

HANOVER INSURANCE GROUP, INC.
Form 10-K
February 22, 2019

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, 2018

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF
1934

For the transition period from: to

Commission file number: 1-13754

THE HANOVER INSURANCE GROUP, INC.

(Exact name of registrant as specified in its charter)

Delaware 04-3263626
(State or other jurisdiction of (I.R.S. Employer
incorporation or organization) Identification No.)

440 Lincoln Street, Worcester, Massachusetts 01653

(Address of principal executive offices) (Zip Code)

(508) 855-1000

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(Registrant's telephone number, including area code)

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

Title of each class	Name of each exchange on which registered
Common Stock, \$.01 par value	New York Stock Exchange
7 5/8% Senior Debentures due 2025	New York Stock Exchange
6.35% Subordinated Debentures due 2053	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 during the preceding 12 months. Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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

Large accelerated filer	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

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Based on the closing sales price of June 29, 2018, the aggregate market value of the voting and non-voting common stock held by non-affiliates of the registrant was \$5,058,103,806.

The number of shares outstanding of the registrant's common stock, \$0.01 par value, was 40,573,500 shares as of February 15, 2019.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of The Hanover Insurance Group, Inc.'s Proxy Statement to be filed pursuant to Regulation 14A relating to the 2019 Annual Meeting of Shareholders to be held May 14, 2019 are incorporated by reference in Part III.

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THE HANOVER INSURANCE GROUP, INC.

ANNUAL REPORT ON FORM 10-K

FOR THE FISCAL YEAR ENDED DECEMBER 31, 2018

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PART I

ITEM 1 — BUSINESS

ORGANIZATION

The Hanover Insurance Group, Inc. (“THG”) is a holding company organized as a Delaware corporation in 1995. We trace our roots to as early as 1852, when the Hanover Fire Insurance Company was founded. Our primary business operations are property and casualty insurance products and services. We market our products and services through independent agents and brokers in the United States (“U.S.”). Our consolidated financial statements include the accounts of THG; The Hanover Insurance Company (“Hanover Insurance”) and Citizens Insurance Company of America (“Citizens”), which are our principal property and casualty subsidiaries; and other insurance and non-insurance subsidiaries. Our results of operations also include the results of our discontinued operations, consisting primarily of our former Chaucer international business, as well as our former accident and health, and life insurance businesses. As discussed further in “Discontinued Operations” below, on December 28, 2018, we completed the sale of Chaucer Holdings Limited, the major portion of our Lloyd’s international specialty business, to China Reinsurance (Group) Corporation (“China Re”). We subsequently completed the sale of our Chaucer-related Irish entity on February 14, 2019. The sale of the Australian entities is pending, subject only to local regulatory approval, and is expected to close in the first quarter of 2019.

INFORMATION ABOUT OPERATING SEGMENTS

We conduct our business operations through three operating segments. These segments are Commercial Lines, Personal Lines, and Other. We report interest expense related to our corporate debt separately from the earnings of our operating segments.

Information with respect to each of our segments is included in “Results of Operations - Segments” in Management’s Discussion and Analysis of Financial Condition and in Note 14 – “Segment Information” in the Notes to Consolidated Financial Statements.

Information with respect to geographic concentrations is included in “Marketing and Distribution” below in Part 1 – Item 1 and in Note 14 – “Segment Information” in the Notes to Consolidated Financial Statements.

The following is a discussion of our operating segments.

GENERAL

In our Commercial Lines and Personal Lines segments, we underwrite commercial and personal property and casualty insurance through Hanover Insurance, Citizens and other THG subsidiaries, through an independent agent and broker network concentrated in the Northeast, Midwest and Southeast U.S. We also continue to actively grow our Commercial Lines’ presence in the Western region of the U.S., particularly in California, which now is our largest state for Commercial Lines as measured by net premiums written. Included in our Other segment are Opus Investment Management, Inc. (“Opus”), a wholly owned subsidiary of THG, which provides investment management services to our insurance and non-insurance companies, as well as to unaffiliated institutions, pension funds and other organizations; earnings on holding company assets; holding company and other expenses, including certain costs associated with retirement benefits due to former life insurance employees and agents; and a run-off voluntary pools business.

Our business strategy focuses on providing our agents and customers with competitive insurance products delivered with clear and consistent underwriting and pricing expectations, while prudently growing and diversifying our product and geographical business mix. We conduct our business with an emphasis on disciplined underwriting, pricing, quality claim handling, and customer service. In 2018, we wrote approximately \$4.8 billion in gross premiums. Agency relationships and active agency management are core to our strategy. Based on net premiums written, we rank among the top 25 property and casualty insurers in the United States.

RISKS

The industry's and our profitability are each significantly affected by numerous factors, including price; competition; volatile and unpredictable developments, such as extreme weather conditions, catastrophes and other disasters; legal and regulatory developments affecting pricing, underwriting, policy coverage and other aspects of doing business, as well as insurer and insureds' liability; extra-contractual liability; increased attorney involvement; size of jury awards; acts of terrorism; fluctuations in interest rates or the value of investments; and other general economic conditions and trends, such as inflationary pressure or unemployment, that may affect the adequacy of reserves or the demand for insurance products. Our investment portfolio and its future returns are impacted by the capital markets and current economic conditions, which affect our liquidity, realized losses and impairments, credit default levels, our ability to hold such investments until recovery and other factors. Additionally, the economic conditions in geographic locations where we conduct business, especially those locations where our business is concentrated, affect the growth and profitability of our business. The regulatory environments in those locations, including any pricing, underwriting or product controls, shared market mechanisms or mandatory pooling arrangements, and other conditions, such as our agency relationships, affect the growth and profitability of our business. Our loss and loss adjustment expense ("LAE") reserves are based on estimates, principally involving case assessments and actuarial projections, at a given time, of what we expect the ultimate settlement and administration of claims will cost based on facts and circumstances then known, predictions of future events, estimates of future trends in claims frequency and severity and judicial

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theories of liability, costs of repairs and replacement, legislative activity and other factors. We regularly reassess our estimate of loss reserves and LAE, both for current and past years, and resulting changes have and will affect our reported profitability and financial position.

Reference is also made to “Risk Factors” in Part 1 – Item 1A.

LINES OF BUSINESS

Commercial Lines

Our Commercial Lines segment generated \$2.7 billion, or 60.3%, of consolidated operating revenues and \$2.6 billion, or 59.5%, of net premiums written, for the year ended December 31, 2018.

The following table provides net premiums written by line of business for our Commercial Lines segment.

YEAR ENDED DECEMBER 31, 2018 (in millions, except ratios)	Net Premiums	
	Written	% of Total
Commercial multiple peril	\$ 861.4	33.0 %
Commercial automobile	344.8	13.2
Workers' compensation	317.1	12.1
Other commercial lines:		
Inland marine	268.2	10.3
Management and professional liability	229.9	8.8
AIX program business	223.2	8.5
Surety	72.5	2.8
Specialty property	64.1	2.5
Other	229.5	8.8
Total	\$ 2,610.7	100.0%

Our Commercial Lines product suite provides agents and customers with products designed for small, middle and specialized markets.

Commercial Lines coverages include:

Commercial multiple peril coverage insures businesses against third-party general liability from accidents occurring on their premises or arising out of their operations, such as injuries sustained from products sold. It also insures business property for damage, such as that caused by fire, wind, hail, water damage (which may include flood), theft and vandalism.

Commercial automobile coverage insures businesses against losses incurred from personal bodily injury, bodily injury to third parties, property damage to an insured's vehicle and property damage to other vehicles and property.

Commercial automobile policies are often written in conjunction with other commercial policies.

Workers' compensation coverage insures employers against employee medical and indemnity claims resulting from injuries related to work. Workers' compensation policies are often written in conjunction with other commercial policies.

Other commercial lines is comprised of:

- inland marine coverage insures businesses against physical losses to property, such as contractor's equipment, builders' risk and goods in transit, and also covers jewelers block, fine art and other valuables;
- management and professional liability coverage provides protection for directors and officers of companies that may be sued in connection with their performance, and errors and omissions protection to companies and individuals against negligence or bad faith, as well as protection for employment practices liability and fidelity and crime;
- AIX program business provides coverage to markets where there are specialty coverage or risk management needs related to groups of similar businesses, including commercial multiple peril, workers' compensation, commercial automobile, general liability and other commercial coverages;
- surety provides businesses with contract surety coverage in the event of performance or non-payment claims, and commercial surety coverage related to fiduciary or regulatory obligations;
- specialty property provides insurance to small and medium-sized chemical, paint, solvent and other manufacturing and distribution companies; and

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- other commercial lines coverages include umbrella, healthcare, miscellaneous commercial property, and monoline general liability. Our healthcare coverage includes product liability, medical professional liability and general liability coverages for selected portions of the healthcare industry, including eldercare providers, durable medical equipment suppliers, podiatrists and behavioral health specialists.

Our strategy in Commercial Lines focuses on building deep relationships with partner independent agents through differentiated product offerings, industry segmentation, and franchise value through limited distribution. We continue to make enhancements to our products and technology platforms that are intended to drive more total account placements in our small commercial and middle market business, while delivering enhanced margins in our specialty businesses. This aligns with our focus of delivering the capabilities that will help expand the depth and breadth of our partnerships with a limited number of agents.

Our small commercial, middle market and specialty businesses each constitute approximately one-third of our total Commercial Lines business. Small commercial offerings, which generally include premiums of \$50,000 or less, deliver value through product expertise, local presence, and ease of doing business. Middle market accounts, with premiums generally in the range of \$50,000 to \$250,000, require greater claim and underwriting expertise, as well as a focus on industry segments where we can deliver differentiation in the market and value to agents and customers. Small and middle market accounts comprise approximately \$1.7 billion of the Commercial Lines segment net premiums written. Our specialty lines of business include inland marine, management and professional liability, AIX program business, surety and specialty property.

In our small commercial and middle market businesses, we offer coverages and capabilities in several key industries including technology, schools, and human services organizations, such as non-profit youth and community service organizations. We also provide further segmentation in our core middle market commercial products, including real estate, hospitality, manufacturing, contractors and wholesale distributors.

Part of our strategy is to expand our specialty lines offerings in order to provide our agents and policyholders with a broader product portfolio and to increase our market share of our partner agents' total business. We have over time acquired various specialized businesses aimed at further diversifying and growing our specialty lines. We used these acquisitions as platforms to expand our product offerings and grow through our existing agency and broker distribution network.

We believe our small commercial capabilities, distinctiveness in the middle market, and continued development of specialty business provides us with a more diversified portfolio of products and enables us to deliver significant value to our agents and policyholders. We believe these efforts will enable us to continue to improve the overall mix of our business and ultimately our underwriting profitability.

Personal Lines

Our Personal Lines segment generated \$1.8 billion, or 39.4%, of consolidated operating revenues and \$1.8 billion, or 40.5%, of net premiums written, for the year ended December 31, 2018.

The following table provides net premiums written by line of business for our Personal Lines segment.

Net
Premiums

YEAR ENDED DECEMBER 31, 2018 (in millions, except ratios)	Written	% of Total
Personal automobile	\$ 1,127.5	63.6 %
Homeowners	604.0	34.0
Other	42.6	2.4
Total	\$ 1,774.1	100.0%

Personal Lines coverages include:

Personal automobile coverage insures individuals against losses incurred from personal bodily injury, bodily injury to third parties, property damage to an insured's vehicle, and property damage to other vehicles and other property.

Homeowners coverage insures individuals for losses to their residences and personal property, such as those caused by fire, wind, hail, water damage (excluding flood), theft and vandalism, and against third-party liability claims.

Other personal lines are comprised of personal inland marine (jewelry, art, etc.), umbrella, fire, personal watercraft, earthquake and other miscellaneous coverages.

Our strategy in Personal Lines is to provide account-oriented business (i.e., writing both an insured's automobile and homeowners insurance) through our partner agencies, with a focus on increasing geographic diversification. The market for our Personal Lines business is very competitive, with continued pressure on independent agents from direct writers, as well as from the increased usage of

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real time comparative rating tools and increasingly sophisticated rating and pricing tools. We maintain a focus on partnering with high quality, value-added agencies that stress the importance of consultative selling and account rounding (the conversion of single policy customers to accounts with multiple policies and/or additional coverages). We are focused on making investments that are intended to help us maintain profitability, build a distinctive position in the market, and provide us with profitable growth opportunities. We continue to refine our products and to work closely with these high potential agents to increase the percentage of business they place with us and to ensure that it is consistent with our preferred mix of business. Additionally, we remain focused on further diversifying our state mix beyond the largest historical core states of Michigan, Massachusetts and New York. We expect these efforts to decrease our risk concentrations and our dependency on these three states, as well as to contribute to improved profitability over time.

Other

The Other segment consists of: Opus, which provides investment advisory services to affiliates and also manages approximately \$3.1 billion of assets for unaffiliated institutions such as insurance companies, retirement plans and foundations, including \$1.6 billion of funds managed for Chaucer subsequent to the completion of the sale. We anticipate that we will continue to manage these assets in connection with a new investment management arrangement. The Other segment also includes earnings on holding company assets; holding company and other expenses, including certain costs associated with retirement benefits due to former life insurance employees and agents; and our run-off voluntary pools business.

MARKETING AND DISTRIBUTION

We serve a variety of standard, specialty and targeted industry markets. Consistent with our objective to diversify our underwriting risks on a geographic and line of business basis, we currently have a split of approximately 40% Personal Lines, 40% core Commercial Lines, and 20% specialty lines. Commercial Lines, including our small, middle market and specialty businesses, and Personal Lines segments distribute our products primarily through an independent agent network.

Commercial and Personal Lines

Our Commercial and Personal Lines agency distribution and field structure are designed to maintain a strong focus on local markets and the flexibility to respond to specific market conditions. During 2018, we wrote 20.5% of our Commercial and Personal Lines business in Michigan and 9.6% in Massachusetts. Our structure is a key factor in the establishment and maintenance of productive, long-term relationships with well-established independent agencies. We maintain 41 local offices across 28 states. The majority of processing support for these locations is provided from Worcester, Massachusetts; Howell, Michigan; Salem, Virginia; and Windsor, Connecticut.

Independent agents account for substantially all of the sales of our Commercial and Personal Lines property and casualty products. Agencies are appointed based on profitability, track record, financial stability, professionalism, and business strategy. Once appointed, we monitor their performance and, subject to legal and regulatory requirements, may take actions as necessary to change these business relationships, such as discontinuing the authority of the agent to underwrite certain products or revising commissions or bonus opportunities. We compensate agents primarily through base commissions and bonus plans that are tied to an agency's written premium, growth and profitability.

We are licensed to sell property and casualty insurance in all fifty states in the U.S., as well as in the District of Columbia. Throughout the U.S., we actively market Commercial Lines policies in 37 states and Personal Lines

policies in 18 states.

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The following table provides our top Commercial and Personal Lines geographical markets based on total net premiums written in the state in 2018.

YEAR ENDED DECEMBER 31, 2018 (in millions, except ratios)	Commercial Lines Net		Personal Lines Net		Total Commercial and Personal Lines Net	
	Premiums		Premiums		Premiums	
	Written	% of Total	Written	% of Total	Written	% of Total
Michigan	\$133.7	5.1 %	\$766.5	43.2 %	\$900.2	20.5 %
Massachusetts	186.6	7.1	234.8	13.2	421.4	9.6
New York	229.9	8.8	128.1	7.2	358.0	8.2
California	317.2	12.1	—	—	317.2	7.2
Illinois	119.1	4.6	96.3	5.4	215.4	4.9
Texas	207.0	7.9	—	—	207.0	4.7
New Jersey	138.1	5.3	57.1	3.2	195.2	4.5
Connecticut	58.8	2.3	89.8	5.1	148.6	3.4
Georgia	80.7	3.1	54.1	3.0	134.8	3.1
Maine	63.4	2.4	49.3	2.8	112.7	2.6
Virginia	74.4	2.8	36.2	2.0	110.6	2.5
Indiana	51.7	2.0	36.5	2.1	88.2	2.0
Florida	86.6	3.3	(0.1)	—	86.5	2.0
Tennessee	50.1	1.9	35.0	2.0	85.1	1.9
Wisconsin	48.3	1.9	35.5	2.0	83.8	1.9
New Hampshire	42.2	1.6	33.8	1.9	76.0	1.7
Louisiana	39.3	1.5	35.6	2.0	74.9	1.7
North Carolina	66.4	2.5	2.8	0.2	69.2	1.6
Minnesota	68.7	2.6	—	—	68.7	1.6
Pennsylvania	60.0	2.3	8.7	0.5	68.7	1.6
Other	488.5	18.9	74.1	4.2	562.6	12.8
Total	\$2,610.7	100.0%	\$1,774.1	100.0%	\$4,384.8	100.0%

We manage our Commercial Lines portfolio, which includes our core and specialty businesses, with a focus on growth from the most profitable industry segments within our underwriting expertise. Our core business is generally comprised of several coordinated commercial lines of business, including small and middle market accounts, which include targeted industry segments. Such business is split between small accounts, generally having less than \$50,000 in premium, and middle market accounts, those with premium over \$50,000, with most middle market accounts having less than \$250,000 of premium. Additionally, we have multiple specialty lines of business, which include inland marine, management and professional liability, AIX program business, surety and specialty property. The Commercial Lines segment seeks to maintain strong agency relationships as an approach to secure and retain our agents' best business. We monitor quality of business written through ongoing quality reviews, accountability for

which is shared at the local, regional and corporate levels.

We manage Personal Lines business with a focus on acquiring and retaining preferred accounts. Currently, approximately 84% of our policies in force are account business. Approximately 56% of our Personal Lines net premium written is generated in the combined states of Michigan and Massachusetts. In Michigan, based upon direct premiums written for 2018, we underwrite approximately 6% of the state's total market.

Approximately 68% of our Michigan Personal Lines business is in the personal automobile line and 31% is in the homeowners line. Michigan business represents approximately 46% of our total personal automobile net premiums written and approximately 39% of our total homeowners net premiums written. In Michigan, we are a principal market for many of our appointed agencies, with approximately \$2.0 million of total direct premiums written per agency in 2018.

Approximately 69% of our Massachusetts Personal Lines business is in the personal automobile line and 29% is in the homeowners line. Massachusetts business represents approximately 14% of our total personal automobile net premiums written and approximately 11% of our total homeowners net premiums written.

We sponsor local and national agent advisory councils to gain the benefit of our agents' insight and enhance our relationships. These councils provide feedback, input on the development of products and services, guidance on marketing efforts, support for our strategies, and assist us in enhancing our local market presence.

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Other

With respect to our Other segment business, we market our investment advisory services directly through Opus.

PRICING AND COMPETITION

The property and casualty industry is a very competitive market. Our competitors include national, international, regional and local companies that sell insurance through various distribution channels, including independent agencies, captive agency forces, brokers and direct to consumers through the internet or otherwise. They also include mutual insurance companies, reciprocals and exchanges. In the Commercial and Personal Lines segments, we market through independent agents and brokers and compete for business on the basis of product, price, agency and customer service, local relationships, ratings, and effective claims handling, among other things. We believe that our emphasis on maintaining strong agency relationships and a local presence in our markets, coupled with investments in products, operating efficiency, technology and effective claims handling, enable us to compete effectively. Our broad product offerings in Commercial Lines and total account strategy in Personal Lines are instrumental to our ability to capitalize on these relationships and improve profitability.

We seek to achieve targeted combined ratios in each of our product lines. Targets vary by product and geography and change with market conditions. The targeted combined ratios reflect competitive market conditions, investment yield expectations, our loss payout patterns, and target returns on equity. This approach is intended to enable us to achieve measured growth and consistent profitability.

For all major product lines in the Commercial and Personal Lines segments, we employ pricing teams which produce exposure and experience-based rating models to support underwriting and pricing decisions. In addition, we seek to utilize our understanding of local markets to achieve superior underwriting results. We rely on market information provided by our local agents and on the knowledge of staff in the local branch offices. Since we maintain a strong regional focus and a significant market share in a number of states, we can better apply our knowledge and experience in making underwriting and rate setting decisions. Also, we seek to gather objective and verifiable information at a policy level during the underwriting process, including prior loss experience, past driving records and, where permitted, credit histories.

CLAIMS MANAGEMENT

Claims management includes the receipt of initial loss notifications, generation of appropriate responses to claim reports, loss appraisals, identification and handling of coverage issues, determination of whether further investigation is required, retention of legal representation where appropriate, establishment of case reserves, approval of loss payments and notification to reinsurers. Part of our strategy focuses on efficient, timely, and fair claim settlements to meet customer service expectations and maintain valuable independent agent relationships. Additionally, effective claims management is important to our business since claim payments and related loss adjustment expenses are our single largest expenditures.

We utilize experienced claims adjusters, appraisers, medical specialists, managers and attorneys to manage our claims. Our U.S. property and casualty operations have field claims adjusters located throughout the states and regions in which we do business. Claims field staff members work closely with the independent agents who bound the policies under which coverage is claimed. Claims office adjusting staff is supported by general adjusters for large property and large casualty losses, by automobile and heavy equipment damage appraisers for automobile material damage losses, and by medical specialists whose principal concentration is on workers' compensation and automobile injury cases.

Additionally, the claims offices are supported by staff attorneys, both in the home office and in regional locations, who specialize in litigation defense and claim settlements. We have a catastrophe response team to assist policyholders impacted by severe weather events. This team mobilizes quickly to impacted regions, often in advance for a large tracked storm, to support our local claims adjusters and facilitate a timely response to resulting claims. We also maintain a special unit that investigates suspected insurance fraud and abuse. We utilize claims processing technology which allows most of the smaller and more routine Personal Lines claims to be processed at centralized locations.

CATASTROPHES

We are subject to claims arising out of catastrophes, which historically have had a significant impact on our results of operations and financial condition. Coverage for such events is a core part of our business, and we expect to experience catastrophe losses in the future, which could have a material adverse impact on our financial results and position. Catastrophes can be caused by various events, including, among others, hurricanes, tornadoes and other windstorms, earthquakes, hail, severe winter weather, fire, explosions, and terrorism. The incidence and severity of catastrophes are volatile and difficult to predict.

We endeavor to manage our catastrophe risks through underwriting procedures, including the use of deductibles and specific exclusions for floods and earthquakes, subject to regulatory restrictions and competitive pressures, and through geographic exposure management and reinsurance. The catastrophe reinsurance program is structured to protect us on a per-occurrence and aggregate excess basis. We monitor geographic location and coverage concentrations in order to manage corporate exposure to catastrophic events. Although catastrophes can cause losses in a variety of property and casualty lines, commercial multiple peril and homeowners property coverages have, in the past, generated the majority of catastrophe-related claims.

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REINSURANCE

Reinsurance Program Overview

We maintain ceded reinsurance programs designed to protect against large or unusual loss and LAE activity. We utilize a variety of proportional and non-proportional reinsurance agreements, which are intended to control our individual policy and aggregate exposure to large property and casualty losses, stabilize earnings and protect capital resources. These programs include facultative reinsurance (to limit exposure on a specified policy); specific excess and proportional treaty reinsurance (to limit exposure on individual policies or risks within specified classes of business); and catastrophe excess of loss reinsurance (to limit exposure to any one event that might impact more than one individual contract). Our proportional reinsurance consists of quota share reinsurance agreements and our non-proportional reinsurance includes excess of loss and stop loss reinsurance agreements.

Catastrophe reinsurance protects us, as the ceding insurer, from significant losses arising from a single event including, among others, hurricanes, tornadoes and other windstorms, earthquakes, hail, severe winter weather, fire, explosions and terrorism. We determine the appropriate amount of reinsurance based upon our evaluation of the risks insured, exposure analyses prepared by consultants, our risk appetite and on market conditions, including the availability and pricing of reinsurance. Although we believe our catastrophe reinsurance program, including our retention and co-participation amounts for 2019, is appropriate given our surplus level and the current reinsurance pricing environment, there can be no assurance that our reinsurance program will provide coverage levels that will prove adequate should we experience losses from one significant or several large catastrophes during 2019. Additionally, as a result of the current economic environment, as well as losses incurred by reinsurers in the past several years, the availability and pricing of appropriate reinsurance programs may be adversely affected in future renewal periods. We may not be able to pass these costs on to policyholders in the form of higher premiums or assessments.

We cede to reinsurers a portion of our risk based upon insurance policies subject to such reinsurance. Reinsurance contracts do not relieve us from our obligations to policyholders. Failure of reinsurers to honor their obligations could result in losses to us. We believe that the terms of our reinsurance contracts are consistent with industry practice in that they contain standard terms with respect to lines of business covered, limit and retention, arbitration and occurrence. We believe our reinsurers are financially sound, based upon our ongoing review of the financial strength ratings assigned to them by rating agencies, their reputations in the reinsurance marketplace, our collections history, advice from third parties, and the analysis and guidance of our reinsurance advisors.

Although we exclude coverage of nuclear, chemical or biological events from the Personal Lines and Commercial Lines policies we write in the U.S., we are statutorily required to provide this coverage in our workers' compensation policies. We have workers' compensation reinsurance coverage under our casualty reinsurance treaty of approximately \$80 million for terrorism losses, limited to approximately \$10 million for losses that result from nuclear, chemical or biological events. All other U.S.-based exposure or treaties exclude such coverage. Further, under The Terrorism Risk Insurance Program Reauthorization Act of 2015 ("TRIPRA"), our share of U.S. domestic losses in 2018 from such events, if deemed certified terrorist events, is limited to 18% of losses in excess of an approximate \$412 million deductible, up to a combined annual aggregate limit for the federal government and all insurers of \$100 billion. Such events could be material to our financial position or results of operations. See also "Terrorism" below for additional information.

Reference is made to Note 16 — "Reinsurance" in the Notes to Consolidated Financial Statements. Reference is also made to "Involuntary Residual Markets".

Our 2019 reinsurance program for our Commercial Lines and Personal Lines segments is substantially consistent with our 2018 program design. The following discussion summarizes both our 2018 and 2019 reinsurance programs for our Commercial Lines and Personal Lines segments (excluding coverage available under the U.S. federal terrorism program which is described under “Terrorism”), but does not purport to be a complete description of the program or the various restrictions or limitations which may apply:

• Our Commercial Lines and Personal Lines segments are primarily protected by a property catastrophe occurrence treaty, a property per risk excess of loss treaty, as well as a casualty excess of loss treaty, with retentions of \$200 million, \$2 million, and \$2 million, respectively. We have lower retentions in place for certain lines, as discussed below.

• The property catastrophe occurrence treaty provides coverage, on an occurrence basis, up to \$1.1 billion countrywide, less a \$200 million retention, with no co-participation, for all defined perils. Effective July 1, 2018, we added a top and aggregate feature which provides for up to \$75 million of coverage in excess of \$300 million in aggregate domestic losses, or against a single extreme event on the top of our \$1.1 billion reinsurance treaty. The domestic catastrophe losses subject to the aggregate feature are limited only to those events that exceed \$7.5 million of incurred losses.

• The property per risk excess of loss treaty provides coverage, on a per risk basis, up to \$100 million, less a \$2 million retention, with a co-participation for the second half of 2018 and the first half of 2019 of 25% for reinsurance placed in the \$2 million to \$3 million layer and no co-participation for reinsurance placed in the \$3 million to \$100 million layer.

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The casualty excess of loss treaty provides coverage, on a per occurrence basis for each loss, up to \$75 million less a \$2 million retention, with no co-participation. Umbrella and excess liability lines share coverage with casualty lines within the \$2 million to \$10 million layers, subject to a maximum umbrella limit of \$5 million. There is also separate umbrella and excess liability only coverage that provides protection for the \$5 million to \$25 million layer. The casualty program provides coverage for management liability and healthcare lines in a \$1 million to \$2 million layer, with co-participations ranging from 45% to 65%.

For 2018 and 2019, Commercial Lines segments are further protected by excess of loss treaty agreements for specific lines of business. For example, the surety and fidelity bond excess of loss treaty provides coverage, on a per principal basis, up to \$40 million, less a \$5 million retention, with co-participations of 50% for the \$5 million to \$10 million layer and no co-participation for the \$10 million to \$40 million layer.

In addition to certain layers of coverage from our Commercial and Personal Lines segment reinsurance program as described above, the Commercial Lines AIX Holdings, Inc. ("AIX") program business also includes surplus share, quota share, excess of loss, stop loss, facultative and other forms of reinsurance that cover the writings from AIX specialty and proprietary programs. There are approximately 55 different AIX programs, and the reinsurance structure is customized to fit the exposure profile for each program.

Our intention is to renew the surety and fidelity bond treaty, the property per risk excess of loss treaty and the property catastrophe treaty in July 2019 with the same or similar terms and conditions, but there can be no assurance that we will be able to maintain our current levels of reinsurance, pricing and terms and conditions. Our 2019 casualty excess of loss treaty is effective January 1, 2019 for a twelve month period.

Reinsurance Recoverables

We share insurance risk of the primary underlying contracts with various insurance entities through the use of reinsurance contracts. As a result, when we experience loss events that are subject to a reinsurance contract, reinsurance recoveries are recorded. The amount of the reinsurance recoverable can vary based on the size of the individual loss or the aggregate amount of all losses in a particular line, book of business or an aggregate amount associated with a particular accident year. The valuation of losses recoverable depends on whether the underlying loss is a reported loss, or an incurred but not reported loss. For reported losses, we value reinsurance recoverables at the time the underlying loss is recognized, in accordance with contract terms. For incurred but not reported losses, we estimate the amount of reinsurance recoverable based on the terms of the reinsurance contracts and historical reinsurance recovery information and apply that information to the gross loss reserve estimates. The most significant assumption we use is the average size of the individual losses that will exceed our reinsurance retentions for those claims that have occurred but have not yet been reported to us. The reinsurance recoverable is based on what we believe are reasonable estimates and is disclosed separately on the financial statements. However, the ultimate amount of the reinsurance recoverable is not known until all losses are settled.

Other than our investment portfolio, the single largest asset class is our reinsurance receivables, which consist of our estimate of amounts recoverable from reinsurers with respect to losses incurred to date (including losses incurred but not reported) and unearned premiums, net of amounts estimated to be uncollectible. These estimates are expected to be revised at each reporting period and such revisions, which could be material, affect our results of operations and financial position. Reinsurance recoverables include amounts due from state mandatory reinsurance or other involuntary risk sharing mechanisms, and private reinsurers to whom we have voluntarily ceded business.

We are subject to concentration of risk with respect to reinsurance ceded to various mandatory residual markets, facilities and pooling mechanisms. As a condition to conduct business in various states, we are required to participate in residual market mechanisms, facilities and pooling arrangements which usually are designed to provide insurance coverages to individuals or other entities that are otherwise unable to purchase such coverage voluntarily or at rates

deemed reasonable. These market mechanisms, facilities and pooling arrangements comprise \$990.9 million of our total reinsurance recoverables on paid and unpaid losses and unearned premiums at December 31, 2018, \$977.1 million of which is attributable to the Michigan Catastrophic Claims Association (“MCCA”).

The MCCA is a mandatory reinsurance association which reinsures claims under Michigan’s unlimited personal injury protection coverage which is required under all Michigan automobile insurance policies. The MCCA reinsures all such claims in excess of a statutorily established company retention, currently \$555,000. Funding for MCCA comes from assessments against automobile insurers based upon their share of insured automobiles in the state. Insurers are allowed to pass along this cost to Michigan automobile policyholders. This recoverable accounted for 64% and 63% of our total personal automobile gross reserves at December 31, 2018 and 2017, respectively. Reinsurance recoverables related to MCCA were \$977.1 million and \$930.6 million at December 31, 2018 and 2017, respectively. Because the MCCA is supported by assessments permitted by statute, and there have been no significant uncollectible balances from MCCA identified during the three years ending December 31, 2018, we believe that we have no significant exposure to uncollectible reinsurance balances from this entity.

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In addition to the reinsurance ceded to various residual market mechanisms, facilities, and pooling arrangements we have \$655.9 million of reinsurance assets due from traditional reinsurers as of December 31, 2018. These amounts are due principally from highly-rated reinsurers, defined as rated A- or higher by A.M. Best or other equivalent rating agency. The following table displays balances recoverable from our ten largest reinsurance groups at December 31, 2018, along with the A.M. Best rating for each group's ultimate parent or lead rating unit. Reinsurance recoverables are comprised of paid losses recoverable, outstanding losses recoverable, incurred but not reported losses recoverable, and ceded unearned premium.

	A.M. Best Reinsurance	
REINSURERS (in millions)	Rating	Recoverable
HDI Group (Hannover Ruckversicherungs AG)	A	\$ 105.0
Lloyd's Syndicates	A	79.4
Alleghany Corporation (Transatlantic Reinsurance Co.)	A	61.9
Munich Reinsurance Companies	A+	56.5
Toa Reinsurance Company Ltd.	A	55.1
Swiss Re Ltd.	A+	48.7
Axis Capital Holding Ltd.	A+	27.4
EXOR N.V. (Partner Reinsurance Company of the U.S.)	A	19.8
Tokio Marine Holdings Inc.	A+	15.1
Berkshire Hathaway Inc.	A++	14.7
Subtotal		483.6
All other reinsurers		172.3
Residual markets, facilities, and pooling arrangements		990.9
Total		\$ 1,646.8

Reinsurance recoverable balances in the table above are shown before consideration of balances owed to reinsurers and any potential rights of offset, including collateral held by us, and are net of an allowance for uncollectible recoverables. Reinsurance treaties are generally purchased on an annual basis. Treaties typically contain provisions that allow us to demand that a reinsurer post letters of credit or assets as security if a reinsurer is an unauthorized reinsurer under applicable regulations or if its rating falls below a predetermined contractual level. In regards to reinsurance recoverables due from Lloyd's Syndicates, as part of the Lloyd's "chain of security" afforded to all of its policyholders, recourse is available to the Lloyd's Central Fund in the event of the failure of an individual syndicate and its capital providers.

Although reinsurance makes the reinsurer liable to us to the extent the risk is transferred or ceded to the reinsurer, ceded reinsurance arrangements do not eliminate our obligation to pay claims to our policyholders. Accordingly, we bear credit risk with respect to our reinsurers. Specifically, our reinsurers may not pay claims made by us on a timely basis, or they may not pay some or all of these claims. In addition, from time to time insurers and reinsurers may disagree on the scope of the reinsurance or on the underlying insured risks. Any of these events would increase our costs and could have a material adverse effect on our business.

We have established a reserve for uncollectible reinsurance of \$3.9 million as of December 31, 2018, or 0.2% of the total reinsurance recoverable balance, which was determined by considering reinsurer specific default risk on paid and unpaid recoverables as indicated by their financial strength ratings, any ongoing solvency issues, any current risk of dispute on paid recoverables, and our past collection experience. There have been no significant balances determined to be uncollectible and thus no significant charges recorded during 2018 for uncollectible reinsurance recoverables.

Our exposure to credit risk from any one reinsurer is managed through diversification by reinsuring with a number of different reinsurers, principally in the United States and European reinsurance markets. When reinsurance for our Commercial and Personal Lines segments is placed, our standards of acceptability generally require that a reinsurer must have a minimum policyholder surplus of \$500 million, a rating from A.M. Best and/or S&P of "A" or better, or an equivalent financial strength if not rated. In addition, for lower rated reinsurers, certain reinsurers for our insurance operations that have not been granted authorized status by an insurance company's state of domicile, and in certain other circumstances, reinsurers must generally provide collateral equal to 100% of estimated reinsurance recoverables. The collateral can serve to mitigate credit risk.

ANALYSIS OF LOSS AND LOSS ADJUSTMENT EXPENSE RESERVE DEVELOPMENT

Information regarding loss and LAE reserve development appears in Note 17 – "Liabilities For Outstanding Claims, Losses and Loss Adjustment Expenses" in the Notes to Consolidated Financial Statements. Additionally, see "Reserve for Losses and Loss Adjustment Expenses" in Management's Discussion and Analysis of Financial Condition for discussion of prior year development.

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TERRORISM

As a result of the continuing threat of terrorist attacks, the insurance industry maintains a high level of focus with respect to the potential for losses caused by terrorist acts. Insured losses may encompass people, property and business operations covered under workers' compensation, commercial multiple peril and other Commercial Lines policies, as well as Personal Lines policies. In certain cases, we are not able to exclude coverage for these losses, either because of regulatory requirements or competitive pressures. We continually evaluate the potential effect of these low frequency, but potentially high severity events in our overall pricing and underwriting plans, especially for policies written in major metropolitan areas.

Although certain terrorism-related risks embedded in our Commercial and Personal Lines are covered under the existing Catastrophe, Property per Risk and Casualty Excess of Loss corporate reinsurance treaties (see "Reinsurance" for additional information), private sector catastrophe reinsurance is limited and generally unavailable for losses attributed to acts of terrorism, particularly those involving nuclear, biological, chemical and/or radiological events. As a result, the industry's primary reinsurance protection against large-scale terrorist attacks in the U.S. is provided through a Federal program that provides compensation for insured losses resulting from acts of terrorism.

The Terrorism Risk Insurance Act of 2002 first established the Terrorism Risk Insurance Program (the "Program"). Coverage under the Program applies to workers' compensation, commercial multiple peril, and certain other Commercial Lines policies for direct written policies. TRIPRA extended the Program through December 31, 2020. All commercial property and casualty insurers participate in the program. Under the program, a participating issuer, in exchange for making terrorism insurance available, may be entitled to be reimbursed by the Federal government for a portion of its aggregate losses. The Program does not cover losses in surety, Personal Lines or certain other lines of business. Losses caused by terrorist acts are not excluded from homeowners or personal automobile policies.

