophes, the 2019 combined ratio was flat compared to 2018. Higher earned premiums in 2019 had a favorable impact on our expense ratio and an unfavorable impact on the prior accident years' loss ratio.

The 2019 combined ratio included \$535.3 million of favorable development on prior years' loss reserves compared to \$551.0 million in 2018. In connection with our quarterly reviews of loss reserves, the actuarial methods we used have exhibited a favorable trend, predominately for the 2015 to 2018 accident years, during 2019. This trend was observed using statistical analysis of actual loss experience for those years, particularly with regard to most of our long-tail books of business within the Insurance segment, which developed more favorably than we had expected. Loss reserves are recorded at management's best estimate, which is generally higher than the corresponding actuarially calculated point estimate due to subjective factors where management's perspective may differ from that of the actuaries. As a result, the initial reserves established by management are more likely to be redundant than deficient. As actual losses continue to be lower than anticipated, it has become more likely that the underwriting results will prove to be better than originally estimated. Additionally, as most actuarial methods rely upon historical reporting patterns, the favorable trends experienced on earlier accident years have resulted in a re-estimation of our ultimate incurred losses on more recent accident years. When we experience loss frequency or loss severity trends that are more favorable than we initially anticipated, we often evaluate the loss experience over a period of several years in order to assess the relative credibility of loss development trends. In both 2019 and 2018, based upon our evaluations of claims development patterns in our long-tail, and often volatile, lines of business, our actuaries reduced their estimates of ultimate losses. Management also gave greater credibility to the favorable trends experienced on earlier accident years and upon incorporating these favorable trends into its best estimate, we reduced prior years' loss reserves on more recent accident years accordingly. While we believe it is possible that there will be additional favorable development on prior years' loss reserves in 2020, we caution readers not to place undue reliance on this favorable trend.

The following discussion provides more detail by segment of the underwriting results described above. Following this segment-based discussion is a summary table of prior years' loss reserve development.

Insurance Segment

The combined ratio for the Insurance segment in 2019 was 93% compared to 94% (including three points for the underwriting loss on the 2018 Catastrophes) in 2018. The decrease in the combined ratio was driven by lower catastrophe losses in 2019 compared to 2018, which was largely offset by a less favorable prior accident years' loss ratio. Higher earned premiums in 2019 had a favorable impact on our expense ratio and an unfavorable impact on the prior years' loss ratio. The expense ratio decreased compared to 2018, primarily due to the favorable impact of higher earned premiums in 2019 compared to 2018, partially offset by higher variable expenses. Higher variable expenses were largely driven by a lower benefit from ceding commissions in 2019 compared to 2018 due to recent changes in our outwards reinsurance treaty structures. In late 2018, we shifted from buying proportional reinsurance coverages towards excess of loss coverages for our general liability and professional liability product lines.

The Insurance segment's 2019 combined ratio included \$462.1 million of favorable development on prior years' loss reserves compared to \$502.3 million in 2018. The decrease in favorable development was primarily due to less favorable development on our marine and energy product lines in 2019 compared to 2018 and adverse development on our property product lines in 2019 compared to favorable development in 2018. These unfavorable changes were partially offset by more favorable development on our general liability product lines in 2019 compared to 2018. The adverse development on our property product lines in 2019 was due to adverse development on our brokerage property product lines resulting from higher than expected attritional losses as well as modest adverse development on prior year catastrophes.

The following is a discussion of the product lines with the most significant development on prior years' loss reserves in the Insurance segment during the last two years.

The favorable development on prior years' loss reserves in the Insurance segment in 2019 and 2018 included \$161.4 million and \$143.0 million, respectively, of favorable development on various long-tail general and excess liability lines. The favorable development in 2019 was most significant on the 2015 to 2018 accident years. In 2019, the favorable development was due in part to lower loss severity than originally anticipated. The favorable development in 2018 occurred across several accident years, but was most significant on the 2012 to 2017 accident years. In 2018, the favorable development was due in part to lower than expected claim frequency. As a result of these factors, our actuarial estimates of the ultimate liability for unpaid losses and loss adjustment expenses in 2019 and 2018 were reduced, and management reduced prior years' loss reserves accordingly.

In 2019 and 2018, we also experienced \$108.4 million and \$100.1 million, respectively, of favorable development on our workers' compensation product line. The favorable development in 2019 occurred across several accident years, but was most significant on the 2016 to 2018 accident years. The favorable development in 2018 was most significant on the 2013 to 2017 accident years. In both years, actual incurred losses and loss adjustment expenses on prior accident years for reported claims on our workers' compensation product lines were less than we anticipated in our actuarial analyses due in part to lower loss severity than originally anticipated and a net decrease in open claims. As a result, our actuaries reduced their estimates of ultimate losses in 2019 and 2018 and management assigned greater credibility to this favorable experience and reduced prior years' loss reserves accordingly.

In 2019 and 2018, we also experienced \$61.8 million and \$68.5 million, respectively, of favorable development on our professional liability product lines. The favorable development in 2019 occurred across several accident years, but was most significant on the 2017 and 2018 accident years. The favorable development in 2018 occurred across several accident years, but was most significant on the 2016 and 2017 accident years. In 2019 and 2018, the favorable development occurred across multiple professional liability lines and was driven primarily by lower than expected case incurred losses. In 2019 there was also a decrease in the frequency of large losses. As a result, our actuaries reduced their estimates of ultimate losses in 2019 and 2018 and management assigned greater credibility to this favorable experience and reduced prior years' loss reserves accordingly.

In 2019 and 2018, we also experienced \$43.7 million and \$70.7 million, respectively, of favorable development on our marine and energy product lines. The favorable development in 2019 was most significant on the 2017 and 2018 accident years, primarily driven by lower than expected loss severity and claims frequency. The favorable development in 2018 was most significant on the 2013 to 2017 accident years, driven by favorable development on the 2017 Catastrophes and lower than expected development on known claims. As a result of these factors, our actuarial estimates of the ultimate liability for unpaid losses and loss adjustment expenses were reduced, and management reduced prior years' loss reserves accordingly.

Reinsurance Segment

The combined ratio for the Reinsurance segment in 2019 was 104% (including 10 points for the underwriting loss on the 2019 Catastrophes) compared to 113% (including 19 points for the underwriting loss on the 2018 Catastrophes) in 2018. The decrease in the combined ratio was primarily driven by lower catastrophe losses, as well as more favorable development on prior accident years' loss reserves in 2019 compared to 2018. Excluding the impact of the 2019 and 2018 Catastrophes, the current accident year loss ratio increased due to higher attritional losses on our property product lines arising from recent changes in our outwards property reinsurance treaty structures. In 2019, we eliminated our proportional property reinsurance treaty and purchased additional excess of loss property and catastrophe reinsurance coverage. We also experienced higher attritional losses across most of our other product lines in 2019 compared to 2018. These unfavorable impacts on the current accident year loss ratio in 2019 were partially offset by net favorable premium adjustments in 2019, primarily on our professional liability product lines, compared to net unfavorable premium adjustments 2018.

The Reinsurance segment's 2019 combined ratio included \$64.8 million of favorable development on prior years' loss reserves compared to \$43.0 million in 2018. The increase in favorable development was primarily due to more favorable development on our property product lines in 2019 compared to 2018, which included favorable development on prior year catastrophes in 2019 compared to adverse development on prior year catastrophes in 2018. We also experienced favorable development on our general liability product lines in 2019 compared to adverse development in 2018. These favorable changes were partially offset by less favorable development on our credit and surety product lines in 2019 compared to 2018.

The following is a discussion of the product lines with the most significant development on prior years' loss reserves in the Reinsurance segment during the last two years.

The favorable development on prior years' loss reserves in the Reinsurance segment in 2019 included \$29.6 million of favorable development on our property product lines. The favorable development in 2019 occurred across several accident years, but was most significant on the 2016 and 2017 accident years. The favorable development in 2019 was driven by lower than expected incurred and paid losses on reported claims. As a result, our actuarial estimates of the ultimate liability for unpaid losses and loss adjustment expenses were reduced, and management reduced prior years' loss reserves accordingly.

In 2019, we also experienced \$26.2 million of favorable development on our whole account product lines. The favorable development in 2019 occurred across several accident years, but was most significant on accident years prior to 2010. The favorable development in 2019 was driven by lower than expected incurred and paid losses on reported claims giving greater credibility to a favorable loss development trend. As a result, our actuarial estimates of the ultimate liability for unpaid losses and loss adjustment expenses were reduced, and management reduced prior years' loss reserves accordingly.

The favorable development on prior years' loss reserves in the Reinsurance segment in 2018 included \$23.9 million of favorable development on our credit and surety product lines, across several accident years. The favorable development in 2018 was driven primarily by lower than expected incurred and paid losses on reported claims. As a result of these factors, our actuarial estimates of the ultimate liability for unpaid losses and loss adjustment expenses were reduced, and management reduced prior years' loss reserves accordingly.

In 2018, we also experienced \$18.0 million of favorable development on our marine and energy product lines. The favorable development occurred across several accident years, but was most significant on the 2012 to 2016 accident years. The favorable development in 2018 was primarily driven by lower than expected loss severity and claims frequency. As a result of these factors, our actuarial estimates of the ultimate liability for unpaid losses and loss adjustment expenses were reduced, and management reduced prior years' loss reserves accordingly.

Prior years' loss reserves in the Reinsurance segment in 2018 also included \$16.2 million of adverse development on our professional liability product lines. In 2018, we experienced adverse claims activity on certain of our professional liability product lines and recognized \$35.7 million of adverse development. Adverse development on certain of our professional liability product lines, was partially offset by \$19.6 million of favorable development on our medical product lines during 2018, primarily on the 2009 to 2013 accident years. The favorable development was driven by a combination of factors, including lower loss severity than was originally anticipated and a decrease in the frequency of claims. As a result of these factors, our actuarial estimates of the ultimate liability for unpaid losses and loss adjustment expenses were reduced, and management reduced prior years' loss reserves accordingly.

The following tables summarize the increases (decreases) in prior years' loss reserves, as discussed above.

<i>(dollars in millions)</i>	Year Ended December 31, 2019			
	Insurance Segment	Reinsurance Segment	Other	Total
Insurance segment:				
General liability	\$ (161.4)			\$ (161.4)
Workers' compensation	(108.4)			(108.4)
Professional liability	(61.8)			(61.8)
Marine and energy	(43.7)			(43.7)
Reinsurance segment:				
Property		\$ (29.6)		(29.6)
Whole account		(26.2)		(26.2)
Net other prior years' development	(86.8)	(9.0)	\$ (8.4)	(104.2)
Decrease	<u>\$ (462.1)</u>	<u>\$ (64.8)</u>	<u>\$ (8.4)</u>	<u>\$ (535.3)</u>

<i>(dollars in millions)</i>	Year Ended December 31, 2018			
	Insurance Segment	Reinsurance Segment	Other	Total
Insurance segment:				
General liability	\$ (143.0)			\$ (143.0)
Workers' compensation	(100.1)			(100.1)
Professional liability	(68.5)			(68.5)
Marine and energy	(70.7)			(70.7)
Reinsurance segment:				
Credit and surety		\$ (23.9)		(23.9)
Marine and energy		(18.0)		(18.0)
Professional liability		16.2		16.2
Net other prior years' development	(120.0)	(17.3)	\$ (5.7)	(143.0)
Decrease	<u>\$ (502.3)</u>	<u>\$ (43.0)</u>	<u>\$ (5.7)</u>	<u>\$ (551.0)</u>

Over the past two years, we have experienced favorable development on prior years' loss reserves of 6% of beginning of year net loss reserves. It is difficult for management to predict the duration and magnitude of an existing trend and, on a relative basis, it is even more difficult to predict the emergence of factors or trends that are unknown today but may have a material impact on loss reserve development. In assessing the likelihood of whether the above favorable trends will continue and whether other trends may develop, we believe that a reasonably likely movement in prior years' loss reserves during 2020 would range from favorable development of less than 1%, or \$50 million, to favorable development of approximately 7%, or \$650 million, of December 31, 2019 net loss reserves.

Premiums

The following table summarizes gross premium volume.

Gross Premium Volume

<i>(dollars in thousands)</i>	Years Ended December 31,	
	2019	2018
Insurance	\$ 5,320,253	\$ 4,749,166
Reinsurance	1,114,153	1,050,870
Other underwriting	(79)	(1,040)
Total Underwriting	6,434,327	5,798,996
Program services and other	2,345,644	2,065,473
Total	\$ 8,779,971	\$ 7,864,469

Gross premium volume in our underwriting segments increased 11% in 2019 compared to 2018. The increase in gross premium volume arose from both our Insurance and Reinsurance segments. Also impacting consolidated gross premium volume were gross premiums written from our program services business and other fronting arrangements, which increased 14% in 2019. Substantially all gross premiums from our program services business and other fronting arrangements were ceded to third parties in 2019 and 2018.

Gross premium volume in our Insurance segment increased 12% in 2019 compared to 2018. The increase was primarily driven by growth within our general liability, professional liability and personal lines product lines.

Gross premium volume in our Reinsurance segment increased 6% in 2019 compared to 2018. The increase was driven by higher gross premiums within our general liability product lines, primarily due to a favorable impact from the timing of renewals, higher premium volume within our workers' compensation product line and favorable premium adjustments on our professional liability product lines. These increases were partially offset by lower gross premiums in our property product lines, primarily due to non-renewals. Significant variability in gross premium volume can be expected in our Reinsurance segment due to individually significant contracts and multi-year contracts.

Following the high level of natural catastrophes that occurred in 2017 and 2018, and based on general market conditions, we have seen more favorable rates, particularly on our catastrophe-exposed and loss-affected business. We are also seeing improved pricing on many of our other product lines, the primary exception being workers' compensation, where we continue to see rate decreases given favorable experience in recent years. When we believe the prevailing market price will not support our underwriting profit targets, the business is not written. As a result of our underwriting discipline, gross premium volume may vary when we alter our product offerings to maintain or improve underwriting profitability.

The following table summarizes net written premiums.

Net Written Premiums

<i>(dollars in thousands)</i>	Years Ended December 31,	
	2019	2018
Insurance	\$ 4,444,702	\$ 3,904,773
Reinsurance	964,947	882,285
Other underwriting	581	(1,468)
Total Underwriting	5,410,230	4,785,590
Program services and other	1,841	1,988
Total	\$ 5,412,071	\$ 4,787,578

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Net retention of gross premium volume for our underwriting operations was 84% in 2019 and 83% in 2018. The increase in net retention in 2019 was driven by an increase in net retention in our Insurance segment resulting from recent changes in our outwards reinsurance treaty structures. In late 2018, we shifted from buying proportional reinsurance coverages towards excess of loss coverages for our general liability and professional liability product lines, which resulted in higher retentions. These increases in net retention were partially offset by lower retention on our personal lines product lines. Within our underwriting operations, we purchase reinsurance and retrocessional reinsurance in order to manage our net retention on individual risks and overall exposure to losses, and enable us to write policies with sufficient limits to meet policyholder needs.

The following table summarizes earned premiums.

Earned Premiums

<i>(dollars in thousands)</i>	Years Ended December 31,	
	2019	2018
Insurance	\$ 4,144,073	\$ 3,783,939
Reinsurance	903,587	928,574
Other underwriting	581	(1,468)
Total Underwriting	5,048,241	4,711,045
Program services and other	1,552	1,015
Total	\$ 5,049,793	\$ 4,712,060

Earned premiums for 2019 increased 7% compared to 2018. The increase in earned premiums was attributable to an increase in earned premiums in our Insurance segment, partially offset by a decrease in our Reinsurance segment. The increase in earned premiums in our Insurance segment was primarily due to the increase in gross premium volume within our general liability and professional liability product lines, as described above. The decrease in earned premiums in our Reinsurance segment was primarily driven by the non-renewal of two large specialty quota share treaties and lower premium volume in our property product lines, as described above. These decreases were partially offset by an increase in gross premium volume within our workers' compensation and professional liability product lines, as described above.

Investing Results

Our business strategy recognizes the importance of both consistent underwriting and operating profits and superior investment returns to build shareholder value. We rely on sound underwriting practices to produce investable funds while minimizing underwriting risk. We measure investing results by our net investment income and net investment gains as well as our taxable equivalent total investment return.