As required by the current Program, we offer policyholders in specific lines of commercial insurance the option to elect terrorism coverage. In order for a loss to be reinsured under the Program, the loss must meet aggregate industry loss minimums and must be the result of an act of terrorism as certified by the Secretary of the Treasury in consultation with the Secretary of Homeland Security and the U.S. Attorney General. Losses from acts which do not qualify or are not so certified will not receive the benefit of the Program and in fact, may be deemed covered losses whether or not terrorism coverage was purchased. The current Program requires insurance carriers to retain 19% of any claims from a certified terrorist event in excess of the federally mandated deductible in 2019, subject to an annual industry-wide cap of \$100 billion. This retention will increase to 20% in 2020. The federally mandated deductible represents 20% of direct earned premium for the covered lines of business of the prior year. In 2018, our deductible was \$412 million, which represents 19.9% of year-end 2017 statutory policyholder surplus of our insurers, and is estimated to be \$431 million in 2019, representing 19.8% of 2018 year-end statutory policyholder surplus.

Given the unpredictability of terrorism losses, future losses from acts of terrorism could be material to our operating results, financial position, and/or liquidity. We attempt to manage our exposures on an individual line of business basis and in the aggregate by one-half square mile grids in major metropolitan areas.

REGULATION

Our property and casualty insurance subsidiaries are subject to extensive regulation in the states in which they transact business and are supervised by the individual state insurance departments. Numerous aspects of our business are subject to regulation, including premium rates, mandatory covered risks, limitations on the ability to non-renew or reject business, prohibited exclusions, licensing and appointment of agents, restrictions on the size of risks that may be

insured under a single policy, reserves and provisions for unearned premiums, losses and other obligations, deposits of securities for the benefit of policyholders, investments and capital, policy forms and coverages, advertising, and other conduct, including restrictions on the use of credit information and other factors in underwriting, as well as other underwriting and claims practices. States also regulate various aspects of the contractual relationships between insurers and independent agents.

Such laws, rules and regulations are usually overseen and enforced by the various state insurance departments, as well as through private rights of action and by state attorneys general. Such regulations or enforcement actions are often responsive to current consumer and political sensitivities, such as automobile and homeowners insurance rates and coverage forms, or which may arise after a major event. Such rules and regulations may result in rate suppression, limit our ability to manage our exposure to unprofitable or volatile risks, or lead to fines, premium refunds or other adverse consequences. The federal government also may regulate aspects of our businesses, such as the use of insurance (credit) scores in underwriting and the protection of confidential information.

In addition, as a condition to writing business in certain states, insurers are required to participate in various pools or risk sharing mechanisms or to accept certain classes of risk, regardless of whether such risks meet their underwriting requirements for voluntary business. Some states also limit or impose restrictions on the ability of an insurer to withdraw from certain classes of business. For example, Massachusetts, New York and California each impose material restrictions on a company's ability to materially reduce its exposures or to withdraw from certain lines of business in their respective states. The state insurance departments can impose significant charges on an insurer in connection with a market withdrawal or refuse to approve withdrawal plans on the grounds that they could lead to market disruption. Laws and regulations that limit cancellation and non-renewal of policies or that subject withdrawal plans to prior approval requirements may significantly restrict our ability to exit unprofitable markets. Such actions and related regulatory restrictions may limit our ability to reduce our potential exposure to hurricane-related losses.

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The insurance laws of many states subject property and casualty insurers doing business in those states to statutory property and casualty guaranty fund assessments. The purpose of a guaranty fund is to protect policyholders by requiring that solvent property and casualty insurers pay the insurance claims of insolvent insurers. These guaranty associations generally pay these claims by assessing solvent insurers proportionately based on each insurer's share of voluntary premiums written in the state. While most guaranty associations provide for recovery of assessments through subsequent rate increases, surcharges or premium tax credits, there is no assurance that insurers will ultimately recover these assessments, which could be material, particularly following a large catastrophe or in markets which become disrupted.

We are subject to periodic financial and market conduct examinations conducted by state insurance departments. We are also required to file annual and other reports with state insurance departments relating to the financial condition of our insurance subsidiaries and other matters. The National Association of Insurance Commissioners ("NAIC") and the Federal Insurance Office are each actively engaged in reviewing and considering proposed insurer risk-based capital standards, risk analysis, solvency assessments and other regulatory initiatives.

INVOLUNTARY RESIDUAL MARKETS

As noted above, as a condition of our license to write business in various states, we are required to participate in mandatory property and casualty residual market mechanisms which provide insurance coverages where such coverage may not otherwise be available at rates deemed reasonable. Such mechanisms provide coverage primarily for personal and commercial property, personal and commercial automobile, and workers' compensation, and include assigned risk plans, reinsurance facilities and involuntary pools, joint underwriting associations, fair access to insurance requirements ("FAIR") plans, and commercial automobile insurance plans.

For example, since most states compel the purchase of a minimal level of automobile liability insurance, states have developed shared market mechanisms to provide the required coverages and in many cases, optional coverages, to those drivers who, because of their driving records or other factors, cannot find insurers who will insure them voluntarily. Also, FAIR plans and other similar property insurance shared market mechanisms increase the availability of property insurance in circumstances where homeowners are unable to obtain insurance at rates deemed reasonable, such as in coastal areas or in areas subject to other hazards. Licensed insurers writing business in such states are often required to pay assessments to cover reserve deficiencies generated by such plans.

With respect to FAIR plans and other similar property insurance shared market mechanisms that have significant exposures, it is difficult to accurately estimate our potential financial exposure for future events. Assessments following a large coastal event, particularly one affecting Massachusetts, Texas, New York, or North Carolina, or a large wildfire event affecting California, could be material to our results of operations. Our participation in such shared markets or pooling mechanisms is generally proportional to our direct writings for the type of coverage written by the specific pooling mechanism in the applicable state or other jurisdiction. For example, we are subject to mandatory participation in the Michigan Assigned Claims ("MAC") facility. MAC is an assigned claim plan covering people injured in uninsured motor vehicle accidents. Our participation in the MAC facility is based on our share of personal and commercial automobile direct written premium in the state and resulted in underwriting losses of \$14.3 million in 2018. There were no other mandatory residual market mechanisms that were significant to our 2018.

RESERVE FOR UNPAID LOSSES AND LOSS ADJUSTMENT EXPENSES

Reference is made to "Results of Operations - Segments – Reserve for Losses and Loss Adjustment Expenses" of Management's Discussion and Analysis of Financial Condition. See also Note 17 – "Liabilities for Outstanding Claims,

Losses and Loss Adjustment Expenses” in the Notes to Consolidated Financial Statements.

The following table reconciles reserves determined in accordance with accounting practices prescribed or permitted by insurance statutory authorities (“Statutory”) to reserves determined in accordance with generally accepted accounting principles (“GAAP”). The primary difference between the Statutory reserves and our GAAP reserves is the requirement, on a GAAP basis, to present reinsurance recoverables as an asset, whereas Statutory guidance provides that reserves are reflected net of the corresponding reinsurance recoverables. We do not use discounting techniques in establishing GAAP reserves for property and casualty losses and LAE, nor have we participated in any loss portfolio transfers or other similar transactions.

DECEMBER 31 (in millions)	2018	2017	2016
Statutory reserve for losses and LAE	\$3,935.6	\$3,717.8	\$3,402.1
GAAP adjustments:			
Reinsurance recoverables on unpaid losses of our			
insurance subsidiaries	1,472.6	1,455.0	1,349.2
Statutory reserves for discontinued accident and health business	(112.4)	(122.4)	(97.8)
Other	8.3	8.1	6.5
GAAP reserve for losses and LAE	\$5,304.1	\$5,058.5	\$4,660.0

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Reserves for discontinued accident and health business of our insurance subsidiaries are included in liabilities of discontinued operations for GAAP and loss and loss adjustment expenses for Statutory reporting.

DISCONTINUED OPERATIONS

Discontinued operations primarily include our former Chaucer operations and our discontinued accident and health business.

Chaucer

The Chaucer business sold property and casualty insurance products internationally through a wholly-owned subsidiary, Chaucer Holdings Limited (“Chaucer”), which operates through the Society and Corporation of Lloyd’s (“Lloyd’s”) and is domiciled in the United Kingdom. During the third quarter of 2018, all of our Chaucer business was classified as discontinued operations. On December 28, 2018, we completed the sale of Chaucer, the major portion of our Lloyd’s international specialty business, to China Re. As part of the sale, we entered into certain transition arrangements and agreed to indemnify China Re for litigation and other regulatory matters that existed as of the closing of the sale. (See also “Risk Factors” in Part I – Item 1A). We subsequently completed the sale of our Chaucer-related Irish entity on February 14, 2019. The sale of the Australian entities is pending, subject only to local regulatory approval, and is expected to close in the first quarter of 2019. We received \$28 million of additional consideration for the Irish entity, and we expect to receive \$13 million of additional consideration related to the Australian entities. At December 31, 2018, assets and liabilities associated with the Chaucer-related Irish and Australian entities are reflected as assets and liabilities held-for-sale.

The result of operations of the Chaucer business through December 28, 2018 is included in our results of discontinued operations. During 2018, the Chaucer business generated \$850.0 million of net earned premium and \$20.0 million of income. See the “Discontinued Chaucer Business” section in our Management’s Discussion and Analysis of Financial Condition and Note 2 – “Discontinued Operations” in the Notes to Consolidated Financial Statements.

Prior to its sale to China Re, Chaucer, as a non-U.S. subsidiary of THG, was permitted to engage in certain transactions with Iran prior to President Donald Trump’s decision to withdraw from the Joint Comprehensive Plan of Action Regarding Iran’s Nuclear Program (the “JCPOA”). As a result of such activity, the following disclosure is provided pursuant to Section 13(r) of the Securities Exchange Act of 1934, as amended:

During the applicable reporting period, January 1 through December 31, 2018, and pursuant to General License H which was then in effect at all relevant times under the JCPOA, a Chaucer syndicate maintained a 5% participation in an aviation reinsurance arrangement to reinsure Bimeh Iran (“Iran Insurance Company”), an insurer wholly-owned by the Government of Iran. The arrangement reinsured the hull, liability and cargo risks incurred by the underlying insured, Iran Air. Bimeh Markazi, another insurer wholly-owned by the Government of Iran, was an additional reinsured. This reinsurance arrangement, which was in effect for the period June 22, 2017 through June 21, 2018, was compliant with General License H and contained a “sanctions exclusion” clause which terminated coverage in the event Chaucer was no longer legally permitted to provide coverage under applicable law. Estimated total gross revenues from this arrangement were approximately \$275,000, and total revenues, net of brokerage expenses and estimated retrocession costs, were approximately \$179,500. It is not possible at this time to determine the net profit from the arrangement, although as of December 31, 2018, no claims were paid by the Chaucer syndicate to either of the reinsureds. The agreement expired on June 21, 2018 and was not renewed.

Accident and Health and Life Businesses

The discontinued accident and health business includes interests in 24 accident and health reinsurance pools and arrangements that we retained subsequent to the sale of First Allmerica Financial Life Insurance Company (“FAFLIC”) in 2009. We ceased writing new premiums in this business in 1999, subject to certain contractual obligations. The reinsurance pool business consists primarily of long-term care, the medical and disability portions of workers’ compensation risks, assumed personal accident, individual medical, long-term disability, and special risk business. This business also includes residual health insurance policies. Total reserves for the assumed accident and health business were \$113.2 million at December 31, 2018. The long-term care pool accounts for approximately 69% of our reserves as of December 31, 2018. Reserves for the long-term care pool, individual medical, and residual health insurance policies are discounted. Reserves for all other assumed accident and health business are undiscounted. Assets and liabilities related to the discontinued accident and health business are reflected as assets and liabilities of discontinued life business.

Loss estimates associated with substantially all of the discontinued accident and health business are provided by managers of each pool. We adopt reserve estimates for this business that consider this information, expected returns on assets assigned to this business and other facts. We update these reserves as new information becomes available and further events occur that may affect the ultimate resolution of unsettled claims. Based on information provided to us by the pool managers, we believe that the reserves recorded related to this business are adequate. However, since reserve and claim cost estimates related to the discontinued accident and health business are dependent on several assumptions, including, but not limited to, morbidity, lapses, future premium rates, future health care costs, persistency of medical care inflation and investment performance, and these assumptions can be impacted by technical developments and advancements in the medical field and other factors, there can be no assurance that the reserves established for this business will prove sufficient. Revisions to these reserves could have a material adverse effect on our results of operations for a particular quarterly or annual period or on our financial position. See also “Risk Factors” in Part I – Item 1A.

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Our long-term care pool accounts for the majority of our remaining reinsurance pool business. The potential risk and exposure of our long-term care pool is based upon expected estimated claims and payment patterns, using assumptions for, among other things, morbidity, lapses, future premium rates, and the interest rate used for discounting the future projected cash flows. The long-term exposure of this pool depends upon how our actual experience compares with these future cash flow projection assumptions.

Our former life insurance businesses, which are also included in discontinued operations, include activities that were not significant to our 2018, 2017 or 2016 results.

INVESTMENT PORTFOLIO

Our wholly-owned subsidiary, Opus, is responsible for managing our investment portfolio. Opus directly manages our entire fixed income portfolio and certain other assets which together constitute approximately 92% of our entire investment portfolio. Opus is also responsible for the selection and monitoring of external asset managers for our commercial mortgage loan participations and certain other investments. We select and monitor external managers based on investment style, performance and corporate governance.

Our investments are generally of high quality and our fixed maturities and equities are broadly diversified across sectors of the fixed income and equity markets. Our overall investment strategy is intended to balance investment income with credit and interest rate risk, while maintaining sufficient liquidity and providing the opportunity for capital growth. The asset allocation process takes into consideration the types of business written and the level of surplus required to support our different businesses and the risk return profiles of the underlying asset classes. We look to balance the goals of capital preservation, net investment income stability, liquidity and total return.

The majority of our assets are invested in the fixed income markets. Through fundamental research and credit analysis, with a focus on value investing, Opus seeks to identify a portfolio of stable income-producing higher quality U.S. government, foreign government, municipal, corporate, residential and commercial mortgage-backed securities and asset-backed securities. We have a general policy of diversifying investments both within and across major investment and industry sectors to mitigate credit and interest rate risk. We monitor the credit quality of our investments and our exposure to individual markets, borrowers, industries, sectors and, in the case of commercial mortgage-backed securities and commercial mortgage loan participations, property types and geographic locations.

Investments held by our insurance subsidiaries are subject to diversification requirements under state insurance laws. Investment considerations include asset/liability profile, including duration, convexity and other characteristics within specified risk tolerances. The investment portfolio duration is approximately 4.5 years. We seek to maintain sufficient liquidity to support our cash flow requirements by monitoring the cash requirements associated with our insurance and corporate liabilities, laddering the maturities within the portfolio, closely monitoring our investment durations, holding high quality liquid public securities and managing the purchases and sales of assets.

Reference is made to “Investments” in Management’s Discussion and Analysis of Financial Condition.

RATING AGENCIES

Insurance companies are rated by financial strength rating agencies to provide both industry participants and insurance consumers information on specific insurance companies. Higher ratings generally indicate the rating agencies’ opinion regarding financial stability and a stronger ability to pay claims.

Strong ratings are important factors in marketing our products to our agents and customers, since rating information is broadly disseminated and generally used throughout the industry. We believe that a rating of “A-” or higher from A.M. Best Co. is particularly important for our business. Insurance company financial strength ratings are assigned to an insurer based upon factors deemed by the rating agencies to be relevant to policyholders and are not directed toward protection of investors. Such ratings are neither a rating of securities nor a recommendation to buy, hold or sell any security.

EMPLOYEES

As of December 31, 2018, we had approximately 4,200 employees, substantially all of whom are located in the United States. We believe our relations with employees are good.

EXECUTIVE OFFICERS OF THE REGISTRANT

Reference is made to “Directors and Executive Officers of the Registrant” in Part III - Item 10.

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AVAILABLE INFORMATION

We file our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, our definitive proxy statement on Schedule 14A, and other required information with the Securities and Exchange Commission (“SEC”). Shareholders may obtain reports, proxy and information statements, and other information with respect to our filings, at the SEC’s website, <https://www.sec.gov>.

Our website address is <https://www.hanover.com>. We make available, free of charge, on or through our website, our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Sections 13(a) or 15(d) of the Securities Exchange Act of 1934, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Additionally, our Code of Conduct is available, free of charge, on our website. Our Corporate Governance Guidelines and the charters of our Audit Committee, Compensation Committee, Committee of Independent Directors and Nominating and Corporate Governance Committee, are available on our website. All documents are also available in print to any shareholder who requests them. Unless specifically incorporated by reference, information on our website is not part of this Annual Report on Form 10-K.

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ITEM 1A—RISK FACTORS

RISK FACTORS AND FORWARD LOOKING STATEMENTS

We wish to caution readers that the following important factors, among others, in some cases have affected, and in the future could affect, our actual results and could cause our actual results to differ materially from historical results and from those expressed in any forward-looking statements made from time to time by us on the basis of our then-current expectations. The words “believes”, “anticipates”, “expects”, “projections”, “outlook”, “should”, “could”, “plan”, “guidance”, “track to”, “targeted” and similar expressions are intended to identify forward-looking statements. Our businesses are in rapidly changing and competitive markets and involve a high degree of risk and unpredictability. Forward-looking projections are subject to these risks and unpredictability.

Our results may fluctuate as a result of cyclical or non-cyclical changes in the property and casualty insurance industry.

The property and casualty insurance industry historically has been subject to significant fluctuations and uncertainties. Our profitability is affected significantly by the following items:

- increases in costs, particularly increases occurring after the time our insurance products are priced, including construction, automobile repair, and medical and rehabilitation costs. This includes inflation, rises in the cost of products due to tariffs or other factors and “cost shifting” from health insurers to casualty and liability insurers (whether as a result of an increasing number of injured parties without health insurance, coverage changes in health policies to make such coverage secondary to casualty policies, the further implementation or the repeal of national healthcare legislation, lower reimbursement rates for the same procedures by health insurers or government-sponsored insurance, or the implementation of the Medicare Secondary Payer Act, which imposes reporting and other requirements with respect to medical and related claims paid for Medicare eligible individuals). As it relates to construction, there are often temporary increases in the cost of building supplies and construction labor after a significant event (for example, so called “demand surge” that causes the cost of labor, construction materials and other items to increase in a geographic area affected by a catastrophe). In addition, we are limited in our ability to negotiate and manage reimbursable expenses incurred by our policyholders;
- competitive and regulatory pressures, which affect the prices of our products and the nature of the risks covered;
- volatile and unpredictable developments, including severe weather, catastrophes, wildfires and terrorist actions;
- legal, regulatory and socio-economic developments, such as new theories of insured and insurer liability and related claims and extra-contractual awards such as punitive damages, financed litigation, where a third party unrelated to a lawsuit provides capital to a plaintiff in return for a portion of any financial recovery from the lawsuit, and increases in the size of jury awards or changes in applicable laws and regulations (such as changes in the thresholds affecting “no fault” liability or when non-economic damages are recoverable for bodily injury claims or coverage requirements);
- fluctuations in interest rates, as a result of a change in monetary policy or otherwise, inflationary pressures, default rates, commodity prices, foreign exchange rates and other factors that affect net income, including with respect to investment returns and operating results for certain of our lines of business; and
- other general economic conditions and trends that may affect the adequacy of reserves.

The demand for property and casualty insurance can also vary significantly based on general economic conditions (either nationally or regionally), rising as the overall level of economic activity increases and falling as such activity decreases. Loss patterns also tend to vary inversely with local economic conditions, increasing during difficult or unstable economic times and moderating during economic upswings or periods of stability. The fluctuations in demand and competition could produce unpredictable underwriting results.

Actual losses from claims against our property and casualty insurance subsidiaries may exceed their reserves for claims.

Our property and casualty insurance subsidiaries maintain reserves to cover their estimated ultimate liability for losses and loss adjustment expenses with respect to reported and unreported claims incurred as of the end of each accounting period. Reserves do not represent an exact calculation of liability. Rather, reserves represent estimates, involving actuarial projections and judgments at a given time, of what we expect the ultimate settlement and administration of incurred claims will cost based on facts and circumstances then known, predictions of future events, estimates of future trends in claims frequency and severity and judicial theories of liability, costs of repair and replacement, legislative activity and myriad other factors.

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The inherent uncertainties of estimating reserves are greater for certain types of property and casualty insurance lines. These include automobile bodily injury liability, automobile personal injury protection, general liability, and workers' compensation, where a longer period of time may elapse before a definitive determination of ultimate liability may be made, environmental liability, where the technological, judicial and political climates involving these types of claims are continuously evolving, and casualty coverages such as professional liability. There is also greater uncertainty in establishing reserves with respect to new business, particularly new business that is generated with respect to newer product lines, such as our management and professional liability, healthcare, and cyber-risk lines, by newly appointed agents, or in geographies where we have less experience in conducting business. In these cases, there is less historical experience or knowledge and less data that the actuaries can rely on. Estimating reserves is further complicated by unexpected claims or unintended coverages that emerge due to changing conditions. These emerging issues may increase the size or number of claims beyond our underwriting intent and may not become apparent for many years after a policy is issued, such as was the case for the industry with respect to environmental, asbestos, and certain product liability claims. These losses are reflected as prior year reserve development. Although we undertake underwriting actions designed to limit losses once emerging issues are identified, we remain subject to losses on policies issued during those years preceding the underwriting actions.

Additionally, the introduction of new Commercial Lines products and the development of new niche and specialty lines present new risks. Certain specialty products, such as the human services program, non-profit directors and officers liability and employment practices liability policies, lawyers and other professional liability policies, healthcare lines and directors and officers coverage may also require a longer period of time (the so-called "tail") to determine the ultimate liability associated with the claims and may produce more volatility in our results and less certainty in our accident year reserves. Some lines of business, such as surety, are less susceptible to establishing reserves based on actuarial or historical experience and losses may be episodic, depending on economic and other factors. Changes in laws, such as so-called "reviver" statutes that retrospectively change the statutes of limitations for certain claims, such as sexual molestation claims, add further uncertainty to the adequacy of prior estimates.

We regularly review our reserving techniques, reinsurance and the overall adequacy of our reserves based upon, among other things:

- our review of historical data, legislative enactments, judicial decisions, legal developments in imposition of damages, changes in political attitudes and trends in general economic conditions;
- our review of per claim information;
 - historical loss experience of our property and casualty insurance subsidiaries and the industry as a whole; and
- the terms of our property and casualty insurance policies.

Underwriting results and operating income could be adversely affected by further changes in our net loss and LAE estimates related to significant events or emerging risks, such as risks related to attacks on or breaches of cloud-based data information storage or computer network systems ("cyber-risks"), privacy regulations or disruptions caused by major power grid failures or widespread electrical and electronic equipment failure due to aging infrastructure, natural factors like hurricanes, earthquakes, wildfires, solar flares and pandemic or man-made factors like terrorism.

Estimating losses following any major catastrophe or with respect to emerging claims is an inherently uncertain process. Factors that add to the complexity of estimating losses from these events include the legal and regulatory uncertainty, the complexity of factors contributing to the losses, delays in claim reporting, and with respect to areas with significant property damage, the impact of "demand surge" and a slower pace of recovery resulting from the extent of damage sustained in the affected areas due, in part, to the availability and cost of resources to effect repairs. Emerging claims issues may involve complex coverage, liability and other costs which could significantly affect LAE.

As a result, there can be no assurance that our ultimate costs associated with these events or issues will not be substantially different from current estimates (for example, actual losses arising from an event could have varied widely depending on the interpretation of various policy provisions). Investors should consider the risks and uncertainties in our business that may affect net loss and LAE reserve estimates and future performance, including the difficulties in arriving at such estimates.

Anticipated losses associated with business interruption exposure, the impact of wind versus water as the cause of loss, disputes over the extent of damage caused by hail storms (particularly with respect to roof damage claims), supplemental payments on previously closed claims caused by the development of latent damages or new theories of liability and inflationary pressures leading to claims cost escalation could also have a negative impact on future loss reserve development. Many states permit insureds to simply sign-over their claims to contractors or others (so-called “assignment of benefits”), which frequently generate higher claim demands. Other states permit filing of suits without prior discussions, which has a similar effect and also increases loss adjustment costs.

Because of the inherent uncertainties involved in setting reserves and establishing current and prior-year “loss picks,” including those related to catastrophes, we cannot provide assurance that the existing reserves or future reserves established by our property and casualty insurance subsidiaries will prove adequate in light of subsequent events. Our results of operations and financial condition have in the past been, and in the future could be, materially affected by adverse loss development for events that we insured in prior periods.

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Due to geographical concentration in our property and casualty business, changes in economic, regulatory and other conditions in the regions where we operate could have a significant negative impact on our business as a whole. Geographic concentrations also expose us to losses that are potentially disproportionate to our market share in the event of natural or other catastrophes.

We generate a significant portion of our property and casualty insurance net premiums written and earnings in Michigan, Massachusetts and other states in the Northeast, including New York. In addition, a significant amount of Commercial Lines' net written premium is generated in California. For the year ended December 31, 2018, approximately 20.5% and 9.6% of our net premiums written in our property and casualty business were generated in the states of Michigan and Massachusetts, respectively. Many states in which we do business impose significant rate control and residual market charges, and restrict an insurer's ability to exit such markets. The revenues and profitability of our property and casualty insurance subsidiaries are subject to prevailing economic, regulatory, demographic and other conditions, including adverse weather in Michigan and the Northeast. Because of our geographic concentration in certain regions, our business as a whole could be significantly affected by changes in the economic, regulatory and other conditions in such areas.

Further, certain new catastrophe models assume an increase in frequency and severity of certain weather or other events, such as fires, whether as a result of global climate change or otherwise. Financial strength rating agencies emphasize capital and reinsurance adequacy for insurers with geographic concentrations of risk that may be subject to disproportionate risk of loss. These factors also may result in insurers seeking to diversify their geographic exposure, which could result in increased regulatory restrictions in those markets where insurers seek to exit or reduce coverage, as well as an increase in competitive pressures in less weather-exposed markets.

Our profitability may be adversely affected if our pricing models differ materially from actual results.

The profitability of our business depends on the extent to which our actual claims experience is consistent with the assumptions we use in pricing our policies. We price our business in a manner that is intended to be consistent, over time, with actual results and return objectives. Our estimates and models, and/or the assumptions behind them, may differ materially from actual results.

If we fail to appropriately price the risks we insure, fail to change or are slow to change our pricing model to appropriately reflect our current experience, or if our claims experience is more frequent or severe than our underlying risk assumptions, our profit margins may be negatively affected. If we underestimate the frequency and/or severity of extreme adverse events occurring, our financial condition may be adversely affected. If we overestimate the risks we are exposed to, we may overprice our products, and new business growth and retention of our existing business may be adversely affected.

Limitations on the ability to predict the potential impact of weather events and catastrophes may impact our future profits and cash flows.

Our business is subject to claims arising out of catastrophes that may have a significant impact on our results of operations and financial condition. We may experience catastrophe losses that could have a material adverse impact on our business. Catastrophes can be caused by various events, including hurricanes, floods, earthquakes, tornadoes, wind, hail, fires, drought, severe winter weather, volcanic eruptions, tropical storms, tsunamis, sabotage, terrorist actions, explosions, nuclear accidents, solar flares, and power outages. The frequency and severity of catastrophes are inherently unpredictable.

The extent of gross losses from a catastrophe is a function of the total amount of insured exposure in the area affected by the event and the severity of the event. The extent of net losses depends on the amount and collectability of reinsurance.

Additionally, the severity of certain catastrophes could be so significant that it impacts the ability of certain locations to recover their economic viability in the near term. And, repeated catastrophes or the threat of catastrophes could undermine the long-term economic viability of certain locations like coastal or wildfire-exposed communities, which could have a significant negative impact on our business.

Although catastrophes can cause losses in a variety of property and casualty lines, homeowners and commercial multiple peril property insurance have, in the past, generated the vast majority of our catastrophe-related claims. Our catastrophe losses have historically been principally weather-related, particularly from hurricanes, as well as snow and ice damage from winter storms.

Although the insurance industry and rating agencies have developed various models intended to help estimate potential insured losses under thousands of scenarios, there is no reliable way of predicting the probability of such events or the magnitude of such losses before a specific event occurs. We utilize various models and other techniques in an attempt to measure and manage potential catastrophe losses within various income and capital risk appetites. However, such models and techniques have many limitations. In addition, due to historical concentrations of business, regulatory restrictions and other factors, our ability to manage such concentrations is limited, particularly in the Northeast and in the state of Michigan.

We purchase catastrophe reinsurance as protection against catastrophe losses. Based upon an ongoing review of our reinsurers' financial strength ratings assigned to them by rating agencies, their reputations in the reinsurance marketplace, our collections history with them and the analysis and guidance of our reinsurance advisors, we believe that the financial condition of our reinsurers is sound. However, reinsurance is subject to counterparty risks, including those resulting from over-concentration of exposures within the industry. In setting our retention levels and coverage limits, we also consider our level of statutory surplus and exposures, as well as the current reinsurance pricing environment. Should we experience losses from one significant or several large catastrophes, there can be no assurance that our reinsurance program will provide adequate coverage levels.

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Our business is dependent on our ability to manage risk, and the failure of the risk mitigation strategies we utilize could have a material adverse effect on our financial condition or results of operations.

Our business performance is highly dependent on our ability to manage operational risks that arise from a large number of day-to-day business activities, including insurance underwriting, claims processing, servicing, investment, financial and tax reporting, compliance with regulatory requirements and other activities. We utilize a number of strategies to mitigate our insurance risk exposure, including: underwriting; setting exposure limits, deductibles and exclusions to mitigate policy risk; updating and reviewing the terms and conditions of our policies; managing risk aggregation by product line, geography, industry type, credit exposure and other bases; and ceding insurance risk. We seek to monitor and control our exposure to risks arising out of these activities through an enterprise-wide risk management framework. However, there are inherent limitations in all of these tactics, and no assurance can be given that these processes and procedures will effectively control all known risks or effectively identify unforeseen risks or that an event or series of events will not result in loss levels in excess of our probable maximum loss models, which could have a material adverse effect on our financial condition or results of operations. It is also possible that losses could manifest themselves in ways that we do not anticipate and that our risk mitigation strategies are not designed to address. Such a manifestation of losses could have a material adverse effect on our financial condition or results of operations. These risks may be heightened during times of challenging macro economic conditions.

We cannot guarantee the adequacy of or ability to maintain our current level of reinsurance coverage.

Similar to insurance companies, reinsurance companies can also be adversely impacted when catastrophes occur. There can be no assurance that we will be able to maintain our current levels of reinsurance coverage. In particular, and as discussed under “Reinsurance Program Overview”, not all of our 2019 reinsurance programs for the Commercial and Personal Lines are fully placed. Reinsurance is a significant factor in our overall cost of providing primary insurance. However, unlike primary insurers, reinsurers are not subject to rate or other restrictions requiring them to continue availability of reinsurance or limiting cost increases or mandating coverage forms. Future catastrophic events and other changes in the reinsurance marketplace, including as a result of investment losses or disruptions due to challenges in the financial markets that have occurred or could occur in the future, may adversely affect our ability to obtain such coverages, as well as adversely affect the cost of obtaining that coverage.

Additionally, the availability, scope of coverage, cost, and creditworthiness of reinsurance could continue to be adversely affected as a result of not only new catastrophes, but also terrorist attacks and the perceived risks associated with future terrorist activities, global conflicts, including the threat of nuclear conflict, and the changing legal and regulatory environment (including changes which could create new insured risks). Federal reinsurance for terrorism risks coverage offered by insurers is available under TRIPRA, but it only applies to certified events of terrorism (as defined in TRIPRA) and contains certain caps and deductibles. Although TRIPRA coverage is in effect through December 31, 2020, should this program not be renewed or should it be modified unfavorably by the government in the future, private reinsurance for events of terrorism may not be available to us or available at reasonable or acceptable rates.

Although we monitor their financial soundness, we cannot be sure that our reinsurers will pay in a timely fashion, if at all.

We purchase reinsurance by transferring part of the risk that we have assumed (known as ceding) to reinsurance companies in exchange for part of the premium we receive in connection with the risk. As of December 31, 2018, our reinsurance receivable (including from the MCCA) amounted to approximately \$1.6 billion. Although reinsurance makes the reinsurer liable to us to the extent the risk is transferred or ceded to the reinsurer, it does not relieve us (the

reinsured) of our liability to our policyholders. Accordingly, we bear counterparty risk with respect to our reinsurers. Although we monitor the credit quality of our reinsurers, we cannot be sure that they will pay the reinsurance recoverables owed to us currently or in the future or that they will pay such recoverables on a timely basis. The contractual obligations under reinsurance agreements are typically with individual subsidiaries of the group and are not typically guaranteed by other group members. In certain circumstances, reinsurers must generally provide collateral equal to 100% of estimated reinsurance recoverables. The collateral can serve to mitigate credit risk. In the event of losses, we may look to 'draw-down' on this collateral to satisfy reinsurance recoveries due to us, but if the collateral held is insufficient to meet those recoveries, we will be exposed to losses.

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Climate change may adversely impact our results of operations.

There are concerns that the increased frequency and severity of weather-related catastrophes and other losses, such as from wildfires, incurred by the industry in 2018 and in prior years is indicative of changing weather patterns, whether as a result of climate-warming trends (“global climate change”) caused by human activities or otherwise, which could cause such events to persist. Increased weather-related catastrophes would lead to higher overall losses, which we may not be able to recoup, particularly in a highly regulated and competitive environment, and higher reinsurance costs. As noted above, certain catastrophe models assume an increase in frequency and severity of certain weather or other events, which could result in a disproportionate impact on insurers with certain geographic concentrations of risk. This would also likely increase the risks of writing property insurance in coastal areas or areas susceptible to wildfires or flooding, particularly in jurisdictions that restrict pricing and underwriting flexibility. The threat of rising seas or other catastrophe losses as a result of global climate change may also cause property values in coastal or such other communities to decrease, reducing the total amount of insurance coverage that is required.

In addition, global climate change could have an impact on assets in which we invest, resulting in realized and unrealized losses in future periods that could have a material adverse impact on our results of operations and/or financial position. It is not possible to foresee which, if any, assets, industries or markets will be materially and adversely affected, nor is it possible to foresee the magnitude of such effect.

We may incur financial losses resulting from our participation in shared market mechanisms, mandatory reinsurance programs and mandatory and voluntary pooling arrangements.

In most of the jurisdictions in which we operate, our property and casualty insurance subsidiaries are required to participate in mandatory property and casualty shared market mechanisms, government-sponsored reinsurance programs or pooling arrangements. These arrangements are designed to provide various insurance coverages to individuals or other entities that are otherwise unable to purchase such coverage or to support the costs of uninsured motorist claims in a particular state or region. We cannot predict whether our participation in these shared market mechanisms or pooling arrangements will provide underwriting profits or losses to us. For the year ended December 31, 2018, we experienced an underwriting loss of \$23.2 million from participation in these mechanisms and pooling arrangements, compared to underwriting losses of \$13.6 million and \$12.7 million in 2017 and 2016, respectively. We may face similar or more significant earnings fluctuations in the future.

Additionally, increases in the number of participants or insureds in state-sponsored reinsurance pools, FAIR Plans or other residual market mechanisms, particularly in the states of Massachusetts, Texas, California, New York, or North Carolina, combined with regulatory restrictions on the ability to adequately price, underwrite, or non-renew business, as well as new legislation, or changes in existing case law, could expose us to significant exposures and risks of increased assessments from these residual market mechanisms. There could also be a significant adverse impact as a result of losses incurred in those states due to hurricane or other high loss exposures, as well as the declining number of carriers providing coverage in those regions. We are unable to predict the likelihood or impact of such potential assessments or other actions.

We also have credit risk associated with certain mandatory reinsurance programs such as the MCCA. The MCCA was created to fund Michigan’s unique unlimited personal injury protection benefit. As of December 31, 2018, our estimated reinsurance recoverable from the MCCA was \$977.1 million. In most years, the MCCA operates with a balance sheet deficit, which may fluctuate significantly based on investment returns, discount rates, incurred claims, annual assessments and other factors, although historically its annual operations have been cash flow positive.

In addition, we may be adversely affected by liabilities resulting from our previous participation in certain voluntary property and casualty assumed reinsurance pools. We have terminated our participation in virtually all property and casualty voluntary pools, but we remain subject to claims related to the periods during which we participated. The property and casualty industry's assumed reinsurance businesses have suffered substantial losses during the past several years, particularly related to environmental and asbestos exposure for property and casualty coverages, in some cases resulting from incidents alleged to have occurred decades ago. Due to the inherent volatility in these businesses, possible issues related to the enforceability of reinsurance treaties in the industry and the continuing history of increased losses, we cannot provide assurance that our current reserves are adequate or that we will not incur losses in the future. Our operating results and financial position may be adversely affected by liabilities resulting from any such claims in excess of our loss estimates. As of December 31, 2018, our reserves totaled \$37.5 million for these legacy voluntary property and casualty assumed reinsurance pools, with the largest being the Excess Casualty Reinsurance Association (ECRA) pool.

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Our businesses are heavily regulated, and changes in regulation may reduce our profitability.

Our insurance businesses are subject to supervision and regulation by the state insurance authority in each state where we transact business. This system of supervision and regulation relates to numerous aspects of an insurance company's business and financial condition, including limitations on the authorization of lines of business, underwriting limitations, the ability to utilize credit-based insurance scores or other factors in underwriting, the ability to terminate agents, supervisory and liability responsibilities for agents, the setting of premium rates, the requirement to write certain classes of business that we might otherwise avoid or charge different premium rates, restrictions on the ability to withdraw from certain lines of business or terminate policies or classes of policyholders, the establishment of standards of solvency, the licensing of insurers and agents, compensation of and contractual arrangements with, independent agents, concentration of investments, levels of reserves, the payment of dividends, transactions with affiliates, changes of control, protection of private information of our agents, policyholders, claimants and others (which may include highly sensitive financial or medical information or other private information such as social security numbers, driving records, driver's license numbers, etc.) and the approval of policy forms. From time to time, various states and Congress have proposed to prohibit or otherwise restrict the use of credit-based insurance scores in underwriting or rating our Personal Lines business. The elimination of the use of credit-based insurance scores could cause significant disruption to our business and our confidence in our pricing and underwriting. Most insurance regulations are designed to protect the interests of policyholders rather than stockholders and other investors.

Legislative and regulatory restrictions are constantly evolving and are subject to then current political pressures. For example, following major events, states have considered, and in some cases adopted, proposals such as homeowners' "Bill of Rights," restrictions on storm deductibles, additional mandatory claim handling guidelines and mandatory coverages. More recently, the California Insurance Commissioner requested that all insurers operating in California voluntarily divest from any investments they may have in thermal coal, and the New York Department of Financial Services and regulatory agencies in other states have enacted comprehensive cybersecurity regulations. Such actions also occur at the federal level, such as the U.S. Department of Housing and Urban Development's proposal that may increase the legal risk of providing homeowners and commercial residential property insurance by imposing liability for discrimination on the basis of a disparate-impact theory even without evidence of discriminatory intent. Some states are also considering mandating owners of firearms to purchase liability insurance and various other states strictly scrutinize first party coverages under such policies.

In addition, The Dodd-Frank Wall Street Reform and Consumer Protection Act provides for enhanced regulation for the financial services industry through initiatives including, but not limited to, the creation of a Federal Insurance Office and several federal oversight agencies, the requiring of more transparency, accountability and focus in protecting investors and businesses, input of shareholders regarding executive compensation, and enhanced empowerment of regulators to pursue those who engage in financial fraud and unethical business practices. The SEC adopted regulations designed to encourage, reward, and protect "whistleblowers", whether or not they first report the potential infraction to the company for correction or remedial action.

Also, the federal Medicare, Medicaid and State Children's Health Insurance Program Extension Act mandates reporting and other requirements applicable to property and casualty insurance companies that make payments to or on behalf of claimants who are eligible for Medicare benefits. These requirements have made bodily injury claim resolutions more difficult, particularly for complex matters or for injuries requiring treatment over an extended period, and impose significant penalties for non-compliance and reporting errors. These requirements also have increased the circumstances under which the federal government may seek to recover from insurers amounts paid to claimants in circumstances where the government had previously paid benefits. In January 2013, the Strengthening Medicare and Repaying Taxpayers Act was signed into law and provided for implementation over a staggered period of time. We

are continuing to monitor the effect of this law on our ability to settle cases and our exposure to federal recoupment claims.

State regulatory oversight and various proposals at the federal level may in the future adversely affect our ability to sustain adequate returns in certain lines of business or in some cases, operate lines profitably. In recent years, the state insurance regulatory framework has come under increased federal scrutiny, and certain state legislatures have considered or enacted laws that alter and, in many cases, increase state authority to regulate insurance companies and insurance holding company systems.

Our business could be negatively impacted by adverse state and federal legislation or regulation, or judicial developments, including those resulting in:

- decreases in rates, including for example, recent regulatory or bureau actions to mandate reduced premiums for workers' compensation insurance;
- limitations on premium levels;
- coverage and benefit mandates;
- limitations on the ability to manage care and utilization or other claim costs;
 - requirements to write certain classes of business or in certain geographies;

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• restrictions on underwriting, on methods of compensating independent producers, or on our ability to cancel or renew certain business (which negatively affects our ability to reduce concentrations of property risks);
• higher liability exposures for our insureds;
• increased assessments or higher premium or other taxes; and
• enhanced ability to pierce “no fault” thresholds, recover non-economic damages (such as “pain and suffering”), or pierce policy limits.

These regulations serve to protect the customers and other third parties who deal with us and are heavily influenced by the then current political environment. If we are found to have violated an applicable regulation, administrative or judicial proceedings may be initiated against us that could result in censures, fines, civil penalties (including punitive damages), the issuance of cease-and-desist orders, premium refunds or the reopening of closed claim files, among other consequences. These actions could have a material adverse effect on our financial position and results of operations.

From time to time, Congress, as well as state and local governments, also consider legislation that could increase or modify our tax costs. For example, on December 22, 2017, the Tax Cuts and Jobs Act (“TCJA”) was enacted and included reductions in the U.S. corporate income tax rate, changes to the cost of related party reinsurance for foreign-owned insurers, and changes to the tax base, that impacted our effective tax rate in 2018 and will continue to have an impact in future years. The TCJA also reduced the carrying value of our net deferred tax asset upon implementation. Although we have estimated the effect that the TCJA will have on our current deferred tax position, there can be no assurance that these estimates won’t change based on new interpretations of the TCJA or in the event that new information related to our current tax position becomes known. Although we believe that the TCJA will continue to result in a lower effective tax rate in future years as compared to years prior to enactment, competitive and state regulatory pressures may force us to enact rate and pricing decreases for our insurance products, which may reduce the net benefit of the tax reduction or significantly limit our ability to realize this benefit beyond the short term.

In addition, we are reliant upon independent agents and brokers to market our products. Changes in regulations related to insurance agents and brokers that materially impact the profitability of the agent and broker business or that restrict the ability of agents and brokers to market and sell insurance products would have a material adverse effect on our business.

Further, as we continue to expand our business into new regions, either organically or through acquisition, we become subject to the regulations and different regulatory bodies governing such business in those locales.

From time to time, we are also involved in investigations and proceedings by federal, state, and other governmental and self-regulatory agencies. We cannot provide assurance that these investigations, proceedings and inquiries will not result in actions that would adversely affect our results of operations or financial condition.

We are subject to litigation risks, including risks relating to the application and interpretation of contracts, and adverse outcomes in litigation and legal proceedings could adversely affect our results of operations and financial condition.

We are subject to litigation risks, including risks relating to the application and interpretation of insurance and reinsurance contracts and our handling of claim matters (which can lead to bad faith and other forms of extra-contractual liability), and are routinely involved in litigation that challenges specific terms and language incorporated into property and casualty contracts, such as claims reimbursements, covered perils and exclusion clauses, among others, or the interpretation or administration of such contracts. We are also involved in legal actions that do not arise in the ordinary course of business, some of which assert claims for substantial amounts. Adverse outcomes could materially affect our results of operations and financial condition.

We are subject to mandatory assessments by state guaranty funds; an increase in these assessments could adversely affect our results of operations and financial condition.

All fifty U.S. states and the District of Columbia have insurance guaranty fund laws requiring property and casualty insurance companies doing business within the state to participate in guaranty associations. These associations are organized to pay contractual obligations under insurance policies issued by impaired or insolvent insurance companies. The associations levy assessments, up to prescribed limits, on all member insurers in a particular state on the basis of the proportionate share of the premiums written by member insurers in the lines of business in which the impaired or insolvent insurer is engaged. Although mandatory assessments by state guaranty funds that are used to cover losses to policyholders of insolvent or rehabilitated companies can be substantially recovered over time through policyholder surcharges or a reduction in future premium taxes in many states (provided the collecting insurer continues to write business in such state), there can be no assurance that all funds will be recoupable in the future. During 2018, we had a total assessment of \$3.9 million levied against us, with refunds of \$0.4 million received in 2018 for a total net assessment of \$3.5 million. As of December 31, 2018, we have \$0.5 million of reserves related to guaranty fund assessments. In the future, these assessments may increase above levels experienced in prior years. Future increases in these assessments depend upon the rate of insolvencies of insurance companies. An increase in assessments could adversely affect our results of operations and financial condition.

If we are unable to attract and retain qualified personnel, or if we experience the loss or retirement of key executives or other key employees, we may not be able to compete effectively and our operations could be impacted significantly.

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Our future success will be affected by our continued ability to attract, develop and retain qualified executives and other key employees, particularly those experienced in the property and casualty industry.

Our profitability could be adversely affected by our relationships with our agencies.

We distribute our products exclusively through independent agents and brokers who have the principal relationships with policyholders. Agents and brokers generally own the “renewal rights,” and thus our business model is dependent on our relationships with, and the success of, the agents and brokers with whom we do business.

We periodically review the agencies, including managing general agencies, with whom we do business, to identify those that do not meet our profitability standards or are not aligned with our business objectives. Following these periodic reviews, we may restrict such agencies’ access to certain types of policies or terminate our relationship with them, subject to applicable contractual and regulatory requirements that limit our ability to terminate agents or require us to renew policies. We may not achieve the desired results from these measures, and our failure to do so could negatively affect our operating results and financial position.

Because we rely on independent agents as our sales channel, any deterioration in the relationships with our independent agents or failure to provide competitive compensation to our independent agents could lead agents to place more premium with other carriers and less premium with us. In addition, we could be adversely affected if the agencies, including managing general agencies, with whom we do business exceed the authority that we have given them, fail to transfer premium to us or breach the obligations that they owe to us. Although we routinely monitor our agency relationships, such actions could expose us to liability and have a negative impact on our results of operations and financial condition.

Also, if agency consolidation continues at its current pace or increases in the future and more agencies are consolidated into larger agencies or managing general agencies, our sales channel could be materially affected in a number of ways, including loss of market access or market share in certain geographic areas if an acquirer is not one of our appointed agencies, loss of agency talent as the people most knowledgeable about our products and with whom we have developed strong working relationships exit the business following a disposition of an agency, increases in our commission costs as larger agencies acquire more negotiating leverage over their fees, and interfere with the core agency business of selling insurance due to integration or distraction. Any such disruption that materially affects our sales channel could have a negative impact on our results of operations and financial condition.

As the speed of digitization accelerates, we are subject to risks associated with both our agents’ and our ability to keep pace. In an increasingly digital world, agents who cannot provide a digital or technology-driven experience risk losing customers who demand such an experience, and such customers may choose to utilize more technology-driven agents or abandon the independent agency channel altogether. Additionally, if we are not able to keep pace with competitors’ digital offerings, we may not be able to meet the demand from our agents or their customers, which could lead to a loss of customers, agents or both. A loss of agents or customers could negatively affect our operating results and financial position.

We may be affected by disruptions caused by the introduction of new products, related technology changes, and new operating models in Commercial Lines, Personal Lines and Specialty businesses and recent or future acquisitions, and expansion into new geographic areas.

There are increased underwriting risks associated with premium growth and the introduction of new products or programs in our Commercial Lines, Personal Lines and Specialty businesses. Additionally, there are increased

underwriting risks associated with the appointment of new agencies and managing general agencies and with the expansion into new geographical areas.

The introduction of new Commercial Lines products and the development of new niche and specialty lines, presents new risks. Certain new specialty products may present longer “tail” risks and increased volatility in profitability. Our expansion into western states, including California, presents additional underwriting risks since the regulatory, geographic, natural risk, legal environment, demographic, business, economic and other characteristics of these states present challenges different from those in the states where we historically have conducted business. In addition, our agency relationships in these new geographies are not as developed.

Our Personal Lines production and earnings may be unfavorably affected by the continued introduction of new products, expanded risk appetites and our focus on account business (i.e., policyholders who have both automobile and homeowner insurance with us) that we believe, despite pricing discounts, will ultimately be more profitable business. We may also experience adverse selection, which occurs when insureds purchase our products because of under-pricing, operational difficulties or implementation impediments with independent agents or the inability to grow new markets after the introduction of new products or the appointment of new agents.

As we enter new states or regions or grow business, there can be no assurance that we won’t experience higher loss trends than anticipated.

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We may experience difficulties with technology, data security and/or outsourcing relationships, which could have a negative impact on our ability to conduct our business.

We use computer systems to store, retrieve, evaluate and utilize customer and company data and information. Our computer, information technology and telecommunications systems, in turn, interface with and rely upon third-party systems, including cloud-based data storage. Our business is highly dependent on our ability, and the ability of certain third parties, to access these systems to perform necessary business functions, including, without limitation, providing insurance quotes, processing premium payments, making changes to existing policies, filing and paying claims, providing customer support and managing investment portfolios. Systems attacks, failures or outages could compromise our ability to perform these functions in a timely manner, which could harm our ability to conduct business and hurt our relationships with our business partners and customers. In the event of a disaster such as a natural catastrophe, an industrial accident, a blackout, a computer virus, a cyber security attack, a terrorist attack or war, or interference from solar flares, our systems or the external systems that we rely on may be inaccessible to our employees, customers or business partners for an extended period of time. Even if our employees are able to report to work, they may be unable to perform their duties for an extended period of time if our data or the systems that we rely on are disabled or destroyed or if our disaster recovery plans are inadequate or suffer from unforeseen consequences. This could result in a materially adverse effect on our business results and liquidity.

In addition, we outsource certain technology and business process functions and data storage to third parties and may do so increasingly in the future. If we do not effectively develop, implement and monitor our outsourcing strategies, 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, data storage 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 outside of the United States might be impacted by cultural differences, political instability, regulatory requirements or policies inside or outside of the United States. As a result, our ability to conduct our business might be adversely affected.

Data security incidents, including, but not limited to, those resulting from a malicious cyber security attack on us or our business partners and service providers, could disrupt or otherwise negatively impact our business.

Our systems and the systems that we rely on, like others in the financial services industry, are vulnerable to cyber security risks, and we are subject to disruption and other adverse effects caused by such activities. Large corporations such as ours are subject to daily attacks on their systems and other vulnerabilities to data security incidents. These attacks and incidents have included, or may in the future include: unauthorized access, viruses, malware or other malicious code, ransomware, deceptive social engineering campaigns (also known as “phishing” or “spoofing”), loss or theft of assets, employee errors or malfeasance, third-party errors or malfeasance, as well as system failures and other security events. Such attacks may have various goals, from seeking confidential information or the misdirection of payments, to causing operational disruption. Such activities could result in material disruptions to our operations, financial loss or material damage to our reputation. Like other companies, we have from time to time experienced, and are likely to continue to experience, security events, and while none of these events to date have had a material adverse effect on our business, no assurances can be made that such attacks or security events will not have a material adverse effect on our business in the future. As the breadth and complexity of cyber security attacks and other data security events become more prevalent and the methods used to perpetrate them evolve, we may be required to devote additional personnel, or financial or systems resources, to protecting our data security or investigating or remediating vulnerabilities as a result of data security incidents. Such resources could be costly in time and expenses, and could detract from resources spent on our core property and casualty insurance operations. In addition, we may not be able

to detect an incident, assess its severity or impact, or appropriately respond in a timely manner, which could increase our exposure to an incident.

The third parties with whom we work are also subject to these same risks, and we are vulnerable if a cyber security attack or other data security incident involves a third party vendor or service provider. Such an event could threaten to disrupt our business if the third party's operations are compromised, or provide attackers an avenue to pivot and attack our systems by exploiting the relationships that we have with our trusted business partners. While we take measures to protect against such events (e.g., utilizing secure transmission capabilities with third-party vendors and others with whom we do business when possible), review and assess our third party providers' cybersecurity controls, as appropriate, and make changes to our business processes to manage these risks, we cannot assure that our efforts will always be successful.

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Any failure to protect the confidentiality of customer information could adversely affect our reputation or expose us to fines, penalties or litigation, which could have a material adverse effect on our business, financial condition and results of operations.

We are required to safeguard the confidential personal information of our customers and applicants and are subject to an increasing number of federal, state, local and international laws and regulations regarding privacy and data security, as well as contractual commitments. These laws and regulations are rapidly evolving, complex, vary significantly from jurisdiction to jurisdiction, and sometimes conflict. We could be subject to governmental enforcement actions and fines, penalties, litigation, or public statements against us by consumer advocacy groups or others if confidential customer information is misappropriated from our computer systems, those of our vendors or others with whom we do business, or otherwise. Despite the security measures that may be in place, any such systems may be vulnerable to the types of attacks and security incidents described above. Any well-publicized compromise of security could deter people from entering into transactions that involve transmitting confidential information, or damage our reputation, which could have a material adverse effect on our business.

Integration of acquired businesses involves a number of risks.

There can be no assurance that we will be able to successfully integrate future acquisitions or that we will not assume unknown liabilities and reserve deficiencies in connection with such acquisitions. If we are unable to successfully integrate new businesses, then we could be impeded from realizing the benefits of an acquisition. The integration process could disrupt our business, and a failure to successfully integrate newer businesses could have a material adverse effect on our business, financial condition and results of operations. The difficulties of integrating an acquisition and risks to our business include, among others:

- unanticipated issues in integrating information, communications and other system or unknown vulnerabilities or inadequacies of an acquired company's systems;
- assumption of unknown and unrecorded liabilities;
- unanticipated incompatibility of logistics, marketing and administration methods;
- maintaining employee morale and retaining key employees;
- integrating the business cultures of different companies;
- preserving important strategic, reinsurance and other relationships;
- integrating legal and financial controls in multiple jurisdictions;
- consolidating corporate and administrative infrastructures and eliminating duplicative operations;
 - the diversion of management's attention from ongoing business concerns;
- integrating geographically separate organizations;
- unexpected or overlapping concentrations of risk where one event or series of events can affect many insured parties;
- significant transaction costs;
 - risks and uncertainties in our ability to increase the investment yield on the investment portfolio;
- uncertainties in our ability to decrease leverage as a result of adding future earnings to our capital base;
- risks and uncertainties regarding the volatility of underwriting results in a combined entity;
- the ability to more efficiently manage capital;
- the ability to improve renewal rates and increase new property and casualty policy counts;
- the ability to increase or maintain certain property and casualty insurance rates;
 - complying with laws, rules and regulations in multiple jurisdictions, including new and multiple employment regulations, and regulations relating to the conduct of business activities such as tax,

privacy, information security, and environmental-related laws; and
the impact of new product or line of business introductions and our ability to meet projected return on capital targets. In addition, even if we are able to successfully integrate future acquisitions, we may not realize the full benefits of such acquisitions, including the synergies, cost savings or underwriting or growth opportunities that we expect. It is possible that these benefits may not be achieved within the anticipated time frame, or at all.

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Intense competition could negatively affect our ability to maintain or increase our profitability, particularly in light of the various competitive, financial, strategic, structural, informational and resource advantages that our competitors have.

We compete, and will continue to compete, with a large number of companies, including international, national and regional insurers, specialty insurance companies, so called “off-shore” companies which enjoy certain tax advantages, underwriting agencies and financial services institutions. We also compete with mutual insurance companies, reciprocal and exchange companies that may not have shareholders and may have different profitability targets than publicly or privately owned companies. In recent years, there has been substantial consolidation and convergence among companies in the financial services industry, resulting in increased competition from large, well-capitalized financial services firms. Many of our competitors have greater financial, technical and operating resources than we do, greater access to “big data,” and may be able to offer a wider range of, or more sophisticated, commercial and personal line products. Some of our competitors also have different marketing, advertising and sales strategies than we do and market and sell their products to consumers directly. Some companies are seeking to protect new products with patents or other legal protections, which may create new legal exposures or limit our ability to develop competing products. In addition, competition in the U.S. property and casualty insurance market has intensified over the past several years. This competition has had, and may continue to have, an adverse impact on our revenues and profitability.

A number of new, proposed or potential legislative or industry developments could further increase competition in our industry. These developments include:

- the implementation of commercial lines deregulation in several states;
- programs in which state-sponsored entities provide property insurance in catastrophe-prone areas or other alternative markets types of coverage; and
- changing practices caused by the Internet, application-based programs relying on algorithms and computer modeling to underwrite policies and administer claims, and the increased usage of real time comparative rating tools and claims management processes, which have led to greater competition in the insurance business in general, particularly on the basis of price, and pressure to reduce coverages to compete on price.

We could face heightened competition resulting from the entry of new competitors and the introduction of new products by new and existing competitors. Additionally, recent entries into the property and casualty marketplace by large technology companies, retail companies, so-called “Insurtech” companies and other non-traditional insurance providers, who aim to leverage their information about and direct access to customers, technology without the burden of legacy systems, access and ability to manipulate “big data,” artificial intelligence or other developing opportunities, may increase competition. Increased competition could make it difficult for us to obtain new or retain existing customers. It could also 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. In addition, our administrative, technology and management information systems expenditures could increase substantially as we try to maintain or improve our competitive position or keep up with evolving technology.

We compete for business not just on the basis of price, but also on the basis of product coverages, reputation, financial strength, quality of service (including claims adjustment service), experience and breadth of product offering. We cannot provide assurance that we will be able to maintain a competitive position in the markets where we operate, or that we will be able to expand our operations into new markets.

We are rated by several rating agencies, and downgrades to our ratings could adversely affect our operations.

Our ratings are important in establishing our competitive position and marketing the products of our insurance companies to our agents and customers. Rating information is broadly disseminated and generally used throughout the industry. Many policyholders, particularly larger commercial customers, will not purchase, and many agents will not distribute, products of insurers that do not meet certain financial strength ratings.

Our insurance company subsidiaries are rated by A.M. Best, Moody's, and Standard & Poor's. These ratings reflect the rating agency's opinion of our insurance subsidiaries' financial strength, operating performance, position in the market place, risk management, and ability to meet their obligations to policyholders. These ratings are not evaluations directed to investors, and are not recommendations to buy, sell or hold our securities. Our ratings are subject to periodic review by the rating agencies, and we cannot guarantee the continued retention or improvement of our current ratings. This is particularly true given that rating agencies may change their criteria or increase capital requirements for various rating levels.

A downgrade in one or more of our or any of our subsidiaries' claims-paying ratings could negatively impact our business and competitive position, particularly in lines where customers require us to maintain minimum ratings. Additionally, a downgrade in one or more of our debt ratings could adversely impact our ability to access the capital markets and other sources of funds, increase the cost of current credit facilities, and/or adversely affect pricing of new debt sought in the capital markets in the future. Our ability to raise capital in the equity markets could also be adversely affected.

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Negative changes in our level of statutory surplus could adversely affect our ratings and profitability.

The capacity for an insurance company's growth in premiums is in part a function of its statutory surplus. Maintaining appropriate levels of statutory surplus, as measured by state insurance regulators, is considered important by state insurance regulatory authorities and by rating agencies that rate insurers' claims-paying abilities and financial strength. As our business grows, or due to other factors, regulators may require that additional capital be retained or contributed to increase the level of statutory surplus. Failure to maintain certain levels of statutory surplus could result in increased regulatory scrutiny, action by state regulatory authorities or a downgrade by private rating agencies. Our surplus is affected by, among other things, results of operations and investment gains, losses, impairments, and dividends from the insurance operating company to its parent company. A number of these factors affecting our level of statutory surplus are, in turn, influenced by factors that are out of our control, including the frequency and severity of catastrophes, changes in policyholder behavior, changes in rating agency models and economic factors such as changes in equity markets, credit markets, interest rates or foreign currency exchange rates.

The NAIC uses a system for assessing the adequacy of statutory capital for property and casualty insurers. The system, known as risk-based capital, is in addition to the states' fixed dollar minimum capital and other requirements. The system is based on risk-based formulas that apply prescribed factors to the various risk elements in an insurer's business and investments to report a minimum capital requirement proportional to the amount of risk assumed by the insurer. Any failure to maintain appropriate levels of statutory surplus would have an adverse impact on our ability to maintain or grow our business.

We may not be able to grow as quickly or as profitably as we intend, which is important to our current strategy.

Over the past several years, we have made, and our current plans are to continue to make, significant investments in our Commercial and Personal Lines of business, in order to, among other things, strengthen our product offerings and service capabilities, expand into new geographic areas, improve technology and our operating models, build expertise in our personnel, and expand our distribution capabilities, with the ultimate goal of achieving significant, sustained growth. The ability to achieve significant profitable premium growth in order to earn adequate returns on such investments and expenses, and to grow further without proportionate increases in expenses, is an important part of our current strategy. There can be no assurance that we will be successful at profitably growing our business, or that we will not alter our current strategy due to changes in our markets or an inability to successfully maintain acceptable margins on new or existing business or for other reasons, in which case premiums written and earned, operating income and net book value could be adversely affected.

An impairment in the carrying value of goodwill and intangible assets could negatively impact our consolidated results of operations and shareholders' equity.

Upon an acquisition of a business, we record goodwill and intangible assets at fair value. Goodwill and intangible assets determined to have indefinite useful lives are not amortized, while other intangible assets are amortized over their estimated useful lives. Goodwill and intangible assets that are not amortized are reviewed for impairment at least annually. Evaluating the recoverability of such assets requires us to rely on estimates and assumptions related to return on equity, margin, growth rates, discount rates, and other data. There are inherent uncertainties related to these factors, and significant judgment is required in applying these factors. Goodwill and intangible asset impairment charges can result from declines in operating results, divestitures or sustained market declines and other factors. As of December 31, 2018, goodwill and intangible assets that are not amortized totaled \$207 million and represented approximately 7% of shareholders' equity. Our legacy Hanover and Citizens businesses represent 63% of this balance; AIX represents 24% of this balance; and, the remaining acquisitions combined represent 13% of this balance.

Although we believe these assets are recoverable, we cannot provide assurance that future market or business conditions would not result in the impairment of a portion of these assets. Impairment charges could materially affect our financial position and our financial results in the quarter or annual period in which they are recognized.

We could be subject to additional losses related to the sale of our discontinued FAFLIC and variable life insurance and annuity businesses and our recent sale of our Chaucer business.

On January 2, 2009, we sold our remaining life insurance subsidiary, FAFLIC, to Commonwealth Annuity and Life Insurance Company. Coincident with the sale transaction, Hanover Insurance and FAFLIC entered into a reinsurance contract whereby Hanover Insurance assumed FAFLIC's discontinued accident and health insurance business. We previously owned Commonwealth Annuity, but sold it in 2005 in conjunction with our disposal of our variable life insurance and annuity business. In connection with these transactions, we have agreed to indemnify Commonwealth Annuity for certain contingent liabilities, including litigation and other regulatory matters.

On December 28, 2018, we sold the majority of our Chaucer business (specifically our U.K.-based Lloyd's entities) to China Re. In connection with this transaction, we made certain representations and warranties and agreed to indemnify China Re for certain pre-sale contingent liabilities.

We cannot provide assurance as to what the costs of any indemnifications will be when they ultimately settle.

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We may incur financial losses related to our discontinued assumed accident and health reinsurance pools and arrangements.

We previously participated, through FAFLIC, in approximately 40 assumed accident and health reinsurance pools and arrangements. The business was retained in the sale of FAFLIC and assumed by Hanover Insurance through a reinsurance agreement. In 1999, prior to the sale of FAFLIC to Commonwealth Annuity, FAFLIC had ceased writing new premiums in this business, subject to certain contractual obligations. The reinsurance pool business consists primarily of long-term care, the medical and disability portions of workers' compensation risks, assumed personal accident, individual medical, long-term disability and special risk business. We are currently monitoring and managing the run-off of our related participation in the 24 pools with remaining liabilities.

Loss estimates associated with substantially all of the discontinued accident and health business are provided by managers of each pool. Reserve estimates for this business are subject to the variability caused by extended loss emergence periods. The estimation of reserves for this business is further complicated by delays between the time a claim is reported to the ceding insurer and when the claim, premium and other pertinent policy data is reported by the ceding insurer to the pool manager and then to us, and by our dependence on the quality and consistency of the claim cost reporting by the ceding company and actuarial estimates by the pool manager. We adopt reserve estimates for this business that consider this information, expected returns on assets assigned to this business and other facts. We update these reserves as new information becomes available and further events occur that may affect the ultimate resolution of unsettled claims. Based on information provided to us by the pool managers, we believe that the reserves recorded related to this business are adequate. However, since reserve and claim cost estimates related to the discontinued accident and health business are dependent on several assumptions, including, but not limited to, morbidity, lapses, future premium rates, future health care costs, persistency of medical care inflation and investment performance, and these assumptions can be impacted by technical developments and advancements in the medical field and other factors, there can be no assurance that the reserves established for this business will prove sufficient. Revisions to these reserves could have a material adverse effect on our results of operations for a particular quarterly or annual period or on our financial position.

Our long-term care pool accounts for the majority of our remaining accident and health reinsurance pool business. The potential risk and exposure of our long-term care pool is based upon expected estimated claims and payment patterns, using assumptions for, among other things, morbidity, lapses, future premium rates, and the interest rate used for discounting the future projected cash flows. The long-term exposure of this pool depends upon how our actual experience compares with these future cash flow projection assumptions. If any of our assumptions prove to be inaccurate, our reserves may be inadequate, which may have a material adverse effect on our results of operations. For example, during the fourth quarter of 2017, we received updated future cash flow projections from the manager of our long-term care pool that reflected a significant increase in projected claim costs. As a result of this deterioration, we increased our long-term care pool reserves by \$23.3 million (44%), before tax, during the fourth quarter of 2017 and we continue to monitor developments in the legacy long-term care industry.

For some of these pools and arrangements, we variously acted as a reinsurer, a reinsured or both. In some instances, we ceded significant exposures to other reinsurers in the marketplace. The potential risk to us as a participant in such pools is primarily that other companies that reinsured this business from us may fail to pay their reinsurance obligations. Thus, we are exposed to both assumed losses and to credit risk related to these pools.

Based on the information provided by the pool managers, we believe that the reserves recorded related to this business are appropriate. However, due to the inherent volatility in this business and the reporting lag of losses that tend to develop over time and which ultimately affect excess covers, as well as uncertainty surrounding both future claim

expenses and with future premium rate levels for certain of these businesses, there can be no assurance that current reserves are adequate or that we will not have additional losses in the future. Although we have discontinued participation in these reinsurance arrangements, unreported and new claims related to the years in which we were a participant may be reported, and previously reported claims may develop unfavorably. If any such unreported claims or unfavorable development is reported to us, our results of operations and financial position may be negatively impacted.

Other market fluctuations and general economic, market and political conditions may also negatively affect our business, profitability, investment portfolio, and the market value of our common stock.

It is difficult to predict the impact of a challenging economic environment on our business. In Commercial Lines, a difficult economy has resulted in reductions in demand for insurance products and services since there are more companies ceasing to do business and there are fewer business start-ups, particularly as businesses are affected by a decline in overall consumer and business spending. Additionally, claims frequency could increase as policyholders submit and pursue claims more aggressively than in the past, fraud incidences may increase, or we may experience higher incidents of abandoned properties or poorer maintenance, which may also result in more claims activity. We have experienced higher workers' compensation claims as injured employees take longer to return to work, increased surety losses as construction companies experience financial pressures and higher retroactive premium returns as audit results reflect lower payrolls. Our business could also be affected by an ensuing consolidation of independent insurance agencies. Our ability to increase pricing has been impacted as agents and policyholders have been more price sensitive, customers shop for policies more frequently or aggressively, utilize comparative rating models or, in Personal Lines in particular, turn to direct sales channels rather than independent agents. We have also experienced decreased new business premium levels, retention and

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renewal rates, and renewal premiums. Specifically, in Personal Lines, policyholders may reduce coverages or change deductibles to reduce premiums, experience declining home values, or be subject to increased foreclosures, and policyholders may retain older or less expensive automobiles and purchase or insure fewer ancillary items such as boats, trailers and motor homes for which we provide coverages. Additionally, if as a result of a difficult economic environment, drivers continue to eliminate automobile insurance coverage or to reduce their bodily injury limit, we may be exposed to more uninsured and underinsured motorist coverage losses. Conversely, favorable economic conditions may also impact our business and results of operations. For example, recent low unemployment has caused employers to hire less experienced workers, which has contributed to higher workers' compensation and commercial automobile losses.

At December 31, 2018, we held approximately \$8.3 billion of investment assets in categories such as fixed maturities, equity securities, other investments, and cash and short-term investments. Our investments are primarily concentrated in the domestic market. Our investment returns, and thus our profitability, statutory surplus and shareholders' equity, may be adversely affected from time to time by conditions affecting our specific investments and, more generally, by bond, stock, real estate and other market fluctuations and general economic, market and political conditions, including the impact of changing government policies, including monetary policies, and geopolitical risks. These broader market conditions are out of our control. Our ability to make a profit on insurance products depends in part on the returns on investments supporting our obligations under these products, and the value of specific investments may fluctuate substantially depending on the foregoing conditions. We may use a variety of strategies to hedge our exposure to interest and currency rates and other market risks. However, hedging strategies are not always available and carry certain credit risks, and our hedging could be ineffective. Moreover, increased government regulation of certain derivative transactions used to hedge certain market risks has served to prevent (or otherwise substantially increase the cost associated with) hedging such risks.

Additionally, the aggregate performance of our investment portfolio depends, to a significant extent, on the ability of our investment managers to select and manage appropriate investments. As a result, we are also exposed to operational risks, which may include, but are not limited to, a failure to follow our investment guidelines, technological and staffing deficiencies and inadequate disaster recovery plans. The failure of these investment managers to perform their services in a manner consistent with our expectations and investment objectives could adversely affect our ability to conduct our business.

Debt securities comprise a material portion of our investment portfolio. The concentration of our investment portfolio in any one type of investment, industry or geography could have a disproportionately adverse effect on our investment portfolio. The issuers of debt securities, as well as borrowers under the loans we make, customers, trading counterparties, counterparties under swaps and other derivative contracts, banks which have commitments under our various borrowing arrangements, and reinsurers, may be affected by declining market conditions or credit weaknesses. These parties may default on their obligations to us due to lack of liquidity, downturns in the economy or real estate values, operational failure, bankruptcy or other reasons. Future increases in interest rates could result in increased defaults as borrowers are unable to pay the additional borrowing costs on variable rate securities or obtain refinancing. We cannot provide assurance that further impairment charges will not be necessary in the future. In addition, evaluation of available-for-sale securities for other-than-temporary impairment includes inherent uncertainty and subjective determinations. We cannot be certain that such impairments are adequate as of any stated date. Our ability to fulfill our debt and other obligations could be adversely affected by the default of third parties on their obligations owed to us.

Deterioration in the global financial markets may adversely affect our investment portfolio and have a related impact on our other comprehensive income, shareholders' equity and overall investment performance. As economic growth

has improved in recent years, central bank policies and fiscal policies are either in transition or returning to a more prominent role across the globe, but the effects of such policies on financial markets are uncertain.

Market conditions also affect the value of assets under our employee pension plans, including our Cash Balance Plan. The expense or benefit related to our employee pension plans results from several factors, including, but not limited to, changes in the market value of plan assets, interest rates, regulatory requirements or judicial interpretation of benefits. At December 31, 2018, our plan assets included approximately 85% of fixed maturities and 15% of equity securities and other assets. Additionally, our net liabilities exceed assets by \$18.8 million and \$33.8 million for our qualified and non-qualified (which is an unfunded plan) pension plans, respectively, at December 31, 2018. Declines in the market value of plan assets and lower interest rates from levels at December 31, 2018, among other factors, could impact our funding estimates and negatively affect our results of operations. Deterioration in market conditions and differences between our assumptions and actual occurrences, and behaviors, could result in a need to fund more into the qualified plans to maintain an appropriate funding level.

These same market conditions and factors could also cause the market price of our common stock to fluctuate or become volatile, which could adversely affect our stock price. Because our stock price is influenced by our financial performance and other larger macro-economic factors that are out of our control, the price of our common stock may not remain at or exceed current or historical levels.

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We may experience unrealized losses on our investments, especially during a period of heightened volatility, or if assumptions related to our investment valuations are changed, which could have a material adverse effect on our results of operations or financial condition.

Our investment portfolio and shareholders' equity can be, and in the past have been, significantly impacted by changes in the market values of our securities. U.S. and global financial markets and economies remain uncertain. This could result in unrealized and realized losses in future periods, and adversely affect the liquidity of our investments, which could have a material adverse impact on our results of operations and our financial position. At December 31, 2018, our financial position (including assets-held-for-sale) was negatively affected by \$85.9 million as a result of unrealized losses, largely driven by the low interest rate environment. Information with respect to interest rate sensitivity is included in "Quantitative and Qualitative Disclosures" in Management's Discussion and Analysis of Financial Condition. Valuation of financial instruments (i.e., Level 1, 2, or 3) include methodologies, estimates, assumptions and judgments that are inherently subjective and open to different interpretations and could result in changes to investment valuations or the ability to receive such valuations on sale. During periods of market disruption, it may be difficult to value certain of our securities if trading becomes less frequent and/or market data becomes less observable. In addition, in times of financial market disruption, certain asset classes that were in active markets with significant observable data may become illiquid. In those cases, the valuation process includes inputs that are less observable and require more subjectivity and judgment by management. Furthermore, a change in the subjective methodologies, estimates, assumptions and judgments used to value our investments could also materially affect the valuation of certain investments.