The following table summarizes our investment performance.

<i>(dollars in thousands)</i>	Years Ended December 31,	
	2019	2018
Net investment income	\$ 451,888	\$ 434,215
Net investment gains (losses)	\$ 1,601,722	\$ (437,596)
Change in net unrealized investment gains on available-for-sale investments ⁽¹⁾	\$ 433,280	\$ (299,446)
Investment yield ⁽²⁾	3.0%	2.7 %
Taxable equivalent total investment return, before foreign currency effect	14.4%	(0.7)%
Taxable equivalent total investment return	14.6%	(1.0)%
Invested assets, end of year	\$ 22,258,265	\$ 19,238,261

⁽¹⁾ The change in net unrealized gains on available-for-sale securities excludes the reserve deficiency adjustment for life and annuity benefit reserves of \$51.4 million for the year ended December 31, 2019.

⁽²⁾ Investment yield reflects net investment income as a percentage of monthly average invested assets at amortized cost.

Net investment gains for 2019 were \$1.6 billion compared to net investment losses of \$437.6 million in 2018. See note 3(e) of the notes to consolidated financial statements for further details on the components of net investment gains (losses). Net investment gains in 2019 were attributable to an increase in the fair value of equity securities of \$1.6 billion, which was driven by favorable market value movements. Net investment losses in 2018 were primarily attributable to a decrease in the fair value of equity securities of \$425.6 million in 2018, which was driven by unfavorable market value movements and a \$108.6 million decline in the fair value of our investments in the Markel CATCo Funds. The decrease in fair value of these funds in 2018 primarily resulted from decreases in the net asset value following the impact of losses from Hurricanes Harvey, Irma and Maria and the 2017 wildfires in California on the underlying reinsurance contracts in which the Markel CATCo Funds are invested. Net investment losses in 2018 also included a loss of \$16.0 million related to our investment in CROF. At December 31, 2019 and 2018, the fair value of our investments in the Markel CATCo Funds and CROF totaled \$50.6 million and \$58.2 million, respectively, which is included in equity securities on our consolidated balance sheets. These investments remain exposed to adverse development on loss events that occurred in 2019, 2018 and 2017, which may result in further declines in fair value.

In 2019, the increase in net unrealized gains on available-for-sale investments was \$433.3 million, which was attributable to an increase in the fair value of our fixed maturity portfolio in 2019 as a result of a decrease in interest rates. In 2018, the decrease in net unrealized gains on available-for-sale investments was \$299.4 million, which was attributable to a decrease in the fair value of our fixed maturity portfolio in 2018 as a result of an increase in interest rates.

Net investment income increased 4% in 2019 compared to 2018. The increase in 2019 was driven by higher dividend income due to increased equity holdings and dividend rates. Higher dividend income in 2019 was partially offset by a decrease in interest income on our fixed maturity portfolio, primarily driven by a decrease in our holdings. See note 3(d) of the notes to consolidated financial statements for further details on the components of net investment income.

We also evaluate our investment performance by analyzing taxable equivalent total investment return, which is a non-GAAP financial measure. Taxable equivalent total investment return includes items that impact net income, such as coupon interest on fixed maturities, changes in fair value of equity securities, dividends on equity securities and realized investment gains or losses on available-for-sale securities, as well as changes in unrealized gains or losses on available-for-sale securities, which do not impact net income. Certain items that are included in net investment income have been excluded from the calculation of taxable equivalent total investment return, such as amortization and accretion of premiums and discounts on our fixed maturity portfolio, to provide a comparable basis for measuring our investment return against industry investment returns. The calculation of taxable equivalent total investment return also includes the current tax benefit associated with income on certain investments that is either taxed at a lower rate than the statutory income tax rate or is not fully included in U.S. taxable income. We believe the taxable equivalent total investment return is a better reflection of the economics of our decision to invest in certain asset classes. We focus on our long-term investment return, understanding that the level of investment gains or losses may vary from one period to the next.

The following table reconciles investment yield to taxable equivalent total investment return.

	Years Ended December 31,	
	2019	2018
Investment yield ⁽¹⁾	3.0 %	2.7 %
Adjustment of investment yield from amortized cost to fair value	(0.7)%	(0.6)%
Net amortization of net premium on fixed maturities	0.4 %	0.4 %
Net investment gains (losses) and change in net unrealized investment gains on available-for-sale securities	10.3 %	(3.4)%
Taxable equivalent effect for interest and dividends ⁽²⁾	0.2 %	0.1 %
Other ⁽³⁾	1.4 %	(0.2)%
Taxable equivalent total investment return	14.6 %	(1.0)%

⁽¹⁾ Investment yield reflects net investment income as a percentage of monthly average invested assets at amortized cost.

⁽²⁾ Adjustment to tax-exempt interest and dividend income to reflect a taxable equivalent basis.

⁽³⁾ Adjustment to reflect the impact of changes in foreign currency exchange rates and time-weighting the inputs to the calculation of taxable equivalent total investment return.

Investments, cash and cash equivalents and restricted cash and cash equivalents (invested assets) increased 16% in 2019. The increase in the investment portfolio in 2019 was attributable to increases in the fair value of equity securities of \$1.6 billion, cash flows from operations of \$1.3 billion and our net issuances of senior long-term debt and other debt totaling \$541.5 million.

Short-term investments, cash and cash equivalents and restricted cash and cash equivalents represented 21% of our invested assets at December 31, 2019 compared to 18% at December 31, 2018. Fixed maturities represented 45% of our invested assets at December 31, 2019 compared to 52% at December 31, 2018. Equity securities at December 31, 2019 represented 34% of our invested assets compared to 30% at December 31, 2018. The change in the composition of the portfolio from December 31, 2018 to December 31, 2019 is primarily due to the increase in the fair value of our equity securities portfolio in 2019. We also increased our holdings of equity securities during both 2019 and 2018 in order to achieve higher long-term investment returns. In 2018, however, the increase in our holdings of equity securities was more than offset by declines in the fair value of the securities. In 2019, our holdings of cash and cash equivalents increased primarily due to operating cash inflows, our net issuances of senior long-term debt and net maturities and calls of fixed maturities. During 2018, we used cash and cash equivalents and short-term investments to purchase fixed maturities and we also decreased our holdings of short-term investments to fund acquisitions.

Markel Ventures

We report the results of our Markel Ventures operations in our Markel Ventures segment. This segment includes a diverse portfolio of businesses from different industries that offer various types of products and services to businesses and consumers, predominately in the United States. We measure Markel Ventures' results by its operating income and net income, as well as earnings before interest, income taxes, depreciation and amortization (EBITDA). We consolidate the results of our Markel Ventures subsidiaries on a one-month lag, with the exception of significant transactions or events that occur during the intervening period.

The following tables summarize the amounts recognized on the consolidated balance sheets and consolidated statements of income related to Markel Ventures.

<i>(dollars in thousands)</i>	December 31,	
	2019	2018
ASSETS		
Cash and cash equivalents	\$ 256,758	\$ 164,336
Receivables	225,630	188,048
Goodwill	606,777	497,338
Intangible assets	473,122	431,457
Other assets:		
Inventory	303,053	298,729
Property, plant and equipment, net	441,934	407,834
Other	243,561	136,764
Total Other assets	988,548	843,327
Total Assets	\$ 2,550,835	\$ 2,124,506
LIABILITIES AND EQUITY		
Accounts payable and accrued liabilities	\$ 139,068	\$ 149,907
Senior long-term debt and other debt ⁽¹⁾	929,243	684,099
Other liabilities	367,340	258,843
Total Liabilities	1,435,651	1,092,849
Redeemable noncontrolling interests	177,562	174,062
Shareholders' equity ⁽²⁾	950,086	860,931
Noncontrolling interests	(12,464)	(3,336)
Total Equity	937,622	857,595
Total Liabilities and Equity	\$ 2,550,835	\$ 2,124,506

(1) Debt as of December 31, 2019 and 2018 included \$858.8 million and \$606.0 million, respectively, of debt due to other subsidiaries of Markel Corporation, which was eliminated in consolidation.

(2) Shareholders' equity as of December 31, 2019 and 2018 included \$654.3 million and \$658.6 million, respectively, of common stock, which represents Markel Corporation's investment in Markel Ventures, which was eliminated in consolidation.

<i>(dollars in thousands)</i>	Years ended December 31,	
	2019	2018
OPERATING REVENUES		
Net investment income	\$ 736	\$ 513
Products revenues	1,609,586	1,497,523
Services and other revenues ⁽¹⁾	445,659	417,461
Total Operating Revenues	2,055,981	1,915,497
OPERATING EXPENSES		
Products expenses	1,455,245	1,413,248
Services and other expenses	389,385	366,739
Amortization of intangible assets	41,973	40,208
Impairment of goodwill and intangible assets	—	14,904
Total Operating Expenses	1,886,603	1,835,099
Operating Income	169,378	80,398
Net foreign exchange gains	384	21
Interest expense ⁽²⁾	(33,795)	(28,423)
Income Before Income Taxes	135,967	51,996
Income tax expense	(35,317)	(18,579)
Net Income	100,650	33,417
Net (income) loss attributable to noncontrolling interests	(7,749)	1,841
Net Income to Shareholders	\$ 92,901	\$ 35,258
EBITDA	\$ 263,944	\$ 169,894

- (1) Services and other revenues for the years ended December 31, 2019 and 2018 included intercompany revenues of \$1.0 million and \$2.9 million, respectively, which were eliminated in consolidation.
- (2) Interest expense for the years ended December 31, 2019 and 2018 included intercompany interest expense of \$24.9 million and \$18.1 million, respectively, which was eliminated in consolidation.

Operating revenues from our Markel Ventures operations increased in 2019 compared to 2018 driven by higher revenues in our products businesses, primarily due to the contribution of revenues from Brahmin, which was acquired in the fourth quarter of 2018. The increase was also attributable to higher sales volumes and selling prices at our transportation-related businesses and growth within one of our consulting services businesses. These increases were partially offset by lower sales volumes at one of our equipment manufacturing businesses.

Operating income and EBITDA from our Markel Ventures operations increased in 2019 compared to 2018 due in part to expenses incurred in 2018 related to an investigation and remediation accrual associated with the manufacture of products at one of our businesses and an impairment charge related to intangible assets at this reporting unit in 2018. See note 20 of the notes to consolidated financial statements for more details regarding the investigation and remediation accrual. Excluding these charges, the increase in operating income and EBITDA in 2019 was primarily attributable to improved operating results at one of our consumer and building products businesses, higher revenues from our transportation-related businesses, as described above, and the contribution of a full year of operations at Brahmin, partially offset by the impact of lower revenues at one of our equipment manufacturing businesses, as described above, and losses in 2019 related to the disposition of certain components of one of our equipment manufacturing businesses.

Net income to shareholders from our Markel Ventures operations increased in 2019 compared to 2018, primarily due to higher operating income, partially offset by higher income tax and interest expenses.

Markel Ventures EBITDA is a non-GAAP financial measure. We use Markel Ventures EBITDA as an operating performance measure in conjunction with U.S. GAAP measures, including operating revenues, operating income and net income to shareholders, to monitor and evaluate the performance of our Markel Ventures segment. Because EBITDA excludes interest, income taxes, depreciation and amortization, it provides an indicator of economic performance that is useful to both management and investors in evaluating our Markel Ventures businesses as it is not affected by levels of debt, interest rates, effective tax rates or levels of depreciation or amortization resulting from purchase accounting. The following table reconciles Markel Ventures operating income to Markel Ventures EBITDA.

<i>(dollars in thousands)</i>	Years ended December 31,	
	2019	2018
Markel Ventures operating income ⁽¹⁾	\$ 168,417	\$ 77,479
Depreciation expense	53,554	52,207
Amortization of intangible assets	41,973	40,208
Markel Ventures EBITDA	\$ 263,944	\$ 169,894

⁽¹⁾ Operating income for the years ended December 31, 2019 and 2018 excluded intercompany revenues of \$1.0 million and \$2.9 million, respectively.

The following table summarizes the cash flows attributable to Markel Ventures for the years ended December 31, 2019 and 2018.

<i>(dollars in thousands)</i>	Years ended December 31,	
	2019	2018
Cash, cash equivalents, restricted cash and restricted cash equivalents, beginning of year	\$ 164,336	\$ 165,172
Net cash provided by operating activities ⁽¹⁾	201,514	163,870
Net cash used by investing activities	(321,950)	(256,533)
Net cash provided by financing activities ⁽²⁾	213,032	92,125
Effect of foreign currency rate changes on cash, cash equivalents, restricted cash and restricted cash equivalents	(174)	(298)
Increase (decrease) in cash, cash equivalents, restricted cash and restricted cash equivalents	92,422	(836)
Cash, cash equivalents, restricted cash and restricted cash equivalents, end of year	\$ 256,758	\$ 164,336

⁽¹⁾ Net cash provided by operating activities for the years ended December 31, 2019 and 2018 included cash flows related to intercompany revenues, which were eliminated in consolidation.

⁽²⁾ Net cash provided by financing activities for the years ended December 31, 2019 and 2018 included net additions to intercompany debt of \$252.8 million and \$130.0 million, respectively, which were eliminated in consolidation.

Other Operations

The following table presents the components of operating revenues and operating expenses that are not included in a reportable segment.

(dollars in thousands)	Years Ended December 31,							
	2019				2018			
	Services and other revenues	Services and other expenses	Amortization of intangible assets	Impairment of goodwill and intangible assets	Services and other revenues	Services and other expenses	Amortization of intangible assets	Impairment of goodwill and intangible assets
Other operations:								
Insurance-linked securities	\$ 225,604	\$ 217,412	\$ 43,360	\$ —	\$ 91,527	\$ 21,417	\$ 7,964	\$ 179,017
Program services	108,813	19,556	20,938	—	95,688	24,298	20,776	—
Life and annuity	1,507	21,062	—	—	1,660	27,855	—	—
Other	32,580	28,264	2,700	—	31,666	34,615	2,518	846
	368,504	286,294	66,998	—	220,541	108,185	31,258	179,863
Underwriting operations			39,667	—			44,464	4,431
Total	\$ 368,504	\$ 286,294	\$ 106,665	\$ —	\$ 220,541	\$ 108,185	\$ 75,722	\$ 184,294

Insurance-Linked Securities

The increase in operating revenues in our insurance-linked securities operations in 2019 compared to 2018 reflects the full year contribution of revenues from Nephila in 2019, which was acquired in the fourth quarter of 2018. The contribution of revenues from Nephila was partially offset by lower revenues from MCIM due to lower assets under management during 2019 compared to 2018 and, effective January 1, 2019, a reduction in management fees charged on sidepocket shares, which represent shares that are restricted following the occurrence of catastrophic loss events for which uncertainty still exists around the ultimate incurred losses on the underlying reinsurance contracts.

The increase in operating expenses in our insurance-linked securities operations in 2019 compared to 2018 is attributable to a full year of operating expenses for Nephila in 2019 and the impact of the reversal of accrued incentive and retention compensation for two former MCIM senior executives totaling \$34.9 million in 2018, which was reflected as a reduction to services and other expenses in 2018. Additionally, 2019 included costs associated with the internal review of matters at our Markel CATCo operations and related litigation costs. These increases were partially offset by the impact of a goodwill and intangible asset impairment charge totaling \$179.0 million at the MCIM reporting unit in 2018. See note 20 of the notes to consolidated financial statements for further details around developments in our run-off Markel CATCo operations.

Program Services

Operating revenues in our program services operations increased 14% compared to 2018 due to higher premium volume. Operating expenses in our program services operations decreased in 2019 compared to 2018 due to higher acquisition-related expenses in 2018.

Interest Expense, Loss on Early Extinguishment of Debt and Income Taxes

Interest Expense and Loss on Early Extinguishment of Debt

Interest expense was \$171.7 million in 2019 compared to \$154.2 million in 2018. The increase in interest expense in 2019 compared to 2018 was primarily due to a \$565.2 million net increase in principal outstanding on our senior long-term debt during 2019. Interest expense in 2019 included interest expense associated with our 5.0% unsecured senior notes issued in the second quarter of 2019 and our 3.35% and 4.15% unsecured senior notes issued in the third quarter of 2019. These increases were partially offset by lower interest expense resulting from the repayment of our 7.125% unsecured senior notes in the third quarter of 2019 as well as the purchase and redemption of our 6.25% and 5.35% unsecured senior notes in the third and fourth quarters of 2019.