If, following such declines, we are unable to hold our investment assets until they recover in value, or if such asset value never recovers, we would incur other-than-temporary impairments that would be recognized as realized losses in our results of operations, reduce net income and earnings per share and adversely affect our liquidity. Impairment determinations, like valuations, are also subjective, and changes to the methodologies, estimates, assumptions and judgments used to determine impairments may affect the timing and amount of impairment losses recognized in our results of operations. Temporary declines in the market value of fixed maturities are recorded as unrealized losses, which do not affect net income and earnings per share, but reduce other comprehensive income, which is reflected on our Consolidated Balance Sheets. We cannot provide assurance that we will not have additional other-than-temporary impairments and/or unrealized or realized investment losses in the future.

We invest a portion of our portfolio in common stock or preferred stocks. The value of these assets fluctuates with the equity markets. Particularly in times of economic weakness, the market value and liquidity of these assets may decline, and may impact net income, capital and cash flows.

We are exposed to significant capital market risks related to changes in interest rates, credit spreads, and equity prices, which may adversely affect our results of operations, financial position or cash flows.

We are exposed to significant capital markets risk related to changes in interest rates, credit spreads, and equity prices. If significant, declines in equity prices, changes in interest rates, and changes in credit spreads each could have a material adverse effect on our results, financial position or cash flows. Our exposure to interest rate risk relates primarily to the market price and cash flow variability associated with changes in interest rates. Our investment portfolio contains interest rate sensitive instruments, such as fixed income securities, which may be adversely affected by changes in interest rates from governmental monetary policies, domestic and international economic and political conditions and other factors beyond our control. A rise in market yields would reduce the fair value of our investment portfolio, but provide the opportunity to earn higher rates of return on funds reinvested. A further decline in interest rates, on the other hand, would increase the fair value of our investment portfolio, but we would earn lower rates of

return on reinvested assets. We may be forced to liquidate investments prior to maturity at a loss in order to cover liabilities, and such liquidation could be accelerated in the event of significant loss events, such as catastrophes. Although we take measures to manage the economic risks of investing in a changing interest rate environment, we may not be able to mitigate the interest rate risk of our assets relative to our liabilities.

Our investment portfolio is invested primarily in high quality, investment-grade fixed income securities. However, we also invest in non-investment-grade high yield fixed income securities and alternative investments. These securities, which pay a higher rate of interest, also have a higher degree of credit or default risk. These securities may also be less liquid in times of economic weakness or market disruptions. Additionally, the reported value of our investments do not necessarily reflect the lowest current market price for the asset, and if we require significant amounts of cash on short notice, we may have difficulty selling our investments in a timely manner, be forced to sell them for less than we otherwise would have been able to realize, or both. While we have procedures to monitor the credit risk and liquidity of our invested assets, we expect from time to time, and particularly in periods of economic weakness, to experience default losses in our portfolio. This would result in a corresponding reduction of net income, capital and cash flows.

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Inflationary pressures may negatively impact expenses, reserves and the value of investments.

Inflationary pressures in the U.S. with respect to medical and health care, automobile repair and construction costs, as well as social inflation of jury awards and settlement expectations, all of which are significant components of our indemnity liabilities under policies we issue to our customers, and which could also impact the adequacy of reserves we have set aside for prior accident years, may have a negative effect on our results of operations. Inflationary pressures also cause or contribute to, or are the result of, increases in interest rates, which would reduce the fair value of our investment portfolio.

We are a holding company and rely on our insurance company subsidiaries for cash flow; we may not be able to receive dividends from our subsidiaries in needed amounts and may be required to provide capital to support their operations.

We are a holding company for a diversified group of insurance companies, and our principal assets are the shares of capital stock of these subsidiaries. Our ability to make required interest payments on our debt, as well as our ability to pay operating expenses and pay dividends to shareholders, depends upon the receipt of sufficient funds from our subsidiaries. The payment of dividends by our insurance company subsidiaries is subject to regulatory restrictions and will depend on the surplus and future earnings of these subsidiaries, as well as these regulatory restrictions. We are required to notify insurance regulators prior to paying any dividends from our insurance subsidiaries, and pre-approval is required with respect to “extraordinary dividends.”

Because of the regulatory limitations on the payment of dividends from our insurance company subsidiaries, we may not always be able to receive dividends from these subsidiaries at times and in amounts necessary to meet our debt and other obligations, or to pay dividends to our shareholders. The inability of our subsidiaries to pay dividends to us in an amount sufficient to meet our debt interest and funding obligations would have a material adverse effect on us. These regulatory dividend restrictions also impede our ability to transfer cash and other capital resources among our subsidiaries. Similarly, our insurance subsidiaries may require capital from the holding company to support their operations.

Our dependence on our insurance subsidiaries for cash flow, and their potential need for capital support, exposes us to the risk of changes in their ability to generate sufficient cash inflows from new or existing customers or from increased cash outflows. Cash outflows may result from claims activity, expense payments or investment losses. Because of the nature of our business, claims activity can arise suddenly and in amounts which could outstrip our capital or liquidity resources. Reductions in cash flow or capital demands from our subsidiaries could have a material adverse effect on our business and results of operations.

We may require additional capital or credit in the future, which may not be available or only available on unfavorable terms.

We monitor our capital adequacy on a regular basis. Our future capital and liquidity requirements depend on many factors, including our premiums written, loss reserves and claim payments, investment portfolio composition and risk exposures, the availability of letters and lines of credit, as well as regulatory and rating agency capital requirements. In addition, our capital strength can affect our ratings, and therefore is important to our ability to underwrite business. The quality of our claims paying and financial strength ratings are evaluated by independent rating agencies. Such ratings affect our ability to write quality business, our borrowing expenses and our ability to raise capital.

To the extent that our existing capital is insufficient or unavailable to fund our future operating requirements and/or cover claim losses, we may need to raise additional funds through financings or limit our growth. Any equity or debt financing, if available, may be on terms that are unfavorable to us. In the case of equity financings, dilution to our shareholders could result and, in any case, such securities may have rights, preferences, and privileges that are senior to our common stock. If we are not able to obtain additional capital as necessary, our business, results of operations and financial condition could be adversely affected.

Errors or omissions in connection with the administration of any of our products may cause our business and profitability to be negatively impacted.

We are responsible to our policyholders for administering their policies, premiums and claims and ensuring that appropriate records are maintained that reflect their transactions. We are subject to risks that errors or omissions of information occurred with respect to the administration of our products. We are also subject to misconduct and fraud on the part of our employees and agents. As a result, we are subject to risks of liabilities associated with “bad faith,” unfair claims practices, unfair trade practices or similar allegations. Such risks may stem from allegations of agents, vendors, policyholders, claimants, reinsurers, regulators, states’ attorneys general, or others. We may incur charges associated with any errors and omissions previously made or that are made in future periods. These charges may result from our obligation to policyholders to correct any errors or omissions or refund premiums, non-compliance with regulatory requirements, from fines imposed by regulatory authorities, or from other items, which may affect our financial position or results of operations.

We are subject to all of the foregoing risks with respect to the third-party asset management operations of Opus. Opus, which had \$3.1 billion of unaffiliated assets under management as of December 31, 2018, is subject to federal (SEC) and other regulatory requirements and is subject to operational, technological, information security, investment and other risks, as well as claims by third parties whose funds it manages.

Changes in current accounting practices and future pronouncements may materially impact our reported financial results.

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Unanticipated developments in accounting practices may require us to incur considerable additional expenses to comply with such developments, particularly if we are required to prepare information relating to prior periods for comparative purposes or to apply the new requirements retroactively. Such developments may also significantly impact the presentation of such financial statements and may require restatements. The impact of changes in current accounting practices and future pronouncements cannot be predicted, but they may affect the calculation of net income, net equity and other relevant financial statement line items.

Failure to maintain effective internal control over financial reporting could have a material adverse effect on our business and stock price.

As a publicly traded company, we are required to maintain effective internal control over financial reporting. While management has certified that our internal control over financial reporting was effective as of December 31, 2018, because internal control over financial reporting is complex, we cannot assure you that our internal control over financial reporting will be effective in the future. Any failure to design, implement or maintain required controls, gaps in internal controls, or difficulties encountered in their operation, could adversely affect our results or cause us to fail to meet our reporting obligations. If we are not able to maintain or document effective internal control over financial reporting, our independent, registered public accounting firm would be unable to certify the effectiveness of our internal control over financial reporting or opine that our financial statements fairly present, in all material respects, our financial position, results of operations and cash flows in conformity with GAAP. Significant internal control deficiencies may also prevent us from reporting our financial information on a timely basis or cause us to restate previously issued financial information, and thereby subject us to litigation and adverse regulatory consequences, including fines and other penalties, and could result in a breach of the covenants under our credit agreements. Investor confidence in us and the reliability of our financial statements could erode, resulting in a decline in our stock price.

We are subject to the U.S. Foreign Corrupt Practices Act and similar worldwide anti-bribery laws, that impose restrictions and may carry substantial penalties. Violations of these laws or allegations of such violations could cause a material adverse effect on our business, financial position and results of operations.

The U.S. Foreign Corrupt Practices Act and anti-bribery laws in other jurisdictions, generally prohibit companies and their intermediaries from making improper payments for the purpose of obtaining or retaining business or other commercial advantage. Our policies mandate compliance with these anti-bribery laws that often carry substantial penalties. We cannot assure you that our internal control policies and procedures will always protect us from reckless or other inappropriate acts committed by our affiliates, employees, or agents. Violations of these laws, or allegations of such violations, could have a material adverse effect on our business, financial position and results of operations.

ITEM 1B—UNRESOLVED STAFF COMMENTS

None.

ITEM 2—PROPERTIES

We own our headquarters, located at 440 Lincoln Street, Worcester, Massachusetts, with approximately 803,000 square feet.

We also own office space located in a three-building complex located at 808 North Highlander Way, Howell, Michigan, with approximately 140,000 square feet, where various business operations are conducted. Certain of our properties have been leased to unrelated third parties or are available for lease.

We also lease offices throughout the United States for branch sales, underwriting and claims processing functions, and the operations of acquired subsidiaries.

We believe that our facilities are adequate for our present needs in all material respects.

ITEM 3—LEGAL PROCEEDINGS

Reference is made to the litigation matter captioned “Durand Litigation” included in Note 18 - “Commitments and Contingencies – Legal Proceedings” in the Notes to Consolidated Financial Statements.

ITEM 4—MINE SAFETY DISCLOSURES

Not applicable.

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PART II

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

COMMON STOCK AND STOCKHOLDER OWNERSHIP

Our common stock is traded on the New York Stock Exchange under the symbol “THG”. On February 15, 2019, we had approximately 16,781 shareholders of record and 40,573,500 shares of common stock outstanding. On the same date, the trading price of our common stock was \$117.63 per share.

DIVIDENDS

On December 30, 2018, the Board of Directors declared a special dividend of \$4.75 per outstanding share following completion of the sale of the Chaucer business. See Note 2 – “Dispositions of Businesses” in the Notes to Consolidated Financial Statements.

We currently expect that quarterly cash dividends, comparable to what we have paid in the past of \$0.54 per share in the first three quarters of 2018 and \$0.60 per share in the fourth quarter of 2018, will continue to be paid in the future; however, the payment of future quarterly or special dividends on our common stock will be determined by the Board of Directors from time to time based upon cash available at our holding company, our results of operations and financial condition and such other factors as the Board of Directors considers relevant.

Dividends to shareholders may be funded from dividends paid to us from our subsidiaries. Dividends from insurance subsidiaries are subject to restrictions imposed by state insurance laws and regulations. See “Liquidity and Capital Resources” in Management’s Discussion and Analysis of Financial Condition and Note 13 – “Dividend Restrictions” in the Notes to Consolidated Financial Statements.

ISSUER PURCHASES OF EQUITY SECURITIES

In 2005, the Board of Directors first authorized a stock repurchase program which, including subsequent amendments to increase the number of shares subject to repurchase, provided for aggregate repurchases of up to \$900 million. This program was terminated on December 30, 2018 in conjunction with the establishment of the new program discussed below. Prior to termination, total repurchases under this program were 14.9 million shares at a cost of \$811.2 million. The prior share repurchase authorization had a balance of approximately \$89 million when terminated.

On December 30, 2018, the Board of Directors authorized a new stock repurchase program which provides for aggregate repurchases of up to \$600 million. Under the new repurchase authorization, we may repurchase our common stock from time to time, in amounts, at prices, and at times we deem appropriate, subject to market conditions and other considerations. Our repurchases may be executed using open market purchases, privately negotiated transactions, accelerated repurchase programs or other transactions. We are not required to purchase any specific number of shares or to make purchases by any certain date under this program. On January 2, 2019, pursuant to the terms of an accelerated share repurchase agreement, we paid \$250.0 million and received an initial delivery of approximately 1.8 million shares of our common stock, which is approximately 80% of the total number of shares expected to be repurchased under this agreement.

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Shares purchased in the fourth quarter of 2018 are as follows:

PERIOD	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares That May Yet be Purchased Under the Plans or Programs (in millions) (2)
October 1 - 31, 2018 ⁽¹⁾	86,140	\$ 116.52	85,822	\$ 92
November 1 - 30, 2018 ⁽¹⁾	14,899	110.69	14,874	91
December 1 - 31, 2018 ⁽¹⁾	16,730	109.56	16,700	600
Total	117,769	\$ 114.79	117,396	\$ 600

(1) Includes 318, 25 and 30 shares withheld to satisfy tax withholding amounts due from employees related to the receipt of stock which resulted from the exercise or vesting of equity awards for the months ended October 31, November 30 and December 31, 2018, respectively.

(2) As noted above, the Board of Directors authorized a new stock repurchase program which replaced the then existing program. Accordingly, the entire \$600 million authorization is available for repurchases at December 31, 2018.

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ITEM 6 - SELECTED FINANCIAL DATA

FIVE YEAR SUMMARY OF SELECTED FINANCIAL HIGHLIGHTS

YEARS ENDED DECEMBER 31 (in millions, except per share data)	2018	2017	2016	2015	2014
Statements of Income					
Revenues					
Premiums	\$4,254.4	\$3,980.4	\$3,789.5	\$3,653.6	\$3,488.5
Net investment income	267.4	243.9	231.6	231.1	224.3
Net realized investment gains (losses)	(50.7)	21.1	10.2	19.2	29.3
Fees and other income	23.2	22.5	22.6	23.6	23.2
Total revenues	4,494.3	4,267.9	4,053.9	3,927.5	3,765.3
Losses and Expenses					
Losses and loss adjustment expenses	2,724.6	2,579.6	2,546.0	2,367.9	2,294.3
Amortization of deferred acquisition costs	891.8	840.7	803.6	778.0	748.5
Loss on repayment of debt	28.2	—	88.3	24.1	0.1
Other operating expenses	567.2	554.7	550.0	540.8	542.5
Total losses and expenses	4,211.8	3,975.0	3,987.9	3,710.8	3,585.4
Income from continuing operations before income taxes	282.5	292.9	66.0	216.7	179.9
Income tax expense (benefit)	43.5	76.8	(1.0)	59.3	40.9
Income from continuing operations, net of taxes	239.0	216.1	67.0	157.4	139.0
Discontinued Operations:					
Gain from sale of Chaucer business, net of taxes	131.9	—	—	—	—
Income (loss) from Chaucer business, net of taxes	20.0	(13.1)	89.1	173.4	143.3
Income (loss) from discontinued life business, net of taxes	0.1	(16.8)	(1.0)	0.7	(0.3)
Net income	\$391.0	\$186.2	\$155.1	\$331.5	\$282.0
Net income per common share (diluted)	\$9.09	\$4.33	\$3.59	\$7.40	\$6.28
Dividends declared per common share	\$6.97	\$2.04	\$1.88	\$1.69	\$1.52
Balance Sheets (at December 31)					
Total assets	\$12,399.7	\$15,469.6	\$14,220.4	\$13,781.2	\$13,748.9
Debt	777.9	786.9	786.4	803.1	892.7
Total liabilities	9,445.0	12,471.9	11,362.9	10,936.8	10,904.9
Shareholders' equity	2,954.7	2,997.7	2,857.5	2,844.4	2,844.0

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

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INTRODUCTION

The following Management's Discussion and Analysis of Financial Condition and Results of Operations is intended to assist readers in understanding the consolidated results of operations and financial condition of The Hanover Insurance Group, Inc. and its subsidiaries ("THG"). Consolidated results of operations and financial condition are prepared in accordance with generally accepted accounting principles in the United States of America ("U.S. GAAP"). This discussion should be read in conjunction with the Consolidated Financial Statements and related footnotes included elsewhere herein.

Results of operations include the accounts of The Hanover Insurance Company ("Hanover Insurance") and Citizens Insurance Company of America ("Citizens"), our principal property and casualty companies; and certain other insurance and non-insurance subsidiaries. Our results of operations also include the results of our discontinued operations, consisting primarily of our former Chaucer international business, Chaucer Holdings Limited ("Chaucer"), a United Kingdom ("U.K.") domiciled specialist insurance underwriting group which operates through the Society and Corporation of Lloyd's ("Lloyd's"), and the international insurance and non-insurance subsidiaries, which collectively constituted our former Chaucer segment. On December 28, 2018, we completed the sale of Chaucer Holdings Limited, the major portion of our Lloyd's international specialty business. As of December 31, 2018 and for all prior periods presented in this Annual Report on Form 10-K, operations from Chaucer and the related assets and liabilities are presented as discontinued operations. Results of operations also include the discontinued operations of our accident and health and former life insurance businesses.

EXECUTIVE OVERVIEW

Business operations consist of three operating segments: Commercial Lines, Personal Lines and Other.

Net income was \$391.0 million in 2018, compared to \$186.2 million in 2017, an increase of \$204.8 million, primarily due to the gain from the sale of our former Chaucer business and an increase in operating income.

Operating income before interest expense and income taxes (a non-GAAP financial measure; see also "Results of Operations – Consolidated – Non-GAAP Financial Measures") was \$406.5 million in 2018 compared to \$327.3 million in 2017, an increase of \$79.2 million. This increase is primarily due to lower catastrophe losses, higher net investment income, a reduction in reinsurance reinstatement premiums, earned premium growth and lower expenses, partially offset by higher non-catastrophe current accident year losses. Pre-tax catastrophe losses were \$219.2 million in 2018, compared to \$251.5 million in 2017, a decrease of \$32.3 million. Reinsurance reinstatement premium, net of ceding commissions, was a favorable change of \$21.5 million. Net unfavorable development on prior years' loss and loss adjustment expense ("LAE") reserves ("prior years' loss reserves") was \$0.4 million in 2018, compared to \$1.2 million in 2017.

As discussed further in "Discontinued Operations" below, on December 28, 2018, we completed the sale of Chaucer to China Re. We subsequently completed the sale of our Chaucer-related Irish entity on February 14, 2019. The sale of the Australian entities is pending, subject only to local regulatory approval, and is expected to close in the first quarter of 2019. We received \$28 million of additional consideration for the Irish entity, and we expect to receive \$13 million of additional consideration related to the Australian entities.

Commercial Lines

Our account-focused approach to the small commercial market, distinctiveness in the middle market, and continued development of specialty lines provides us with a diversified portfolio of products and delivers significant value to agents and policyholders. Each of these businesses is expected to contribute to premium growth in Commercial Lines over the next several years as we continue to pursue our core strategy of developing strong partnerships with agents, enhanced franchise value through limited distribution, distinctive products and coverages, and continued investment in industry segmentation.

These efforts have driven, and we believe they will continue to drive, improvement in our overall mix of business and our underwriting profitability. Commercial Lines net premiums written grew by 6.0% in 2018, due to growth in small commercial, middle market, and the professional lines within our specialty business. Approximately 4.9% of this growth was due to rate and exposure increases, strong retention and targeted new business expansion, with the balance being attributable to improved reinsurance reinstatement activity.

Underwriting results improved in 2018, as compared to 2017, primarily due to lower catastrophe losses, higher favorable development on prior years' loss reserves, a reduction in reinsurance reinstatement premiums driven by prior year large loss activity, and lower expenses, partially offset by higher non-catastrophe current accident year losses. Catastrophe losses were \$142.3 million in 2018, a decrease of \$28.3 million when compared to 2017. Favorable development on prior years' loss reserve in 2018 was \$34.1 million, compared to \$9.4 million in 2017, an increase of \$24.7 million. Reinsurance reinstatement premium, net of ceding commissions, had an unfavorable impact of \$0.9 million in 2018, compared to \$22.4 million in 2017, a favorable change of \$21.5 million. The competitive nature of the Commercial Lines market requires us to be highly disciplined in our underwriting process to ensure that we write business at acceptable margins, and we continue to seek rate increases across our lines of business.

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Personal Lines

Personal Lines focuses on partnering with high quality, value-oriented agencies that deliver consultative selling and stress the importance of account rounding (the conversion of single policy customers to accounts with multiple policies and additional coverages, to address customers' broader objectives). Approximately 84% of our policies in force are account business. We are focused on seeking profitable growth opportunities, building a distinctive position in the market, and diversifying geographically.

Net premiums written grew by 7.7% in 2018, primarily due to higher renewal premium, driven by rate increases and strong retention, as well as new business growth. Underwriting results declined in 2018, as compared to 2017, primarily due to higher unfavorable development on prior years' loss reserves and higher non-catastrophe current accident year losses, partially offset by earned premium growth, lower catastrophe losses, and lower expenses. We continue to seek rate increases that meet or exceed underlying loss cost trends, subject to regulatory and competitive considerations.

DESCRIPTION OF OPERATING SEGMENTS

Primary business operations include insurance products and services currently provided through three operating segments: Commercial Lines, Personal Lines, and Other. Commercial Lines includes commercial multiple peril, commercial automobile, workers' compensation, and other commercial coverages, such as inland marine, specialty program business, management and professional liability, surety, and specialty property. Personal Lines includes personal automobile, homeowners, and other personal coverages, such as umbrella. Included in the "Other" segment are Opus Investment Management, Inc., which markets investment management services to institutions, pension funds, and other organizations; earnings on holding company assets; holding company and other expenses, including certain costs associated with retirement benefits due to our former life insurance employees and agents; and a run-off voluntary pools business. Due to the sale of Chaucer on December 28, 2018, the operations of Chaucer have been classified as Discontinued Operations for the period ending December 31, 2018. Periods prior to 2018 have also been restated to present Chaucer as a discontinued operation. We present the separate financial information of each segment consistent with the manner in which our chief operating decision maker evaluates results in deciding how to allocate resources and in assessing performance.

We report interest expense on debt separately from the earnings of our operating segments. This consists of interest on our senior debentures, subordinated debentures, and collateralized borrowings with the Federal Home Loan Bank ("FHLB").

RESULTS OF OPERATIONS – CONSOLIDATED

2018 Compared to 2017

Consolidated net income was \$391.0 million in 2018, compared to \$186.2 million in 2017, an increase of \$204.8 million. The year over year comparison of consolidated net income reflects a \$131.9 million gain, net of taxes, on the sale of our Chaucer business. Additionally, operating income before interest expense and income taxes increased \$79.2 million, primarily due to lower catastrophe losses and higher net investment income. Income increased from our discontinued operations, primarily Chaucer and, to a lesser extent, our discontinued life business, which incurred a 2017 reserve charge related to our participation in a long-term care pool (See also "Discontinued Operations" section below). Also, income tax expense on operating income decreased \$20.2 million, driven by a decrease in the U.S. statutory tax rate from 35% to 21% effective January 1, 2018. These increases in net income were partially offset by

net realized and unrealized investment losses, net of taxes, of \$30.9 million in 2018, compared to net realized investment gains, net of taxes, of \$26.2 million in 2017, principally related to reductions in fair value of equity securities. Effective January 1, 2018, we implemented ASU 2016-01, which requires that the changes in fair value of equity securities be presented in net income. Prior to then, these changes were recognized through accumulated other comprehensive income (see also Note 1 – “Summary of Significant Accounting Policies” in the Notes to Consolidated Financial Statements). Net income was also affected by \$22.3 million in losses, net of taxes, associated with the repayment of debt in 2018.

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2017 Compared to 2016

Consolidated net income was \$186.2 million in 2017, compared to \$155.1 million in 2016, an increase of \$31.1 million. Operating income before interest expense and income taxes increased \$134.4 million, primarily attributable to the year-over-year changes in development on prior years' loss reserves. Unfavorable development on prior years' loss reserves was \$1.2 million in 2017 compared to \$235.6 million in 2016. Additionally, our results in 2017 benefitted from improved non-catastrophe current accident year underwriting results and higher investment income. These increases were partially offset by a \$134.4 million increase in current year catastrophe losses. The year over year comparison of consolidated net income was also affected by a \$102.2 million decrease in earnings from the Chaucer business, now reclassified as discontinued operations, from income of \$89.1 million in 2016 to losses of \$13.1 million in 2017, primarily resulting from higher catastrophe losses. Also, consolidated net income in 2016 included a \$57.4 million loss, after taxes, associated with the repayment of debt that did not recur in 2017. These increases in net income were partially offset by increases in 2017 of \$15.8 million of after-tax losses from discontinued life operations, primarily due to an increase in our long-term care pool reserves.

The following table reflects operating income before interest expense and income taxes for each operating segment and a reconciliation to consolidated net income from operating income before interest expense and income taxes (a non-GAAP measure).

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Operating income (loss) before interest expense and income taxes:			
Commercial Lines	\$265.7	\$177.4	\$34.7
Personal Lines	146.2	158.7	177.7
Other	(5.4)	(8.8)	(19.5)
Operating income before interest expense and income taxes	406.5	327.3	192.9
Interest expense on debt	(45.1)	(45.2)	(51.4)
Operating income before income taxes	361.4	282.1	141.5
Income tax expense on operating income	(69.3)	(89.5)	(46.3)
Operating income	292.1	192.6	95.2
Non-operating items:			
Net realized investment gains (losses)	(50.7)	21.1	10.2
Net loss from repayment of debt	(28.2)	—	(88.3)
Other	—	(10.3)	2.6
Income tax benefit on non-operating items	25.8	12.7	47.3
Income from continuing operations, net of taxes	239.0	216.1	67.0
Discontinued operations:			
Gain from sale of Chaucer business, net of taxes	131.9	—	—
Income (loss) from Chaucer business, net of taxes	20.0	(13.1)	89.1
Income (loss) from discontinued life business, net of taxes	0.1	(16.8)	(1.0)
Net income	\$391.0	\$186.2	\$155.1

Non-GAAP Financial Measures

In addition to consolidated net income, discussed above, we assess our financial performance based upon pre-tax "operating income," and we assess the operating performance of each of our three operating segments based upon the

pre-tax operating income (loss) generated by each segment. As reflected in the table above, operating income before taxes excludes interest expense on debt and certain other items which we believe are not indicative of our core operations, such as net realized investment gains and losses. Such gains and losses are excluded since they are determined by interest rates, financial markets and the timing of sales. Also, operating income before taxes excludes net gains and losses on disposals of businesses, gains and losses related to the repayment of debt, discontinued operations, costs to acquire businesses, restructuring costs, the cumulative effect of accounting changes and certain other items. Although the items excluded from operating income before taxes are important components in understanding and assessing our overall financial performance, we believe a discussion of operating income before taxes enhances an investor's understanding of our results of operations by highlighting net income attributable to the core operations of the business. However, operating income before taxes, which is a non-GAAP measure, should not be construed as a substitute for income before income taxes, and operating income should not be construed as a substitute for net income.

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Catastrophe losses and prior years' reserve development are significant components in understanding and assessing the financial performance of our business. Management reviews and evaluates catastrophes and prior years' reserve development separately from the other components of earnings. References to "current accident year underwriting results" exclude prior accident year reserve development, and may also be presented, "excluding catastrophes". Prior years' reserve development and catastrophes are not predictable as to timing or the amount that will affect the results of our operations and have an effect on each year's operating and net income. Management believes that providing certain financial metrics and trends excluding the effects of catastrophes and prior years' reserve development helps investors to understand the variability in periodic earnings and to evaluate the underlying performance of our operations. Discussion of catastrophe losses in this Management's Discussion and Analysis of Financial Condition includes development on prior years' catastrophe reserves and, unless otherwise indicated, such development is excluded from discussions of prior year loss and LAE reserve development.

RESULTS OF OPERATIONS - SEGMENTS

The following is our discussion and analysis of the results of operations by business segment. The operating results are presented before interest expense, taxes and other items which management believes are not indicative of our core operations, including realized gains and losses and the results of discontinued operations.

The following table summarizes the results of operations for the periods indicated:

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Operating revenues			
Net premiums written	\$4,384.8	\$4,109.1	\$3,882.7
Net premiums earned	\$4,254.4	\$3,980.4	\$3,789.5
Net investment income	267.4	243.9	231.6
Other income	23.2	22.5	22.6
Total operating revenues	4,545.0	4,246.8	4,043.7
Losses and operating expenses			
Losses and LAE	2,724.6	2,574.9	2,546.0
Amortization of deferred acquisition costs	891.8	840.7	803.6
Other operating expenses	522.1	503.9	501.2
Total losses and operating expenses	4,138.5	3,919.5	3,850.8
Operating income before interest expense and income taxes	\$406.5	\$327.3	\$192.9

2018 Compared to 2017

Operating income before interest expense and income taxes was \$406.5 million for the year ended December 31, 2018, compared to \$327.3 million for the year ended December 31, 2017, an increase of \$79.2 million. This increase was primarily due to lower catastrophe losses, higher net investment income, a favorable change in reinsurance reinstatement premiums driven by prior year large loss activity, earned premium growth and lower expenses, partially offset by higher non-catastrophe current accident year losses.

Net premiums written increased by \$275.7 million for the year ended December 31, 2018, compared to the year ended December 31, 2017, due to growth in both our Commercial and Personal Lines segments.

2017 Compared to 2016

Operating income before interest expense and income taxes was \$327.3 million for the year ended December 31, 2017, compared to \$192.9 million for the year ended December 31, 2016, an increase of \$134.4 million. This increase was primarily due to a favorable change in development on prior years' loss reserves, partially offset by higher catastrophe losses. Unfavorable development on prior years' loss reserves was \$1.2 million for the year ended December 31, 2017, compared to unfavorable development of \$235.6 million for the year ended December 31, 2016, a favorable change of \$234.4 million. In 2016, we recognized a reserve charge of \$174.1 million following the 2016 fourth quarter reserve review. Catastrophe-related activity for the year ended December 31, 2017 was \$251.5 million, compared to \$117.1 million for the year ended December 31, 2016, an increase of \$134.4 million. This increase in catastrophe losses was primarily due to hurricanes Harvey, Irma and Maria that occurred in the third quarter of 2017, the California wildfires that occurred in the fourth quarter of 2017, and a Midwest wind event that occurred in the first quarter of 2017.

Net premiums written increased by \$226.4 million for the year ended December 31, 2017, compared to the year ended December 31, 2016, due to growth in both our Personal and Commercial Lines segments.

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PRODUCTION AND UNDERWRITING RESULTS

The following table summarizes premiums written on a gross and net basis, net premiums earned and loss (including catastrophe losses), LAE, expense and combined ratios for the Commercial Lines and Personal Lines segments. Loss, LAE, catastrophe loss and combined ratios shown below include prior year reserve development. These items are not meaningful for our Other segment.

YEAR ENDED DECEMBER 31, 2018							
	Gross	Net	Net				
	Premiums	Premiums	Premiums	Catastrophe	Loss &	Expense	Combined
(dollars in millions)	Written	Written	Earned	Loss Ratios	LAE Ratios	Ratios	Ratios
Commercial Lines	\$2,968.1	\$2,610.7	\$2,548.4	5.6	61.5	34.9	96.4
Personal Lines	1,875.6	1,774.1	1,706.0	4.5	67.7	27.8	95.5
Total	\$4,843.7	\$4,384.8	\$4,254.4	5.2	64.0	32.1	96.1

YEAR ENDED DECEMBER 31, 2017							
	Gross	Net	Net				
	Premiums	Premiums	Premiums	Catastrophe	Loss &	Expense	Combined
(dollars in millions)	Written	Written	Earned	Loss Ratios	LAE Ratios	Ratios	Ratios
Commercial Lines	\$2,826.8	\$2,462.0	\$2,399.6	7.1	63.7	35.6	99.3
Personal Lines	1,736.7	1,647.1	1,580.8	5.1	66.1	28.0	94.1
Total	\$4,563.5	\$4,109.1	\$3,980.4	6.4	64.7	32.6	97.3

YEAR ENDED DECEMBER 31, 2016							
	Gross	Net	Net				
	Premiums	Premiums	Premiums	Catastrophe	Loss &	Expense	Combined
(dollars in millions)	Written	Written	Earned	Loss Ratios	LAE Ratios	Ratios	Ratios
Commercial Lines	\$2,686.2	\$2,361.5	\$2,318.0	3.0	69.1	36.0	105.1
Personal Lines	1,604.6	1,521.2	1,471.5	3.2	63.6	28.7	92.3
Total	\$4,290.8	\$3,882.7	\$3,789.5	3.1	67.2	33.2	100.4

The following table summarizes net premiums written, and loss and LAE and catastrophe loss ratios by line of business for the Commercial Lines and Personal Lines segments. Loss and LAE and catastrophe loss ratios include prior year reserve development.

YEAR ENDED DECEMBER 31,
2018
Net

	Premiums	Loss &	Catastrophe
(dollars in millions)	Written	LAE Ratios	Loss Ratios
Commercial Lines:			
Commercial multiple peril	\$861.4	66.4	10.7
Commercial automobile	344.8	79.9	0.8
Workers' compensation	317.1	51.0	—
Other commercial	1,087.4	54.9	4.7
Total Commercial Lines	2,610.7	61.5	5.6
Personal Lines:			
Personal automobile	1,127.5	72.0	0.5
Homeowners	604.0	61.2	12.1
Other personal	42.6	48.1	2.2
Total Personal Lines	1,774.1	67.7	4.5
Total	\$4,384.8	64.0	5.2

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	YEAR ENDED DECEMBER 31, 2017		
	Premiums Loss &		Catastrophe
(dollars in millions)	Written	LAE Ratios	Loss Ratios
Commercial Lines:			
Commercial multiple peril	\$815.3	66.2	11.8
Commercial automobile	322.7	70.6	1.4
Workers' compensation	311.1	58.6	—
Other commercial	1,012.9	61.1	7.3
Total Commercial Lines	2,462.0	63.7	7.1
Personal Lines:			
Personal automobile	1,041.6	70.7	0.6
Homeowners	566.9	59.8	13.5
Other personal	38.6	35.9	1.8
Total Personal Lines	1,647.1	66.1	5.1
Total	\$4,109.1	64.7	6.4

	YEAR ENDED DECEMBER 31, 2016		
	Premiums Loss &		Catastrophe
(dollars in millions)	Written	LAE Ratios	Loss Ratios
Commercial Lines:			
Commercial multiple peril	\$792.9	66.7	5.8
Commercial automobile	307.1	78.6	0.8
Workers' compensation	285.6	50.6	—
Other commercial	975.9	73.2	2.4
Total Commercial Lines	2,361.5	69.1	3.0
Personal Lines:			
Personal automobile	953.6	72.2	0.6
Homeowners	529.7	49.9	7.8
Other personal	37.9	43.8	2.9
Total Personal Lines	1,521.2	63.6	3.2
Total	\$3,882.7	67.2	3.1

The following table summarizes GAAP underwriting results for the Commercial Lines, Personal Lines, and Other segments and reconciles them to operating income (loss) before interest expense and income taxes.

(in millions)	YEAR ENDED DECEMBER 31, 2018			
	Commercial	Personal	Other	Total
Underwriting profit (loss), excluding prior year reserve				
development and catastrophes	\$ 193.2	\$ 176.8	\$(3.0)	\$ 367.0
Prior year favorable (unfavorable) loss and LAE reserve				
development on non-catastrophe losses	34.1	(33.3)	(1.2)	(0.4)
Prior year favorable catastrophe development	6.8	2.5	—	9.3
Current year catastrophe losses	(149.1)	(79.4)	—	(228.5)
Underwriting profit (loss)	85.0	66.6	(4.2)	147.4
Net investment income	182.2	73.7	11.5	267.4
Fees and other income	8.9	11.6	2.7	23.2
Other operating expenses	(10.4)	(5.7)	(15.4)	(31.5)
Operating income (loss) before interest expense and income taxes	\$ 265.7	\$ 146.2	\$(5.4)	\$ 406.5

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(in millions)	YEAR ENDED DECEMBER 31, 2017			
	Commercial Lines	Personal Lines	Other	Total
Underwriting profit (loss), excluding prior year reserve				
development and catastrophes	\$ 173.4	\$ 174.0	\$(3.0)	\$344.4
Prior year favorable (unfavorable) loss and LAE reserve				
development on non-catastrophe losses	9.4	(9.4)	(1.2)	(1.2)
Prior year favorable catastrophe development	1.4	—	—	1.4
Current year catastrophe losses	(172.0)	(80.9)	—	(252.9)
Underwriting profit (loss)	12.2	83.7	(4.2)	91.7
Net investment income	165.8	70.1	8.0	243.9
Fees and other income	8.4	11.4	2.7	22.5
Other operating expenses	(9.0)	(6.5)	(15.3)	(30.8)
Operating income (loss) before interest expense and income taxes	\$ 177.4	\$ 158.7	\$(8.8)	\$327.3

(in millions)	YEAR ENDED DECEMBER 31, 2016			
	Commercial Lines	Personal Lines	Other	Total
Underwriting profit (loss), excluding prior year reserve				
development and catastrophes	\$ 169.9	\$ 154.4	\$(1.6)	\$322.7
Prior year (unfavorable) favorable loss and LAE reserve				
development on non-catastrophe losses	(223.0)	(4.3)	(8.3)	(235.6)
Prior year favorable (unfavorable) catastrophe development	3.7	(6.3)	—	(2.6)
Current year catastrophe losses	(73.8)	(40.7)	—	(114.5)
Underwriting (loss) profit	(123.2)	103.1	(9.9)	(30.0)
Net investment income	158.5	69.5	3.6	231.6
Fees and other income	8.5	11.4	2.7	22.6
Other operating expenses	(9.1)	(6.3)	(15.9)	(31.3)
Operating income (loss) before interest expense and income taxes	\$ 34.7	\$ 177.7	\$(19.5)	\$192.9

2018 Compared to 2017

Commercial Lines

Commercial Lines net premiums written were \$2,610.7 million for the year ended December 31, 2018, compared to \$2,462.0 million for the year ended December 31, 2017. This \$148.7 million increase was primarily driven by pricing increases, strong retention, and targeted new business expansion, in addition to reductions in reinstatement premiums.