In September 2019, we purchased \$125.2 million of principal on our 6.25% unsecured senior notes due September 30, 2020 (2020 Notes) and \$97.8 million of principal on our 5.35% unsecured senior notes due June 1, 2021 (2021 Notes) through a tender offer at a total purchase price of \$130.1 million and \$103.0 million, respectively. In October 2019, we redeemed the remaining outstanding balance of \$224.8 million on our 2020 Notes and \$152.2 million on our 2021 Notes for a total purchase price of \$233.4 million and \$160.2 million, respectively. In connection with the September 2019 tender offer and purchase and the October 2019 redemption, we recognized losses on early extinguishment of debt of \$17.6 million during 2019.

See "Liquidity and Capital Resources" for further discussion of our 2019 senior long-term debt transactions.

Income Taxes

The effective tax rate for 2019 was 21%. The effective tax rate for 2018 was not meaningful due to a small pre-tax loss for the year and a one-time deferred tax charge, described below.

In 2018, we decided to elect to treat our two most significant United Kingdom (U.K.) subsidiaries as domestic corporations for U.S. tax purposes. As a result, the earnings and profits from those subsidiaries are no longer considered to be indefinitely reinvested, and during 2018, we recorded a one-time deferred tax charge of \$103.3 million related to the book and tax basis differences attributable to those subsidiaries. In addition to this one-time deferred tax charge, our effective tax rate in 2018 differed from the statutory rate of 21% primarily as a result of nondeductible losses of \$124.6 million on our investments in the Markel CATCo Funds and CROF in 2018, partially offset by the impact of tax-exempt investment income.

Comprehensive Income (Loss) to Shareholders

The following table summarizes the components of comprehensive income (loss) to shareholders.

<i>(dollars in thousands)</i>	Years Ended December 31,	
	2019	2018
Net income (loss) to shareholders	\$ 1,790,466	\$ (128,180)
Other comprehensive income (loss)		
Change in net unrealized gains on available-for-sale investments, net of taxes	297,977	(233,476)
Other, net of taxes	5,424	(14,154)
Other comprehensive loss attributable to noncontrolling interest	21	40
Other comprehensive income (loss) to shareholders	303,422	(247,590)
Comprehensive income (loss) to shareholders	\$ 2,093,888	\$ (375,770)

Book Value per Share and Total Shareholder Return

Book value per share increased 23% for the year ended December 31, 2019 and decreased 4% for the year ended December 31, 2018, primarily due to net income to shareholders, as shown above. Over the past five years, we have grown book value per share at a compound annual rate of 8% to \$802.59 per share at December 31, 2019.

Our stock price per share increased 10% for the year ended December 31, 2019 and decreased 9% for the year ended December 31, 2018. Over the past five years, our stock price per share increased at a compound annual rate of 11%.

Liquidity and Capital Resources

Holding Company

We seek to maintain prudent levels of liquidity and financial leverage for the protection of our policyholders, creditors and shareholders. Our debt to capital ratio was 24% at December 31, 2019 and 25% at December 31, 2018.

At December 31, 2019, our holding company (Markel Corporation) held \$4.0 billion of invested assets compared to \$2.6 billion at December 31, 2018. The increase in holding company invested assets is primarily due to the net proceeds from the issuance of unsecured senior notes in 2019 and dividends received from our subsidiaries, partially offset by the repayment and purchase of certain unsecured senior notes in 2019. After satisfying our interest and principal obligations on our senior long-term debt and notes payable to subsidiaries, as well as any other holding company obligations, excess liquidity at Markel Corporation is available, among other things, to allocate capital to our existing businesses, complete acquisitions, build our portfolio of equity securities or repurchase shares of our common stock.

In August 2019, our Board of Directors approved a new share repurchase program (the 2019 Program) to replace the previous share repurchase program. Consistent with the previous program, the 2019 Program provides for the repurchase of up to \$300 million of common stock and has no expiration date but may be terminated by the Board of Directors at any time. As of December 31, 2019, we had repurchased 31,348 shares of common stock under the 2019 Program at a cost of \$35.8 million.

Our underwriting operations collect premiums and pay claims, reinsurance costs and operating expenses. Premiums collected from our underwriting operations are invested primarily in short-term investments and long-term fixed maturities. Short-term investments held by our insurance subsidiaries provide liquidity for projected claims, reinsurance costs and operating expenses. As a holding company, Markel Corporation receives cash from its subsidiaries as reimbursement for operating and other administrative expenses it incurs. The reimbursements are made within the guidelines of various management agreements between the holding company and its subsidiaries.

The holding company relies on dividends from its subsidiaries to meet debt service obligations. Under the insurance laws of the various states in which our domestic insurance subsidiaries are incorporated, an insurer is restricted in the amount of dividends it may pay without prior approval of regulatory authorities. There are also regulatory restrictions on the amount of dividends that certain of our foreign subsidiaries may pay based on applicable laws in Bermuda and the U.K. At December 31, 2019, our domestic insurance subsidiaries and Markel Bermuda Limited could pay ordinary dividends of \$962.8 million during the following twelve months under these laws.

In April 2019, we entered into a credit agreement for a new revolving credit facility, which provides up to \$300 million of capacity for future acquisitions, investments and stock repurchases and for other working capital and general corporate purposes. At our discretion, up to \$200 million of the total capacity may be used for letters of credit. We may increase the capacity of the facility by up to \$200 million subject to obtaining commitments for the increase and satisfying certain other terms and conditions. This facility replaced our previous \$300 million revolving credit facility and expires in April 2024. See note 13 of the notes to consolidated financial statements for further discussion of our revolving credit facility. As of December 31, 2019 and 2018, there were no borrowings outstanding on either of our revolving credit facilities.

We were in compliance with all covenants contained in our revolving credit facility at December 31, 2019. To the extent that we are not in compliance with our covenants, our access to the revolving credit facility could be restricted. While we believe this to be unlikely, the inability to access the revolving credit facility could adversely affect our liquidity.

We have access to various capital sources, including dividends from certain of our insurance and Markel Ventures subsidiaries, holding company invested assets, undrawn capacity under our revolving credit facility and access to the debt and equity capital markets. We believe that we have sufficient liquidity to meet our capital needs. However, the availability and terms of future financings will depend on a variety of factors. For more discussion regarding our access to capital sources, see "Risk Factors," including the section titled "Access to Capital."

Cash Flows and Invested Assets

Net cash provided by operating activities was \$1.3 billion in 2019 compared to \$892.9 million in 2018. The increase in net cash flows from operating activities for the year ended December 31, 2019 was primarily driven by higher net premiums collections in our Insurance segment compared to 2018.

Net cash used by investing activities was \$535.2 million in 2019 compared to \$797.2 million in 2018. In 2019, net cash used by investing activities included \$245.3 million of net cash used for acquisitions and \$257.7 million of cash used for equity method investments, including \$212.5 million of cash used to purchase a minority ownership interest in The Hagerty Group, LLC. Net cash used by investing activities in 2019 was net of \$170.3 million of proceeds from maturities and sales of fixed maturities and sales of equity securities, net of purchases of fixed maturities and equity securities. Net cash used by investing activities in 2018 included \$574.9 million of purchases of fixed maturities and equity securities, net of proceeds from maturities and sales of fixed maturities and sales of equity securities. In 2018, net cash used for acquisitions of \$1.2 billion was partially offset by reductions in our holdings of short-term investments totaling \$1.1 billion. In 2018, we reduced our holdings of short-term investments to fund acquisitions. See "Investing Results" for further discussion of changes in our allocation of funds within the investment portfolio in 2018. Cash flow from investing activities is affected by various factors such as anticipated payment of claims, financing activity, acquisition opportunities and individual buy and sell decisions made in the normal course of our investment portfolio management.

Invested assets were \$22.3 billion at December 31, 2019 compared to \$19.2 billion at December 31, 2018. The increase was primarily attributable to an increase in the fair value of our equity securities, driven by favorable market value movements.

Net cash provided by financing activities was \$359.3 million in 2019 compared to net cash used by financing activities of \$179.0 million in 2018. In 2019, we issued unsecured senior notes with net proceeds of \$1.4 billion, before expenses. We used a portion of these proceeds to repay the remaining outstanding balance of our 7.125% unsecured senior notes due September 30, 2019 (\$234.8 million aggregate principal outstanding at December 31, 2018). We used an additional portion of these proceeds to purchase a total of \$600.0 million of principal on two additional series of our unsecured senior notes for a total purchase price of \$626.7 million. The remaining proceeds from our 2019 debt issuances are available to be used for general corporate purposes. See note 13 of the notes to consolidated financial statements for more details regarding the components of senior long-term debt. In 2018, cash used by financing activities included \$82.3 million of net repayments of debt. Cash of \$116.3 million and \$54.0 million was used to repurchase shares of our common stock during 2019 and 2018, respectively.

Contractual Obligations

The following table summarizes our contractual cash payment obligations at December 31, 2019.

(dollars in thousands)	Payments Due by Period ⁽¹⁾				
	Total	Less than 1 year	1-3 years	4-5 years	More than 5 years
Unpaid losses and loss adjustment expenses (estimated)	\$ 14,770,585	\$ 5,096,551	\$ 4,464,073	\$ 2,280,539	\$ 2,929,422
Life and annuity benefits (estimated)	1,238,505	77,683	130,108	121,380	909,334
Senior long-term debt and other debt	6,795,835	224,013	688,759	515,142	5,367,921
Total	\$ 22,804,925	\$ 5,398,247	\$ 5,282,940	\$ 2,917,061	\$ 9,206,677

(1) See notes 10, 12 and 13 of the notes to consolidated financial statements for further discussion of these obligations.

Unpaid losses and loss adjustment expenses were \$14.7 billion and \$14.3 billion at December 31, 2019 and 2018, respectively. Reserves for unpaid losses and loss adjustment expenses represent future contractual obligations associated with property and casualty insurance and reinsurance contracts issued to our policyholders or other insurance companies. Information presented in the table of contractual cash payment obligations is an estimate of our future payment of claims as of December 31, 2019. Payment patterns for losses and loss adjustment expenses were generally based upon historical claims settlement patterns. Each claim is settled individually based upon its merits and certain claims may take years to settle, especially if legal action is involved. The actual cash payments for settled claims will vary, possibly significantly, from the estimates shown in the preceding table. The unpaid losses and loss adjustment expenses in the table above are our gross estimates of payments for known liabilities as of December 31, 2019. The expected payments by period are the estimated payments at a future time, whereas the reserves for unpaid losses and loss adjustment expenses included on the consolidated balance sheet include the unamortized portion of any fair value adjustments for unpaid losses and loss adjustment expenses assumed in conjunction with an acquisition and any adjustments to discount reserves.

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The following table summarizes case reserves and IBNR reserves. See note 10 of the notes to consolidated financial statements and "Critical Accounting Estimates" for a discussion of estimates and assumptions related to unpaid losses and loss adjustment expenses.

<i>(dollars in thousands)</i>	Insurance	Reinsurance	Other underwriting	Program Services and other	Consolidated
December 31, 2019					
Case reserves	\$ 2,597,273	\$ 1,404,461	\$ 127,639	\$ 1,035,742	\$ 5,165,115
IBNR reserves	5,502,167	2,052,512	170,424	1,880,367	9,605,470
Total	\$ 8,099,440	\$ 3,456,973	\$ 298,063	\$ 2,916,109 ⁽¹⁾	\$ 14,770,585
December 31, 2018					
Case reserves	\$ 2,719,038	\$ 1,336,884	\$ 166,844	\$ 881,847	\$ 5,104,613
IBNR reserves	5,204,653	2,144,456	219,485	1,634,781	9,203,375
Total	\$ 7,923,691	\$ 3,481,340	\$ 386,329	\$ 2,516,628 ⁽¹⁾	\$ 14,307,988

(1) Substantially all of the premium written in our program services business is ceded, resulting in reinsurance recoverables on unpaid losses of \$2.9 billion and \$2.5 billion as of December 31, 2019 and 2018, respectively.

Reserves for life and annuity benefits represent future contractual obligations associated with reinsurance contracts issued to other insurance companies. Information presented in the table of contractual cash payment obligations is an estimate of our future payment of benefits as of December 31, 2019. The assumptions used in estimating the likely payments due by period are based on cedent experience, industry mortality tables, and our expense experience. Due to the inherent uncertainty in the process of estimating the timing of such payments, there is a risk that the amounts paid in any such period can be significantly different from the estimates shown in the preceding table. The life and annuity benefits in the above table are our gross estimates of known obligations as of December 31, 2019. These obligations are computed on a net present value basis on the consolidated balance sheet as of December 31, 2019, whereas the expected payments by period in the table above are the estimated payments at a future time and do not reflect a discount of the amount payable or any reserve deficiency adjustments for life and annuity benefit reserves.

Senior long-term debt and other debt was \$3.5 billion at December 31, 2019 and \$3.0 billion at December 31, 2018. The amounts in the contractual obligations table above include interest expense and exclude net unamortized premium and net unamortized debt issuance costs.

Restricted Assets and Capital

At December 31, 2019, we had \$4.2 billion of invested assets held in trust or on deposit for the benefit of policyholders or ceding companies or to support underwriting activities. Additionally, we have pledged investments and cash and cash equivalents totaling \$406.1 million at December 31, 2019 as security for letters of credit that have been issued by various banks on our behalf. These invested assets and the related liabilities are included in our consolidated balance sheet. See note 3(f) of the notes to consolidated financial statements for further discussion of restrictions over our invested assets.

Our insurance operations require capital to support premium writings, and we remain committed to maintaining adequate capital and surplus at each of our insurance subsidiaries. The National Association of Insurance Commissioners (NAIC) developed a model law and risk-based capital formula designed to help regulators identify domestic property and casualty insurers that may be inadequately capitalized. Under the NAIC's requirements, a domestic insurer must maintain total capital and surplus above a calculated threshold or face varying levels of regulatory action. Capital adequacy of our foreign insurance subsidiaries is regulated by applicable laws of the U.K., Bermuda and other jurisdictions, including Germany. At December 31, 2019, the capital and surplus of each of our insurance subsidiaries significantly exceeded the amount of statutory capital and surplus necessary to satisfy regulatory requirements.

Market Risk Disclosures

Market risk is the risk of economic losses due to adverse changes in the estimated fair value of a financial instrument as the result of changes in equity prices, interest rates, foreign currency exchange rates and commodity prices. Our consolidated balance sheets include assets and liabilities with estimated fair values that are subject to market risk. Our primary market risks have been equity price risk associated with investments in equity securities, interest rate risk associated with investments in fixed maturities and foreign currency exchange rate risk associated with our international operations. Some businesses within our Market Ventures operations are exposed to commodity price risk resulting from changes in the price of raw materials, parts and other components necessary to manufacture products, however, this risk is not material to the Company. The operating results of these businesses could be adversely impacted should they be unable to obtain price increases from customers in response to significant increases in raw material, parts and other component prices.

The estimated fair value of our investment portfolio at December 31, 2019 was \$22.3 billion, 45% of which was invested in fixed maturities and 34% of which was invested in equity securities. At December 31, 2018, the estimated fair value of our investment portfolio was \$19.2 billion, 52% of which was invested in fixed maturities and 30% of which was invested in equity securities.

Our fixed maturities and equity securities are recorded at fair value, which is measured based upon quoted prices in active markets, if available. We determine fair value for these investments after considering various sources of information, including information provided by a third party pricing service. The pricing service provides prices for substantially all of our fixed maturities and equity securities. In determining fair value, we generally do not adjust the prices obtained from the pricing service. We obtain an understanding of the pricing service's valuation methodologies and related inputs, which include, but are not limited to, reported trades, benchmark yields, issuer spreads, bids, offers, duration, credit ratings, estimated cash flows and prepayment speeds. We validate prices provided by the pricing service by reviewing prices from other pricing sources and analyzing pricing data in certain instances.

Equity Price Risk

We invest a portion of shareholder funds in equity securities, which have historically produced higher long-term returns relative to fixed maturities. We seek to invest in profitable companies, with honest and talented management, that exhibit reinvestment opportunities and capital discipline, at reasonable prices. We intend to hold these investments over the long term and focus on long-term total investment return, understanding that gains or losses on investments may fluctuate from one period to the next. Changes in the fair value of equity securities are recognized in net income.

At December 31, 2019, our equity portfolio was concentrated in terms of the number of issuers and industries. Such concentrations can lead to higher levels of price volatility. At December 31, 2019, our ten largest equity holdings represented \$3.0 billion, or 39%, of the equity portfolio. Investments in the property and casualty insurance industry represented \$1.2 billion, or 16%, of our equity portfolio at December 31, 2019. Our investments in the property and casualty insurance industry included a \$721.8 million investment in the common stock of Berkshire Hathaway Inc., a company whose subsidiaries engage in a number of diverse business activities in addition to insurance. We have investment guidelines that set limits on the equity holdings of our insurance subsidiaries.

The following table summarizes our equity price risk and shows the effect of a hypothetical 35% increase or decrease in market prices as of December 31, 2019 and 2018. The selected hypothetical changes do not indicate what could be the potential best or worst case scenarios.

<i>(dollars in millions)</i>	Estimated Fair Value	Hypothetical Price Change	Estimated Fair Value after Hypothetical Change in Prices	Estimated Hypothetical Percentage Increase (Decrease) in Shareholders' Equity
As of December 31, 2019				
Equity securities	\$ 7,591	35% increase	\$ 10,248	19.0 %
		35% decrease	4,934	(19.0)
As of December 31, 2018				
Equity securities	\$ 5,721	35% increase	\$ 7,723	17.4 %
		35% decrease	3,719	(17.4)

Interest Rate Risk

Our fixed maturity investments and borrowings are subject to interest rate risk. Increases and decreases in interest rates typically result in decreases and increases, respectively, in the fair value of these financial instruments.

The majority of our investable assets come from premiums paid by policyholders. These funds are invested predominantly in high quality government, municipal and corporate bonds that generally match the duration and currency of our loss reserves. The fixed maturity portfolio, including short-term investments and cash and cash equivalents, has an average duration of 4.0 years and an average rating of "AA." See note 3(c) of the notes to consolidated financial statements for disclosure of contractual maturity dates of our fixed maturity portfolio. The changes in the estimated fair value of the fixed maturity portfolio are presented as a component of shareholders' equity in accumulated other comprehensive income, net of taxes.

We work to manage the impact of interest rate fluctuations on our fixed maturity portfolio. The effective duration of the fixed maturity portfolio is managed with consideration given to the estimated duration of our liabilities. We have investment guidelines that limit the maximum duration and maturity of the fixed maturity portfolio.

We use a commercially available model to estimate the effect of interest rate risk on the fair values of our fixed maturity portfolio and borrowings. The model estimates the impact of interest rate changes on a wide range of factors including duration, prepayment, put options and call options. Fair values are estimated based on the net present value of cash flows, using a representative set of possible future interest rate scenarios. The model requires that numerous assumptions be made about the future. To the extent that any of the assumptions are invalid, incorrect estimates could result. The usefulness of a single point-in-time model is limited, as it is unable to accurately incorporate the full complexity of market interactions.

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The following table summarizes our interest rate risk and shows the effect of hypothetical changes in interest rates as of December 31, 2019 and 2018. The selected hypothetical changes do not indicate what could be the potential best or worst case scenarios.

				Hypothetical Percentage Increase (Decrease) in	
<i>(dollars in millions)</i>	Estimated Fair Value	Hypothetical Change in Interest Rates (bp=basis points)	Estimated Fair Value after Hypothetical Change in Interest Rates	Fair Value of Fixed Maturities	Shareholders' Equity
Fixed Maturity Investments					
As of December 31, 2019					
Total fixed maturity investments	\$ 9,971	200 bp decrease	\$ 11,212	12.4 %	8.9 %
		100 bp decrease	10,570	6.0	4.3
		100 bp increase	9,407	(5.7)	(4.0)
		200 bp increase	8,881	(10.9)	(7.8)
As of December 31, 2018					
Total fixed maturity investments	\$ 10,043	200 bp decrease	\$ 11,364	13.2 %	11.5 %
		100 bp decrease	10,681	6.4	5.6
		100 bp increase	9,436	(6.0)	(5.3)
		200 bp increase	8,848	(11.9)	(10.4)
Liabilities ⁽¹⁾					
As of December 31, 2019					
Borrowings	\$ 3,907	200 bp decrease	\$ 5,050		
		100 bp decrease	4,419		
		100 bp increase	3,486		
		200 bp increase	3,138		
As of December 31, 2018					
Borrowings	\$ 3,030	200 bp decrease	\$ 3,555		
		100 bp decrease	3,270		
		100 bp increase	2,826		
		200 bp increase	2,652		

⁽¹⁾ Changes in estimated fair value have no impact on shareholders' equity.

Foreign Currency Exchange Rate Risk

We have foreign currency exchange rate risk associated with certain of our assets and liabilities related to certain of our foreign operations. We manage this risk primarily by matching assets and liabilities in each foreign currency, other than non-monetary assets, as closely as possible. Non-monetary assets primarily consist of goodwill and intangible assets, a portion of which are remeasured into the U.S. Dollar at historic exchange rates. As of December 31, 2019 and December 31, 2018, the carrying value of goodwill and intangible assets which are subject to foreign currency exchange rate risk was \$123.0 million and \$126.5 million, respectively.

To assist with the matching of assets and liabilities in foreign currencies, we periodically purchase foreign currency forward contracts and we purchase or sell foreign currencies in the open market. Realized and unrealized gains and losses on our forward contracts are recorded in earnings. Our forward contracts generally have maturities of three months. At December 31, 2019 and 2018, substantially all of our monetary assets and liabilities denominated in foreign currencies were either matched or hedged.

At December 31, 2019 and 2018, 89% and 87%, respectively, of our invested assets were denominated in U.S. Dollars. At December 31, 2019 and 2018, 84% and 83%, respectively, of our reserves for unpaid losses and loss adjustment expenses and life and annuity benefits were denominated in U.S. Dollars. At those dates, the largest foreign currency denominated balances within both our invested assets and reserves for unpaid losses and loss adjustment expenses and life and annuity benefits were the Euro and British Pound Sterling.

Credit Risk

Fixed Maturity Investments

Credit risk exists within our fixed maturity portfolio from the potential for loss resulting from adverse changes in an issuer's ability to repay its debt obligations. We monitor our investment portfolio to ensure that credit risk does not exceed prudent levels. We have consistently invested in high credit quality, investment grade securities. Our fixed maturity portfolio has an average rating of "AA," with 98% rated "A" or better by at least one nationally recognized rating organization. Our policy is to invest in investment grade securities and to minimize investments in fixed maturities that are unrated or rated below investment grade. At December 31, 2019, less than 1% of our fixed maturity portfolio was unrated or rated below investment grade. Our fixed maturity portfolio includes securities issued with financial guaranty insurance. We purchase fixed maturities based on our assessment of the credit quality of the underlying assets without regard to insurance.

Our fixed maturity portfolio includes securities issued by foreign governments and non-sovereign foreign institutions. General concern exists about the financial difficulties facing certain foreign countries in light of the adverse economic conditions experienced over the past several years. We monitor developments in foreign countries, currencies and issuers that could pose risks to our fixed maturity portfolio, including ratings downgrades, political and financial changes and the widening of credit spreads. We believe that our fixed maturity portfolio is highly diversified and is comprised of high quality securities.

We obtain information from news services, rating agencies and various financial market participants to assess potential negative impacts on a country or company's financial risk profile. We analyze concentrations within our fixed maturity portfolio by country, currency and issuer, which allows us to assess our level of diversification with respect to these exposures, reduce troubled exposures should they occur and mitigate any future financial distress that these exposures could cause.

General concern exists about municipalities that experience financial difficulties during periods of adverse economic conditions. We manage the exposure to credit risk in our municipal bond portfolio by investing in high quality securities and by diversifying our holdings, which are typically either general obligation or revenue bonds related to essential products and services.

Reinsurance Recoverables

We have credit risk to the extent any of our reinsurers are unwilling or unable to meet their obligations under our ceded reinsurance agreements. Within our underwriting operations, our reinsurance recoverables balance for the ten largest reinsurers was \$1.6 billion at December 31, 2019, representing 62% of the total reinsurance recoverables, before considering allowances for bad debts. All of our ten largest reinsurers within our underwriting operations were rated "A" or better by A.M. Best. We were the beneficiary of letters of credit, trust accounts and funds withheld in the aggregate amount of \$550.7 million at December 31, 2019, collateralizing reinsurance recoverable balances due from these ten reinsurers.

Within our program services business, our reinsurance recoverables balance for the ten largest reinsurers was \$2.1 billion at December 31, 2019, representing 71% of the total reinsurance recoverables, before considering allowances for bad debts. Six of our ten largest reinsurers within our program services business were rated "A" or better by A.M. Best. We were the beneficiary of letters of credit, trust accounts and funds withheld in the aggregate amount of \$1.4 billion at December 31, 2019, collateralizing reinsurance recoverable balances due from these ten reinsurers. For reinsurers with a credit rating of lower than "A" we employ a stringent collateral monitoring program, under which the majority of the reinsurance recoverable balances are fully collateralized. These collateral requirements are regularly monitored by a credit committee within our program services operations. See note 11 of the notes to consolidated financial statements for further discussion of reinsurance recoverables and exposures.

Within our underwriting operations, we attempt to minimize credit exposure to reinsurers through adherence to internal reinsurance guidelines. We monitor changes in the financial condition of each of our reinsurers, and we assess our concentration of credit risk on a regular basis. Within our program services business, we mitigate credit risk by either selecting well capitalized, highly rated authorized reinsurers or requiring that the reinsurer post substantial collateral to secure the reinsured risks. While we believe that net reinsurance recoverable balances are collectible, deterioration in reinsurers' ability to pay, or collection disputes, could adversely affect our operating cash flows, financial position and results of operations.

Impact of Inflation

Property and casualty insurance premiums are established before the amount of losses and loss adjustment expenses, or the extent to which inflation may affect such expenses, is known. Consequently, in establishing premiums, we attempt to anticipate the potential impact of inflation. We also consider inflation in the determination and review of reserves for losses and loss adjustment expenses and life and annuity benefits since portions of these reserves are expected to be paid over extended periods of time. This is especially true for our long-tailed lines of business. Although our life and annuity reinsurance business is in run-off, we must monitor the effect that inflation, among other things, has on the related reserves. We regularly complete loss recognition testing to ensure that held reserves are sufficient to meet our future claim obligations in the current investment environment.

Controls and Procedures

As of December 31, 2019, we carried out an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures pursuant to Securities Exchange Act Rule 13a-15 (Disclosure Controls). This evaluation was conducted under the supervision and with the participation of our management, including the Co-Principal Executive Officers (Co-PEOs) and the Principal Financial Officer (PFO).

Our management, including the Co-PEOs and PFO, does not expect that our Disclosure Controls will prevent all error and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. These inherent limitations include the realities that judgments in decision making can be faulty, and that breakdowns can occur because of simple error or mistake. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

Based upon our controls evaluation, the Co-PEOs and PFO concluded that effective Disclosure Controls were in place to ensure that the information required to be disclosed in reports we file or submit under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms.

Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, we carried out an evaluation, under the supervision and with the participation of our management, including the Co-PEOs and the PFO, of the effectiveness of our internal control over financial reporting as of December 31, 2019. See Management's Report on Internal Control over Financial Reporting and our independent registered public accounting firm's attestation report on the effectiveness of our internal control over financial reporting.

There were no changes in our internal control over financial reporting during the fourth quarter of 2019 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Safe Harbor and Cautionary Statement

This report contains statements concerning or incorporating our expectations, assumptions, plans, objectives, future financial or operating performance and other statements that are not historical facts. These statements are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Such statements may use words such as "anticipate," "believe," "estimate," "expect," "intend," "predict," "project" and similar expressions as they relate to us or our management.

There are risks and uncertainties that may cause actual results to differ materially from predicted results in forward-looking statements. Factors that may cause actual results to differ are often presented with the forward-looking statements themselves. Additional factors that could cause actual results to differ from those predicted are set forth under "Business Overview," "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this report or are included in the items listed below:

- our expectations about future results of our underwriting, investing, Markel Ventures and other operations are based on current knowledge and assume no significant man-made or natural catastrophes, no significant changes in products or personnel and no adverse changes in market conditions;
- the effect of cyclical trends on our underwriting, investing, Markel Ventures and other operations, including demand and pricing in the insurance, reinsurance and other markets in which we operate;
- actions by competitors, including the use of technology and innovation to simplify the customer experience, increase efficiencies, redesign products, alter models and effect other potentially disruptive changes in the insurance industry, and the effect of competition on market trends and pricing;
- our efforts to develop new products, expand in targeted markets or improve business processes and workflows may not be successful and may increase or create new risks (e.g., insufficient demand, change to risk exposures, distribution channel conflicts, execution risk, increased expenditures);
- the frequency and severity of man-made and natural catastrophes (including earthquakes, wildfires and weather-related catastrophes) may exceed expectations, are unpredictable and, in the case of wildfires and weather-related catastrophes, may be exacerbated if, as many forecast, changing conditions in the oceans and atmosphere result in increased hurricane, flood, drought or other adverse weather-related activity;
- we offer insurance and reinsurance coverage against terrorist acts in connection with some of our programs, and in other instances we are legally required to offer terrorism insurance; in both circumstances, we actively manage our exposure, but if there is a covered terrorist attack, we could sustain material losses;
- emerging claim and coverage issues, changing legal and social trends, and inherent uncertainties in the loss estimation process can adversely impact the adequacy of our loss reserves and our allowance for reinsurance recoverables;
- reinsurance reserves are subject to greater uncertainty than insurance reserves, primarily because of reliance upon the original underwriting decisions made by ceding companies and the longer lapse of time from the occurrence of loss events to their reporting to the reinsurer for ultimate resolution;
- inaccuracies (whether due to data error, human error or otherwise) in the various modeling techniques and data analytics (e.g., scenarios, predictive and stochastic modeling, and forecasting) we use to analyze and estimate exposures, loss trends and other risks associated with our insurance and ILS businesses could cause us to misprice our products or fail to appropriately estimate the risks to which we are exposed;
- changes in the assumptions and estimates used in establishing reserves for our life and annuity reinsurance book (which is in runoff), for example, changes in assumptions and estimates of mortality, longevity, morbidity and interest rates, could result in material increases in our estimated loss reserves for such business;
- adverse developments in insurance coverage litigation or other legal or administrative proceedings could result in material increases in our estimates of loss reserves;
- initial estimates for catastrophe losses are often based on limited information, are dependent on broad assumptions about the nature and extent of losses, coverage, liability and reinsurance, and those losses may ultimately differ materially from our expectations;
- changes in the availability, costs, quality and providers of reinsurance coverage, which may impact our ability to write or continue to write certain lines of business or to mitigate the volatility of losses on our results of operations and financial condition;