Reinsurance reinstatements were \$0.5 million unfavorable in 2018 compared to \$27.8 million unfavorable in 2017. The year over year favorable change was \$27.3 million due to several 2017 large losses above our retention level in our surety, inland marine and commercial multiple peril lines. The reinstatement premiums represent the pro-rata reinsurance premium charged for reinstating the amount of reinsurance coverage utilized as a result of the incurred losses that are reimbursable under our reinsurance treaties. See the Glossary of Selected Insurance Terms – “Reinstatement premium”.

Commercial Lines underwriting profit for the year ended December 31, 2018 was \$85.0 million, compared to \$12.2 million for the year ended December 31, 2017, a change of \$72.8 million. Catastrophe-related losses for the year ended December 31, 2018 were \$142.3 million, compared to \$170.6 million for the year ended December 31, 2017, a decrease of \$28.3 million. Favorable development on prior years’ loss reserves for the year ended December 31, 2018 was \$34.1 million, compared to \$9.4 million for the year ended December 31, 2017, a favorable change of \$24.7 million.

Commercial Lines current accident year underwriting profit, excluding catastrophes, was \$193.2 million for the year ended December 31, 2018, compared to \$173.4 million for the year ended December 31, 2017. This \$19.8 million improvement was primarily due to the reduction in large loss-related reinsurance reinstatement premiums, lower expenses and earned premium growth, partially offset by higher non-catastrophe current accident year losses. The reduction in reinsurance reinstatement premiums, net of ceding commissions, increased non-catastrophe current accident year underwriting profit by \$21.5 million compared to the prior year. The higher non-catastrophe current accident year losses were driven by large property loss activity in our commercial multiple peril line and higher loss activity in our commercial automobile liability line, partially offset by lower loss activity in our other commercial lines.

We are continuing our efforts to improve underwriting results through increased rates, pricing segmentation, specific underwriting actions and targeted new business growth. Our ability to achieve overall rate increases is affected by the current competitive pricing

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environment, particularly within our workers' compensation line, as well as for larger middle market accounts, which may hamper our ability to grow in this portion of our business.

Personal Lines

Personal Lines net premiums written were \$1,774.1 million for the year ended December 31, 2018, compared to \$1,647.1 million for the year ended December 31, 2017, an increase of \$127.0 million. This was primarily due to higher renewal premium driven by rate increases and strong retention, as well as new business growth.

Net premiums written in the personal automobile line of business for the year ended December 31, 2018 were \$1,127.5 million, compared to \$1,041.6 million for the year ended December 31, 2017, an increase of \$85.9 million. This increase was primarily due to rate increases and an increase in policies in force of 2.5%. Net premiums written in the homeowners line of business for the year ended December 31, 2018 were \$604.0 million, compared to \$566.9 million for the year ended December 31, 2017, an increase of \$37.1 million. This is attributable to rate increases and an increase in policies in force of 3.0%.

Personal Lines underwriting profit for the year ended December 31, 2018 was \$66.6 million, compared to \$83.7 million for the year ended December 31, 2017, a decline of \$17.1 million. Catastrophe losses for the year ended December 31, 2018 were \$76.9 million, compared to \$80.9 million for the year ended December 31, 2017, a decrease of \$4.0 million. Unfavorable development on prior years' loss reserves for the year ended December 31, 2018 was \$33.3 million, compared to \$9.4 million for the year ended December 31, 2017, an increase of \$23.9 million.

Personal Lines current accident year underwriting profit, excluding catastrophes, was \$176.8 million in the year ended December 31, 2018, compared to \$174.0 million for the year ended December 31, 2017. This \$2.8 million increase was primarily a result of earned premium growth and lower expenses, partially offset by higher non-catastrophe current accident year losses. This increase in losses was driven by higher homeowners property losses, partly due to large losses and non-catastrophe weather activity, higher personal automobile bodily injury loss severity and, to a lesser extent, higher personal automobile property losses.

We have been able to obtain rate increases in our Personal Lines markets and believe that our ability to obtain these increases will continue. However, our ability to maintain Personal Lines net premiums written may be affected by price competition, and regulatory and legal developments. Additionally, these factors along with weather-related loss volatility may also affect our ability to maintain and improve underwriting results. We monitor these trends and consider them in our rate actions.

Other

Other operating losses were \$5.4 million for the year ended December 31, 2018, compared to \$8.8 million for the year ended December 31, 2017, an improvement of \$3.4 million, primarily due to higher net investment income.

2017 Compared to 2016

Commercial Lines

Commercial Lines net premiums written were \$2,462.0 million for the year ended December 31, 2017, compared to \$2,361.5 million for the year ended December 31, 2016. This \$100.5 million increase was due to growth of \$117.4 million, primarily driven by pricing increases, strong retention, and targeted new business expansion, partially offset

by a \$16.9 million increase in reinsurance reinstatement premiums driven by large property losses in our inland marine and commercial multiple peril lines.

Commercial Lines underwriting profit for the year ended December 31, 2017 was \$12.2 million, compared to underwriting loss of \$123.2 million for the year ended December 31, 2016, a change of \$135.4 million. Favorable development on prior years' loss reserves for the year ended December 31, 2017 was \$9.4 million, compared to unfavorable development of \$223.0 million for the year ended December 31, 2016, a favorable change of \$232.4 million, primarily due to the aforementioned reserve charge following our 2016 fourth quarter reserve review. Catastrophe-related losses for the year ended December 31, 2017 were \$170.6 million, compared to \$70.1 million for the year ended December 31, 2016, an increase of \$100.5 million. This increase is primarily due to hurricanes Harvey and Irma that occurred in the third quarter, the California wildfires that occurred in the fourth quarter, and a large Midwest hail event that occurred in the second quarter.

Commercial Lines current accident year underwriting profit, excluding catastrophes, was \$173.4 million for the year ended December 31, 2017, compared to \$169.9 million for the year ended December 31, 2016. This \$3.5 million improvement was primarily due to lower losses in our workers' compensation line, lower expenses and premium growth, partially offset by higher large losses and the increase in reinstatement premiums. The impact of additional reinstatement premiums, net of ceding commissions, decreased 2017 current accident year underwriting profit by \$12.0 million from 2016 levels.

Personal Lines

Personal Lines net premiums written were \$1,647.1 million for the year ended December 31, 2017, compared to \$1,521.2 million for the year ended December 31, 2016, an increase of \$125.9 million. This was primarily due to higher renewal premium driven by rate increases and improved retention, as well as new business growth.

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Net premiums written in the personal automobile line of business for the year ended December 31, 2017 were \$1,041.6 million, compared to \$953.6 million for the year ended December 31, 2016, an increase of \$88.0 million. This increase was primarily due to rate increases and an increase in policies in force of 3.8%. Net premiums written in the homeowners line of business for the year ended December 31, 2017 were \$566.9 million, compared to \$529.7 million for the year ended December 31, 2016, an increase of \$37.2 million. This is attributable to rate increases and an increase in policies in force of 4.0%.

Personal Lines underwriting profit for the year ended December 31, 2017 was \$83.7 million, compared to \$103.1 million for the year ended December 31, 2016, a decline of \$19.4 million. Catastrophe losses for the year ended December 31, 2017 were \$80.9 million, compared to \$47.0 million for the year ended December 31, 2016, an increase of \$33.9 million. This increase is primarily due to a large Midwest wind event that occurred in the first quarter of 2017. Unfavorable development on prior years' loss reserves for the year ended December 31, 2017 was \$9.4 million, compared to \$4.3 million for the year ended December 31, 2016, an increase of \$5.1 million.

Personal Lines current accident year underwriting profit, excluding catastrophes, was \$174.0 million in the year ended December 31, 2017, compared to \$154.4 million for the year ended December 31, 2016. This \$19.6 million increase was primarily a result of earned premium growth and lower expenses. Also, higher current accident year losses in our homeowners line were substantially offset by lower losses in our personal automobile line.

Other

Other operating losses were \$8.8 million for the year ended December 31, 2017, compared to \$19.5 million for the year ended December 31, 2016, an improvement of \$10.7 million, primarily due to 2016 unfavorable prior year reserve development in our run-off voluntary pools business (See "2016 Loss and LAE Development, excluding catastrophes" section below for further discussion).

RESERVE FOR LOSSES AND LOSS ADJUSTMENT EXPENSES

Overview of Loss Reserve Estimation Process

We maintain reserves for our property and casualty products to provide for our ultimate liability for losses and loss adjustment expenses (our "loss reserves") with respect to reported and unreported claims incurred as of the end of each accounting period. These reserves are estimates, taking into account past loss experience, modified for current trends, as well as prevailing economic, legal and social conditions. Loss reserves represent our largest liability.

Management's process for establishing loss reserves is a comprehensive process that involves input from multiple functions throughout our organization, including actuarial, finance, claims, legal, underwriting, distribution and business operations management. The process incorporates facts currently known, as well as the current, and in some cases, the anticipated, state of the law and coverage litigation. Based on information currently available, we believe that the aggregate loss reserves at December 31, 2018 were adequate to cover claims for losses that had occurred as of that date, including both those known to us and those yet to be reported. However, as described below, there are significant uncertainties inherent in the loss reserving process. Our estimate of the ultimate liability for losses that had occurred as of December 31, 2018 is expected to change in future periods as we obtain further information, and such changes could have a material effect on our results of operations and financial position.

Our loss reserves include case estimates for claims that have been reported and estimates for claims that have been incurred but not reported ("IBNR") at the balance sheet date. They also include estimates of the expenses associated

with processing and settling all reported and unreported claims, less estimates of anticipated salvage and subrogation recoveries. Our property and casualty loss reserves are not discounted to present value.

Case reserves are established by our claim personnel individually on a claim by claim basis and based on information specific to the occurrence and terms of the underlying policy. For some classes of business, average case reserves are used initially. Case reserves are periodically reviewed and modified based on new or additional information pertaining to the claim.

Our ultimate IBNR reserves are estimated by management and our reserving actuaries on an aggregate basis for each line of business or coverage for loss and loss expense liabilities not reflected within the case reserves. The sum of the case reserves and the IBNR reserves represents our estimate of total unpaid losses and loss adjustment expenses.

We regularly review our loss reserves using a variety of industry accepted analytical techniques. We update the loss reserves as historical loss experience develops, additional claims are reported and resolved and new information becomes available. Net changes in loss reserves are reflected in operating results in the period in which the reserves are changed.

The IBNR reserve includes a provision for claims that have occurred but have not yet been reported to us, some of which may not yet be known to the insured, as well as a provision for future development on reported claims. IBNR represents a significant proportion of our total net loss reserves, particularly for long-tail liability classes. In fact, approximately 48% of our aggregate net loss reserves at December 31, 2018 were for IBNR losses and loss expenses.

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Critical Judgments and Key Assumptions

We determine the amount of our loss reserves based on an estimation process that is complex and considers information from both company specific and industry data, as well as general economic and other information. The estimation process utilizes a combination of objective and subjective information, the blending of which requires significant professional judgment. There are various assumptions required, including future trends in frequency and severity of claims, operational changes in claim handling and case reserving practices, and trends related to general economic and social conditions. Informed judgments as to our ultimate exposure to losses are an integral component of our loss reserve estimation process.

Given the inherent complexity of our loss reserve estimation process and the potential variability of the assumptions used, the actual emergence of losses will vary, perhaps substantially, from the estimate of losses included in our financial statements, particularly in those instances where settlements or other claim resolutions do not occur until well into the future. Our net loss reserves at December 31, 2018 were \$3.8 billion. Therefore, a relatively small percentage change in the estimate of net loss reserves would have a material effect on our results of operations.

There is greater inherent uncertainty in estimating insurance reserves for certain types of property and casualty insurance lines, particularly liability lines, where a longer period of time may elapse before a definitive determination of ultimate liability and losses may be made. In addition, the technological, judicial, regulatory and political climates involving these types of claims are continuously evolving. There is also greater uncertainty in establishing reserves with respect to business that is new to us, particularly new business which is generated with respect to newly introduced product lines, by newly appointed agents or in geographies in which we have less experience in conducting business. In such cases, there is less historical experience or knowledge and less data upon which we can rely. A combination of business that is both new to us and has longer development periods provides even greater uncertainty in estimating insurance reserves. In our management and professional liability lines, we are modestly increasing, and expect to continue to increase, our exposure to longer-tailed liability lines, including directors and officers liability, errors and omissions liability and product liability coverages. In addition, in recent periods we have experienced extensions of the “tails” in certain lines of business as the full value of claims are presented later than had been our historical experience.

We regularly update our reserve estimates as new information becomes available and additional events occur which may impact the resolution of unsettled claims. Reserve adjustments are reflected in the results of operations as adjustments to losses and LAE. Often, these adjustments are recognized in periods subsequent to the period in which the underlying policy was written and the loss event occurred. When these types of subsequent adjustments affect prior years, they are described separately as “prior year reserve development”. Such development can be either favorable or unfavorable to our financial results and may vary by line of business. As discussed below, estimated loss and LAE reserves for claims occurring in prior years, in the aggregate, developed unfavorably by \$0.4 million, \$1.2 million and \$235.6 million for the years ended December 31, 2018, 2017, and 2016, respectively, although there was considerable variance by line of business. Additionally, our estimated loss and LAE reserves for catastrophe claims occurring in prior years developed favorably by \$9.3 million, favorably by \$1.4 million, and unfavorably by \$2.6 million for the years ended December 31, 2018, 2017, and 2016, respectively. There can be no assurance that current loss and LAE reserves will be sufficient.

We regularly review our reserving techniques, our overall reserving position and our reinsurance. Based on (i) our review of historical data, legislative enactments, judicial decisions, legal developments in impositions of damages and policy coverage, political attitudes and trends in general economic conditions, (ii) our review of per claim information, (iii) our historical loss experience and that of the industry, (iv) the nature of policies written by us, and (v) our internal

estimates of required reserves, we believe that adequate provision has been made for loss reserves. However, establishment of appropriate reserves is an inherently uncertain process, and there can be no certainty that current established reserves will prove adequate in light of subsequent actual experience. A significant change to the estimated reserves could have a material impact on our results of operations and financial position. An increase or decrease in reserve estimates would result in a corresponding decrease or increase in financial results. For example, each one percentage point change in the aggregate loss and LAE ratio resulting from a change in reserve estimation is currently projected to have an approximate \$43 million impact on operating income, based on 2018 full year premiums.

The major causes of material uncertainty relating to ultimate losses and LAE (“risk factors”) generally vary for each line of business, as well as for each separately analyzed component of the line of business. In some cases, such risk factors are explicit assumptions of the estimation method and in others, they are implicit. For example, a method may explicitly assume that a certain percentage of claims will close each year, but will implicitly assume that the legal interpretation of existing contract language will remain substantially unchanged. Actual results will likely vary from expectations for each of these assumptions, resulting in an ultimate claim liability that is different from that being estimated currently.

Some risk factors affect multiple lines of business. Examples include changes in claim handling and claim reserving practices, changes in claim settlement patterns, regulatory and legislative actions, court actions, timeliness of claim reporting, state mix of claimants, and degree of claimant fraud. Additionally, there is also a higher degree of uncertainty due to growth in our newly acquired businesses, with respect to which we have less familiarity and, in some cases, limited historical claims experience. The extent of the impact of a risk factor will also vary by components within a line of business. Individual risk factors are subject to interactions with other risk factors within line of business components. Thus, risk factors can have offsetting or compounding effects on required reserves.

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Inflation generally increases the cost of losses covered by insurance contracts. The effect of inflation varies by product. Our property and casualty insurance premiums are established before the amount of losses and LAE and the extent to which inflation may affect such expenses are known. Consequently, we attempt, in establishing rates and reserves, to anticipate the potential impact of inflation in the projection of ultimate costs. For example, we monitor and continue to experience increases in medical costs, wages and legal costs, which are key considerations in setting reserve assumptions for workers' compensation, bodily injury and other liability lines. We are also monitoring the continued advancements in technology and design found in automobiles and homes and the increased claims settlement costs that result from repairs or replacement of such equipment. Estimated increases are reflected in our current reserve estimates, but continued increases are expected to contribute to increased losses and LAE in the future.

We are also defendants in various litigation matters, including putative class actions, which may seek punitive damages, bad faith or extra-contractual damages, legal fees and interest, or claim a broader scope of policy coverage or settlement and payment obligations than our interpretation. Resolution of these cases are often highly unpredictable and could involve material unanticipated damage awards. We have experienced, and others in the industry have reported, increased attorney involvement in claims, delayed submissions of medical and other expense claims, and a trend toward higher valued settlements and litigation, all of which contribute to uncertainty regarding reserve estimates.

Loss and LAE Reserves by Line of Business

Reserving Process Overview

Our loss reserves include amounts related to short-tail and long-tail classes of business. "Tail" refers to the time period between the occurrence of a loss and the final settlement of the claim. The longer the time span between the incidence of a loss and the settlement of the claim (i.e., a longer tail), the more the ultimate settlement amount may likely vary from our original estimate.

Short-tail classes consist principally of automobile physical damage, homeowners property, commercial property and marine business. For these property coverages, claims are generally reported and settled shortly after the loss occurs because the claims relate to tangible property and are more likely to be discovered shortly after the loss occurs. Consequently, the estimation of loss reserves for these classes is generally less complex.

While we estimate that a majority of our written premium is in what we would characterize as shorter-tailed classes of business, most of our loss reserves relate to longer-tail liability classes of business. Long-tailed classes include commercial liability, automobile liability, workers' compensation and other types of third-party coverage. For many liability claims, significant periods of time, ranging up to several years or more, may elapse between the occurrence of the loss, the discovery and reporting of the loss to us and the settlement of the claim. As a result, loss experience in the more recent accident years for long-tailed liability coverage has limited statistical credibility because a relatively small proportion of losses in these accident years (the calendar years in which losses are incurred) are reported claims and an even smaller proportion are paid losses. Liability claims are also more susceptible to litigation and can be significantly affected by changing contract interpretations, the legal, political and social environment, the risk and expense of protracted litigation and inflation. Consequently, the estimation of loss reserves for these coverages is more complex and typically subject to a higher degree of variability and uncertainty compared to short-tailed coverages.

Most of our indirect business from our run-off voluntary and ongoing involuntary pools is assumed long-tailed casualty reinsurance. Reserve estimates for this business are therefore subject to the variability caused by extended

loss emergence periods. The estimation of loss reserves for this business is further complicated by delays between the time the claim is reported to the ceding insurer and when it is reported by the ceding insurer to the pool manager and then to us, and by our dependence on the quality and consistency of the loss reporting by the ceding company and actuarial estimates by the pool manager. These reserving factors also apply to our discontinued assumed accident and health reinsurance pools and arrangements that are included in our liabilities of discontinued life business (See “Risk Factors” in Part I – Item 1A for further discussion).

A review of loss reserves for each of the classes of business which we write is conducted regularly, generally quarterly. This review process takes into consideration a variety of trends that impact the ultimate settlement of claims. Where appropriate, the review includes a review of overall payment patterns and the emergence of paid and reported losses relative to expectations.

The loss reserve estimation process relies on the basic assumption that past experience, adjusted for the effects of current developments and likely trends, is an appropriate basis for predicting future outcomes. As part of this process, we use a variety of analytical methods that consider experience, trends and other relevant factors. IBNR reserves are generally calculated by first projecting the ultimate cost of all claims that have been reported or expected to be reported in the future and then subtracting reported losses and loss expenses. Reported losses include cumulative paid losses and loss expenses plus case reserves. Within the loss reserving process, standard actuarial methods which include: (1) loss development factor methods; (2) expected loss methods (Bornheutter-Ferguson); and (3) adjusted loss methods (Berquist-Sherman), are given due consideration. These methods are described below:

Loss development factor methods generally assume that the losses yet to emerge for an accident year are proportional to the paid or reported loss amount observed to date. Historical patterns of the development of paid and reported losses by

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accident year can be predictive of the expected future patterns that are applied to current paid and reported losses to generate estimated ultimate losses by accident year.

Bornheutter-Ferguson methods utilize the product of the expected ultimate losses times the proportion of ultimate losses estimated to be unreported or unpaid to calculate IBNR. The expected ultimate losses are based upon current estimates of ultimate losses from prior accident years, adjusted to reflect expected earned premium, current rating, claims cost levels and changes in business mix. The expected losses, and corresponding loss ratios, are a critical component of Bornheutter-Ferguson methodologies and provide a general reasonability guide.

Berquist-Sherman methods are used for estimating reserves in business lines where historical development patterns may be deemed less reliable for more recent accident years' ultimate losses. Under these methods, patterns of historical paid or reported losses are first adjusted to reflect current payment settlement patterns and case reserve adequacy and then evaluated in the same manner as the loss development factor methods described above. When the adequacy of case reserves change, the Berquist-Sherman incurred method may be deemed more reliable than the reported loss development factor method. Likewise, when the settlement patterns change, the Berquist-Sherman paid method may be deemed more reliable than the paid loss development factor method.

In addition to the methods described above, various tailored reserving methodologies are used for certain businesses. For example, for some low volume and high volatility classes of business, special reserving techniques are utilized that estimate IBNR by selecting the loss ratio that balances actual reported losses to expected reported losses as defined by the estimated underlying reporting pattern. Also, for some classes with long exposure periods (e.g., construction defect, engineering and surety), earnings patterns plus an estimated reporting lag applied to the Bornheutter-Ferguson initial expected loss ratio are used to estimate IBNR. This is done in order to reflect the changing average exposure periods by policy year (and consequently accident year).

In completing the loss reserve analysis, a variety of assumptions must be made for each line of business, coverage and accident year. Each estimation method has its own pattern, parameter and/or judgmental dependencies, with no estimation method being better than the others in all situations. The relative strengths and weaknesses of the various estimation methods, when applied to a particular class of business, can also change over time, depending on the underlying circumstances. In many cases, multiple estimation methods will be valid for the particular facts and circumstances of the relevant class of business. The manner of application and the degree of reliance on a given method will vary by line of business and coverage, and by accident year based on an evaluation of the above dependencies and the potential volatility of the loss frequency and severity patterns. The estimation methods selected or given weight at a particular valuation date are those that are believed to produce the most reliable indication for the loss reserves being evaluated. Selections incorporate input from claims personnel, pricing actuaries, and underwriting management on loss cost trends and other factors that could affect ultimate losses.

For most classes of shorter-tailed business in our Commercial and Personal Lines segments, the emergence of paid and incurred losses generally exhibits a relatively stable pattern of loss development from one accident year to the next. Thus, for these classes, the loss development factor method is generally appropriate. For many of the classes of shorter-tailed business, the emergence of paid and incurred losses may exhibit a relatively volatile pattern of loss development from one accident year to the next. In certain cases where there is a relatively low level of reliability placed on the available paid and incurred loss data, expected loss methods or adjusted loss methods are considered appropriate for the most recent accident year.

For longer-tailed lines of business, applying the loss development factor method often requires even more judgment in selecting development factors, as well as more significant extrapolation. For those long-tailed lines of business with high frequency and relatively low per-loss severity (e.g., personal automobile liability), volatility will often be sufficiently modest for the loss development factor method to be given significant weight, even in the most recent accident years, but expected loss methods and adjusted loss methods are always considered and frequently utilized in

the selection process. For those long-tailed lines of business with low frequency and high loss potential (e.g., commercial general liability), anticipated loss experience is less predictable because of the small number of claims and erratic claim severity patterns. In these situations, the loss development factor methods may not produce a reliable estimate of ultimate losses in the most recent accident years since many claims either have not yet been reported or are only in the early stages of the settlement process. Therefore, the loss reserve estimates for these accident years may be based on methods less reliant on extrapolation, such as Bornheutter-Ferguson. Over time, as a greater number of claims are reported and the statistical credibility of loss experience increases, loss development factor methods or adjusted loss methods are given increasing weight.

Management endeavors to apply as much available data as practicable to estimate the loss reserve amount for each line of business, coverage and accident year, utilizing varying assumptions, projections and methods. The ultimate outcome is likely to fall within a range of potential outcomes around this loss reserve estimated amount.

Our carried reserves for each line of business and coverage are determined based on the quarterly loss reserving process. In making the determination, we consider numerous quantitative and qualitative factors. Quantitative factors include changes in reserve estimates in the period, the maturity of the accident year, trends observed over the recent past, the level of volatility within a particular class of business, the estimated effects of reinsurance, including reinstatement premiums, general economic trends, and other factors. Qualitative factors may include legal and regulatory developments, changes in claim handling and case reserving practices, recent

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entry into new markets or products, changes in underwriting practices or business mix, concerns that we do not have sufficient or quality historical reported and paid loss and LAE information with respect to a particular line or segment of our business, effects of the economy and political outlook, perceived anomalies in the historical results, evolving trends or other factors. In doing so, we must evaluate whether a change in the data represents credible actionable information or an anomaly. Such an assessment requires considerable judgment. Even if a change is determined to be apparent, it is not always possible to determine the extent of the change. As a result, there can be a time lag between the emergence of a change and a determination that the change should be partially or fully reflected in the carried loss reserves. In general, changes are made more quickly to reserves for more mature accident years and less volatile classes of business.

Reserving Process Uncertainties

As stated above, numerous factors (both internal and external) contribute to the inherent uncertainty in the process of establishing loss reserves, including changes in the rate of inflation for goods and services related to insured damages (e.g., medical care, home repairs, etc.), changes in the judicial interpretation of policy provisions, and settlement obligations, changes in the general attitude of juries in determining damage awards, legislative actions, such as expanding liability, coverage mandates or expanding or suspending statutes of limitations which otherwise limit the times within which claims can be made, changes in the extent of insured injuries, changes in the trend of expected frequency and/or severity of claims, changes in our book of business (e.g., change in mix due to new product offerings, new geographic areas, etc.), changes in our underwriting practices, and changes in claim handling procedures and/or systems. Regarding our indirect business from voluntary and involuntary pools, we are provided loss estimates by managers of each pool. We adopt reserve estimates for the pools that consider this information and other facts.

In addition, we must consider the uncertain effects of emerging or potential claims and coverage issues that arise as legal, judicial, social conditions, political risks, and economic conditions change. For example, claims which we consider closed may be re-opened as additional damages surface or new liability or damage theories are presented. Also, historically we have observed more frequent and higher severity in workers' compensation, bodily injury and other liability claims, and more credit related losses (for example, in our surety business) during periods of economic uncertainty or high unemployment. These and other issues could have a negative effect on our loss reserves by either extending coverage beyond the original underwriting intent or by increasing the number or size of claims.

As part of our loss reserving analysis, we consider the various factors that contribute to the uncertainty in the loss reserving process. Those factors that could materially affect our loss reserve estimates include loss development patterns and loss cost trends, reporting lags, rate and exposure level changes, the effects of changes in coverage and policy limits, business mix shifts, the effects of regulatory and legislative developments, economic circumstances, the effects of changes in judicial interpretations, the effects of emerging claims and coverage issues and the effects of changes in claim handling and claim reserving practices. In making estimates of reserves, however, we do not necessarily make an explicit assumption for each of these factors. Moreover, all estimation methods do not utilize the same assumptions and typically no single method is determinative in the reserve analysis for a line of business and coverage. Consequently, changes in our loss reserve estimates generally are not the result of changes in any one assumption. Instead, the variability will be affected by the interplay of changes in numerous assumptions, many of which are implicit to the approaches used.

For each line of business and coverage, we regularly adjust the assumptions and methods used in the estimation of loss reserves in response to our actual loss experience, as well as our judgments regarding changes in trends and/or emerging patterns. In those instances where we primarily utilize analyses of historical patterns of the development of

paid and reported losses, this may be reflected, for example, in the selection of revised loss development factors. In longer-tailed classes of business and for which loss experience is less predictable due to potential changes in judicial interpretations, potential legislative actions, the cost of litigation or determining liability and the ultimate loss, inflation, potential claims and other issues, this may be reflected in a judgmental change in our estimate of ultimate losses for particular accident years. Most of the insurance policies we have written over many years are written on an "occurrence" basis, which means we insure specified acts or events which occurred during the covered period, even if claims first arise from such events many years later. For example, the industry incurred significant losses as a result of claims arising from asbestos and environmental damage which occurred decades ago and was not known at such time, and in many cases policy limits were available for each year during which such occurrence policies were in place.

The future impact of the various factors that contribute to the uncertainty in the loss reserving process is impossible to predict. There is potential for significant variation in the development of loss reserves, particularly for long-tailed classes of business and classes of business that are more vulnerable to economic or political risks.

Reserving Process for Catastrophe Events

The estimation of claims and claims expense reserves for catastrophes also comprises estimates of losses from reported claims and IBNR, primarily for damage to property. In general, our estimates for catastrophe reserves are determined on an event basis by considering various sources of available information, including specific loss estimates reported to us based on claim adjuster inspections, overall industry loss estimates, and our internal data regarding exposures related to the geographical location of the event. However, depending on the nature of the catastrophe, the estimation process can be further complicated by other impediments. For

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example, for hurricanes and other severe wind storms, complications often include the inability of insureds to promptly report losses, delays in the ability of claims adjusting staff to inspect losses, difficulties in determining whether losses are covered by our homeowners policy (generally for damage caused by wind or wind driven rain) or are specifically excluded from coverage caused by flood, and challenges in estimating additional living expenses, assessing the impact of demand surge, exposure to mold damage, and the effects of numerous other considerations. Another example is the complication of estimating the cost of business interruption coverage on commercial lines policies. Estimates for catastrophes which occur at or near the end of a financial reporting period may be even less reliable since we will have less claims data available and little time to complete our estimation process. In such situations, we may adapt our practices to accommodate the circumstances.

For events designated as catastrophes which affect our Commercial and Personal Lines business segments, we generally calculate IBNR reserves directly as a result of an estimated IBNR claim count and an estimated average claim amount for each event. Such an assessment involves a comprehensive analysis of the nature of the event, of policyholder exposures within the affected geographic area and of available claims intelligence. Depending on the nature of the event, available claims intelligence could include surveys of field claims associates within the affected geographic area, feedback from a catastrophe claims team sent into the area, as well as data on claims reported as of the financial statement date. In addition, loss emergence from similar historical events is compared to the estimated IBNR for our current catastrophe events to help assess the reasonableness of our estimates.

Reserving Sensitivity Analysis

The following discussion presents disclosure related to possible variation in net reserve estimates due to changes in key assumptions. This information is provided for illustrative purposes only. Many other assumptions may also lead to material reserve adjustments. If any such variations do occur, then they would likely occur over a period of several years and therefore their impact on our results of operations would be recognized during the same periods. It is important to note, however, that there is the potential for future variations greater than the amounts described below and for any such variations to be recognized in a single quarterly or annual period. No consideration has been given to potential correlation or lack of correlation among key assumptions or among lines of business and coverage as described below. As a result and because there are so many other factors which affect our net reserve estimate, it would be inappropriate to take the amounts described below and simply add them together in an attempt to estimate volatility in total. While we believe these are reasonably possible scenarios, the reader should not consider the following sensitivity analysis as illustrative of a net reserve range.

• **Personal and Commercial Automobile Bodily Injury** – loss reserves recorded for bodily injury on U.S. voluntary business were \$635.7 million as of December 31, 2018. A key assumption for bodily injury is the inflation rate underlying the estimated reserve. A five point change (e.g., 4% changed to 9% or -1%) in the embedded inflation rate would have changed total reserves by approximately \$79 million, either positive or negative, respectively, at December 31, 2018.

- **Personal Automobile Personal Injury Protection Medical Payment** – loss reserves recorded for personal injury protection medical payment on U.S. voluntary business were \$150.1 million as of December 31, 2018. A key assumption for this coverage is the inflation rate underlying the estimated reserve. Given the long reporting pattern for this line of business, an additional key assumption is the amount of additional development required to reach full maturity, thereby reflecting ultimate costs, as represented by the tail factor. A five point change in the embedded inflation rate and a one point change to the tail factor assumption (e.g., 2% changed to 1% or 3%) would have changed total reserves by approximately \$47 million, either positive or negative, at December 31, 2018.

Workers' Compensation – loss reserves recorded for workers' compensation on U.S. voluntary business were \$420.6 million as of December 31, 2018. A key assumption for workers' compensation is the inflation rate underlying the estimated reserve. Given the long reporting pattern for this line of business, an additional key assumption is the amount of additional development required to reach full maturity, thereby reflecting ultimate costs, as represented by the tail factor. A five point change in the embedded inflation rate and a one point change to the tail factor assumption would have changed total reserves by approximately \$123 million, either positive or negative, at December 31, 2018.

Monoline and Multiple Peril General Liability – loss reserves recorded for monoline and multiple peril general liability on U.S. voluntary business were \$787.7 million as of December 31, 2018. A key assumption for monoline and multiple peril general liability is the implied adequacy of the underlying case reserves. A ten point change in case adequacy (e.g., 10% deficiency changed to 0% or 20% deficiency) would have changed total reserves by approximately \$87 million, either positive or negative, at December 31, 2018.

Specialty Programs – loss reserves recorded for the AIX program business were \$339.6 million as of December 31, 2018. Two key assumptions underlying the actuarial reserve analysis for specialty programs are the inflation rate underlying the estimated reserve for our commercial automobile liability, general liability and workers' compensation coverages, as well as the tail factor selection for workers' compensation. A five point change to the embedded inflation rate for the aforementioned coverages, and a one point change in the workers' compensation tail factor on AIX program business would have changed total reserves by approximately \$52 million at December 31, 2018.

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Chaucer Catastrophe events – the most significant events of 2018 were typhoons Jebi and Trami, the California wildfires, and hurricanes Michael and Florence. For these events, which represent 71% of the total 2018 accident year incurred catastrophe losses, a 25% increase in their estimated gross ultimate claims deterioration would have increased incurred catastrophe losses by approximately \$6 million, net of reinsurance. For these events, a 25% decrease in their estimated gross ultimate claims deterioration would have decreased incurred catastrophe losses by approximately \$9 million, net of reinsurance.

Carried Reserves and Reserve Rollforward

The following table provides a reconciliation of the gross beginning and ending reserve for unpaid losses and loss adjustment expenses.

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Gross loss and LAE reserves, beginning of year	\$5,058.5	\$4,660.0	\$4,201.9
Reinsurance recoverable on unpaid losses	1,455.0	1,349.2	1,295.3
Net loss and LAE reserves, beginning of year	3,603.5	3,310.8	2,906.6
Net incurred losses and LAE in respect of losses occurring in:			
Current year	2,733.5	2,579.8	2,307.8
Prior year non-catastrophe development	0.4	1.2	235.6
Prior year catastrophe development	(9.3)	(1.4)	2.6
Total incurred losses and LAE	2,724.6	2,579.6	2,546.0
Net payments of losses and LAE in respect of losses occurring in:			
Current year	1,232.3	1,203.8	1,063.0
Prior years	1,264.3	1,083.1	1,078.8
Total payments	2,496.6	2,286.9	2,141.8
Net reserve for losses and LAE, end of year	3,831.5	3,603.5	3,310.8
Reinsurance recoverable on unpaid losses	1,472.6	1,455.0	1,349.2
Gross reserve for losses and LAE, end of year	\$5,304.1	\$5,058.5	\$4,660.0

The following table summarizes the gross reserve for losses and LAE by line of business.

DECEMBER 31 (in millions)	2018	2017	2016
Commercial multiple peril	\$1,098.7	\$1,012.5	\$899.7
Workers' compensation	649.3	628.3	580.2
Commercial automobile	399.6	380.2	374.2
Other commercial lines:			
AIX program business	492.0	475.4	453.2
General liability	285.0	269.8	261.9
Umbrella	139.7	135.9	112.6
Surety	99.0	87.8	72.4
Other lines	395.3	410.6	311.5

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Total other commercial lines	1,411.0	1,379.5	1,211.6
Total Commercial Lines	3,558.6	3,400.5	3,065.7
Personal automobile	1,532.8	1,471.7	1,430.2
Homeowners and other personal	174.8	147.6	123.8
Total Personal Lines	1,707.6	1,619.3	1,554.0
Total Other Segment	37.9	38.7	40.3
Total loss and LAE reserves	\$5,304.1	\$5,058.5	\$4,660.0

“Other commercial lines – Other lines” in the table above, is primarily comprised of management and professional liability, marine, miscellaneous commercial property, healthcare, and fidelity lines. Loss and LAE reserves in our “Total Other Segment” relate to our run-off voluntary assumed reinsurance pools business.