- the ability or willingness of reinsurers to pay balances due may be adversely affected by industry and economic conditions, deterioration in reinsurer credit quality and coverage disputes, and collateral we hold, if any, may not be sufficient to cover a reinsurer's obligation to us;
- after the commutation of ceded reinsurance contracts, any subsequent adverse development in the re-assumed loss reserves will result in a charge to earnings;
- regulatory actions can impede our ability to charge adequate rates and efficiently allocate capital;
- general economic and market conditions and industry specific conditions, including extended economic recessions or expansions; prolonged periods of slow economic growth; inflation or deflation; fluctuations in foreign currency exchange rates, commodity and energy prices and interest rates; volatility in the credit and capital markets; and other factors;
- economic conditions, actual or potential defaults in municipal bonds or sovereign debt obligations, volatility in interest and foreign currency exchange rates and changes in market value of concentrated investments can have a significant impact on the fair value of our fixed maturity and equity securities, as well as the carrying value of our other assets and liabilities, and this impact may be heightened by market volatility and our ability to mitigate our sensitivity to these changing conditions;
- economic conditions may adversely affect our access to capital and credit markets;
- the effects of government intervention, including material changes in the monetary policies of central banks, to address financial downturns and economic and currency concerns;
- the impacts that political and civil unrest and regional conflicts may have on our businesses and the markets they serve or that any disruptions in regional or worldwide economic conditions generally arising from these situations may have on our businesses, industries or investments;
- the impacts that health epidemics and pandemics may have on our business operations and claims activity;
- the impact on our businesses in the event of a repeal, in part or in whole, or modification of U.S. health care reform legislation and regulations;
- changes in U.S. tax laws, regulations or interpretations, or in the tax laws, regulations or interpretations of other jurisdictions in which we operate, and adjustments we may make in our operations or tax strategies in response to those changes;
- a failure of our enterprise information technology systems and those maintained by third parties upon which we may rely, or a failure to comply with data protection or privacy regulations;
- outsourced providers may fail to perform as we anticipate or may breach their obligations to us;
- our acquisitions may increase our operational and control risks for a period of time;
- we may not realize the contemplated benefits, including cost savings and synergies, of our acquisitions;
- any determination requiring the write-off of a significant portion of our goodwill and intangible assets;
- the failure or inadequacy of any methods we employ to manage our loss exposures;
- the loss of services of any executive officer or other key personnel could adversely impact one or more of our operations;
- the manner in which we manage our global operations through a network of business entities could result inconsistent management, governance and oversight practices and make it difficult for us to implement strategic decisions and coordinate procedures;
- our substantial international operations and investments expose us to increased political, operational and economic risks, including foreign currency exchange rate and credit risk;
- the political, legal, regulatory, financial, tax and general economic impacts, and other impacts we cannot anticipate, related to the United Kingdom's withdrawal from the European Union (Brexit), which could have adverse consequences for our businesses, particularly our London-based international insurance operations;
- our ability to obtain additional capital for our operations on terms favorable to us;
- our compliance, or failure to comply, with covenants and other requirements under our revolving credit facility, senior debt and other indebtedness;
- our ability to maintain or raise third party capital for existing or new investment vehicles and risks related to our management of third party capital;

- the effectiveness of our procedures for compliance with existing and future guidelines, policies and legal and regulatory standards, rules, laws and regulations;
- the impact of economic and trade sanctions and embargo programs on our businesses, including instances in which the requirements and limitations applicable to the global operations of U.S. companies and their affiliates are more restrictive than, or conflict with, those applicable to non-U.S. companies and their affiliates;
- regulatory changes, or challenges by regulators, regarding the use of certain issuing carrier or fronting arrangements;
- our dependence on a limited number of brokers for a large portion of our revenues and third-party capital;
- adverse changes in our assigned financial strength or debt ratings could adversely impact us, including our ability to attract and retain business, the amount of capital our insurance subsidiaries must hold and the availability and cost of capital;
- changes in the amount of statutory capital our insurance subsidiaries are required to hold, which can vary significantly and is based on many factors, some of which are outside our control;
- losses from litigation and regulatory investigations and actions; and
- a number of additional factors may adversely affect our Markel Ventures operations, and the markets they serve, and negatively impact their revenues and profitability, including, among others: adverse weather conditions, plant disease and other contaminants; changes in government support for education, healthcare and infrastructure projects; changes in capital spending levels; changes in the housing and commercial construction markets; liability for environmental matters; volatility in the market prices for their products; and volatility in commodity prices and interest and foreign currency exchange rates.

Our premium volume, underwriting and investment results and results from our other operations have been and will continue to be potentially materially affected by these factors. In addition, with respect to previously reported developments at MCIM and the decision to place both the Markel CATCo Funds and Markel CATCo Re into run-off:

- the inquiries by the U.S. Department of Justice, U.S. Securities and Exchange Commission and Bermuda Monetary Authority into loss reserves recorded in late 2017 and early 2018 at Markel CATCo Re (the Markel CATCo Inquiries) may result in adverse findings, reputational damage, the imposition of sanctions, increased costs, litigation and other negative consequences; and
- management time and resources may be diverted to address the Markel CATCo Inquiries, as well as related litigation.

By making forward-looking statements, we do not intend to become obligated to publicly update or revise any such statements whether as a result of new information, future events or other changes. Readers are cautioned not to place undue reliance on any forward-looking statements, which speak only as at their dates.

Legal Proceedings

Markel CATCo Inquiries

We previously reported that the U.S. Department of Justice, U.S. Securities and Exchange Commission and Bermuda Monetary Authority (together, the Governmental Authorities) are conducting inquiries into loss reserves recorded in late 2017 and early 2018 at our Markel CATCo operations. Those reserves are held at Markel CATCo Re, an unconsolidated subsidiary of MCIM. The Markel CATCo Inquiries are limited to MCIM and its subsidiaries (together, Markel CATCo) and do not involve other Markel subsidiaries.

We retained outside counsel to conduct an internal review of Markel CATCo's loss reserving in late 2017 and early 2018. The internal review was completed in April 2019 and found no evidence that Markel CATCo personnel acted in bad faith in exercising business judgment in the setting of reserves and making related disclosures during late 2017 and early 2018. Our outside counsel has met with the Governmental Authorities and reported the findings from the internal review.

The Markel CATCo Inquiries are ongoing and we continue to fully cooperate with the Governmental Authorities. At this time, we are unable to predict the duration, scope or result of the Markel CATCo Inquiries.

Belisle Arbitration

On February 21, 2019, Anthony Belisle filed a lawsuit, *Anthony Belisle v. Markel CATCo Investment Management Ltd and Markel Corp.* (U.S. District Court for the District of New Hampshire), which suit was amended on March 29, 2019. As amended, the complaint alleged claims for, among other things, breach of contract, defamation, invasion of privacy, indemnification, intentional interference with contractual relations and deceptive and unfair acts and sought relief of, among other things, \$66.0 million in incentive compensation, enhanced compensatory damages, consequential damages, damages for emotional distress and injury to reputation, exemplary damages and attorneys' fees. In June 2019, MCIM, Markel Corporation, and Mr. Belisle agreed to commence binding arbitration to finally, fully and confidentially resolve the claims and counterclaims alleged in the action, and the Belisle suit was dismissed with prejudice in July 2019. The arbitrators have been selected and the arbitration proceeding has commenced. We believe that Mr. Belisle's claims are without merit.

Thomas Yeransian v. Markel Corporation

In October 2010, we completed the acquisition of Aspen Holdings, Inc. (Aspen). As part of the consideration for that acquisition, Aspen shareholders received contingent value rights (CVRs). Based on a valuation of the CVRs as of their December 31, 2017 maturity date, we paid \$9.9 million to the CVR holders on June 5, 2018, which represents 90% of the undisputed portion of the final amount we believe we are required to pay under the CVR agreement.

Prior to the December 31, 2017 CVR maturity date, the CVR holder representative, Thomas Yeransian, had disputed our prior estimation of the value of the CVRs. On September 15, 2016, Mr. Yeransian filed a suit, *Thomas Yeransian v. Markel Corporation* (U.S. District Court for the District of Delaware), alleging, among other things, that we are in default under the CVR agreement. The suit seeks: \$47.3 million in damages, which represents the unadjusted value of the CVRs; plus interest (\$17.1 million through December 31, 2019) and default interest (up to an additional \$14.1 million through December 31, 2019, depending on the date any default occurred); and an unspecified amount of punitive damages, costs, and attorneys' fees.

At the initial hearing held February 21, 2017, the court stayed the proceedings and ordered the parties to discuss resolving the dispute pursuant to the independent CVR valuation procedure under the CVR agreement. The parties met on April 5, 2017, but were unsuccessful in reaching agreement on a process for resolving the dispute. We subsequently filed a motion to stay the litigation and compel arbitration, and, on July 31, 2017, the court issued an order granting that motion.

On September 20, 2018, a new judge was assigned to the case. On October 12, 2018, the court denied both Mr. Yeransian's motion to reconsider the order staying the litigation and compelling arbitration and our motion for sanctions against Mr. Yeransian for violating the confidentiality of mediation proceedings. The court subsequently (1) on December 3, 2018 ordered Mr. Yeransian to provide the court and us with the identity of an actuarial firm to participate in the selection of independent experts for the CVR valuation process under the CVR agreement and (2) on December 11, 2018 denied Mr. Yeransian's motion for judgment that we had waived our right to require Mr. Yeransian's participation in the CVR valuation process. On July 8, 2019, the Court granted our motion for instructions as to how the independent experts are to conduct the CVR valuation process and denied Mr. Yeransian's motion to have a hearing officer appointed to oversee the valuation process. The independent experts, who were jointly selected by the parties, have been engaged and are conducting the valuation process.

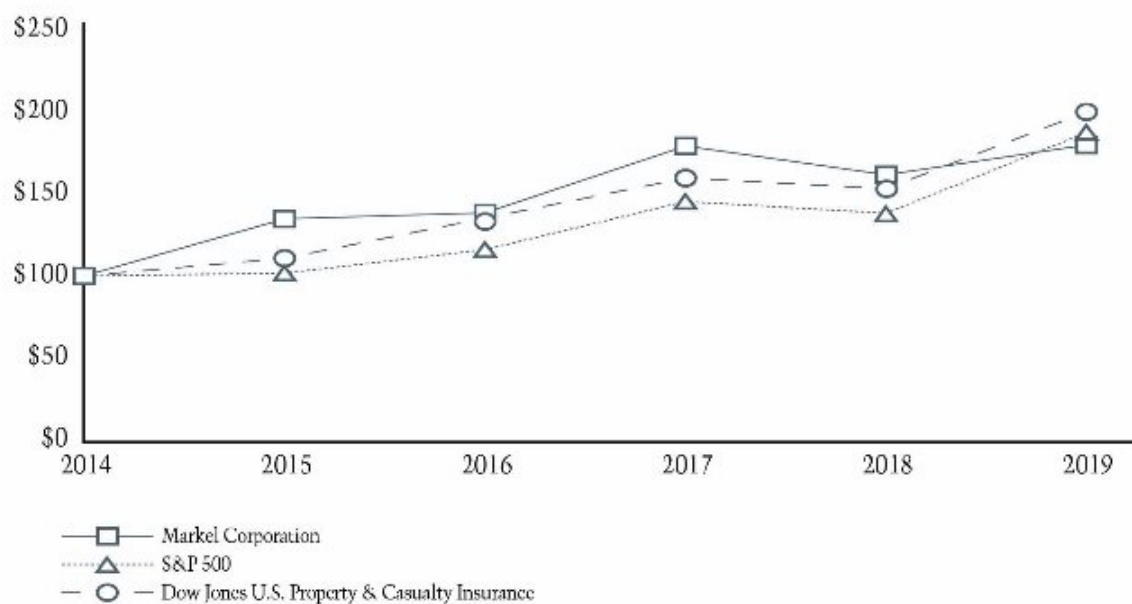
On November 13, 2018, Mr. Yeransian filed a second suit, Thomas Yeransian v. Markel Corporation (U.S. District Court for the District of Delaware), which also alleges that the Company is in default under the CVR agreement. The second suit seeks the same damages and relief as the original suit. We filed a motion to stay this suit until the arbitration for the original suit has concluded and the CVR holders have received the remainder of the final amount due under the CVR Agreement. The court granted that motion on August 6, 2019.

We believe Mr. Yeransian's suits to be without merit. We further believe that any material loss resulting from the suits to be remote. We do not believe the contractual contingent consideration payments related to the CVRs, as ultimately determined by the independent experts in the valuation process, will have a material impact on the Company's liquidity.

OTHER INFORMATION

Performance Graph

The following graph compares the cumulative total return (based on share price) on our common stock with the cumulative total return of companies included in the S&P 500 Index and the Dow Jones U.S. Property & Casualty Insurance Companies Index. This information is not necessarily indicative of future results.



	Years Ended December 31,					
	2014 ⁽¹⁾	2015	2016	2017	2018	2019
Markel Corporation	\$ 100	\$ 129	\$ 132	\$ 167	\$ 152	\$ 167
S&P 500	100	101	114	138	132	174
Dow Jones U.S. Property & Casualty Insurance	100	109	128	150	145	184

⁽¹⁾ \$100 invested on December 31, 2014 in our common stock or the listed index. Includes reinvestment of dividends.

Common Stock and Dividend Information

Our common stock trades on the New York Stock Exchange under the symbol MKL. The number of shareholders of record as of February 4, 2020 was approximately 300. The total number of shareholders, including those holding shares in street name or in brokerage accounts, is estimated to be in excess of 160,000. Our current strategy is to retain earnings and, consequently, we have not paid and do not expect to pay a cash dividend on our common stock.

Common Stock Repurchases

The following table summarizes our common stock repurchases for the quarter ended December 31, 2019.

Issuer Purchases of Equity Securities				
Period	(a) Total Number of Shares Purchased	(b) Average Price Paid per Share	(c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs ⁽¹⁾	(d) Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs (in thousands)
October 1, 2019 through October 31, 2019	3,795	\$ 1,147.03	3,795	\$ 290,283
November 1, 2019 through November 30, 2019	10,770	\$ 1,144.93	10,770	\$ 277,952
December 1, 2019 through December 31, 2019	12,163	\$ 1,132.55	12,163	\$ 264,176
Total	26,728	\$ 1,139.59	26,728	\$ 264,176

⁽¹⁾ The Board of Directors approved the repurchase of up to \$300 million of our common stock pursuant to a share repurchase program publicly announced on August 21, 2019 (the 2019 Program). The 2019 Program terminated and replaced a similar \$300 million program authorized in May 2018 (the 2018 Program). Under the 2019 Program, as under the 2018 Program, we may repurchase outstanding shares of our common stock from time to time in privately negotiated or open market transactions, including under plans complying with Rule 10b5-1 under the Securities Exchange Act of 1934. The 2019 Program has no expiration date, but may be terminated by the Board of Directors at any time.

Available Information

This document represents Markel Corporation's Annual Report and Form 10-K, which is filed with the U.S. Securities and Exchange Commission.

We make available free of charge on or through our website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports as soon as reasonably practicable after such material is electronically filed with or furnished to the U.S. Securities and Exchange Commission. Our website address is www.markel.com.

Transfer Agent

American Stock Transfer & Trust Co., LLC, Operations Center, 6201 15th Avenue, Brooklyn, NY 11219
(800) 937-5449 info@astfinancial.com

Code of Conduct

We have adopted a code of business conduct and ethics (Code of Conduct) which is applicable to all directors and employees, including executive officers. We have posted the Code of Conduct on our website at www.markel.com. We intend to satisfy applicable disclosure requirements regarding amendments to, or waivers from, provisions of our Code of Conduct by posting such information on our website. Shareholders may obtain a copy of the Code of Conduct by emailing investorrelations@markel.com, writing Investor Relations, at the address of the corporate offices listed below, or calling (800) 446-6671.

Annual Shareholders' Meeting

Shareholders of Markel Corporation are invited to attend the Annual Meeting to be held at Altria Theater, 6 North Laurel Street, Richmond, Virginia at 4:30 p.m. ET, May 11, 2020.

Corporate Offices

Markel Corporation, 4521 Highwoods Parkway, Glen Allen, Virginia 23060-6148
(804) 747-0136 (800) 446-6671

Information About Our Executive Officers

Alan I. Kirshner

Executive Chairman since January 2016. Chairman of the Board since 1986. Chief Executive Officer from 1986 to December 2015. Director since 1978. Age 84.

Anthony F. Markel

Vice Chairman of Markel Corporation and the Board since May 2008. President and Chief Operating Officer from March 1992 to April 2008. Director since 1978. Age 78.

Steven A. Markel

Vice Chairman of Markel Corporation and the Board since March 1992. Director since 1978. Age 71.

Thomas S. Gayner

Co-Chief Executive Officer since January 2016. President and Chief Investment Officer from May 2010 to December 2015. Chief Investment Officer from January 2001 to December 2015. President, Markel-Gayner Asset Management Corporation, a subsidiary, since December 1990. Director from 1998 to 2004. Director since August 2016. Age 58.

Richard R. Whitt, III

Co-Chief Executive Officer since January 2016. President and Co-Chief Operating Officer from May 2010 to December 2015. Senior Vice President and Chief Financial Officer from May 2005 to May 2010. Director since August 2016. Age 56.

Robert C. Cox

President and Chief Operating Officer, Insurance Operations since September 2018. Executive Vice President of Chubb Ltd. (a public company) and Division Chairman of Chubb Ltd.'s North American Financial Lines from January 2016 until retirement in July 2016; Executive Vice President of Chubb & Son and Chief Operating Officer of Chubb Specialty Insurance from June 2013 to January 2016. Age 61.

Michael R. Heaton

President, Markel Ventures since January 2016; President and Chief Operating Officer, Markel Ventures, Inc., a subsidiary, since January 2016 and September 2013, respectively. Age 43.

Bradley J. Kiscaden

President and Chief Administrative Officer, Insurance Operations since September 2018. Executive Vice President and Chief Actuarial Officer from July 2012 to September 2018. Chief Actuarial Officer from March 1999 to September 2018. Age 57.

Jeremy A. Noble

Senior Vice President and Chief Financial Officer since September 2018. Senior Vice President, Finance from June 2018 to September 2018. Finance Director, Markel International from July 2015 to June 2018. Managing Director, Internal Audit from September 2011 to July 2015. Age 44.

Linda V. Schreiner

Senior Vice President, Strategic Management since January 2016. Senior Vice President, Human Resources and Communications of MeadWestvaco Corporation (a public company) from January 2002 to July 2015. Age 60.

Richard R. Grinnan

Senior Vice President, Chief Legal Officer and Secretary since February 2020. General Counsel and Secretary from June 2014 to February 2020. Assistant General Counsel from August 2012 to June 2014. Age 51.

EXHIBIT INDEX

Exhibit No.	Document Description
3(i)	Amended and Restated Articles of Incorporation (incorporated by reference from Exhibit 3.1 in the Registrant's report on Form 8-K filed with the Commission May 13, 2011)
3(ii)	Bylaws, as amended and restated May 14, 2018 (incorporated by reference from Exhibit 3(ii) in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended June 30, 2018)
4.1	Description of Registrant's Securities**
4.2(a)	Indenture dated as of June 5, 2001 between Markel Corporation and The Chase Manhattan Bank, as Trustee (incorporated by reference from Exhibit 4.1 in the Registrant's report on Form 8-K filed with the Commission June 5, 2001)
4.2(b)	Form of Third Supplemental Indenture dated as of August 13, 2004 between Markel Corporation and JPMorgan Chase Bank (formerly known as The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission August 11, 2004)
4.2(c)	Form of Seventh Supplemental Indenture dated as of July 2, 2012 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission June 29, 2012)
4.2(d)	Form of Eighth Supplemental Indenture dated as of March 8, 2013 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission March 7, 2013)
4.2(e)	Form of Ninth Supplemental Indenture dated as of March 8, 2013 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.3 in the Registrant's report on Form 8-K filed with the Commission March 7, 2013)
4.2(f)	Form of Tenth Supplemental Indenture dated as of April 5, 2016 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission March 31, 2016)
4.2(g)	Eleventh Supplemental Indenture dated as of November 2, 2017 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission November 2, 2017)
4.2(h)	Twelfth Supplemental Indenture dated as of November 2, 2017 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.3 in the Registrant's report on Form 8-K filed with the Commission November 2, 2017)
4.2(i)	Thirteenth Supplemental Indenture, dated as of May 20, 2019, between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission May 20, 2019)
4.2(j)	Fourteenth Supplemental Indenture, dated as of September 17, 2019, between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission September 17, 2019)
4.2(k)	Fifteenth Supplemental Indenture, dated as of September 17, 2019, between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.3 in the Registrant's report on Form 8-K filed with the Commission September 17, 2019)

The registrant hereby agrees to furnish to the Securities and Exchange Commission, upon request, a copy of all other instruments defining the rights of holders of long-term debt of the registrant and its subsidiaries.

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Exhibit No.	Document Description
<u>10.1(a)</u>	<u>Credit Agreement, dated as of April 10, 2019, among Markel Corporation, Markel Bermuda Limited, Markel Global Reinsurance Company, Alterra Finance LLC, the lenders party from time to time thereto, and Wells Fargo Bank, National Association, as administrative agent (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 8-K filed with the Commission April 12, 2019)</u>
<u>10.1(b)</u>	<u>First Amendment to Credit Agreement, dated as of December 13, 2019, among Markel Corporation, Markel Bermuda Limited, Markel Global Reinsurance Company, Alterra Finance LLC and Wells Fargo National Association**</u>
<u>10.2(a)</u>	<u>Form of Amended and Restated Employment Agreement with Alan I. Kirshner (incorporated by reference from Exhibit 10.2 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2008)*</u>
<u>10.2(b)</u>	<u>Amendment, dated February 21, 2019, to Amended and Restated Employment Agreement, dated December 31, 2018, between Markel Corporation and Alan I. Kirshner (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 8-K filed with the Commission February 22, 2019) *</u>
<u>10.3</u>	<u>Form of Amended and Restated Employment Agreement with Anthony F. Markel (incorporated by reference from Exhibit 10.4 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2008)*</u>
<u>10.4</u>	<u>Form of Executive Employment Agreement with Anne G. Waleski (incorporated by reference from Exhibit 10.5 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2008)*</u>
<u>10.5(a)</u>	<u>Amended and Restated Employment Agreement with Steven A. Markel (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended September 30, 2015)*</u>
<u>10.5(b)</u>	<u>Amendment dated as of December 31, 2017 to Amended and Restated Employment Agreement with Steven A. Markel (incorporated by reference from Exhibit 10.6 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2017)*</u>
<u>10.6</u>	<u>Employment Agreement, dated June 28, 2018, between Markel Corporation and Robert C. Cox (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 8-K filed with the Commission July 12, 2018)*</u>
<u>10.7</u>	<u>Amended and Restated Form of Executive Employment Agreement with Bradley J. Kiscaden and Linda V. Schreiner (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 8-K filed with the Commission August 21, 2018)*</u>
<u>10.8</u>	<u>Amended and Restated Executive Employment Agreement, dated as of August 15, 2018, between Markel Corporation and Thomas S. Gayner (incorporated by reference from Exhibit 10.2 in the Registrant's report on Form 8-K filed with the Commission August 21, 2018)*</u>
<u>10.9</u>	<u>Amended and Restated Executive Employment Agreement, dated as of August 15, 2018, between Markel Corporation and Richard R. Whitt, III (incorporated by reference from Exhibit 10.3 in the Registrant's report on Form 8-K filed with the Commission August 21, 2018)*</u>
<u>10.10</u>	<u>Executive Employment Agreement, dated as of August 15, 2018, between Markel Corporation and Jeremy A. Noble (incorporated by reference from Exhibit 10.4 in the Registrant's report on Form 8-K filed with the Commission August 21, 2018)*</u>
<u>10.11(a)</u>	<u>Markel Corporation Voluntary Deferral Plan (incorporated by reference from Exhibit 10.14 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2015)*</u>
<u>10.11(b)</u>	<u>Amendment to Markel Corporation Voluntary Deferral Plan (incorporated by reference from Exhibit 10.20 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2018)*</u>
<u>10.11(c)</u>	<u>Amendment to Markel Corporation Voluntary Deferral Plan (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended September 30, 2019)*</u>
<u>10.12(a)</u>	<u>Markel Corporation Omnibus Incentive Plan (incorporated by reference from Appendix B in the Registrant's Proxy Statement and Definitive 14A filed with the Commission April 2, 2003)*</u>
<u>10.12(b)</u>	<u>May 2010 Restricted Stock Units Deferral Election Form (incorporated by reference from Exhibit 10.2 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended June 30, 2010)*</u>
<u>10.13(a)</u>	<u>Markel Corporation 2012 Equity Incentive Compensation Plan (incorporated by reference from Appendix A in the Registrant's Proxy Statement and Definitive 14A filed with the Commission March 16, 2012)*</u>

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<u>10.13(b)</u>	<u>Restricted Stock Units Deferral Election Form for the 2012 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.24 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2012)*</u>
<u>10.14</u>	<u>Markel Corporation Executive Bonus Plan, as amended and restated May 14, 2018 (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended June 30, 2018)*</u>
<u>10.15(a)</u>	<u>2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 8-K filed with the Commission May 19, 2016)*</u>
<u>10.15(b)</u>	<u>Form of Performance Based (Cliff Vesting) Restricted Stock Unit Award Agreement for Executive Officers for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.3 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended June 30, 2016)*</u>
<u>10.15(c)</u>	<u>Form of Time Based (Cliff Vesting) Restricted Stock Unit Award Agreement for Executive Officers for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.4 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended June 30, 2016)*</u>
<u>10.15(d)</u>	<u>Form of Time Based (Graded Vesting) Restricted Stock Unit Award Agreement for Executive Officers for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.5 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended June 30, 2016)*</u>
<u>10.15(e)</u>	<u>Form of Restricted Stock Award Agreement for Outside Directors for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.6 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended June 30, 2016)*</u>
<u>10.15(f)</u>	<u>Form of Performance-Based Restricted Stock Unit Award Agreement for Executive Officers for the 2016 Equity Incentive Compensation Plan (revised May 2017) (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 8-K filed with the Commission May 17, 2017)*</u>
<u>10.15(g)</u>	<u>Form of Performance-Based (Graded Vesting) Restricted Stock Unit Award Agreement for Executive Officers for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.2 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended March 31, 2018)*</u>
<u>10.15(h)</u>	<u>Form of Performance-Based (Cliff Vesting) Restricted Stock Unit Award Agreement for Executive Officers (revised 2019) for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.5 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended March 31, 2019)*</u>
<u>10.15(i)</u>	<u>Form of Performance-Based Restricted Stock Unit Award Agreement for Executive Officers for the 2016 Equity Incentive Compensation Plan* **</u>
<u>21</u>	<u>Certain Subsidiaries of Markel Corporation**</u>
<u>23</u>	<u>Consent of KPMG LLP**</u>
<u>31.1</u>	<u>Certification of Co-Principal Executive Officer Pursuant to Rule 13a-14(a)/ 15d-14(a)**</u>
<u>31.2</u>	<u>Certification of Co-Principal Executive Officer Pursuant to Rule 13a-14(a)/ 15d-14(a)**</u>
<u>31.3</u>	<u>Certification of Principal Financial Officer Pursuant to Rule 13a-14(a)/ 15d-14(a)**</u>
<u>32.1</u>	<u>Certification of Co-Principal Executive Officer furnished Pursuant to 18 U.S.C. Section 1350**</u>
<u>32.2</u>	<u>Certification of Co-Principal Executive Officer furnished Pursuant to 18 U.S.C. Section 1350**</u>
<u>32.3</u>	<u>Certification of Principal Financial Officer furnished Pursuant to 18 U.S.C. Section 1350**</u>
101	The following consolidated financial statements from Markel Corporation's Annual Report on Form 10-K for the year ended December 31, 2019, filed on February 21, 2020, formatted in Inline XBRL: (i) Consolidated Balance Sheets, (ii) Consolidated Statements of Income (Loss) and Comprehensive Income (Loss), (iii) Consolidated Statements of Changes in Equity, (iv) Consolidated Statements of Cash Flows and (v) Notes to Consolidated Financial Statements.**
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

* Indicates management contract or compensatory plan or arrangement

** Filed with this report

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

MARKEL CORPORATION

<u>/s/ Thomas S. Gayner</u>	<u>/s/ Richard R. Whitt, III</u>	<u>/s/ Jeremy A. Noble</u>
Thomas S. Gayner	Richard R. Whitt, III	Jeremy A. Noble
Co-Chief Executive Officer	Co-Chief Executive Officer	Senior Vice President and Chief Financial Officer
(Co-Principal Executive Officer)	(Co-Principal Executive Officer)	(Principal Financial Officer)
February 21, 2020	February 21, 2020	February 21, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

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<u>Signatures</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Alan I. Kirshner</u> Alan I. Kirshner	Executive Chairman, Chairman of the Board	February 21, 2020
<u>/s/ Anthony F. Markel</u> Anthony F. Markel	Director, Vice Chairman	February 21, 2020
<u>/s/ Steven A. Markel</u> Steven A. Markel	Director, Vice Chairman	February 21, 2020
<u>/s/ Thomas S. Gayner</u> Thomas S. Gayner	Director, Co-Chief Executive Officer (Co-Principal Executive Officer)	February 21, 2020
<u>/s/ Richard R. Whitt, III</u> Richard R. Whitt, III	Director, Co-Chief Executive Officer (Co-Principal Executive Officer)	February 21, 2020
<u>/s/ Jeremy A. Noble</u> Jeremy A. Noble	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	February 21, 2020
<u>/s/ Nora N. Crouch</u> Nora N. Crouch	Chief Accounting Officer (Principal Accounting Officer)	February 21, 2020
<u>/s/ K. Bruce Connell</u> K. Bruce Connell	Director	February 21, 2020
<u>/s/ Stewart M. Kasen</u> Stewart M. Kasen	Director	February 21, 2020
<u>/s/ Diane Leopold</u> Diane Leopold	Director	February 21, 2020
<u>/s/ Lemuel E. Lewis</u> Lemuel E. Lewis	Director	February 21, 2020
<u>/s/ Darrell D. Martin</u> Darrell D. Martin	Director	February 21, 2020
<u>/s/ Harold L. Morrison, Jr.</u> Harold L. Morrison, Jr.	Director	February 21, 2020
<u>/s/ Michael O'Reilly</u> Michael O'Reilly	Director	February 21, 2020
<u>/s/ Michael J. Schewel</u> Michael J. Schewel	Director	February 21, 2020
<u>/s/ Debora J. Wilson</u> Debora J. Wilson	Director	February 21, 2020

DESCRIPTION OF THE REGISTRANT’S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

As of February 21, 2020, Markel Corporation (the “Company,” “we,” “us” or “our”) had one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended, our common shares, no par value.

DESCRIPTION OF COMMON SHARES

The following summary description of securities does not purport to be complete and is qualified in its entirety by reference to our articles of incorporation, our bylaws, and applicable provisions of the Virginia Stock Corporation Act.

General

Our authorized capital consists of 50,000,000 common shares, no par value, and 10,000,000 preferred shares, no par value. No preferred shares are currently issued and outstanding.

Our common shares are listed on the New York Stock Exchange under the symbol “MKL.”

Each holder of our common shares is entitled to one vote for each share held of record on each matter submitted to a vote of shareholders. Cumulative voting in the election of directors is not permitted. As a result, the holders of more than 50% of the outstanding shares have the power to elect all directors. The quorum required at a shareholders’ meeting for consideration of any matter is a majority of the shares entitled to vote on that matter, represented in person or by proxy. If a quorum is present, the affirmative vote of a majority of the shares voting on the matter at the meeting generally is required for shareholder approval. However, approval is required by the affirmative vote of more than two-thirds of all shares entitled to vote, whether or not represented at the meeting, in the case of major corporate actions, such as:

- a merger,
- a share exchange,
- the dissolution of the Company,
- an amendment to our articles of incorporation, or
- the sale of all or substantially all of our assets.

These provisions, together with our ability to issue preferred shares with disproportionately high voting power could be used in, or have the effect of, preventing or deterring a party from gaining control of the Company, whether or not beneficial to public shareholders, and could discourage tactics that involve an actual or threatened change of control of the Company.

Subject to the rights of any holders of our preferred shares, the holders of common shares are entitled to receive dividends when, as, and if declared by the board of directors out of funds legally available for that purpose and, in the event of liquidation, dissolution or winding up of the Company, to share ratably in all assets remaining after the payment of liabilities. There are no preemptive or other subscription rights, conversion rights, or redemption or sinking fund provisions with respect to common shares. All common shares outstanding upon the consummation of any offering will be legally issued, fully paid and nonassessable.

Our transfer agent and registrar for common shares is American Stock Transfer & Trust Co., LLC.