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Prior Year Development

Conditions and trends that have affected reserve development in the past will not necessarily recur in the future. As discussed under “Reserving Process Overview” in the preceding section, our historical loss experience and loss development patterns are important factors in estimating loss reserves, however, they are not the only factors we evaluate to establish reserves. Therefore, a mechanical application of standard actuarial methodologies in projecting ultimate claims could result in materially different reserves to those held. Accordingly, it is not appropriate to extrapolate future favorable or unfavorable development based on amounts experienced in prior periods.

The following table summarizes prior year (favorable) unfavorable development by segment for the periods indicated:

	2018			2017			2016		
	Loss			Loss			Loss		
	&			&			&		
(in millions)	LAE	Catastrophe	Total	LAE	Catastrophe	Total	LAE	Catastrophe	Total
Commercial Lines	\$(34.1)	\$ (6.8)	\$(40.9)	\$(9.4)	\$ (1.4)	\$(10.8)	\$223.0	\$ (3.7)	\$219.3
Personal Lines	33.3	(2.5)	30.8	9.4	—	9.4	4.3	6.3	10.6
Other Segment	1.2	—	1.2	1.2	—	1.2	8.3	—	8.3
Total prior year (favorable)									
unfavorable development	\$0.4	\$ (9.3)	\$(8.9)	\$1.2	\$ (1.4)	\$(0.2)	\$235.6	\$ 2.6	\$238.2
Catastrophe Loss Development									

In 2018, favorable catastrophe development was \$9.3 million, primarily due to lower than expected losses related to the 2017 hurricanes Harvey, Irma and Maria and California wildfires. In 2017, favorable catastrophe development was \$1.4 million, primarily due to lower than expected losses related to the 2016 hurricane Matthew. In 2016, unfavorable catastrophe development was \$2.6 million, primarily due to higher than expected losses related to 2015 severe summer hail and wind storms.

Loss and LAE Development, excluding catastrophes

The following table provides a summary of (favorable)/unfavorable loss and LAE reserve development, excluding catastrophes.

YEARS ENDED DECEMBER 31	2018	2017	2016
(in millions)			
Commercial multiple peril	\$(1.2)	\$2.5	\$74.2
Workers' compensation	(31.0)	(9.1)	(46.7)
Commercial automobile	23.2	2.5	27.5

Other commercial lines:			
AIX program business	18.2	(0.4)	75.3
General liability	(21.1)	(1.9)	56.0
Surety	(9.0)	0.1	35.3
Umbrella	0.6	(0.2)	(9.0)
Other lines	(13.8)	(2.9)	10.4
Total other commercial lines	(25.1)	(5.3)	168.0
Total Commercial Lines	(34.1)	(9.4)	223.0
Personal automobile	15.0	3.7	4.8
Homeowners and other personal lines	18.3	5.7	(0.5)
Total Personal Lines	33.3	9.4	4.3
Total Other Segment	1.2	1.2	8.3
Total loss and LAE reserve development, excluding catastrophes	\$0.4	\$1.2	\$235.6

2018 Loss and LAE Development, excluding catastrophes

In 2018, net unfavorable loss and LAE development, excluding catastrophes, was \$0.4 million. Commercial Lines favorable development of \$34.1 million was primarily due to lower than expected losses of \$31.0 million within the workers' compensation line in accident years 2015 through 2017; \$25.1 million in other commercial lines, primarily in our professional and management liability and monoline general liability lines, related to the 2014 through 2016 accident years; and our surety line in accident years 2015 and 2017; partially offset by higher than expected losses in AIX programs and business classes which have since been terminated. Also partially offsetting the favorable Commercial Lines development was higher than expected losses of \$23.2 million in the commercial automobile line, driven by higher bodily injury severity in the 2014, 2016, and 2017 accident years. Personal Lines unfavorable

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development of \$33.3 million was primarily due to higher than expected losses of \$15.8 million within the homeowners line in accident years 2015 through 2017, and \$15.0 million in the personal automobile line, driven by bodily injury severity in the 2016 accident year and, to a lesser extent, the 2015 accident year. In addition, Other segment unfavorable development of \$1.2 million was due to higher than expected losses in our runoff voluntary pools business.

2017 Loss and LAE Development, excluding catastrophes

In 2017, net unfavorable loss and LAE development, excluding catastrophes, was \$1.2 million. Commercial Lines favorable development of \$9.4 million was primarily due to lower than expected losses within the workers' compensation line in accident years 2012 through 2016. Personal Lines unfavorable development of \$9.4 million was primarily due to higher than expected losses in homeowners for accident year 2016. In addition, Other segment unfavorable development of \$1.2 million was due to higher than expected losses in our runoff voluntary pools business.

2016 Loss and LAE Development, excluding catastrophes

In 2016, net unfavorable loss and LAE development was \$235.6 million, primarily as a result of net unfavorable development of \$223.0 million for Commercial Lines. The net unfavorable Commercial Lines development primarily resulted from higher than expected losses in other commercial lines of \$168.0 million, which includes the AIX program business. This was primarily driven by AIX programs, general liability coverages in accident years 2012 through 2015, and surety bonds in accident years 2012 through 2015. We also experienced higher than expected losses within the commercial multiple peril line of \$74.2 million for accident years 2012 through 2015 and the commercial automobile line of \$27.5 million in accident years 2012 through 2014, both primarily within liability coverages. Partially offsetting the unfavorable development was lower than expected losses of \$46.7 million within the workers' compensation line, primarily related to accident years 2013 through 2015 and, to a lesser extent, our commercial umbrella line related to accident year 2015.

As a result of our 2016 fourth quarter reserve review, carried reserves for prior accident years, excluding catastrophes, were increased by \$174.1 million in the fourth quarter, of which \$161.5 million related to Commercial Lines. The majority of this adjustment was attributed to our long-tailed commercial liability coverages, including our AIX program business and was largely driven by worsening trends in the number and nature of high severity losses and higher than anticipated legal defense costs. We reacted to this adverse emergence by updating our assumptions about loss severity, loss development patterns, expected loss ratios and loss adjustment expenses for the most recent accident years, placing greater weight on the adverse severity trends experienced in the most recent calendar years. The adverse prior year development for our Other segment was due to our run-off voluntary assumed reinsurance pools business. The reserve increase was based on an updated third-party actuarial study received in the fourth quarter for the Excess and Casualty Reinsurance Association ("ECRA") pool that primarily consists of asbestos and environmental exposures.

Asbestos and Environmental Reserves

As of December 31, 2018, we have \$38.9 million of net asbestos and environmental reserves, comprised of \$8.9 million of direct reserves and \$30.0 million of assumed reinsurance pool reserves. This compares to net reserves of \$39.8 million and \$41.1 million as of December 31, 2017 and 2016, respectively. Ending loss and LAE reserves for all direct business written by our property and casualty companies related to asbestos and environmental damage liability were \$8.9 million, \$9.5 million, and \$9.9 million, net of reinsurance of \$18.7 million, \$20.2 million, and

\$19.9 million for the years ended December 31, 2018, 2017 and 2016, respectively. Activity for our direct asbestos and environmental reserves was not significant to our 2018, 2017 or 2016 financial results. As a result of our historical direct underwriting mix of Commercial Lines policies toward smaller and middle market risks, past asbestos and environmental damage liability loss experience has remained minimal in relation to our total loss and LAE incurred experience. Although we attempt to limit our exposures to asbestos and environmental damage liability through specific policy exclusions, we have been and may continue to be subject to claims related to these exposures.

In addition to reserves we carry to cover exposure in our direct business, we have established gross and net loss and LAE reserves for assumed reinsurance pool business with asbestos and environmental damage liability of \$30.0 million, \$30.3 million and \$31.2 million at December 31, 2018, 2017 and 2016, respectively. These reserves relate to pools in which we have terminated our participation; however, we continue to be subject to claims related to years in which we were a participant. Results of operations from these pools are included in our Other segment. A significant part of our pool reserves relates to our participation in the ECRA voluntary pool from 1950 to 1982. In 1982, the pool was dissolved and since that time, the business has been in run-off. Our percentage of the total pool liabilities varied from 1% to 6% during these years. Our participation in this pool has resulted in average paid losses of approximately \$2 million annually over the past ten years.

We estimate our ultimate liability for asbestos, environmental and toxic tort liability claims, whether resulting from direct business, assumed reinsurance or pool business, based upon currently known facts, reasonable assumptions where the facts are not known, current law and methodologies currently available. Although these outstanding claims are not significant, their existence gives rise to uncertainty and are discussed because of the possibility that they may become significant. We believe that, notwithstanding the evolution of case law expanding liability in asbestos and environmental claims, recorded reserves related to these claims are adequate.

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Nevertheless, the asbestos, environmental and toxic tort liability reserves could be revised, and any such revisions could have a material adverse effect on our results of operations for a particular quarterly or annual period or on our financial position.

Reinsurance

See “Reinsurance” in Item 1 – Business for information on our reinsurance programs.

INVESTMENTS

The investments discussion below excludes amounts relating to the operations of Chaucer.

INVESTMENT RESULTS

Net investment income before income taxes was as follows:

DECEMBER 31 (dollars in millions)	2018	2017	2016
Fixed maturities	\$217.7	\$205.8	\$202.1
Limited partnerships	24.1	15.3	8.0
Equity securities	17.0	18.0	18.6
Mortgage loans	14.0	11.4	9.1
Other investments	4.8	3.4	3.4
Investment expenses	(10.2)	(10.0)	(9.6)
Net investment income	\$267.4	\$243.9	\$231.6
Earned yield, fixed maturities	3.62 %	3.75 %	3.99 %
Earned yield, total portfolio	3.74 %	3.75 %	3.85 %

The increase in net investment income in both 2018 and 2017 was primarily due to the investment of higher operational cash flows, partially offset by the impact of lower fixed income new money yields that, while increasing from recent lower levels, were below that of average embedded investments. Also, net investment income included higher limited partnership and commercial mortgage loan income in both years.

INVESTMENT PORTFOLIO

We held cash and investment assets diversified across several asset classes, as follows:

DECEMBER 31 (dollars in millions)	2018 Carrying Value	% of Total Carrying	2017 Carrying Value	% of Total Carrying
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		Value		Value	
Fixed maturities, at fair value	\$6,161.5	74.1	%	\$5,749.3	80.0 %
Equity securities, at fair value	464.4	5.6		576.2	8.0
Mortgage and other loans	405.7	4.9		365.8	5.1
Other investments	255.8	3.1		196.9	2.7
Cash and cash equivalents	1,020.7	12.3		297.9	4.2
Total cash and investments, excluding Chaucer	\$8,308.1	100.0	%	\$7,186.1	100.0 %

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CASH AND INVESTMENTS

Total cash and investments increased \$1,122.0 million, or 15.6%, for the year ended December 31, 2018. This increase was primarily attributable to the proceeds from the sale of Chaucer and the pre-signing dividend. Excluding the impact from the sale of Chaucer, the investment portfolio increased by 3.8% for the year, primarily due to operational cashflows, partially offset by market value depreciation and the funding of financing activities, including dividend payments and stock repurchases.

The following table provides information about the investment types of our fixed maturities portfolio:

DECEMBER 31 (in millions)	2018		Net	Change in Net
	Amortized Cost	Fair Value	Unrealized Gains (Losses)	Unrealized for the Year
Investment Type				
U.S. Treasury and government agencies	\$414.7	\$409.9	\$ (4.8)	\$ (5.0)
Foreign government	7.3	7.4	0.1	(0.2)
Municipals:				
Taxable	820.4	827.8	7.4	(16.1)
Tax-exempt	58.6	58.0	(0.6)	(1.0)
Corporate	3,476.6	3,410.7	(65.9)	(128.3)
Asset-backed:				
Residential mortgage-backed	728.4	716.4	(12.0)	(12.9)
Commercial mortgage-backed	648.4	640.3	(8.1)	(12.8)
Asset-backed	91.5	91.0	(0.5)	(0.3)
Total fixed maturities, excluding Chaucer	\$6,245.9	\$6,161.5	\$ (84.4)	\$ (176.6)

The change in net unrealized gains (losses) on fixed maturities, from a gain of \$92.2 million at year-end 2017 to a loss of \$84.4 million at year-end 2018, was primarily due to higher prevailing interest rates and wider credit spreads in 2018.

Amortized cost and fair value by rating category were as follows:

DECEMBER 31 (dollars in millions)	Rating	2018		% of Total Fair	2017		% of Total Fair
		Amortized Cost	Fair Value		Amortized Cost	Fair Value	
NAIC Designation	Agency	Cost	Value	Total Fair	Cost	Value	Total Fair

	Equivalent	Value			Value		
	Designation						
1	Aaa/Aa/A	\$4,297.7	\$4,258.8	69.1 %	\$3,745.9	\$3,798.0	66.1 %
2	Baa	1,636.7	1,601.0	26.0	1,594.4	1,623.0	28.2
3	Ba	176.4	173.2	2.8	159.7	166.8	2.9
4	B	120.0	113.8	1.9	149.1	153.3	2.7
5	Caa and lower	14.8	14.3	0.2	7.7	7.9	0.1
6	In or near default	0.3	0.4	—	0.3	0.3	—
Total fixed maturities, excluding Chaucer		\$6,245.9	\$6,161.5	100.0%	\$5,657.1	\$5,749.3	100.0%

Based on ratings by the National Association of Insurance Commissioners (“NAIC”), approximately 95% and 94% of the fixed maturity portfolio consisted of investment grade securities at December 31, 2018 and 2017, respectively. The quality of our fixed maturity portfolio remains strong based on ratings, capital structure position, support through guarantees, underlying security, issuer diversification and yield curve position.

Our investment portfolio primarily consists of fixed maturity securities whose fair value is susceptible to market risk, including interest rate changes. See also “Quantitative and Qualitative Disclosures about Market Risk” included in Management’s Discussion and Analysis of Financial Condition. Duration is a measurement used to quantify our inherent interest rate risk and analyze invested assets relative to our reserve liabilities.

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The duration of our fixed maturity portfolio was as follows:

DECEMBER 31 (dollars in millions)	2018			2017		
	Amortized Cost	Fair Value	% of Total Fair Value	Amortized Cost	Fair Value	% of Total Fair Value
Duration						
0-2 years	\$1,092.3	\$1,101.5	17.9 %	\$770.6	\$791.1	13.8 %
2-4 years	1,427.3	1,420.4	23.0	1,428.7	1,471.6	25.6
4-6 years	1,831.2	1,801.4	29.2	1,559.4	1,584.4	27.5
6-8 years	1,768.6	1,710.3	27.8	1,620.9	1,619.1	28.2
8-10 years	57.5	59.7	1.0	201.1	203.7	3.5
10+ years	69.0	68.2	1.1	76.4	79.4	1.4
Total fixed maturities, excluding Chaucer	\$6,245.9	\$6,161.5	100.0 %	\$5,657.1	\$5,749.3	100.0 %
Weighted average duration, excluding Chaucer		4.5			4.8	

Our fixed maturity and equity securities are carried at fair value. Financial instruments whose value was determined using significant management judgment or estimation constituted less than 1% of the total assets we measured at fair value. See also Note 5 - "Fair Value" in the Notes to Consolidated Financial Statements.

Equity securities primarily consist of U.S. income-oriented large capitalization common stocks and developed market equity index exchange-traded funds.

Mortgage and other loans consist primarily of commercial mortgage loan participations, which represent our interest in commercial mortgage loans originated by a third-party. We share, on a pro-rata basis, in all related cash flows of the underlying mortgage loans, which are investment-grade quality and diversified by geographic area and property type.

Other investments consist primarily of our interest in corporate middle market and real estate limited partnerships. Corporate middle market limited partnerships may invest in senior or subordinated debt, preferred or common equity or a combination thereof, of middle market businesses. Real estate limited partnerships invest in debt and/or equity of real properties.

Although we expect to invest new funds primarily in investment grade fixed maturities, we have invested, and expect to continue to invest, a portion of funds in limited partnerships, common equity securities, below investment grade fixed maturities and other investment assets.

We deposit funds with various state and governmental authorities. See Note 3 - "Investments" in the Notes to Consolidated Financial Statements for additional information.

OTHER-THAN-TEMPORARY IMPAIRMENTS

For the years ended December 31, 2018, 2017 and 2016, we recognized in earnings \$4.6 million, \$5.6 million and \$27.4 million, respectively, of other-than-temporary impairments (“OTTI”). In 2018, OTTI consisted of \$2.6 million on fixed maturities and \$2.0 million on other invested assets. In 2017, OTTI consisted of \$2.0 million on other invested assets, \$1.8 million on fixed maturities and \$1.8 million on equity securities. In 2016, OTTI consisted primarily of \$16.1 million on fixed maturities we intended to sell, \$8.3 million related to estimated credit losses on fixed maturities and \$2.7 million on equity securities. OTTI in 2016 that related to the energy sector was \$16.4 million.

The carrying values of fixed maturity securities on non-accrual status at December 31, 2018 and 2017 were not material. The effects of non-accruals compared with amounts that would have been recognized in accordance with the original terms of the fixed maturities for the years ended December 31, 2018, 2017 and 2016 were also not material. Any defaults in the fixed maturities portfolio in future periods may negatively affect investment income.

UNREALIZED LOSSES

Gross unrealized losses on fixed maturities as of December 31, 2018 were \$134.2 million, an increase of \$95.8 million compared to December 31, 2017, primarily attributable to higher prevailing interest rates and wider credit spreads. At December 31, 2018, gross unrealized losses consisted primarily of \$92.0 million of corporate fixed maturities, \$24.5 million of residential and commercial mortgage-backed securities and \$9.8 million on municipal securities. See also Note 3 – “Investments” in the Notes to Consolidated Financial Statements.

We view gross unrealized losses on fixed maturities as temporary since it is our assessment that these securities will recover in the near term, allowing us to realize their anticipated long-term economic value. Further, we do not intend to sell, nor is it more likely than not we will be required to sell, such debt securities before this expected recovery of amortized cost (see also “Liquidity and

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Capital Resources”). Inherent in our assessment are the risks that market factors may differ from our expectations; the global economy reverts to recessionary trends; we may decide to subsequently sell a security for unforeseen business needs; or changes in the credit assessment from our original assessment may lead us to determine that a sale at the current value would maximize recovery on such investments. To the extent that there are such adverse changes, an OTTI would be recognized as a realized loss. Although unrealized losses on fixed maturities are not reflected in the results of financial operations until they are realized or deemed “other-than-temporary”, the fair value of the underlying investment, which does reflect the unrealized loss, is reflected in our Consolidated Balance Sheets.

The following table sets forth gross unrealized losses for fixed maturities by maturity period at December 31, 2018 and 2017. Actual maturities may differ from contractual maturities because borrowers may have the right to call or prepay obligations, with or without call or prepayment penalties, or we may have the right to put or sell the obligations back to the issuers.

DECEMBER 31 (in millions)	2018	2017
Due in one year or less	\$0.3	\$0.1
Due after one year through five years	20.2	5.7
Due after five years through ten years	80.2	19.6
Due after ten years	8.3	5.3
	109.0	30.7
Mortgage-backed and asset-backed securities	25.2	7.7
Total fixed maturities, excluding Chaucer	\$134.2	\$38.4

As of January 1, 2018, we adopted ASC Update No. 2016-01, (Subtopic 825-10) Financial Instruments – Overall: Recognition and Measurement of Financial Assets and Financial Liabilities (“ASU No. 2016-01”), which resulted in a cumulative effect adjustment of \$97.8 million, net of tax, recorded in retained earnings. See Item O. “New Accounting Pronouncements” in Note 1 – “Summary of Significant Accounting Policies” in the Notes to Consolidated Financial Statements for additional information. Beginning in 2018, our equity securities are carried at fair value with increases and decreases in fair value recorded in net income. Previously, changes in fair value on equity securities were recorded in accumulated other comprehensive income, a component of shareholders’ equity.

Our investment portfolio and shareholders’ equity can be significantly impacted by changes in market values of our securities. Market volatility could increase and defaults on fixed income securities could occur. As a result, we could incur additional realized and unrealized losses in future periods, which could have a material adverse impact on our results of operations and/or financial position.

Monetary policies in developed economies have become more divergent recently, but remain generally supportive of moderate economic growth. Major central banks continue to closely monitor developments in global financial markets and the outlook for growth, and reportedly are committed to adjust monetary policy as required to provide liquidity, support growth and achieve inflation targets. In the United States, the Federal Reserve (the “Fed”) increased its target for the federal funds rate by 1.00% in 2018, including 0.25% in December, raising its target range to 2.25% to 2.50%. The Fed continues to signal that economic activity will expand at a moderate pace, labor conditions will remain strong

with inflation stabilized around its 2% objective over the medium term. The Fed has communicated that it will be patient as it determines the timing and size of future adjustments to the federal funds rate, which will depend on realized and expected economic conditions relative to its objectives of maximum employment and 2% inflation. While the Fed believes near-term risks to the economic outlook appear roughly balanced, it continues to closely monitor inflation indicators and global economic and financial developments. One such development being watched carefully is the trade/tariff negotiations between the United States and its various trade partners. Should these negotiations lead to a shift or break-down in global trade patterns, there could be negative implications for certain issuers, sectors, or the economy at large.

Most developed economies' central banks have now ended their extraordinary measures and begun to tighten monetary policy or signal potential tightening, but inflation remains below target in several large economies. Fundamental conditions in the corporate sector generally remain sound. While we may experience defaults on fixed income securities, particularly with respect to non-investment grade debt securities, it is difficult to foresee which issuers, industries or markets will be affected. As a result, the value of our fixed maturity portfolio could change rapidly in ways we cannot currently anticipate, and we could incur additional realized and unrealized losses in future periods.

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QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

INTEREST RATE SENSITIVITY

Operations are subject to risk resulting from interest rate fluctuations, which may adversely impact the valuation of the investment portfolio. In a rising interest rate environment, the value of the fixed maturity sector, which comprises approximately 74% of our investment portfolio, may decline as a result of decreases in the fair value of the securities. Our intent is to hold securities to maturity and recover the decline in valuation as prices accrete to par. However, our intent may change prior to maturity due to changes in the financial markets, our analysis of an issuer's credit metrics and prospects, or as a result of changes in cash flow needs. Interest rate fluctuations may also reduce net investment income and as a result, profitability. The portfolio may realize lower yields and therefore lower net investment income on securities because securities with prepayment and call features may prepay at a different rate than originally projected. Also, funds may not be available to invest at higher interest rates.

In a declining interest rate environment, prepayments and calls may increase as issuers exercise their option to refinance at lower rates. The resulting funds would be reinvested at lower yields.

The following table, which excludes assets relating to Chaucer, illustrates the estimated impact on the fair value of our fixed maturity portfolio at December 31, 2018 and 2017 of hypothetical changes in prevailing interest rates, defined as changes in interest rates on U.S. Treasury debt. It does not reflect changes in credit spreads, liquidity spreads and other factors that also affect the value of securities. Since changes in prevailing interest rates are often accompanied by changes in these other factors, the reader should not assume that an actual change in interest rates would result in the values illustrated.

(dollars in millions)

INVESTMENT TYPE	+300bp	+200bp	+100bp	0	-100bp	-200bp	-300bp
Residential mortgage-backed securities	\$ 600	\$ 635	\$ 675	\$ 715	\$ 750	\$ 770	\$ 770
Municipal securities	790	820	855	885	920	950	985
All other fixed maturity securities	3,980	4,165	4,355	4,560	4,770	4,990	5,220
Total December 31, 2018	\$ 5,370	\$ 5,620	\$ 5,885	\$ 6,160	\$ 6,440	\$ 6,710	\$ 6,975
Total December 31, 2017	\$ 4,970	\$ 5,215	\$ 5,480	\$ 5,750	\$ 6,020	\$ 6,285	\$ 6,550

Our overall investment strategy is intended to balance investment income with credit and interest rate risk, while maintaining sufficient liquidity and the opportunity for capital growth. The asset allocation process takes into consideration the types of business written and the level of surplus required to support our different businesses and the risk return profiles of the underlying asset classes. We look to balance the goals of capital preservation, net investment income stability, liquidity and total return.

The majority of our assets are invested in the fixed income markets. Through fundamental research and credit analysis, with a focus on value investing, our investment professionals seek to identify a portfolio of stable income-producing higher quality U.S. government, foreign government, municipal, corporate, residential and commercial mortgage-backed securities and asset-backed securities. We have a general policy of diversifying investments both within and across major investment and industrial sectors to mitigate credit and interest rate risk. We monitor the credit quality of our investments and our exposure to individual markets, borrowers, industries, sectors

and, in the case of commercial mortgage-backed securities and commercial mortgage loan participations, property types and geographic locations. In addition, we currently carry debt that is subject to interest rate risk, which was issued at fixed interest rates between 4.50% and 8.207%. Current market conditions, in light of our risk tolerance, restrict our ability to invest fixed income assets at similar rates of return; therefore, earnings on a similar level of assets are not sufficient to cover current debt interest costs.

EQUITY PRICE RISK

Our equity securities portfolio is exposed to equity price risk arising from potential volatility in equity market prices. Portfolio characteristics are analyzed regularly and price risk is actively managed through a variety of techniques. A hypothetical increase or decrease of 10% in the market price of our equity securities would have resulted in an increase or decrease in the fair value of the equity securities portfolio of approximately \$46 million at December 31, 2018 and \$58 million at December 31, 2017.

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OTHER ITEMS

Net income also included the following items:

(in millions)	YEARS ENDED DECEMBER 31				
	Commercial Lines	Personal Lines	Other	Discontinued Operations	Total
2018					
Net realized investment gains (losses)	\$ (35.5)	\$ (13.6)	\$ 1.6	\$ —	\$ (50.7)
Net loss from repayment of debt	(18.7)	(7.6)	(1.9)	—	(28.2)
Discontinued operations - Chaucer business, including gain					
on sale, net of taxes	—	—	—	151.9	151.9
Discontinued life businesses, net of taxes	—	—	—	0.1	0.1
2017					
Net realized investment gains (losses)	\$ 17.7	\$ 8.4	\$ (5.0)	\$ —	\$ 21.1
Other non-operating items	(5.6)	(4.6)	(0.1)	—	(10.3)
Discontinued operations - Chaucer business, including gain					
on sale, net of taxes	—	—	—	(13.1)	(13.1)
Discontinued life businesses, net of taxes	—	—	—	(16.8)	(16.8)
2016					
Net realized investment gains (losses)	\$ 7.5	\$ 3.5	\$ (0.8)	\$ —	\$ 10.2
Net loss from repayment of debt	—	—	(88.3)	—	(88.3)
Other non-operating items	2.5	—	0.1	—	2.6
Discontinued operations - Chaucer business, including gain					
on sale, net of taxes	—	—	—	89.1	89.1
Discontinued life businesses, net of taxes	—	—	—	(1.0)	(1.0)

We manage investment assets for our Commercial Lines, Personal Lines, and Other segments based on the requirements of our combined property and casualty companies. We allocate the investment income, expenses, and realized gains and losses to our Commercial Lines, Personal Lines, and Other segments based on actuarial information related to the underlying businesses. We manage investment assets separately for our Chaucer business.

Net realized losses on investments were \$50.7 million for 2018, and \$21.1 million and \$10.2 million of net realized gains for 2017 and 2016, respectively. Net realized losses in 2018 were primarily due to \$43.4 million of losses from the net change in fair value of equity securities that are now required to be reflected in net income, due to the implementation of ASU 2016-01 effective January 1, 2018. (See also Item O. “New Accounting Pronouncements” in Note 1 – “Summary of Significant Accounting Policies” in the Notes to Consolidated Financial Statements.) This change in fair value of equity securities resulted from prevailing market conditions. Additionally, in 2018 we recognized \$4.6

million of OTTI losses, and \$2.7 million of losses recognized from the sale of securities, primarily fixed maturities. Net realized gains in 2017 were primarily due to \$26.6 million of gains recognized from the sale of securities, primarily equities, and to a lesser extent, fixed maturities. These gains were partially offset by \$5.6 million of OTTI losses. Net realized gains in 2016 were primarily due to \$36.6 million of gains recognized from the sale of securities, primarily equities, and to a lesser extent, fixed maturities. These gains were partially offset by \$27.4 million of OTTI losses.

At December 31, 2018, we had informed the FHLB of our intent to repay a \$125 million FHLB note due 2029 with a coupon of 5.5%, with settlement to occur on January 2, 2019. In the fourth quarter of 2018, we recorded a non-operating charge of \$20.8 million after-taxes related to the pre-payment provision. Additionally, in 2018 we repurchased subordinated debentures with a net carrying value of \$9.6 million at a cost of \$11.5 million, resulting in a loss of \$1.9 million. In 2016, we redeemed senior debentures with a net carrying value of \$375.2 million at a cost of \$461.3 million, resulting in a loss of \$86.1 million. Additionally, in 2016 we repurchased senior debentures with a net carrying value of \$11.9 million at a cost of \$14.1 million, resulting in a loss of \$2.2 million.

Included in “other non-operating items” above in 2017 were \$10.2 million of employee termination costs associated with a company-wide expense savings initiative.

Discontinued operations primarily include our former Chaucer business and discontinued accident and health and former life insurance businesses. In 2018, discontinued operations, in total, generated a gain of \$152.0 million, net of tax, primarily related to the sale of the Chaucer business. In 2017, discontinued operations, in total, generated a loss of \$29.9 million, net of tax, primarily related to the long-term care pool in our discontinued accident and health business and, to a lesser extent, the Chaucer business. In 2016, discontinued operations contributed \$88.1 million of income, primarily related to the Chaucer business. See also “Discontinued Operations – Chaucer Business” below and Note 2 – “Dispositions of businesses” in the Notes to Consolidated Financial Statements.

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DISCONTINUED OPERATIONS - CHAUCER BUSINESS

As discussed above, the Chaucer business includes both the gain related to the sale and the income or loss from Chaucer's then current operations.

Gain on Sale of Chaucer Business

On December 28, 2018, we completed the sale of Chaucer Holdings Limited to China Re. Total consideration payable by China Re for this portion of the transaction is expected to total approximately \$793.7 million⁽¹⁾ and is subject to adjustment based upon 2018 accident year catastrophe losses in excess of 10% of Chaucer's 2018 net earned premium. The pre-tax gain on the sale is estimated to be \$174.4 million. THG paid customary transaction costs along with providing certain representations and warranties and agreeing to indemnify China Re for certain pre-sale contingent liabilities.

The following table summarizes the components of the estimated gain related to the sale of the Chaucer business as of December 28, 2018. This gain below excludes an expected gain on the Irish and Australian entities associated with the Chaucer business. We subsequently completed the sale of our Chaucer-related Irish entity on February 14, 2019. The sale of the Australian entities is pending, subject only to local regulatory approval. We received \$28 million of additional consideration for the Irish entity, and we expect to receive \$13 million of additional consideration related to the Australian entities.

FOR THE YEAR ENDED DECEMBER 31	2018
(in millions)	
Initial consideration received from sale ⁽¹⁾	\$779.0
Adjustment ⁽¹⁾	(17.0)
Contingent proceeds ⁽¹⁾⁽²⁾	31.7
Total cash proceeds expected from sale of Chaucer Holdings Limited ⁽¹⁾	793.7
Less:	
Carrying value of Chaucer business ⁽³⁾	530.0
Transaction and other sale-related costs ⁽⁴⁾	30.6
Net realized losses on securities, pension and currency translation obligations related to Chaucer business ⁽⁵⁾	58.7
Total pre-tax reductions	619.3
Pre-tax gain on sale	174.4
Income tax expense ⁽⁶⁾	42.5
Gain on sale	\$131.9

(1) Initial consideration for Chaucer Holdings Limited as determined in the sales and purchase agreement was \$779 million. This amount, along with \$28 million in cash proceeds received from the sale of the Irish entity on February 14, 2019, \$13 million in cash proceeds to be received upon the closing of the sale of the Australian entities, estimated contingent consideration of \$31.7 million, and an \$85 million pre-signing dividend from Chaucer that was received in the second quarter of 2018, results in expected total proceeds from the entire transaction of \$936.7 million. These amounts were partially offset by \$17.0 million paid to China Re to adjust the purchase price for amounts received by the Company from Chaucer prior to December 28, 2018.

(2)

Contingent proceeds, as reflected in the sales and purchase agreement, may be up to \$45 million and is determined based upon 2018 catastrophe losses. Based upon our best estimate of Chaucer's 2018 catastrophe losses, expected contingent consideration is \$31.7 million.

- (3) The carrying value of the Chaucer business reflects its U.S. GAAP book value at December 28, 2018, excluding \$7.9 million of U.S.-related deferred tax assets that are no longer likely to be realized and therefore are reflected in the income tax expense category.
- (4) Transaction and other sale related costs primarily include brokerage, legal, actuarial, tax and other professional fees, employee retention costs, costs for the purchase of aggregate excess of loss catastrophe coverage in consideration of the contingent proceeds provision, along with certain other miscellaneous charges related to the execution of the transaction.
- (5) As part of the transaction, investments held by Chaucer were transferred to China Re resulting in the recognition of net realized investment losses that were previously reflected in accumulated other comprehensive income. Additionally, Chaucer's deferred pension obligations and currency translation obligations previously recognized in accumulated other comprehensive income were recognized as losses associated with the transaction.
- (6) The income tax expense represents the current tax obligation on the sale and the derecognition of deferred tax assets that are no longer likely to be realized.

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Income (Loss) from Operations of Chaucer Business

The following table summarizes the results of operations for Chaucer for the periods indicated:

(in millions)	2018 (1)	2017	2016
Revenues			
Net premiums earned	\$850.0	\$853.0	\$838.6
Net investment income	54.9	52.0	45.7
Other income	7.5	6.7	7.1
	912.4	911.7	891.4
Losses and operating expenses			
Losses and LAE	515.5	549.5	419.3
Amortization of deferred acquisition costs	252.5	245.9	231.6
Other expenses	115.0	109.2	113.7
	883.0	904.6	764.6
Income from Chaucer business before			
income taxes and other items (previously presented as			
Chaucer's operating income)	29.4	7.1	126.8
Other items:			
Interest expense	(3.8)	(3.3)	(3.5)
Net realized and unrealized investment gains (losses)	(1.3)	2.6	(1.6)
Other income	0.4	2.2	4.6
Income from Chaucer business before income taxes	\$24.7	\$8.6	\$126.3
Loss and LAE ratio:			
Current accident year, excluding catastrophe losses	54.8 %	53.0 %	60.4 %
Prior accident year reserve development,			
excluding catastrophe losses	(4.3)%	(4.0)%	(11.4)%
Current accident year catastrophe losses	12.1 %	18.2 %	5.5 %
Prior accident year favorable catastrophe loss development	(2.0)%	(2.8)%	(4.5)%
Total loss and LAE ratio	60.6 %	64.4 %	50.0 %
Expense ratio	42.5 %	40.9 %	40.4 %
Combined ratio	103.1 %	105.3 %	90.4 %

(1) 2018 reflects the results of operations for the period in which we owned Chaucer, which concluded with the sale of the Chaucer business on December 28, 2018.

2018 Compared to 2017

Chaucer's net premiums earned were \$850.0 million for the year ended December 31, 2018, compared to \$853.0 million for the year ended December 31, 2017, a decrease of \$3.0 million, or 0.4%. This was primarily due to a planned increase in the use of ceded reinsurance, as a result of current market conditions, partially offset by new business growth in the casualty line.

Chaucer's income before income taxes for the year ended December 31, 2018 was \$24.7 million, compared to \$8.6 million for the year ended December 31, 2017, an improvement of \$16.1 million. This increase is primarily due to lower catastrophe losses. Catastrophe losses for the year ended December 31, 2018 were \$85.8 million, compared to \$131.1 million for the year ended December 31, 2017, a decrease of \$45.3 million. Chaucer's income before taxes, excluding catastrophes, was \$110.5 million in the year ended December 31, 2018, compared to \$139.7 million for the year ended December 31, 2017. This \$29.2 million decline was primarily due to higher non-catastrophe current accident year large losses and higher expenses, primarily driven by higher brokerage costs due to a change in business mix.

2017 Compared to 2016

Chaucer's net premiums earned were \$853.0 million for the year ended December 31, 2017, compared to \$838.6 million for the year ended December 31, 2016, an increase of \$14.4 million, or 1.7%. This was primarily due to new business growth in the treaty, property and casualty lines, partially offset by a planned increase in the use of ceded reinsurance, as a result of current market conditions.

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Chaucer's income before income taxes for the year ended December 31, 2017 was \$8.6 million, compared to \$126.3 million for the year ended December 31, 2016, a decline of \$117.7 million. This decrease is primarily due to higher catastrophe losses. Catastrophe losses for the year ended December 31, 2017 were \$131.1 million, compared to \$8.0 million for the year ended December 31, 2016, an increase of \$123.1 million. Chaucer's income before taxes, excluding catastrophes, was \$139.7 million in the year ended December 31, 2017, compared to \$134.3 million for the year ended December 31, 2016. This \$5.4 million increase was primarily due to lower non-catastrophe current accident year losses and higher net investment income, partially offset by lower favorable prior years' reserve development.

Catastrophe Loss Development

In 2018, the favorable catastrophe development ratio was 2.0% primarily driven by lower than expected losses related to hurricane Harvey. In 2017, the favorable catastrophe development ratio was 2.8% primarily due to lower than expected property losses in the treaty line. In 2016, the favorable catastrophe development ratio was 4.5% primarily due to lower than expected property losses in the treaty line and, to a lesser extent, in the property line.