Voting Rights with Respect to Extraordinary Corporate Transactions

Under Virginia law, a corporation may sell, lease, exchange or otherwise dispose of all, or substantially all, of its property, other than in the usual and regular course of business, if the proposed transaction is approved by more than two-thirds of all of the votes entitled to be cast on that matter. A merger or share exchange plan must be approved by each voting group entitled to vote separately on the plan by more than two-thirds of all the votes entitled to be cast on the plan by that voting group. The articles of incorporation may provide for a greater or lesser vote, but not less than a majority of all the votes cast on the transaction by each voting group entitled to vote on the transaction. Our articles of incorporation do not provide for a greater or lesser vote.

Anti-takeover Statutes

Virginia law, except as to companies that elect not to be covered, prohibits the following business combinations between a Virginia corporation and any “interested shareholder”:

- mergers and statutory share exchanges;
- material dispositions of corporate assets not in the ordinary course of business;
- any dissolution of the corporation proposed by or on behalf of an interested shareholder; or
- any reclassification, including a reverse stock split, recapitalization or merger of the corporation with its subsidiaries that increases the percentage of voting shares beneficially owned by an interested shareholder by more than 5%.

An interested shareholder of a corporation is, among others, a person who is, or an affiliate or associate of the corporation who was within three years of the transaction, a beneficial owner of more than 10% of any class of the outstanding voting shares of the corporation unless a majority of disinterested directors approved the acquisition of shares making a person an interested shareholder. Unless the affiliated transaction comes within an applicable exemption, an affiliated transaction in the three years after a person becomes an interested shareholder must be approved by the affirmative vote of a majority of the disinterested directors and by the affirmative vote of the holders of two-thirds of the voting shares other than shares beneficially owned by the interested shareholder. After three years, an affiliated transaction must be approved by the affirmative vote of the holders of two-thirds of the voting shares other than shares beneficially owned by the interested shareholder, unless the affiliated transaction is approved by a majority of the disinterested directors or meets “fair price” criteria. We have not made any election in our articles of incorporation not to be covered by this provision of the Virginia law.

Under Virginia law, voting rights for “control shares” must be approved by a corporation’s shareholders, not including the shares held by interested parties. “Control shares” are shares whose acquisition entitles the acquiror to between 1/5 and 1/3, between 1/3 and 1/2, or greater than 1/2 of a corporation’s voting power. If a shareholder has acquired control shares with a majority of all voting power and these shares have been given voting rights, all other shareholders have dissenters’ rights. Virginia law exempts from these provisions acquisitions where the corporation is a party to the governing agreement. We have not made any election not to be governed by these provisions of Virginia law. Our board of directors can elect not to be governed by these provisions at any time before four days after receipt of a control share acquisition notice.

Insurance Holding Company Regulations on Change of Control

We are regulated as an insurance holding company and are subject to state and foreign laws that restrict the ability of any person to obtain control of an insurance holding company without prior regulatory approval. Without this approval or an exemption, no person may acquire, or seek to acquire, any voting security of an insurance holding company that controls an insurance subsidiary, or merge with the holding company if, as a result, the person would obtain control of the holding company. “Control” is generally defined as the direct or indirect power to direct or cause the direction of the management and policies of a person and is usually presumed to exist if a person directly or indirectly owns or controls 10% or more of the voting securities of another person.

Directors' Duties

Under Virginia law, directors must discharge their duties in accordance with their good faith business judgment of the best interests of the corporation. Directors may rely on the advice or acts of others, including officers, employees, attorneys, accountants and board committees, if they have a good faith belief in their competence. Directors' actions are not subject to a reasonable or prudent person standard. Virginia's federal and state courts have focused on the process involved with directors' decision-making and are generally supportive of directors if they have based their decision on an informed process. These elements of Virginia law could make it more difficult to take over a Virginia corporation than corporations in other states.

Advance Notice Requirements for Shareholder Proposals and Director Nominations

Our bylaws provide that shareholders seeking to bring business before an annual meeting of shareholders, or to nominate candidates for election as directors at an annual meeting of shareholders, must provide timely notice thereof in writing. For shareholder proposals to be timely, a shareholder's notice generally has to be delivered to and received at our principal executive offices not later than 90 days before the date of the anniversary of the immediately preceding annual meeting. For shareholder director nominations to be timely, a shareholder's notice generally has to be delivered to and received at our principal executive offices not later than 60 days before the annual meeting; provided, that in the event that public disclosure of the annual meeting is made less 70 days before the annual meeting, the notice must be delivered within 10 days following such public disclosure). Our bylaws also specify certain requirements as to the form and content of a shareholder's notice. These provisions may preclude shareholders from bringing matters before an annual meeting of shareholders or from making nominations for directors at an annual meeting of shareholders.

Proxy Access Requirements for Shareholder-Nominated Director Candidates

Our bylaws provide shareholders with "proxy access," which permits a shareholder (or a group of up to 20 shareholders) holding at least 3% of our outstanding common shares continuously for at least three years to nominate and include, in the aggregate, director nominees constituting up to the greater of two individuals or 20% of the board of directors in the Company's proxy materials, provided that the nominating holder(s) and the nominee(s) satisfy the requirements specified in the bylaws, including by providing the Company with timely advance notice of the nomination. To be timely, a shareholder's notice generally must be delivered to and received by the Secretary of the Company at our principal executive offices not later than the close of business on 120th day nor earlier than the close of business on the 150th day prior to the anniversary date of the immediately preceding mailing date for the notice of annual meeting of shareholders. Our bylaws also specify certain requirements as to the form and content of a shareholder's notice and certain other nomination materials. These provisions may preclude certain shareholders from nominating director candidates, or certain director candidates from being properly nominated, in each case pursuant to our proxy access provisions.

FIRST AMENDMENT TO CREDIT AGREEMENT

This **FIRST AMENDMENT TO CREDIT AGREEMENT** (this “Amendment”), dated as of December 13, 2019, is entered into by and among **MARKEL CORPORATION**, a Virginia corporation (the “Borrower”), **MARKEL BERMUDA LIMITED**, a Bermuda company, **MARKEL GLOBAL REINSURANCE COMPANY**, a Delaware corporation, **ALTERRA FINANCE LLC**, a Delaware limited liability company, the Lenders (as hereinafter defined), and **WELLS FARGO BANK, NATIONAL ASSOCIATION**, as Administrative Agent.

RECITALS

A. The Credit Parties, the several lenders from time to time party thereto (the “Lenders”), and the Administrative Agent are party to the Credit Agreement, dated as of April 10, 2019 (the “Credit Agreement”). Capitalized terms used but not defined herein shall have the meanings assigned to such terms in the Credit Agreement as amended by this Amendment.

B. The Borrower has requested that the Lenders amend the Credit Agreement on the terms and conditions set forth herein.

STATEMENT OF AGREEMENT

NOW, THEREFORE, in consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

ARTICLE I

AMENDMENTS TO CREDIT AGREEMENT

1.1 Section 1.1 of the Credit Agreement is hereby amended by amending and restating the following defined terms:

““Excluded Subsidiary” means Markel Ventures, Inc., a Virginia corporation, Markel CATCo Investment Management Ltd., a company organized under the laws of Bermuda, Nephila, Lodgepine Capital Management Limited, a company organized under the laws of Bermuda, and each other Subsidiary of the Borrower that:

(i) is a Pledged Subsidiary;

(ii) (x) is acquired or formed by the Borrower or a Subsidiary of the Borrower on or after the Closing Date, (y) is not, or is formed for the purpose of acquiring another Person that is not, primarily engaged in the property and casualty insurance or property and casualty insurance-related businesses, and (z) is designated as an Excluded Subsidiary in the first Officer’s Compliance Certificate furnished pursuant to Section 7.3(a) following its formation or acquisition; or

(iii) is a Subsidiary of any other Excluded Subsidiary.”

““Guarantor” means the Borrower (with respect to the Obligations of the other Account Parties).”

1.2 Article XI of the Credit Agreement is hereby amended by adding the following new Section 11.24 at the end thereof:

“SECTION 11.24 Acknowledgement Regarding Any Supported QFCs. To the extent that the Loan Documents provide support, through a guarantee or otherwise, for Hedge Agreements or any other agreement or instrument that is a QFC (such support, “QFC Credit Support” and, each such QFC, a “Supported QFC”), the parties acknowledge and agree as follows with respect to the resolution power of the FDIC under the Federal Deposit Insurance Act and Title II of the Dodd-Frank Wall Street Reform and Consumer Protection Act (together with the regulations promulgated thereunder, the “U.S. Special Resolution Regimes”) in respect of such Supported QFC and QFC Credit Support (with the provisions below applicable notwithstanding that the Loan Documents and any Supported QFC may in fact be stated to be governed by the laws of the State of New York and/or of the United States or any other state of the United States):

(a) In the event a Covered Entity that is party to a Supported QFC (each, a “Covered Party”) becomes subject to a proceeding under a U.S. Special Resolution Regime, the transfer of such Supported QFC and the benefit of such QFC Credit Support (and any interest and obligation in or under such Supported QFC and such QFC Credit Support, and any rights in property securing such Supported QFC or such QFC Credit Support) from such Covered Party will be effective to the same extent as the transfer would be effective under the U.S. Special Resolution Regime if the Supported QFC and such QFC Credit Support (and any such interest, obligation and rights in property) were governed by the laws of the United States or a state of the United States. In the event a Covered Party or a BHC Act Affiliate of a Covered Party becomes subject to a proceeding under a U.S. Special Resolution Regime, Default Rights under the Loan Documents that might otherwise apply to such Supported QFC or any QFC Credit Support that may be exercised against such Covered Party are permitted to be exercised to no greater extent than such Default Rights could be exercised under the U.S. Special Resolution Regime if the Supported QFC and the Loan Documents were governed by the laws of the United States or a state of the United States. Without limitation of the foregoing, it is understood and agreed that rights and remedies of the parties with respect to a Defaulting Lender shall in no event affect the rights of any Covered Party with respect to a Supported QFC or any QFC Credit Support.

(b) As used in this Section 11.24, the following terms have the following meanings:

“BHC Act Affiliate” of a party means an “affiliate” (as such term is defined under, and interpreted in accordance with, 12 U.S.C. 1841(k)) of such party.

“Covered Entity” means any of the following:

- (i) a “covered entity” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 252.82(b);
- (ii) a “covered bank” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 47.3(b); or
- (iii) a “covered FSI” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 382.2(b).

“Default Right” has the meaning assigned to that term in, and shall be interpreted in accordance with, 12 C.F.R. §§ 252.81, 47.2 or 382.1, as applicable.

“QFC” has the meaning assigned to the term “qualified financial contract” in, and shall be interpreted in accordance with, 12 U.S.C. 5390(c)(8)(D).”

ARTICLE II

RELEASE OF GUARANTY

2.1 Alterra Finance LLC is hereby released from its obligations as a Guarantor under the Guaranty set forth in Article XII of the Credit Agreement.

ARTICLE III

CONDITIONS OF EFFECTIVENESS

3.1 The amendments set forth in **ARTICLE I** (other than the amendment to the definition of “Guarantor”) shall become effective as of the date when, and only when, the Administrative Agent shall have received an executed counterpart of this Amendment from the Credit Parties and the Required Lenders.

3.2 The release set forth in **ARTICLE II** and the amendment to the definition of “Guarantor” shall become effective as of the date when, and only when, the Administrative Agent shall have received an executed counterpart of this Amendment from the Credit Parties and each Lender.

ARTICLE IV

REPRESENTATIONS OF WARRANTIES

4.1 Each Credit Party (solely as to itself and its Subsidiaries) represents and warrants to the Administrative Agent, the Issuing Lenders and the Lenders on and as of the date hereof, that: (i) it has taken all necessary action to authorize the execution, delivery and performance of this Amendment, (ii) this Amendment has been duly executed and delivered by such Credit Party and constitutes such Credit Party’s legal, valid and binding obligations, enforceable in accordance with its terms, except as such enforcement may be limited by bankruptcy, insolvency, reorganization, moratorium or similar state or federal debtor relief laws from time to time in effect which affect the enforcement of creditors’ rights in general and the availability of

equitable remedies, (iii) no consent, approval, authorization or order of, or filing, registration or qualification with, any court or Governmental Authority or third party is required in connection with the execution, delivery or performance by such Credit Party of this Amendment, (iv) the representations and warranties set forth in Article VI of the Credit Agreement are true and correct as of the date hereof except for those which expressly relate to an earlier date, (v) both before and after giving effect to this Amendment, no event has occurred and is continuing which constitutes a Default or an Event of Default and (vi) the Obligations are not reduced by this Amendment and are not subject to any offsets, defenses or counterclaims.

ARTICLE V

ACKNOWLEDGEMENT AND CONFIRMATION

5.1 Each party to this Amendment hereby confirms and agrees that, after giving effect to this Amendment, the Credit Agreement and the other Loan Documents to which it is a party remain in full force and effect and enforceable against such party in accordance with their respective terms, as modified hereby, and shall not be discharged, diminished, limited or otherwise affected in any respect.

ARTICLE VI

MISCELLANEOUS

6.1 Governing Law. THIS AMENDMENT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK (WITHOUT REGARD TO THE CONFLICTS OF LAW PROVISIONS THEREOF).

6.2 Loan Document. As used in the Credit Agreement, “hereinafter,” “hereto,” “hereof,” and words of similar import shall, unless the context otherwise requires, mean the Credit Agreement after amendment by this Amendment. Any reference to the Credit Agreement or any of the other Loan Documents herein or in any such documents shall refer to the Credit Agreement and the other Loan Documents as amended hereby. This Amendment is limited to the matters expressly set forth herein, and shall not constitute or be deemed to constitute an amendment, modification or waiver of any provision of the Credit Agreement except as expressly set forth herein. This Amendment shall constitute a Loan Document under the terms of the Credit Agreement.

6.3 Expenses. The Credit Parties shall pay all reasonable and documented fees and expenses of counsel to the Administrative Agent in connection with the preparation, negotiation, execution and delivery of this Amendment.

6.4 Severability. To the extent any provision of this Amendment is prohibited by or invalid under the applicable law of any jurisdiction, such provision shall be ineffective only to the extent of such prohibition or invalidity and only in any such jurisdiction, without prohibiting or invalidating such provision in any other jurisdiction or the remaining provisions of this Amendment in any jurisdiction.

6.5 Successors and Assigns. This Amendment shall be binding upon, inure to the benefit of and be enforceable by the respective successors and permitted assigns of the parties hereto.

6.6 Construction. The headings of the various sections and subsections of this Amendment have been inserted for convenience only and shall not in any way affect the meaning or construction of any of the provisions hereof.

6.7 Counterparts; Integration. This Amendment may be executed and delivered via facsimile or electronic format with the same force and effect as if an original were executed and may be signed in any number of counterparts, each of which shall be an original, with the same effect as if the signatures hereto were upon the same instrument. This Amendment constitutes the entire contract among the parties hereto with respect to the subject matter hereof and supersedes any and all prior agreements and understandings, oral or written, relating to the subject matter hereof.

[remainder of page intentionally left blank]

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed by their duly authorized officers as of the date first above written.

MARKEL CORPORATION

By: /s/ Jeremy A. Noble

Name: Jeremy A. Noble

Title: Senior Vice President and Chief Financial Officer

MARKEL BERMUDA LIMITED

By: /s/ April L. Duff

Name: April L. Duff

Title: Treasurer

MARKEL GLOBAL REINSURANCE COMPANY

By: /s/ April L. Duff

Name: April L. Duff

Title: Treasurer

ALTERRA FINANCE LLC

By: /s/ Jeremy A. Noble

Name: Jeremy A. Noble

Title: Chief Financial Officer and Treasurer

WELLS FARGO BANK, NATIONAL ASSOCIATION,
as Administrative Agent, L/C Agent, Fronting Bank, Issuing
Lender and Lender

By: /s/ Jason Hafener

Name: Jason Hafener

Title: Managing Director

CITIBANK, N.A., as a Lender

By: /s/ John Modin

Name: John Modin

Title: Vice President & Managing Director

BARCLAYS BANK PLC, as a Lender

By: /s/ Edward Turowski

Name: Edward Turowski

Title: Vice President & Managing Director

JPMORGAN CHASE BANK, N.A., as a Lender

By: /s/ Hector J. Varona

Name: Hector J. Varona

Title: Executive Director

TRUIST BANK, formerly known as Branch

Banking and Trust Company and as successor by
merger to SunTrust Bank, as a Lender

By: /s/ Hays Wood

Name: Hays Wood

Title: Director

THE NORTHERN TRUST COMPANY, as a Lender

By: /s/ Joshua Metcalf

Name: Joshua Metcalf

Title: VP

BANK OF AMERICA, N.A., as a Lender

By: /s/ Hema Kishnani

Name: Hema Kishnani

Title: Director

Capital One, National Association, as a Lender

By: /s/ Seth Meier

Name: Seth Meier

Title: Director

FRONT BANK, as a Lender

By: /s/ Leslie Wilson Cosp

Name: Leslie Wilson Cosp

Title: Vice President

The Bank of New York Mellon, as a Lender

By: /s/ Tatiana Ross

Name: Tatiana Ross

Title: Vice President

MARKEL CORPORATION
PERFORMANCE-BASED RESTRICTED STOCK UNIT
AWARD AGREEMENT

AWARDED TO XXXXX	AWARD DATE XXXXX	VESTING SCHEDULE ¹	
		VESTING	PERCENTAGE
		<u>DATE</u> XXXXX	<u>OF UNITS</u> 100%

MARKEL CORPORATION (the "Company") grants you (the "Participant") the opportunity to receive restricted stock units ("Units"). The number of Units will be based on performance conditions as specified below. Until the Vesting Date stated above, except as specifically provided below, the Units are forfeitable and nontransferable. The Compensation Committee of the Company's Board of Directors (the "Committee") will administer this Agreement and any decision of the Committee will be final and conclusive. Capitalized terms not defined herein have the meanings provided in the Markel Corporation 2016 Equity Incentive Compensation Plan (the "Plan").

The terms of the award are:

1. Performance Conditions: The performance conditions are set forth on Exhibit A. Upon certification by the Committee of the completion of the performance conditions, the dollar equivalent of the percentage of salary will be determined. The Participant will receive a number of Units determined by dividing the dollar equivalent by the Fair Market Value of a share of Company Stock on the date that the completion of the performance conditions is certified by the Committee or its designee (the "Determination Date"). No Units will be awarded hereunder if the Participant separates from service for any reason before the Determination Date.
2. Vesting for Units. If the Participant has not separated from service before the Vesting Date, the Units will become vested and non-forfeitable, and the Company will issue to the Participant for each vested Unit a share of Company Stock on that date (or such later date as may be elected by the Participant pursuant to a valid deferral election in accordance with procedures determined by the Company) or, in either case, as soon as administratively practicable (but in any event no later than 90 days) thereafter.
3. Forfeiture of Units. If the Participant separates from service before the Vesting Date in circumstances other than as described in (a)-(d) below, any unvested Units will be forfeited. If the Participant separates from service as set forth in (a) or (b) below, the unvested Units will become fully vested and non-forfeitable, and shares will be issued on the date on which the Participant's death, Disability, or separation occurs or as soon as administratively practicable (but in any event no later than 90 days) thereafter, subject in the case of subsection (b) to Section 5 below.

¹ If necessary or appropriate to ensure orderly administration of the Company's payroll and tax reporting obligations, the Company may accelerate vesting and payment of restricted stock units up to a maximum of thirty days before the date on which such restricted stock units would otherwise have vested and been paid.

If the Participant separates from service before the Vesting Date in the circumstances set forth in (c) below, the number of Units set forth in this Award will be vested on a pro rata basis based on a fraction of the number of whole months from January 1 of the calendar year following the calendar year in which the Award Date occurs until the date of termination divided by 36, and shares will be issued on the otherwise applicable Vesting Date, subject to Section 5 below. Any remaining unvested Units will be forfeited as of the date of separation; except that a Participant who separates from service or whose employment is interrupted, in both instances, due to military service as provided in (c) below and who returns to employment with the Company upon cessation of such military service before the otherwise applicable Vesting Date will vest in any remaining unvested Units if employed on the Vesting Date. If the Participant separates from service before the Vesting Date in the circumstance set forth in (d) below, the unvested Units will become fully vested and non-forfeitable, and shares will be issued on the otherwise applicable Vesting Date, subject to Section 5 below.

- (a) The Participant separates from service due to death or Disability;
 - (b) The Participant separates from service after turning 55 years old and, at the time of separation, has at least 10 consecutive years of service with the Company or its subsidiaries since the Participant's most recent hire date;
 - (c) The Participant separates from service or his employment is interrupted due to military service; or
 - (d) Paragraphs (a) and (b) do not apply, but the Committee or its designee so authorized determines that forfeiture should not occur because the Participant had an approved separation from service. The Committee or its designee so authorized will in his or her sole discretion determine whether or not to apply this provision.
4. Change in Control. Any unvested Units will become fully vested and non-forfeitable if, within 12 months after a Change in Control, the Participant separates from service due to Involuntary Termination. For this purpose, Involuntary Termination means that the Participant's employment is involuntarily terminated without Cause or the Participant terminates his employment for Good Reason. In either case, shares will be issued for such Units on the otherwise applicable Vesting Date, subject to Section 5 below.
5. Six Month Delay for Specified Employees. With respect to a Participant who separates from service before the Vesting Date as set forth in Sections 3(b), (c), or (d) above or in Section 4, if such Participant is a "specified employee" (as defined in Section 409A(a)(2)(B)(i) of the Code and the generally applicable Internal Revenue Service guidance thereunder) on the date of his separation, then, notwithstanding anything in Sections 3 or 4 to the contrary, no shares will be issued for his Units until the date that is six months after the date of his separation (or until the date of his death, if earlier). Any shares which the Participant would otherwise have been entitled to receive during the first six months following the date of his separation will be issued instead on the date which is six months after the date of his separation (or on the date of his death, if earlier). Whether the Participant is a "specified employee" will be determined under guidelines established by the Company for this purpose.
6. Separation from Service Defined. References throughout this Agreement to the Participant's "separation from service" and variations thereof will have the meaning set forth in Section 1.409A-1(h) of the Treasury Regulations, as amended from time to time, applying the default terms thereof.

7. Forfeiture and Restitution. If during the period of the Participant's employment and one year thereafter, the Participant (1) becomes associated with, recruits or solicits customers or other employees of the Employer for, is employed by, renders services to, or owns any interest in (other than any non-substantial interest, as determined by the Committee) any business that is in competition with Markel or its Subsidiaries, (2) has his employment terminated by his Employer for Cause, (3) discloses the terms of this Agreement to any person other than, on a confidential basis, to his spouse, attorneys, accountants or financial advisors or in response to a court order, or (4) engages in, or has engaged in, conduct which the Committee determines to be detrimental to the interests of Markel, the Committee may, in its sole discretion, (A) cancel this Award, and/or (B) require the Participant to repay by delivery of an equivalent number of shares any payment received under this Award within the previous two years. In addition, this Award shall be subject to any recoupment or clawback policy that is adopted by, or applicable to, the Company, pursuant to any requirement of law or any exchange listing requirement related to clawback or other recovery of incentive compensation. The provisions of this Section 7 are material consideration for this Award, which would not have been granted had Participant not agreed to them.
8. Transfer Restrictions. The Participant's rights to the Units are not subject to sale, assignment, transfer, pledge, hypothecation or encumbrance.
9. Tax Withholding. Unless alternative arrangements satisfactory to the Company are made, the Company will withhold from the payment for the vested Units shares with a Fair Market Value equal to the minimum amount of any foreign, federal, state, or local income, employment or other taxes imposed on the payment required to be withheld by law. The Fair Market Value will be determined on the Vesting Date.
10. Binding Effect. Subject to the limitations stated above, this Agreement will be binding upon and inure to the benefit of the Participant's legatees, distributees, and personal representatives and the successors of the Company.
11. Change in Capital Structure. The Units will be adjusted as the Committee determines is equitably required in the event of a dividend in the form of stock, spin-off, stock split-up, subdivision or consolidation of shares of Company Stock or other similar changes in capitalization.
12. Interpretation. This Agreement will be construed under and be governed by the laws of the Commonwealth of Virginia. THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF VIRGINIA OR THE CIRCUIT COURT FOR THE COUNTY OF HENRICO WILL HAVE EXCLUSIVE JURISDICTION OVER ANY DISPUTES ARISING OUT OF OR RELATED TO THE PLAN OR THIS AGREEMENT.
13. Code Section 409A. This Agreement is intended to comply with the applicable requirements of Sections 409A(a)(2) through (4) of the Code, and will be interpreted to the extent context reasonably permits in accordance with this intent. The parties agree to modify this Agreement or the timing (but not the amount) of any payment to the extent necessary to comply with Section 409A of the Code and avoid application of any taxes, penalties, or interest thereunder. However, in the event that any amounts payable under this Agreement are subject to any taxes, penalties or interest under Section 409A of the Code or otherwise, the Participant will be solely liable for the payment thereof.
14. By accepting any benefits under this Agreement, Participant is accepting all the provisions hereof, including without limitation Section 7 hereof.

IN WITNESS WHEREOF, the Company has caused this Agreement to be signed as of the award date shown above.

MARKEL CORPORATION

By: _____
Richard R. Whitt, III
Co-Chief Executive Officer

By: _____
Thomas S. Gayner
Co-Chief Executive Officer

CERTAIN SUBSIDIARIES OF MARKEL CORPORATION

Subsidiary	State or Other Jurisdiction of Incorporation or Organization
Alterra Capital Holdings Limited	Bermuda
Lodgepine Capital Management Limited	Bermuda
Markel Bermuda Limited	Bermuda
Markel CATCo Investment Management Ltd.	Bermuda
Markel CATCo Re Ltd.	Bermuda
Markel Resseguradora do Brasil S.A.	Brazil
Black/White & Associates Insurance Brokers	California
Essentia Insurance Company	Missouri
Evanston Insurance Company	Illinois
Markel American Insurance Company	Virginia
Markel Aspen, Inc.	Delaware
FirstComp Insurance Company	Nebraska
Markel Global Reinsurance Company	Delaware
Markel Holdings GmbH	Germany
Markel Insurance S.E.	Germany
Markel India Investments, Inc.	Virginia
Markel Insurance Company	Illinois
Markel International Holdings (Delaware) Limited	Delaware
Counce O'Hara & Company Limited	England
EC Insurance Company Limited	England
FSB Insurance Service Limited	England
Galleon Marine Insurance Agency Limited	England
Markel Capital Limited	England
Markel Consultancy Services Limited	England
Markel International (Dubai) Limited	United Arab Emirates
Markel International Hong Kong Limited	Hong Kong
Markel International Insurance Company Limited	England
Markel International Labuan Limited	Malaysia
Markel International Singapore Pte. Limited	Singapore
Markel Law LLP	England
Markel Protection Limited	England
Markel Services India Private Limited	India
Markel Syndicate Management Limited	England
Markel Service, Incorporated	Virginia
Markel Ventures, Inc.	Virginia
Brahmin Leather Works, LLC	Delaware
CapTech Ventures, Inc.	Virginia
Costa Farms Holdings, LLC	Florida
Cottrell, Inc.	Georgia
Diamond Healthcare Corporation	Virginia
Eagle Construction of Va., LLC	Virginia
Ellicott Dredge Enterprises, LLC	Maryland
Havco WP LLC	Delaware
Markel Eagle Investment, LLC	Virginia

Markel Eagle Investment II, LLC	Virginia
Markel Food Group, Inc.	Virginia
Panel Specialists, Inc.	Texas
ParkLand Ventures, Inc.	Virginia
PartnerMD, LLC	Virginia
Retail Data, LLC	Virginia
Rosemont Investment Group, LLC	Delaware
VSC Fire & Security, Inc.	Virginia
Weldship LLC	Pennsylvania
Markel West, Inc.	California
MINT Canadian Specialty Underwriters Limited	Canada
Markel Canada Limited	Canada
Nephila Holdings Ltd.	Bermuda
Bridge Underwriting AB	Sweden
Nautical Management Ltd.	Bermuda
Nephila Advisors LLC	Delaware
Nephila Capital Ltd.	Bermuda
Nephila Syndicate Management Ltd.	England
Rubik Reinsurance Ltd.	Bermuda
Velocity Risk Underwriters, LLC	Delaware
Volante Emerging Markets Limited	England
Volante International Limited	England
Volante Specialty Risk, LLC	Delaware
Volante Transaction Solutions Limited	England
Prairie State Administrative Services, Inc.	Illinois
Schouten Insurance International B.V.	The Netherlands
State National Companies, Inc.	Delaware
City National Insurance Company	Texas
Independent Specialty Insurance Company	Delaware
National Specialty Insurance Company	Texas
Pinnacle National Insurance Company	Texas
State National Insurance Company, Inc.	Texas
Superior Specialty Insurance Company	Delaware
T.B.A. Insurance Group, Ltd.	Texas
United Specialty Insurance Company	Delaware
SureTec Insurance Company	Texas
SureTec Indemnity Company	California

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Markel Corporation:

We consent to the incorporation by reference in the registration statement No. 333-223194 on Form S-3; No. 333-107661, No. 333-143393, No. 333-178051, No. 333-181419, No. 333-188294, No. 333-211414, and No. 333-211415 on Form S-8; and No. 333-185715 on Form S-4 of Markel Corporation of our reports dated February 21, 2020, with respect to the consolidated balance sheets of Markel Corporation as of December 31, 2019 and 2018, the related consolidated statements of income (loss) and comprehensive income (loss), changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes, and the effectiveness of internal control over financial reporting as of December 31, 2019, which reports appear in the December 31, 2019 annual report on Form 10-K of Markel Corporation. Our report on the consolidated financial statements refers to a change in the method of accounting for investments in equity securities effective January 1, 2018 due to the adoption of ASU 2016-01, *Financial Instruments*.

/s/ KPMG LLP

Richmond, Virginia
February 21, 2020

**CERTIFICATION OF CO-PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO RULE 13a-14(a)/15d-14(a)**

I, Thomas S. Gayner, certify that:

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

February 21, 2020

/s/ Thomas S. Gayner

Thomas S. Gayner

Co-Chief Executive Officer

(Co-Principal Executive Officer)

**CERTIFICATION OF CO-PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO RULE 13a-14(a)/15d-14(a)**

I, Richard R. Whitt, III, certify that:

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

February 21, 2020

/s/ Richard R. Whitt, III

Richard R. Whitt, III

Co-Chief Executive Officer

(Co-Principal Executive Officer)

**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO RULE 13a-14(a)/15d-14(a)**

I, Jeremy A. Noble, certify that:

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

February 21, 2020

/s/ Jeremy A. Noble

Jeremy A. Noble

Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

**CERTIFICATION OF CO-PRINCIPAL EXECUTIVE OFFICER
FURNISHED PURSUANT TO 18 U.S.C. SECTION 1350**

In connection with the Annual Report of Markel Corporation (the "Company") on Form 10-K for the year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Thomas S. Gayner, Co-Chief Executive Officer of the Company, certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Thomas S. Gayner

Thomas S. Gayner

Co-Chief Executive Officer

(Co-Principal Executive Officer)

February 21, 2020

**CERTIFICATION OF CO-PRINCIPAL EXECUTIVE OFFICER
FURNISHED PURSUANT TO 18 U.S.C. SECTION 1350**

In connection with the Annual Report of Markel Corporation (the "Company") on Form 10-K for the year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Richard R. Whitt, III, Co-Chief Executive Officer of the Company, certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Richard R. Whitt, III

Richard R. Whitt, III

Co-Chief Executive Officer

(Co-Principal Executive Officer)

February 21, 2020

**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
FURNISHED PURSUANT TO 18 U.S.C. SECTION 1350**

In connection with the Annual Report of Markel Corporation (the "Company") on Form 10-K for the year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Jeremy A. Noble, Senior Vice President and Chief Financial Officer of the Company, certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Jeremy A. Noble

Jeremy A. Noble

Senior Vice President and Chief Financial Officer

(Principal Financial Officer)

February 21, 2020