Loss and LAE Development, excluding catastrophes

In 2018, the favorable loss and LAE development ratio was 4.3%, excluding catastrophes, primarily due to lower than expected losses in the political, energy, marine, and treaty lines, partially offset by higher than expected losses in the casualty lines. In 2017, the favorable loss and LAE development ratio was 4.0%, excluding catastrophes, primarily as a result of lower than expected losses in the energy and political lines, partially offset by higher than expected losses in the treaty line, primarily a result of higher than expected losses in Chaucer's U.S. casualty business. In 2016, the favorable loss and LAE development ratio was 11.4%, excluding catastrophes, primarily due to lower than expected losses in the energy, casualty, political, and treaty lines. Partially offsetting the 2016 favorable loss and LAE development was the unfavorable impact of foreign exchange rate movements on prior years' loss reserves.

Investment Portfolio

Chaucer held cash and investment assets diversified across several asset classes, as follows:

	2018		2017	
	Value	Carrying % of Total	Value	Carrying % of Total
(dollars in millions)				
Fixed maturities, at fair value	\$24.5	88.1	% \$2,030.4	91.0
Other investments	—	—	123.1	5.5
Cash and cash equivalents	3.3	11.9	78.5	3.5
Total cash and investments	\$27.8	100.0	% \$2,232.0	100.0

Cash and Investments

Total cash and investments decreased \$2.2 billion, or 98.8%, for the year ended December 31, 2018, primarily due to the sale of the U.K. subsidiaries, which included cash and investments of approximately \$2.0 billion. Also, prior to the sale, Chaucer's investment assets were reduced by a pre-signing dividend of \$85.0 million from Chaucer to THG and an approximate \$65 million repayment of intercompany debt. Assets remaining at December 31, 2018 relate to the

Chaucer-related Irish and Australian subsidiaries which, as discussed elsewhere, have been or are expected to be sold in the first quarter of 2019.

Investment Results

Net investment income increased \$2.9 million for the year ended December 31, 2018 and \$6.3 million for the year ended December 31, 2017 as compared to the prior years. The increase in 2018 was primarily due to the impact of higher new money yields and higher income on certain reinsurance contracts subject to deposit accounting, partially offset by lower average invested assets. The increase in 2017 compared to 2016 also reflects higher income on certain reinsurance contracts subject to deposit accounting, as well as the impact of higher operational cashflows.

Earned yields on the investment portfolio were 2.21%, 2.03% and 1.97% for the years ended December 31, 2018, 2017, and 2016, respectively.

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Letter of Credit

Prior to the sale of Chaucer, we had a Standby Letter of Credit Facility Agreement (the “Facility Agreement”) which was not to exceed £220.0 million outstanding at any one time, and included an option to increase the amount available for issuances of letters of credit to £300.0 million. The Facility Agreement provided regulatory capital supporting Chaucer’s underwriting activities for the 2018 and 2019 years of account and each prior open year of account. Supporting the Facility Agreement, we had entered into a Guaranty Agreement (the “Guaranty Agreement”) with Lloyds Bank plc, as Facility Agent and Security Agent, pursuant to which we unconditionally guaranteed the obligations of Chaucer under the Facility Agreement. On December 28, 2018, in connection with the completion of the Chaucer sale, this Facility Agreement and the related Guaranty Agreement were terminated.

Foreign Exchange

Most of Chaucer’s transactions are denominated in the currencies that we use to settle transactions with Lloyd’s, specifically the U.S. Dollar, the U.K. Pound Sterling (“GBP”) and the Canadian Dollar. These are Chaucer’s functional currencies under U.S. GAAP. A portion of Chaucer’s transactions and its assets and liabilities are denominated in other currencies, such as the Euro, the Swiss Franc, the Australian Dollar, and the Japanese Yen. Changes in the value of these currencies versus the functional currencies, particularly versus the GBP, cause transactional gains and losses during each reporting period. During 2018 and 2017, the GBP was relatively stable against most currencies. In contrast, the GBP weakened meaningfully against most currencies in 2016. We believe that this was due, in large part, to the effect of the U.K.’s referendum vote to discontinue its membership in the European Union (“Brexit Referendum”). The following table summarizes the total effect of Chaucer’s foreign exchange transactional gains and losses on comprehensive income:

YEARS ENDED DECEMBER 31	2018	2017	2016
in millions			
Effect of revaluing loss and LAE reserves	\$0.3	\$(2.7)	\$(36.9)
Effect of revaluing overseas deposits and cash	(2.1)	(0.8)	11.5
Effect of revaluing premium receivables	1.1	0.4	3.4
Total FX effect on operating income before interest expense			
and income taxes	(0.7)	(3.1)	(22.0)
FX gains (losses) reflected in net realized investment gains (losses)	0.4	1.7	(0.7)
Total FX effect on income before income taxes	(0.3)	(1.4)	(22.7)
Unrealized FX gains from investment securities	0.5	0.6	8.3
Total pre-tax effect of transactional FX gains (losses)			
on comprehensive income	0.2	(0.8)	(14.4)
Income tax benefit	—	0.3	5.0
Total effect of transactional FX gains (losses)			
on comprehensive income	\$0.2	\$(0.5)	\$(9.4)

During 2018, foreign exchange losses, on a net basis, reduced pre-tax income by approximately \$0.3 million, compared to approximately \$1.4 million in 2017 and \$22.7 million in 2016. For 2018, this impact primarily resulted from the revaluation of investments in overseas deposits. For 2017 and 2016, this impact primarily resulted from the

revaluation of loss and LAE reserves. In addition, during 2018, pre-tax unrealized foreign exchange gains from investment securities were approximately \$0.5 million, which was reflected as an increase to accumulated other comprehensive income, compared to \$0.6 million in 2017 and \$8.3 million in 2016.

INCOME TAXES

We are subject to the tax laws and regulations of the U.S. and foreign countries in which we operate. We file a consolidated U.S. federal income tax return that includes our holding company and its U.S. subsidiaries. Generally, taxes are accrued at the U.S. statutory tax rate for income from the U.S. operations. In December 2017, the U.S. statutory rate decreased from 35% to 21%, effective January 1, 2018. Our primary non-U.S. jurisdiction was the U.K., until the sale of our U.K. subsidiaries, largely completed December 28, 2018. The U.K. statutory tax rate ranged between 20% and 19% during the period 2016 through 2018. We accrue taxes on certain non-U.S. income that is subject to U.S. tax at the enacted U.S. tax rate. Foreign tax credits, where available, are utilized to offset U.S. tax as permitted.

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The provision for income taxes from continuing operations was an expense of \$43.5 million, \$76.8 million, and a benefit of \$1.0 million in 2018, 2017 and 2016, respectively. These amounts resulted in consolidated effective tax rates of 15.4% and 26.2% on pre-tax income for 2018 and 2017, respectively, and a benefit of 1.5% on pre-tax income for 2016. The provision for 2018 reflects a tax benefit related to prior years of \$4.3 million, primarily due to a \$40.0 million contribution to our U.S. pension plan made in September 2018 and reflected as a deduction in our 2017 U.S. income tax return at the then higher statutory tax rate. The provision for the 2017 tax year further reflects a tax benefit of \$3.9 million related to the revaluation of our net deferred tax liabilities as a result of the enactment of the Tax Cuts and Jobs Act (“TCJA,” “U.S. Tax Reform” or “the Act”). See the discussion of the new tax law, “U.S. Tax Reform”, below. The provisions in 2018 and 2017 also included excess tax benefits related to stock-based compensation of \$2.3 million and \$5.3 million, respectively. The adoption of ASC Update No. 2016-09 on January 1, 2017 required the inclusion of excess tax benefits from stock-based compensation in the income statement, whereas prior to the adoption, these excess tax benefits were recognized in additional paid-in capital. Lastly, the provisions in 2018, 2017, and 2016 reflect benefits related to tax planning strategies implemented in prior years of \$9.2 million, \$12.7 million, and \$20.7 million, respectively. Absent these items, the provision for income taxes for 2018, 2017, and 2016 would have been expenses of \$59.3 million, or 21.0%, \$98.7 million, or 33.7%, and \$19.7 million, or 29.8%, respectively. The lower effective tax rate in 2018 is primarily due to the aforementioned decrease in the U.S. statutory rate and the lower effective tax rate in 2016 is primarily due to lower underwriting income.

The income tax provision on operating income was an expense of \$69.3 million, \$89.5 million and \$46.3 million for 2018, 2017 and 2016, respectively. These provisions resulted in effective tax rates for operating income of 19.2%, 31.7% and 32.7% in 2018, 2017 and 2016, respectively. The provisions for 2018 and 2017 reflect the aforementioned excess tax benefit related to stock-based compensation of \$2.3 million and \$5.3 million, respectively. In addition, the 2018 provision included the aforementioned tax benefit related to prior years of \$4.3 million. Absent these items, the provision for income taxes for 2018 and 2017 would have been expense of \$75.9 million, or 21.0% and \$94.8 million, or 33.6%.

The income tax provision on the Chaucer business was an expense of \$4.7 million, \$21.7 million and \$37.2 million for 2018, 2017 and 2016, respectively. The provision for 2017 reflects a one-time expense of \$26.2 million related to the enactment of the TCJA. This expense included a revaluation of our net deferred tax assets and the recognition of federal income tax on previously untaxed earnings from foreign operations of \$13.5 million and \$12.7 million, respectively. Absent these items, the provision for income tax for 2017 would have been a benefit of \$4.5 million.

The income tax provision on the gain from the disposal of Chaucer business was an expense of \$42.5 million. This provision includes a write off of \$8.0 million of deferred tax assets primarily attributable to Lloyd’s underwriting losses.

During 2017, we recorded an increase to our uncertain tax positions of \$0.9 million related to the recognition of federal income taxes on previously untaxed earnings from foreign operations. This amount is partially offset by a decrease in our uncertain tax positions of \$0.6 million due to the expiration of a statute of limitation, for a net change of \$0.3 million. We are subject to U.S. federal and state examinations and foreign examinations for years after 2014. There are no ongoing audits on our open tax years.

In prior years, we completed several transactions which resulted in the realization, for tax purposes only, of unrealized gains in our investment portfolio. As a result of these transactions, we were able to realize capital losses carried forward and release the valuation allowance recorded against the deferred tax asset related to those losses. The releases of valuation allowances were recorded as a benefit in accumulated other comprehensive income. Previously unrealized benefits of \$9.2 million, \$12.7 million and \$20.7 million attributable to non-operating income, are

recognized as part of our income from continuing operations during 2018, 2017 and 2016, respectively. The remaining amount of \$35.6 million in accumulated other comprehensive income will be released into income from continuing operations in future years, as the investment securities subject to these transactions are sold or mature.

U.S. TAX REFORM

On December 22, 2017, the TCJA was enacted in the U.S. The Act substantially changed many aspects of the U.S. Tax code, including reducing the U.S. corporate income tax rate from 35% to 21%. While the new corporate rate is effective on January 1, 2018, we have recognized the impact of the rate change on our deferred tax balances as of the enactment date. The effect of this re-measurement of our deferred tax balances is a provision of \$9.4 million for the year ended December 31, 2017. This provision is recorded as a component of income tax expense in continuing operations and within discontinued operations as a component of income from Chaucer business. A tax benefit of \$4.1 million was recognized in continuing operations and an expense of \$13.5 million was recognized in discontinued operations. This amount includes the revaluation of deferred taxes initially recorded through other comprehensive income and recorded through discontinued operations, such as unrealized appreciation on investments, employee benefit plan-related items, foreign currency translation adjustments and reserve adjustments for discontinued business. Deferred taxes related to the revaluation of our pension plans at December 31, 2017, as well as changes in unrealized gains and losses occurring after the Act's enactment date, are recorded at 21% in other comprehensive income.

The Act also created a territorial tax system, which will generally allow companies to repatriate future non-U.S. sourced earnings without incurring additional U.S. taxes, by providing a 100% exemption on dividends received from certain non-U.S. subsidiaries. Although most of our non-U.S. income had been previously subject to U.S. taxes, a portion of our non-U.S. income had been

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indefinitely reinvested overseas and was not subject to U.S. tax until repatriated. These non-U.S. earnings are now subject to a one-time mandatory toll charge totaling \$12.7 million, which is recorded within discontinued operations as a component of income tax expense related to the Chaucer business for the year ended December 31, 2017.

In addition, the Act limited various existing deductions such as executive compensation and introduced new income taxes on certain low-taxed non-U.S. income. Under the Act, the exemption from the \$1 million limitation on certain executive compensation has been eliminated. As a result, we have recognized a provision of \$0.2 million for the year ended December 31, 2017.

The cumulative effect of the enactment of TCJA is an expense of \$22.3 million for the year ended December 31, 2017, comprising the aforementioned three components. Our estimates are not based upon provisional amounts, as defined in the SEC's Staff Accounting Bulletin No. 118.

CRITICAL ACCOUNTING ESTIMATES

The discussion and analysis of our financial condition and results of operations are based upon the consolidated financial statements. These statements have been prepared in accordance with U.S. GAAP, which requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amount of revenues and expenses during the reporting period. Actual results could differ from those estimates. The following critical accounting estimates are those which we believe affect the more significant judgments and estimates used in the preparation of our financial statements. Additional information about other significant accounting policies and estimates may be found in Note 1—"Summary of Significant Accounting Policies" in the Notes to Consolidated Financial Statements.

RESERVE FOR LOSSES AND LOSS EXPENSES

See "Reserve for Losses and Loss Adjustment Expenses" within "Results of Operations – Segments" for a discussion of our critical accounting estimates for loss reserves.

REINSURANCE RECOVERABLE BALANCES

See "Reinsurance Recoverables" in Part I – Item 1 for information on our reinsurance recoverable balances.

PENSION BENEFIT OBLIGATIONS

We currently have a U.S. qualified defined benefit plan and several smaller non-qualified benefit plans. Additionally, we held a defined benefit pension plan for our international subsidiary, Chaucer, until its sale on December 28, 2018. Accordingly, this discussion focuses on our domestic plans only. In order to measure the liabilities and expense associated with these plans, we must make various estimates and key assumptions, including discount rates used to value liabilities, assumed rates of return on plan assets, employee turnover rates and anticipated mortality rates. These estimates and assumptions are reviewed at least annually and are based on our historical experience, as well as current facts and circumstances. In addition, we use outside actuaries to assist in measuring the expenses and liabilities associated with our defined benefit pension plan.

Two significant assumptions used in the determination of benefit plan obligations and expenses that are dependent on market factors, which have been subject to a greater level of volatility in recent years, are the discount rate and the return on plan asset assumptions. The discount rate enables us to state expected future benefit payments as a present

value on the measurement date. We also use this discount rate in the determination of our pre-tax pension expense or benefit. A lower discount rate increases the present value of benefit obligations and increases pension expense. We determined our discount rate for the domestic plan utilizing independent yield curves which provide for a portfolio of high quality bonds that are expected to match the cash flows of our pension plans. Bond information used in the yield curve included only those rated Aa or better as of December 31, 2018 and 2017, respectively, and had been rated by at least two well-known rating agencies. The following provides the discount rates for our qualified pension plan.

Discount Rate Assumptions:	U.S. Qualified Plan	
2018	4.50	%
2017	3.875	%

To determine the expected long-term return on plan assets, we generally consider historical mean returns by asset class for passive indexed strategies, as well as current and expected asset allocations, and adjust for certain factors that we believe will have an impact on future returns. Actual returns on plan assets in any given year seldom result in the achievement of the expected rate of return on assets. Actual returns on plan assets in excess of these expected returns will generally reduce our net actuarial losses (or increase actuarial gains) that are reflected in the accumulated other comprehensive income balance in shareholders' equity, whereas actual returns on plan assets that are less than expected returns will generally increase our net actuarial losses (or decrease actuarial gains) that are reflected in accumulated other comprehensive income. These gains or losses are amortized into expense in future years. The U.S. qualified plan held assets consisting of approximately 85% fixed maturities and 15% equities at December 31, 2018.

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The expected return on asset assumption was 4.75% and 5.00% in 2018 and 2017, respectively. Asset returns are reflected net of administrative expenses.

Net actuarial losses related to the domestic qualified plan of \$19.9 million and gains of \$11.4 million were reflected as changes to accumulated other comprehensive income in 2018 and 2017, respectively. Net actuarial losses in 2018 resulted primarily from investment losses experienced during the year, partially offset by increases in the discount rate. Net actuarial gains in 2017 resulted primarily from benefits from investment gains experienced during the year, partially offset by decreases in the discount rate. The change in these actuarial gains and losses is amortized into earnings in future periods. In 2018 and 2017, amortization of actuarial losses from prior years was \$8.6 million and \$12.5 million, respectively.

Expenses related to our defined benefit plan are generally calculated based upon information available at the beginning of the plan year. Our pre-tax expense related to our domestic qualified defined benefit plan was \$6.5 million and \$11.4 million for 2018 and 2017, respectively. As a result of the significant decline of our actual investment experience in 2018, which was only partially offset by an increase in the discount rate, our pension expense related to our domestic qualified defined benefit plan is expected to increase from \$6.5 million in 2018 to \$7.6 million in 2019.

Holding all other assumptions constant, sensitivity to changes in our key assumptions related to our qualified defined pension plan is as follows:

(in millions)	
Discount Rate -	
25 basis point increase	
Change in Benefit Obligation	\$(9.2)
Change in 2018 Expense	(1.0)
25 basis point decrease	
Change in Benefit Obligation	9.5
Change in 2018 Expense	1.0
Expected Return on Plan Assets -	
25 basis point increase	
Change in 2018 Expense	(1.1)
25 basis point decrease	
Change in 2018 Expense	1.1

OTHER-THAN-TEMPORARY IMPAIRMENTS

We employ a systematic methodology to evaluate declines in fair values below amortized cost for all fixed maturity investments. The methodology utilizes a quantitative and qualitative process that seeks to ensure that available evidence concerning the declines in fair value below amortized cost is evaluated in a disciplined manner. In determining whether a decline in fair value below amortized cost is other-than-temporary, we evaluate several factors and circumstances, including the issuer's overall financial condition; the issuer's credit and financial strength ratings; the issuer's financial performance, including earnings trends, dividend payments and asset quality; any specific events which may influence the operations of the issuer; the general outlook for market conditions in the industry or

geographic region in which the issuer operates; and the length of time and the degree to which the fair value of an issuer's securities remains below our cost. We consider factors that might raise doubt about the issuer's ability to make contractual payments as they become due and whether we expect to recover the entire amortized cost basis of the security.

We monitor corporate fixed maturity securities with unrealized losses on a quarterly basis and more frequently when necessary to identify potential credit deterioration, as evidenced by ratings downgrades, unexpected price variances, and/or company or industry specific concerns. We apply consistent standards of credit analysis which includes determining whether the issuer is current on its contractual payments, and we consider past events, current conditions and reasonable forecasts to evaluate whether we expect to recover the entire amortized cost basis of the security. We utilize valuation declines as a potential indicator of credit deterioration and apply additional levels of scrutiny in our analysis as the severity of the decline increases or duration persists.

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For our impairment review of asset-backed fixed maturity securities, we forecast our best estimate of the prospective future cash flows of the security to determine if we expect to recover the entire amortized cost basis of the security. Our analysis includes estimates of underlying collateral default rates based on historical and projected delinquency rates and estimates of the amount and timing of potential recovery. We consider available information relevant to the collectability of cash flows, including information about the payment terms of the security, prepayment speeds, the financial condition of the underlying borrowers, collateral trustee reports, credit ratings analysis and other market data when developing our estimate of the expected cash flows.

When an OTTI of a fixed maturity security occurs, and we intend to sell or more likely than not will be required to sell the investment before recovery of its amortized cost basis, the amortized cost of the security is reduced to its fair value, with a corresponding charge to earnings, which reduces net income and earnings per share. If we do not intend to sell the fixed maturity investment or more likely than not will not be required to sell it, we separate the OTTI into the amount we estimate represents the credit loss and the amount related to all other factors. The amount of the estimated loss attributable to credit is recognized in earnings, which reduces net income and earnings per share. The amount of the estimated OTTI that is non-credit related is recognized in other comprehensive income, net of applicable taxes.

We estimate the amount of the OTTI that relates to credit by comparing the amortized cost of the fixed maturity security with the net present value of the fixed maturity security's projected future cash flows, discounted at the effective interest rate implicit in the investment prior to impairment. The non-credit portion of the impairment is equal to the difference between the fair value and the net present value of the fixed maturity security at the impairment measurement date.

Temporary declines in market value are recorded as unrealized losses, which do not affect net income and earnings per share, but reduce accumulated other comprehensive income, which is reflected in our Consolidated Balance Sheets. We cannot provide assurance that the OTTIs will be adequate to cover future losses or that we will not have substantial additional impairments in the future. See "Investments" for further discussion regarding OTTIs and securities in an unrealized loss position.

DEFERRED TAX ASSETS

Deferred tax assets and liabilities primarily result from temporary differences between the amounts recorded in our consolidated financial statements and the tax basis of our assets and liabilities and loss and tax credit carryforwards. These temporary differences are measured at the balance sheet date using enacted tax rates expected to apply to taxable income in the years the temporary differences are expected to reverse.

The realization of deferred tax assets depends upon the existence of sufficient taxable income within the carryback or carryforward periods under the tax law in the applicable tax jurisdiction. Consideration is given to available positive and negative evidence, including reversals of deferred tax liabilities, projected future taxable income in each tax jurisdiction, tax planning strategies and recent financial operations. Valuation allowances are established if, based on the weight of available information, it is more likely than not that all or some portion of the deferred tax assets will not be realized. The determination of the valuation allowance for our deferred tax assets requires management to make certain judgments and assumptions. Our judgments and assumptions are subject to change given the inherent uncertainty in predicting future performance and specific industry and investment market conditions. Changes in valuation allowances are generally reflected in income tax expense or as an adjustment to other comprehensive income depending on the nature of the item for which the valuation allowance is being recorded.

The following are the components of our deferred tax assets and liabilities as of December 31, 2018.

DEFERRED TAX ASSETS (LIABILITIES) (in millions)	Amount
Loss, LAE and unearned premium reserves, net	\$ 129.8
Deferred acquisition costs	(95.0)
Employee benefit plan	14.5
Investments, net	4.1
Software capitalization	(18.3)
Other, net	15.7
	50.8
Less: Valuation allowance	0.2
Total	\$ 50.6

As of December 31, 2018, we had \$0.2 million of valuation allowance related to our employee benefit plan. We believe it is more likely than not that the remaining deferred tax assets will be realized.

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STATUTORY SURPLUS OF U.S. INSURANCE SUBSIDIARIES

The following table reflects statutory surplus for our insurance subsidiaries:

DECEMBER 31 (in millions)	2018	2017
Total Statutory Capital and Surplus	\$2,172.5	\$2,077.1

The statutory capital and surplus for our insurance subsidiaries increased \$95.4 million during 2018, primarily due to approximately \$290 million of income, partially offset by a \$140.0 million dividend paid by Hanover Insurance to THG in the second quarter and increases in unrealized losses on investments.

The NAIC prescribes an annual calculation regarding risk based capital (“RBC”). RBC ratios for regulatory purposes, as described in the glossary, are expressed as a percentage of the capital required to be above the Authorized Control Level (the “Regulatory Scale”); however, in the insurance industry, RBC ratios are widely expressed as a percentage of the Company Action Level. The following table reflects the Company Action Level, the Authorized Control Level and RBC ratios for Hanover Insurance (which includes Citizens and other insurance subsidiaries), as of December 31, 2018 and 2017, expressed both on the Industry Scale (Total Adjusted Capital divided by the Company Action Level) and Regulatory Scale (Total Adjusted Capital divided by Authorized Control Level):

(dollars in millions)

	Company Action Level	Authorized Control Level	RBC Ratio Industry Scale	RBC Ratio Regulatory Scale
DECEMBER 31, 2018				
The Hanover Insurance Company	\$ 1,036.8	\$ 518.4	209 %	417 %
DECEMBER 31, 2017				
The Hanover Insurance Company	\$ 1,001.4	\$ 500.7	207 %	413 %

LIQUIDITY AND CAPITAL RESOURCES

Liquidity is a measure of our ability to generate sufficient cash flows to meet the cash requirements of business operations. As a holding company, our primary ongoing source of cash is dividends from our insurance subsidiaries. However, dividend payments to us by our insurance subsidiaries are subject to limitations imposed by regulators, such as prior notice periods and the requirement that dividends in excess of a specified percentage of statutory surplus or prior year’s statutory earnings receive prior approval (so called “extraordinary dividends”). Hanover Insurance paid \$140.0 million in dividends to the holding company during 2018. In 2017, Hanover Insurance paid \$296.8 million in dividends to the holding company, which included \$80.0 million of extraordinary dividends. In 2016, a \$218.8 million

ordinary dividend was paid by Hanover Insurance.

Dividend payments previously made to the holding company by Chaucer were regulated by U.K. law. Chaucer paid dividends of \$85.0 million and \$79.5 million to the holding company in 2018 and 2016, respectively, and did not pay any dividend in 2017. Additionally, in connection with an intercompany borrowing arrangement between Chaucer and a wholly-owned non-insurance subsidiary of the holding company, interest on a \$300 million note was paid by Chaucer on a quarterly basis to this affiliate, which is ultimately available to provide dividends to the holding company. During 2018 and 2017, Chaucer made payments of \$22.5 million and \$20.7 million, respectively, related to this agreement of which \$22.1 million and \$20.2 million, respectively, were then dividended to the holding company. In 2016, Chaucer made a payment of \$22.4 million directly to the holding company. This agreement was terminated as part of the sale of Chaucer.

Sources of cash for our insurance subsidiaries primarily consist of premiums collected, investment income and maturing investments. Primary cash outflows are paid claims, losses and loss adjustment expenses, policy and contract acquisition expenses, other underwriting expenses, and investment purchases. Cash outflows related to losses and loss adjustment expenses can be variable because of uncertainties surrounding settlement dates for liabilities for unpaid losses and because of the potential for large losses either individually or in the aggregate. We periodically adjust our investment policy to respond to changes in short-term and long-term cash requirements.

Net cash provided by operating activities was \$551.3 million during 2018, as compared to \$704.6 million during 2017 and \$743.4 million in 2016. During 2018, the \$153.3 million decrease in cash provided was primarily the result of higher loss payments, the contribution made to the qualified defined benefit plan and taxes paid, partially offset by an increase in premiums collected. During 2017, the \$38.8 million decrease in cash provided was primarily the result of higher loss payments and taxes paid to foreign jurisdictions, partially offset by an increase in premiums collected.

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Net cash provided by investing activities was \$271.3 million during 2018, as compared to net cash used of \$506.3 million during 2017 and \$495.4 million in 2016. During 2018, cash provided by investing activities primarily related to net proceeds received from the sale of Chaucer. These proceeds were partially offset by net purchases of fixed maturities, commercial mortgage loan participations, and other investments. During 2017, cash used in investing activities primarily related to net purchases of fixed maturities, commercial mortgage loan participations, and other investments. During 2016, cash used in investing activities primarily related to net purchases of fixed maturities, commercial mortgage loan participations, and other investments. These cash outflows were partially offset by proceeds from net sales of equity securities.

Net cash used in financing activities was \$171.0 million during 2018, as compared to \$111.7 million during 2017 and \$300.8 million in 2016. During 2018, cash used in financing activities primarily resulted from the payment of dividends to shareholders and repurchases of common stock. During 2017, cash used in financing activities primarily resulted from the payment of dividends to shareholders and repurchases of common stock, partially offset by cash inflows related to option exercises. During 2016, cash used in financing activities primarily resulted from the repayment of debt, repurchases of common stock, and payment of dividends to shareholders. These cash outflows were partially offset by cash inflows related to the issuance of \$375 million of senior unsecured debentures.

Dividends to common shareholders are subject to quarterly board approval and declaration. During 2018, as declared by the Board, dividends totaled \$288.0 million. This included three quarterly dividends of \$0.54 per share and one quarterly dividend of \$0.60 per share to our shareholders, as well as a special dividend declared on December 30, 2018 of \$4.75 per share. We believe that our holding company assets are sufficient to provide for future shareholder dividends, should the Board of Directors declare them.

At December 31, 2018, THG, as a holding company, held approximately \$1.2 billion of fixed maturities and cash. This amount includes deployable capital primarily generated through the sale of Chaucer which provided approximately \$779 million of proceeds to the holding company upon closing the sale of the U.K. subsidiaries in December 2018. On January 2, 2019, we paid cash of \$250.0 million as part of an accelerated share repurchase (“ASR”) agreement (described below). Additionally, in January 2019, we paid the aforementioned special dividend of \$4.75 per share with total cash payments of approximately \$193 million. We believe our holding company assets will be sufficient to meet other 2019 obligations, which consist primarily of quarterly dividends to our shareholders (as and to the extent declared), interest on our senior and subordinated debentures, certain costs associated with benefits due to our former life employees and agents, and, to the extent required, payments related to indemnification of liabilities associated with the sale of various subsidiaries. As discussed below, we have, and opportunistically may continue to, repurchase our common stock and debt. We do not expect that it will be necessary to dividend additional funds from our insurance subsidiaries in order to fund 2019 holding company obligations; however, we may decide to do so.

We expect to continue to generate sufficient positive operating cash to meet all short-term and long-term cash requirements relating to current operations, including the funding of our qualified defined benefit pension plan. Based upon the current estimate of liabilities and certain assumptions regarding investment returns and other factors, our qualified defined benefit pension plan has plan liabilities in excess of plan assets of approximately \$19 million. The ultimate payment amounts for our benefit plan is based on several assumptions, including but not limited to, the rate of return on plan assets, the discount rate for benefit obligations, mortality experience, interest crediting rates, inflation and the ultimate valuation and determination of benefit obligations. Since differences between actual plan experience and our assumptions are almost certain, changes, both positive and negative, to our current funding status and ultimately our obligations in future periods are likely.

Our insurance subsidiaries maintain a high degree of liquidity within their respective investment portfolios in fixed maturity and short-term investments. We believe that the quality of the assets we hold will allow us to realize the long-term economic value of our portfolio, including securities that are currently in an unrealized loss position. We do not anticipate the need to sell these securities to meet our insurance subsidiaries' cash requirements since we expect our insurance subsidiaries to generate sufficient operating cash to meet all short-term and long-term cash requirements relating to current operations. However, there can be no assurance that unforeseen business needs or other items will not occur causing us to have to sell those securities in a loss position before their values fully recover, thereby causing us to recognize impairment charges in that time period.

On December 30, 2018, the Board of Directors authorized a new stock repurchase program which provides for aggregate repurchases of our common stock of up to \$600 million. Under the repurchase authorization, the Company may repurchase, from time to time, common shares in amounts, at prices and at such times as the Company deems appropriate, subject to market conditions and other considerations. Repurchases may be executed using open market purchases, privately negotiated transactions, accelerated repurchase programs or other transactions. We are not required to purchase any specific number of shares or to make purchases by any certain date under this program. On January 2, 2019, pursuant to the terms of an ASR agreement, we paid \$250.0 million and received an initial delivery of approximately 1.8 million shares of our common stock, which is approximately 80% of the total number of shares expected to be repurchased under this agreement. Additionally, under the prior repurchase program, during 2018, we repurchased 0.5 million shares at a cost of \$57.7 million.

From time to time, we may repurchase our debt on an opportunistic basis. During the third quarter of 2018, we repurchased subordinated debentures with a net carrying value of \$9.6 million at a cost of \$11.5 million, resulting in a loss of \$1.9 million.

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Additionally, on January 2, 2019, we repaid \$125 million of our FHLB advances due 2029 with a coupon of 5.5%. In the fourth quarter of 2018, we recorded a non-operating charge of approximately \$26.3 million for related pre-payment fees. Membership in the FHLB provides us with access to additional liquidity based on our stock holdings and pledged collateral. At December 31, 2018, we had additional borrowing capacity of \$90.1 million. There were no borrowings outstanding under this short-term facility at December 31, 2018; however, we have borrowed and may continue to borrow, from time to time, through this facility to provide short-term liquidity.

We have a \$200.0 million credit agreement which expires in May 2019. Borrowings, if any, under the agreement are unsecured and incur interest at a rate per annum equal to, the higher of (a) the prime commercial lending rate of the administrative agent, (b) the Federal Funds Rate plus half a percent, or (c) the one month Adjusted LIBOR plus one percent and any applicable margin. The agreement contains financial covenants including, but not limited to, maintaining at least specified levels of consolidated equity and leverage ratios, and requires certain of our subsidiaries to maintain minimum RBC ratios. We had no borrowings under this agreement during 2018.

At December 31, 2018, we were in compliance with the covenants of our debt and credit agreements.

CONTRACTUAL OBLIGATIONS

Financing obligations generally include repayment of our senior debentures, subordinated debentures, borrowings from the FHLB, and operating lease payments. The following table represents our annual payments related to the contractual principal and interest payments of these financing obligations as of December 31, 2018, unless otherwise noted, and operating lease payments reflect expected cash payments based upon lease terms. In addition, we also have included our estimated payments related to our loss and LAE obligations and our current expectation of payments to be made to support the obligations of our benefit plans. The following table also includes commitments to purchase investment securities at a future date. Actual payments may differ from the contractual and/or estimated payments in the table.

	Maturity less than 1 year	Maturity 1-3 years	Maturity 4-5 years	Maturity in excess of 5 years	Total
DECEMBER 31, 2018 (in millions)					
Debt ⁽¹⁾	\$125.0	\$—	\$—	\$662.7	\$787.7
Interest associated with debt ⁽¹⁾	36.9	73.8	73.8	390.9	575.4
Operating lease commitments ⁽²⁾	13.5	19.3	8.3	—	41.1
Defined benefit pension and post-retirement benefit obligation ⁽³⁾	1.3	2.4	2.3	5.2	11.2
Investment commitments ⁽⁴⁾	56.7	69.8	16.5	—	143.0
Loss and LAE obligations ⁽⁵⁾	1,656.0	1,586.3	659.4	1,402.4	5,304.1

- (1) Debt included in the maturity less than 1 year category reflects our advances from the FHLB that were repaid on January 2, 2019. No interest payments are provided for this item. Debt in the maturity in excess of 5 years category includes our senior debentures due in 2026, which pay annual interest at a rate of 4.50%, our senior debentures due in 2025, which pay annual interest at a rate of 7.625%, our subordinated debentures due in 2053, which pay annual interest at a rate of 6.35%, and our subordinated debentures due in 2027, which pay cumulative dividends at an annual rate of 8.207%. Payments related to the principal amounts of these agreements represent contractual maturity; therefore, principal and interest associated with these obligations are reflected in the above table based upon the contractual maturity dates.
- (2) Our subsidiaries are lessees with a number of operating leases.
- (3) Amounts represent non-qualified defined benefit pension and postretirement benefit obligations and reflect estimated payments to be made through plan year 2028 for pension, postretirement, and postemployment benefits, although it is likely that payments will be made beyond 2028. Estimates of these payments and the payment patterns are based upon historical experience. We do not expect to make any significant contributions to our qualified plan in order to meet our minimum funding requirements for the next several years; therefore, no contributions for this plan are included in this schedule. However, additional contributions may be required in the future based on the level of pension assets and liabilities in future periods. The ultimate payment amount for our pension plan is based on several assumptions, including, but not limited to, the rate of return on plan assets, the discount rate for benefit obligations, mortality experience, interest crediting rates and the ultimate valuation of benefit obligations. Differences between actual plan experience and our assumptions are likely and will likely result in changes to our funding obligations in future periods.
- (4) Investment commitments relate primarily to limited partnerships.
- (5) Unlike many other forms of contractual obligations, loss and LAE reserves do not have definitive due dates and the ultimate payment dates are subject to a number of variables and uncertainties. As a result, the total loss and LAE reserve payments to be made by period, as shown in the table, are estimates based principally on historical experience.

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OFF-BALANCE SHEET ARRANGEMENTS

We currently do not have any material off-balance sheet arrangements that are reasonably likely to have an effect on our financial position, revenues, expenses, results of operations, liquidity, capital expenditures, or capital resources.

CONTINGENCIES AND REGULATORY MATTERS

Information regarding litigation and legal contingencies appears in Note 18 – “Commitments and Contingencies” in the Notes to Consolidated Financial Statements. Information related to certain regulatory and industry developments are contained in “Regulation” in Part 1 - Item 1 and in “Risk Factors” in Part 1 – Item 1A.

RATING AGENCIES

Insurance companies are rated by rating agencies to provide both industry participants and insurance consumers information on specific insurance companies. Higher ratings generally indicate the rating agencies’ opinion regarding financial stability and a stronger ability to pay claims.

We believe that strong ratings are important factors in marketing our products to our agents and customers, since rating information is broadly disseminated and generally used throughout the industry. Insurance company financial strength ratings are assigned to an insurer based upon factors deemed by the rating agencies to be relevant to policyholders and are not directed toward protection of investors. Such ratings are neither a rating of securities nor a recommendation to buy, hold or sell any security. Customers typically focus on claims-paying ratings, while creditors focus on debt ratings. Investors use both to evaluate a company’s overall financial strength.

RISKS AND FORWARD-LOOKING STATEMENTS

Management’s Discussion and Analysis contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. For a discussion of indicators of forward-looking statements and specific important factors that could cause actual results to differ materially from those contained in forward-looking statements, see “Risk Factors” in Part 1 – Item 1A. This Management’s Discussion and Analysis should be read and interpreted in light of such factors.

GLOSSARY OF SELECTED INSURANCE TERMS

Account business - Customers with multiple policies and/or coverages.

Account rounding – The conversion of single policy customers to accounts with multiple policies and/or additional coverages.

Benefit payments – Payments made to an insured or their beneficiary in accordance with the terms of an insurance policy.

Casualty insurance – Insurance that is primarily concerned with the losses caused by injuries to third persons and their property (other than the policyholder) and the related legal liability of the insured for such losses.

Catastrophe – A severe loss, resulting from natural or manmade events, including, among others, hurricanes, tornadoes and other windstorms, earthquakes, hail, severe winter weather, fire, explosions, and terrorism.

Catastrophe loss – Loss and directly identified loss adjustment expenses from catastrophes, including development on prior years' catastrophe loss reserves. The Insurance Services Office (“ISO”) Property Claim Services (“PCS”) defines a catastrophe loss as an event that causes \$25 million or more in insured property losses from U.S. direct writers and affects a significant number of property and casualty policyholders and insurers. In limited instances where the impact of an event extends across multiple geographic areas or time periods, but is not within the specific parameters established by PCS, the Company may determine that certain losses are better included within the same catastrophe event. In addition to those catastrophe events declared by ISO, claims management also generally includes within the definition of a “catastrophe loss”, a property loss event that causes approximately \$5 million or more in Company insured losses and affects in excess of one hundred policy holders.

Cede; cedent; ceding company – When a party reinsures its liability with another party, it “cedes” business and is referred to as the “cedent” or “ceding company”.

Credit spread – The difference between the yield on the debt securities of a particular corporate debt issue and the yield of a similar maturity of U.S. Treasury debt securities.

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Current accident year results – A non-GAAP measure of the estimated earnings impact of current premiums offset by estimated loss experience and expenses for the current accident year. This measure includes the estimated increase in revenue associated with higher prices (premiums), including those caused by price inflation and changes in exposure, partially offset by higher volume driven expenses and inflation of loss costs. Volume driven expenses include acquisition costs such as commissions paid to agents, which are typically based on a percentage of premium dollars.

Earned premium – The portion of a premium that is recognized as income, or earned, based on the expired portion of the policy period, that is, the period for which loss coverage has actually been provided. For example, after six months, \$50 of a \$100 annual premium is generally considered earned premium. The remaining \$50 of annual premium is unearned premium. Net earned premium is earned premium net of reinsurance.

Excess of loss reinsurance – Reinsurance that indemnifies the insured against all or a specific portion of losses under reinsured policies in excess of a specified dollar amount or “retention”.

Exposure – As it relates to underwriting, a measure of the rating units or premium basis of a risk; for example, an exposure of a number of automobiles. As it relates to loss events, the maximum value of claims made on an insurer from an event or events that would result in the total exhaustion of the cover or indemnity offered by an insurance policy.

Exposure management actions – Actions that focus on improving underwriting profitability and/or lessening earnings volatility by reducing our exposures and property concentrations in certain geographies and lines that are believed to be more prone to catastrophe and non-catastrophe losses. These actions include, but are not limited to, non-renewal, rate increases, stricter underwriting standards and higher deductible utilization, agency management actions, and more selective portfolio management by modifying our business mix.

Frequency – The number of claims occurring during a given coverage period.

Inland Marine Insurance – In Commercial Lines, this is a type of coverage developed for insuring businesses against physical losses to property such as contractor’s equipment, builder’s risk and goods in transit that do not involve ocean transport. It covers articles in transit by all forms of land and air transportation as well as bridges, tunnels and other means of transportation and communication. In the context of Personal Lines, this term relates to floater policies that cover expensive personal items such as fine art and jewelry.

Loss adjustment expenses (“LAE”) – Expenses incurred in the adjusting, recording, and settlement of claims. These expenses include both internal company expenses and outside services. Allocated LAE (“ALAE”) refers to defense and cost containment expenses, including legal fees, court costs, and investigation fees. Unallocated LAE (“ULAE”) refers to expenses that generally cannot be associated with a specific claim. ULAE includes internal costs such as salaries, fringe benefits and other overhead costs associated with the claim settlement process and external adjustment and appraisal fees.

Loss costs – An amount of money paid for an insurance claim.

Loss reserves – Liabilities established by insurers to reflect the estimated cost of claims payments and the related expenses that the insurer will ultimately be required to pay in respect of insurance it has written. Reserves are established for losses and for LAE.

Morbidity – Morbidity relates to the occurrence of illness, disability or other physical or psychological impairment, whether temporary or permanent, for insured risks. Morbidity is a key assumption for long-term care insurance and other forms of individual and group health benefits.

Peril – A cause of loss.

Price(ing) increase or decrease (Commercial Lines) – Represents the average change in premium on renewed policies caused by the estimated net effect of base rate changes, discretionary pricing, inflation or changes in policy level exposure or insured risk.

Price(ing) increase or decrease (Personal Lines) – The estimated cumulative premium effect of approved rate actions applied to policies available for renewal, regardless of whether or not policies are actually renewed. Pricing changes do not represent actual increases or decreases realized by the Company.

Property insurance – Insurance that provides coverage for tangible property in the event of loss, damage or loss of use.

Rate – The estimated pure pricing factor upon which the policyholder's premium is based excluding changes in exposure or risk.

Ratios: ⁽¹⁾

Catastrophe loss ratio –The ratio of catastrophe losses incurred to premiums earned.

Combined ratio – This ratio is the GAAP equivalent of the statutory ratio that is widely used as a benchmark for determining an insurer's underwriting performance. A ratio below 100% generally indicates profitable underwriting prior to the consideration of investment income. A combined ratio over 100% generally indicates unprofitable underwriting prior to the consideration of investment income. The combined ratio is the sum of the loss and loss adjustment expense ratio and the expense ratio.

Expense Ratio – The ratio of underwriting expenses (including the amortization of deferred acquisition costs), less premium installment fee income and premium charge offs, to premiums earned for a given period.

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Loss and Loss adjustment expense (“LAE”) ratio – The ratio of loss and loss adjustment expenses to premiums earned for a given period. The LAE ratio includes catastrophe losses and prior year reserve development.

Loss ratio – The ratio of losses (including catastrophe losses) to premiums earned for a given period.

Reinstatement premium – A pro-rata reinsurance premium that may be charged to us by our reinsurers. A reinstatement premium may be contractually required to be charged for restoring an amount of reinsurance coverage reduced as the result of a reinsurance loss payment that depletes or exhausts a reinsurance treaty or treaty layer. For example, in 2005, this premium was required to ensure that our property catastrophe occurrence treaty, which was exhausted by hurricane Katrina, was available again in the event of another large catastrophe loss in 2005. Reinsurance reinstatement premiums accrued by us are accounted for as a reduction in net premiums earned rather than as an “expense”. For certain reinsurance treaties, a ceding commission adjustment is recorded commensurate with a reinstatement premium accrual. A ceding commission is a fee paid by a reinsurance company to a direct writer to cover the costs of issuing the policy and is recorded as a contra-expense.

Reinsurance – An arrangement in which an insurance company, or a reinsurance company, known as the reinsurer, agrees to indemnify another insurance or reinsurance company, known as the ceding company, against all or a portion of the insurance or reinsurance risks underwritten by the ceding company under one or more policies. Reinsurance can provide a ceding company with several benefits, including a reduction in net liability on risks and catastrophe protection from large or multiple losses. Reinsurance does not legally discharge the primary insurer from its liability with respect to its obligations to the insured.

Risk based capital (“RBC”) – A method of measuring the minimum amount of capital appropriate for an insurance company to support its overall business operations in consideration of its size and risk profile. The RBC ratio for regulatory purposes is calculated as total adjusted capital divided by required risk based capital. Total adjusted capital for property and casualty companies is capital and surplus, adjusted for the non-tabular reserve discount applicable to our assumed discontinued accident and health insurance business. The Company Action Level is the first level at which regulatory involvement is specified based upon the level of capital.

Regulators may take action for reasons other than triggering various RBC action levels. The various action levels are summarized as follows:

- The Company Action Level, which equals 200% of the Authorized Control Level, requires a company to prepare and submit a RBC plan to the commissioner of the state of domicile. A RBC plan proposes actions which a company may take in order to bring statutory capital above the Company Action Level. After review, the commissioner will notify the company if the plan is satisfactory.
- The Regulatory Action Level, which equals 150% of the Authorized Control Level, requires the insurer to submit to the commissioner of the state of domicile an RBC plan, or if applicable, a revised RBC plan. After examination or analysis, the commissioner will issue an order specifying corrective actions to be taken.
- The Authorized Control Level authorizes the commissioner of the state of domicile to take whatever regulatory actions are considered necessary to protect the best interest of the policyholders and creditors of the insurer.
- The Mandatory Control Level, which equals 70% of the Authorized Control Level, authorizes the commissioner of the state of domicile to take actions necessary to place the company under regulatory control (i.e., rehabilitation or liquidation).

Security Lending – We engage our banking provider to lend securities from our investment portfolio to third parties. These lent securities are fully collateralized by cash. We monitor the fair value of the securities on a daily basis to assure that the collateral is maintained at a level of at least 102% of the fair value of the loaned securities. We record

securities lending collateral as a cash equivalent, with an offsetting liability in expenses and taxes payable.

Severity – A monetary increase in the loss costs associated with the same or similar type of event or coverage.

Specialty Lines – A major component of our other commercial lines. There is no accepted industry definition of “specialty lines”, but for our purpose specialty lines consist of products such as inland and ocean marine, surety, specialty property, professional liability, management liability and various other program businesses. When discussing net premiums written and other financial measures of our specialty businesses, we may include non-specialty premiums that are written as part of the entire account.

Statutory accounting practices – Recording transactions and preparing financial statements in accordance with the rules and procedures prescribed or permitted by insurance regulatory authorities including the National Association of Insurance Commissioners, which in general reflect a liquidating, rather than going concern, concept of accounting.

Underwriting – The process of selecting risks for insurance and determining in what amounts and on what terms the insurance company will accept risks.

Underwriting expenses – Expenses incurred in connection with the acquisition, pricing and administration of a policy or contract, and other insurance company expenses unrelated to claims handling or investments.

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Unearned premiums – The portion of a premium representing the unexpired amount of the contract term as of a certain date.

Written premium – The premium assessed for the entire coverage period of an insurance policy or contract without regard to how much of the premium has been earned. See also “Earned premium” above. Net premium written is written premium net of reinsurance.

⁽¹⁾ Ratios may not be comparable to similarly titled measures of other companies.

ITEM 7A—QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Reference is made to “Quantitative and Qualitative Disclosures about Market Risk” in Management’s Discussion and Analysis of Financial Condition.

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ITEM 8 – FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of

The Hanover Insurance Group, Inc.:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of The Hanover Insurance Group, Inc. and its subsidiaries as of December 31, 2018 and 2017, and the related consolidated statements of income, comprehensive income, shareholders' equity and cash flows for each of the three years in the period ended December 31, 2018, including the related notes and financial statement schedules listed in the index appearing under Item 15(a)(2) (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements 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. 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 audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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.

/s/ PricewaterhouseCoopers LLP

Boston, MA

February 21, 2019

We have served as the Company's auditor since 1991.

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THE HANOVER INSURANCE GROUP, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF INCOME

YEARS ENDED DECEMBER 31 (in millions, except per share data)	2018	2017	2016
Revenues			
Premiums	\$4,254.4	\$3,980.4	\$3,789.5
Net investment income	267.4	243.9	231.6
Net realized and unrealized investment gains (losses):			
Net realized gains (losses) from sales and other	(2.7)	26.7	37.6
Net change in fair value of equity securities	(43.4)	—	—
Net other-than-temporary impairment losses on investments recognized in earnings	(4.6)	(5.6)	(27.4)
Total net realized and unrealized investment gains (losses)	(50.7)	21.1	10.2
Fees and other income	23.2	22.5	22.6
Total revenues	4,494.3	4,267.9	4,053.9
Losses and expenses			
Losses and loss adjustment expenses	2,724.6	2,579.6	2,546.0
Amortization of deferred acquisition costs	891.8	840.7	803.6
Interest expense	45.1	45.2	51.4
Loss on repayment of debt	28.2	—	88.3
Other operating expenses	522.1	509.5	498.6
Total losses and expenses	4,211.8	3,975.0	3,987.9
Income from continuing operations before income taxes	282.5	292.9	66.0
Current	46.2	3.1	26.2
Deferred	(2.7)	73.7	(27.2)
Total income tax expense (benefit)	43.5	76.8	(1.0)
Income from continuing operations	239.0	216.1	67.0
Discontinued operations:			
Gain from sale of Chaucer business, net of taxes	131.9	—	—
Income (loss) from Chaucer business, net of taxes	20.0	(13.1)	89.1
Net gain (loss) from discontinued life businesses, net of taxes	0.1	(16.8)	(1.0)
Net income	\$391.0	\$186.2	\$155.1
Earnings per common share:			
Basic:			
Income from continuing operations	\$5.63	\$5.08	\$1.57
Discontinued operations:			
Gain from sale of Chaucer business, net of taxes	3.11	—	—
Income (loss) from Chaucer business, net of taxes	0.47	(0.30)	2.08
Net gain (loss) from discontinued life businesses, net of taxes	—	(0.40)	(0.02)
Net income per share	\$9.21	\$4.38	\$3.63
Weighted average shares outstanding	42.4	42.5	42.8
Diluted:			

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Income from continuing operations	\$5.56	\$5.03	\$1.55
Discontinued operations:			
Gain from sale of Chaucer business, net of taxes	3.07	—	—
Income (loss) from Chaucer business, net of taxes	0.46	(0.30)	2.06
Net gain (loss) from discontinued life businesses, net of taxes	—	(0.40)	(0.02)
Net income per share	\$9.09	\$4.33	\$3.59
Weighted average shares outstanding	43.0	43.0	43.2

The accompanying notes are an integral part of these consolidated financial statements.

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THE HANOVER INSURANCE GROUP, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Net income	\$391.0	\$186.2	\$155.1
Other comprehensive income (loss), net of tax:			
Available-for-sale securities:			
Net appreciation (depreciation) during the period	(170.1)	13.4	28.8
Change in other-than-temporary impairment losses recognized in other comprehensive income	—	6.0	7.3
Amount realized with sale of Chaucer business	19.1	—	—
Total available-for-sale securities	(151.0)	19.4	36.1
Pension and postretirement benefits:			
Net actuarial losses and prior service costs arising in the period	(17.0)	13.6	(30.3)
Amortization recognized as net periodic benefit and postretirement cost	7.7	9.4	6.4
Amount realized with sale of Chaucer business	16.4	—	—
Total pension and postretirement benefits	7.1	23.0	(23.9)
Cumulative foreign currency translation adjustment:			
Amount recognized as cumulative foreign currency translation during the period	(1.7)	2.4	(3.3)
Amount realized with sale of Chaucer business	23.2	—	—
Total cumulative foreign currency translation adjustment	21.5	2.4	(3.3)
Total other comprehensive income (loss), net of tax	(122.4)	44.8	8.9
Comprehensive income	\$268.6	\$231.0	\$164.0

The accompanying notes are an integral part of these consolidated financial statements.

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THE HANOVER INSURANCE GROUP, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

DECEMBER 31 (in millions, except share data)	2018	2017
Assets		
Investments:		
Fixed maturities, at fair value (amortized cost of \$6,245.9 and \$5,657.1)	\$6,161.5	\$5,749.3
Equity securities, at fair value	464.4	576.2
Other investments	661.5	562.7
Total investments	7,287.4	6,888.2
Cash and cash equivalents	1,020.7	297.9
Accrued investment income	53.2	48.2
Premiums and accounts receivable, net	1,176.7	1,095.7
Reinsurance recoverable on paid and unpaid losses and unearned premiums	1,648.6	1,625.5
Deferred acquisition costs	450.8	430.0
Deferred income taxes	50.6	17.0
Goodwill	178.8	178.8
Other assets	371.6	333.7
Assets held-for-sale	57.4	4,466.6
Assets of discontinued life businesses	103.9	88.0
Total assets	\$12,399.7	\$15,469.6
Liabilities		
Loss and loss adjustment expense reserves	\$5,304.1	\$5,058.5
Unearned premiums	2,277.8	2,131.7
Expenses and taxes payable	909.8	620.7
Reinsurance premiums payable	37.3	51.5
Debt	777.9	786.9
Liabilities held-for-sale	22.2	3,707.2
Liabilities of discontinued life businesses	115.9	115.4
Total liabilities	9,445.0	12,471.9
Commitments and contingencies		
Shareholders' Equity		
Preferred stock, par value \$0.01 per share; 20.0 million shares authorized; none issued	—	—
Common stock, par value \$0.01 per share; 300.0 million shares authorized; 60.5 million shares issued	0.6	0.6
Additional paid-in capital	1,871.8	1,857.0
Accumulated other comprehensive income (loss)	(116.5)	107.6
Retained earnings	2,182.3	1,975.0
Treasury stock at cost (18.2 and 18.0 million shares)	(983.5)	(942.5)
Total shareholders' equity	2,954.7	2,997.7
Total liabilities and shareholders' equity	\$12,399.7	\$15,469.6

The accompanying notes are an integral part of these consolidated financial statements.

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THE HANOVER INSURANCE GROUP, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Preferred Stock			
Balance at beginning and end of year	\$—	\$—	\$—
Common Stock			
Balance at beginning and end of year	0.6	0.6	0.6
Additional Paid-in Capital			
Balance at beginning of year	1,857.0	1,846.7	1,833.5
Employee and director stock-based awards and other	14.8	10.3	13.2
Balance at end of year	1,871.8	1,857.0	1,846.7
Accumulated Other Comprehensive Income (Loss), net of tax			
Net Unrealized Appreciation (Depreciation) on Investments:			
Balance at beginning of year	205.4	186.0	149.9
Net appreciation (depreciation) on available-for-sale securities	(170.1)	19.4	36.1
Adoption of Accounting Standards Update 2016-01 and 2018-02	(81.6)	—	—
Amount realized with sale of Chaucer business	19.1		
Balance at end of year	(27.2)	205.4	186.0
Defined Benefit Pension and Postretirement Plans:			
Balance at beginning of year	(79.5)	(102.5)	(78.6)
Net amount arising in the period	(17.0)	13.6	(30.3)
Net amount recognized as net periodic benefit cost	7.7	9.4	6.4
Adoption of Accounting Standards Update 2018-02	(16.2)	—	—
Amount realized with sale of Chaucer business	16.4		
Balance at end of year	(88.6)	(79.5)	(102.5)
Cumulative Foreign Currency Translation Adjustment:			
Balance at beginning of year	(18.3)	(20.7)	(17.4)
Amount recognized as cumulative foreign currency translation			
during the year	(1.7)	2.4	(3.3)
Adoption of Accounting Standards Update 2018-02	(3.9)	—	—
Amount realized with sale of Chaucer business	23.2		
Balance at end of year	(0.7)	(18.3)	(20.7)
Total accumulated other comprehensive income	(116.5)	107.6	62.8
Retained Earnings			
Balance at beginning of year	1,975.0	1,875.6	1,803.5
Cumulative effect of accounting change, net of taxes	104.3	—	—
Balance at beginning of period, as adjusted	2,079.3	1,875.6	1,803.5
Net income	391.0	186.2	155.1
Dividends to shareholders	(288.0)	(86.8)	(80.4)
Stock-based compensation	—	—	(2.6)
Balance at end of year	2,182.3	1,975.0	1,875.6

Treasury Stock

Balance at beginning of year	(942.5)	(928.2)	(847.1)
Shares purchased at cost	(57.7)	(37.2)	(105.6)
Net shares reissued at cost under employee stock-based			
compensation plans	16.7	22.9	24.5
Balance at end of year	983.5	(942.5)	(928.2)
Total shareholders' equity	\$2,954.7	\$2,997.7	\$2,857.5

The accompanying notes are an integral part of these consolidated financial statements.

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THE HANOVER INSURANCE GROUP, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Cash Flows From Operating Activities			
Net income	\$391.0	\$186.2	\$155.1
Adjustments to reconcile net income to net cash provided by operating activities:			
Gain from sale of Chaucer business	(131.9)	—	—
Net loss from repayment of debt	1.9	—	88.3
Net realized investment losses (gains)	51.3	(23.7)	(8.6)
Net amortization and depreciation	24.6	30.1	30.7
Stock-based compensation expense	13.4	12.3	12.0
Amortization of defined benefit plan costs	9.7	14.0	9.9
Deferred income tax expense (benefit)	(23.4)	39.8	(13.2)
Change in deferred acquisition costs	(19.2)	(31.8)	(7.8)
Change in premiums receivable, net of reinsurance premiums payable	(73.9)	(29.6)	(28.2)
Change in loss, loss adjustment expense and unearned premium reserves	584.9	949.5	527.8
Change in reinsurance recoverable	(248.1)	(414.0)	(35.8)
Change in expenses and taxes payable	4.6	(0.5)	12.7
Other, net	(33.6)	(27.7)	0.5
Net cash provided by operating activities	551.3	704.6	743.4
Cash Flows From Investing Activities			
Proceeds from disposals and maturities of fixed maturities	1,094.2	1,225.3	1,602.3
Proceeds from disposals of equity securities and other investments	158.4	164.9	271.1
Purchase of fixed maturities	(1,425.6)	(1,645.8)	(2,020.9)
Purchase of equity securities and other investments	(178.3)	(222.6)	(351.2)
Capital expenditures	(13.1)	(18.6)	(15.7)
Net proceeds from sale of Chaucer business	635.7	—	—
Other investing activities	—	(9.5)	19.0
Net cash provided by (used in) investing activities	271.3	(506.3)	(495.4)
Cash Flows From Financing Activities			
Proceeds from exercise of employee stock options	14.8	23.1	16.2
Proceeds from debt borrowings, net	—	—	370.7
Change in cash collateral related to securities lending program	(19.0)	(6.7)	(6.4)
Dividends paid to shareholders	(94.3)	(86.8)	(80.4)
Repayment of debt	(11.6)	—	(475.4)
Repurchases of common stock	(57.7)	(37.2)	(105.6)
Other financing activities	(3.2)	(4.1)	(19.9)
Net cash used in financing activities	(171.0)	(111.7)	(300.8)

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Effect of exchange rate changes on cash	(4.0)	7.2	(3.4)
Net change in cash and cash equivalents	647.6	93.8	(56.2)
Net change in cash related to discontinued operations	75.2	56.8	14.0
Cash and cash equivalents, beginning of year	297.9	147.3	189.5
Cash and cash equivalents, end of year	\$1,020.7	\$297.9	\$147.3
Supplemental Cash Flow Information			
Interest payments	\$47.8	\$47.5	\$53.1
Income tax net payments	\$57.0	\$51.1	\$29.7

The accompanying notes are an integral part of these consolidated financial statements.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

A. Basis of Presentation and Principles of Consolidation

The consolidated financial statements of The Hanover Insurance Group, Inc. (“THG” or the “Company”), include the accounts of The Hanover Insurance Company (“Hanover Insurance”) and Citizens Insurance Company of America (“Citizens”), THG’s principal property and casualty companies; and other insurance and non-insurance subsidiaries. These legal entities conduct their operations through several business segments discussed in Note 14 – “Segment Information”. The consolidated financial statements also include the Company’s discontinued operations, consisting primarily of Chaucer Holdings Limited (“Chaucer”), a specialist insurance underwriting group which operates through the Society and Corporation of Lloyd’s (“Lloyd’s”), and the Company’s accident and health and former life insurance businesses. All intercompany accounts and transactions have been eliminated. On December 28, 2018, the Company completed the sale of Chaucer to China Reinsurance (Group) Corporation (“China Re”). The sale of the Chaucer-related Irish entity was completed on February 14, 2019 for proceeds of \$28 million. The sale of the Australian entities for proceeds of \$13 million is pending, subject only to local regulatory approval, and is expected to close in the first quarter of 2019. Accordingly, as of December 31, 2018 and for all prior periods presented in this Annual Report on Form 10-K, Chaucer’s accounts have been classified as discontinued operations in the Consolidated Statements of Income and as held-for-sale in the Consolidated Balance Sheets (See Note 2 – “Discontinued Operations”).

The preparation of financial statements in conformity with generally accepted accounting principles in the United States of America (“U.S. GAAP”) requires the Company to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amount of revenues and expenses during the reporting period. Actual results could differ from those estimates. In the opinion of the Company’s management these financial statements reflect all adjustments, consisting of normal recurring items necessary for a fair presentation of the financial position and results of operations.

B. Investments

Fixed maturities are classified as available-for-sale and are carried at fair value, with unrealized gains and losses, net of taxes, reported in accumulated other comprehensive income (“AOCI”), a separate component of shareholders’ equity. The amortized cost of fixed maturities is adjusted for amortization of premiums and accretion of discounts to maturity.

Equity securities are carried at fair value. Effective January 1, 2018, in accordance with the provisions of Accounting Standards Codification (“ASC”) Update No. 2016-01, (Subtopic 825-10) Financial Instruments – Overall: Recognition and Measurement of Financial Assets and Financial Liabilities (“ASU No. 2016-01”), increases and decreases in fair value are reported in net income. Previously, equity securities were classified as available-for-sale and unrealized gains and losses, net of taxes, were reported in AOCI. See Section O – “New Accounting Pronouncements” below.

Other investments consist primarily of mortgage participations and limited partnerships. Mortgage participations represent interests in commercial mortgage loans originated and serviced by a third-party of which the Company shares, on a pro-rata basis, in all related cash flows of the underlying mortgage loans. Prior to May 2018, certain reacquisition rights, which are no longer in effect, and which were previously retained by the third-party in the loan participations required that these investments be accounted for as secured borrowings under ASC 860, Transfers and Servicing (“ASC 860”). Mortgage participations are stated at unpaid principal balances adjusted for deferred fees or

expenses, net of reserves. Reserves on mortgages are established and are collectively evaluated based on losses expected by the Company for loans that may not be collectible in full. In establishing reserves, the Company considers, among other things, the estimated fair value of the underlying collateral.

Investments in limited partnerships include interests in private equity funds. Effective January 1, 2018, in accordance with the provisions of ASC Update No. 2016-01, when the Company's interest in the partnership is so minor that it exercises virtually no influence over operating and financial policies, the limited partnership investment is accounted for at fair value with unrealized gains and losses reported in net income. Previously, such investments were accounted for under the cost method. All other investments in limited partnership interests are accounted for in accordance with the equity method of accounting.

Net investment income includes interest, dividends, and income from limited partnership interests. Interest income is recognized based on the effective yield method which includes the amortization of premiums and accretion of discounts. The effective yield used to determine the amortization for fixed maturities subject to prepayment risk, such as mortgage-backed and asset-backed securities, is recalculated and adjusted periodically based upon actual historical and projected future cash flows. The adjustment to yields for highly rated prepayable fixed maturities is accounted for using the retrospective method. The adjustment to yields for all other prepayable fixed maturities is accounted for using the prospective method. Fixed maturities and mortgage participations that are delinquent are placed on non-accrual status, and thereafter interest income is recognized only when cash payments are received.

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Realized investment gains and losses on sales are reported as a component of revenues based upon specific identification of the investment assets sold. When an other-than-temporary decline in value of a specific investment is deemed to have occurred, and a charge to earnings is required, the Company recognizes a realized investment loss. Changes in the fair value of equity securities are reported in net realized and unrealized investment gains (losses), including increases and decreases in fair value on securities that are still held and realized gains and losses on securities that have been sold.

Prior to the sale of Chaucer on December 28, 2018, the Company also held investments in overseas deposits; such deposits were maintained in overseas funds and were managed exclusively by Lloyd's. These funds were required in order to protect policyholders in overseas markets and enabled the Company to operate in these markets. Net investment income and realized and unrealized investment gains (losses) related to overseas deposits are included in income (loss) from Chaucer business within discontinued operations.

The Company reviews investments in an unrealized loss position to identify other-than-temporary declines in value. When an other-than-temporary decline in value of a debt security is deemed to have occurred, the Company must assess whether it intends to sell the security or more likely than not will be required to sell the security before recovery of its amortized cost basis. If the debt security meets either of these two criteria, an other-than-temporary impairment ("OTTI") is recognized in earnings equal to the entire difference between the security's amortized cost basis and its fair value at the impairment measurement date. If the Company does not intend to sell the debt security and it is not more likely than not the Company will be required to sell the security before recovery of its amortized cost basis, the credit loss portion of an OTTI is recorded through earnings while the portion attributable to all other factors is recorded separately as a component of other comprehensive income. The amount of the OTTI that relates to credit is estimated by comparing the amortized cost of the fixed maturity security with the net present value of the security's projected future cash flows, discounted at the effective interest rate implicit in the investment prior to impairment. The non-credit portion of the impairment is equal to the difference between the fair value and the net present value of the security's cash flows at the impairment measurement date. Once an OTTI has been recognized, the new amortized cost basis of the security is equal to the previous amortized cost less the amount of OTTI recognized in earnings.

C. Financial Instruments

In the normal course of business, the Company may enter into transactions involving various types of financial instruments, including debt, investments such as fixed maturities, equity securities and mortgage loans, investment and loan commitments, swap contracts, option contracts, forward contracts and futures contracts. These instruments involve credit risk and could also be subject to risk of loss due to interest rate and foreign currency fluctuation. The Company evaluates and monitors each financial instrument individually and, when appropriate, obtains collateral or other security to minimize losses.

D. Cash and Cash Equivalents

Cash and cash equivalents includes cash on hand, amounts due from banks and highly liquid debt instruments purchased with an original maturity of three months or less.

E. Deferred Acquisition Costs

Acquisition costs consist of commissions, underwriting costs and other costs, which vary with, and are primarily related to, the successful production of premiums. Acquisition costs are deferred and amortized over the terms of the insurance policies.

Deferred acquisition costs (“DAC”) for each operating segment are reviewed to determine if the costs are recoverable from future income, including investment income. If such costs are determined to be unrecoverable, they are expensed at the time of determination. Although recoverability of DAC is not assured, the Company believes it is more likely than not that all of these costs will be recovered. The amount of DAC considered recoverable, however, could be reduced in the near term if the estimates of total revenues discussed above are reduced or permanently impaired as a result of a disposition of a line of business. The amount of amortization of DAC could be revised in the near term if any of the estimates discussed above are revised.

F. Reinsurance Recoverables

The Company shares certain insurance risks it has underwritten, through the use of reinsurance contracts, with various insurance entities. Reinsurance accounting is followed for ceded transactions when the risk transfer provisions of ASC 944, Financial Services – Insurance (“ASC 944”), have been met. As a result, when the Company experiences loss or claims events that are subject to a reinsurance contract, reinsurance recoverables are recorded. The amount of the reinsurance recoverable can vary based on the terms of the reinsurance contract, the size of the individual loss or claim, or the aggregate amount of all losses or claims in a particular line or book of business or an aggregate amount associated with a particular accident year. The valuation of losses or claims recoverable depends on whether the underlying loss or claim is a reported loss or claim, or an incurred but not reported loss. For reported losses and claims, the Company values reinsurance recoverables at the time the underlying loss or claim is recognized, in accordance with contract terms. For incurred but not reported losses, the Company estimates the amount of reinsurance recoverables based on the terms of the reinsurance contracts and historical reinsurance recovery information and applies that information to the gross loss reserve. Amounts recoverable from reinsurers are estimated in a manner consistent with the claim liability associated with the reinsured

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business and the balance is disclosed separately in the financial statements. However, the ultimate amount of the reinsurance recoverable is not known until all losses and claims are settled. 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 credit losses from individual reinsurers.

G. Property, Equipment and Capitalized Software

Property, equipment, leasehold improvements and capitalized software are recorded at cost, less accumulated depreciation and amortization. Depreciation is generally provided using the straight-line method over the estimated useful lives of the related assets, which generally range from 3 to 30 years. The estimated useful life for capitalized software is generally 5 to 7 years. Amortization of leasehold improvements is provided using the straight-line method over the lesser of the term of the leases or the estimated useful life of the improvements.

The Company tests for the recoverability of long-lived assets whenever events or changes in circumstances indicate that the carrying amounts may not be recoverable. The Company recognizes impairment losses only to the extent that the carrying amounts of long-lived assets exceed the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the assets. When an impairment loss occurs, the Company reduces the carrying value of the asset to fair value and no longer depreciates the asset. Fair values are estimated using discounted cash flow analysis.

H. GOODWILL AND INTANGIBLE ASSETS

In accordance with the provisions of ASC 350, Intangibles- Goodwill and Other, the Company carries its goodwill at cost, net of amortization accumulated prior to January 1, 2002, and net of impairments. Increases to goodwill are generated through acquisition and represent the excess of the cost of an acquisition over the fair value of net assets acquired, including any intangibles acquired. Since January 1, 2002, goodwill is no longer amortized but rather, is reviewed for impairment. Additionally, acquisitions can also produce intangible assets, which have either a definite or indefinite life. Intangible assets with definite lives are amortized over that life, whereas those intangible assets determined to have an indefinite life are reviewed at least annually for impairment.

The Company tests for the recoverability of goodwill and intangible assets with indefinite lives annually or whenever events or changes in circumstances indicate that the carrying amounts may not be recoverable. The Company recognizes impairment losses only to the extent that the carrying amounts of reporting units with goodwill exceed the fair value. The amount of the impairment loss that would be recognized is determined based upon the excess of the carrying value of goodwill compared to the implied fair value of the goodwill, as determined with respect to all assets and liabilities of the reporting unit. The Company has performed its annual review of goodwill and intangible assets with indefinite lives for impairment in the fourth quarters of 2018 and 2017 with no impairments recognized. At December 31, 2018 and 2017, the Company held goodwill of \$178.8 million and intangible assets with indefinite lives of \$15.0 million.

I. LIABILITIES FOR LOSSES, LAE, AND UNEARNED PREMIUMS

Liabilities for outstanding claims, losses and loss adjustment expenses (“LAE”) are estimates of payments to be made for reported losses and LAE and estimates of losses and LAE incurred but not reported. These liabilities are determined using case basis evaluations and statistical analyses of historical loss patterns and represent estimates of the ultimate cost of all losses incurred but not paid. These estimates are continually reviewed and adjusted as

necessary; adjustments are reflected in current operations. Estimated amounts of salvage and subrogation on unpaid losses are deducted from the liability for unpaid claims.

Premiums for direct and assumed business are reported as earned on a pro-rata basis over the contract period. The unexpired portion of these premiums is recorded as unearned premiums.

All losses, LAE and unearned premium liabilities are based on the various estimates discussed in this note. Although the adequacy of these amounts cannot be assured, the Company believes that it is more likely than not that these liabilities and accruals will be sufficient to meet future obligations of policies in force. The amount of liabilities and accruals, however, could be revised in the near-term if the estimates discussed above are revised.

J. Debt

The Company's debt at December 31, 2018 includes senior debentures, subordinated debentures, and collateralized borrowings with the Federal Home Loan Bank ("FHLB"). Debt instruments are carried at principal amount borrowed, net of any applicable unamortized discounts and issuance costs. See Note 6 – "Debt and Credit Arrangements".

K. Premium, Premium Receivable, Fee Revenue and Related Expenses

Insurance premiums written are generally recorded at the policy inception and are primarily earned on a pro-rata basis over the terms of the policies for all products. Premiums written may also include estimates that are derived from multiple sources, which include the historical experience of the underlying business, similar businesses and available industry information. These estimates are regularly reviewed and updated, and any resulting adjustments are included in the current year's results. Unearned premium reserves represent

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the portion of premiums written that relates to the unexpired terms of the underlying in-force insurance policies and reinsurance contracts. Premium receivables reflect the unpaid balance of premium written as of the balance sheet date. Premium receivables are generally short-term in nature and are reported net of an allowance for estimated uncollectible premium accounts. The Company reviews its receivables for collectability at the balance sheet date. The allowance for uncollectible accounts was not material as of December 31, 2018 and 2017. Ceded premiums are charged to income over the applicable term of the various reinsurance contracts with third-party reinsurers. Reinsurance reinstatement premiums, when required, are recognized in the same period as the loss event that gave rise to the reinstatement premiums. Losses and related expenses are matched with premiums, resulting in their recognition over the lives of the contracts. This matching is accomplished through estimated and unpaid losses and amortization of deferred acquisition costs.

L. Income Taxes

The Company is subject to the tax laws and regulations of the U.S. and foreign countries in which it operates. The Company files a consolidated U.S. federal income tax return that includes the holding company and its U.S. subsidiaries. Generally, taxes are accrued at the U.S. statutory tax rate for income from the U.S. operations. In December 2017, the Tax Cuts and Jobs Act (“TCJA”) was enacted, which reduced the U.S. statutory rate from 35% to 21%, effective January 1, 2018. See Note 7 – “Income Taxes” for a discussion of this new law. The Company accrues taxes on certain non-U.S. income that is subject to U.S. tax at the enacted U.S. tax rate. Foreign tax credits, where available, are utilized to offset U.S. tax as permitted.

The Company’s accounting for income taxes represents its best estimate of various events and transactions.

Deferred income taxes are generally recognized when assets and liabilities have different values for financial statement and tax reporting purposes, and for other temporary taxable and deductible differences as defined by ASC 740, Income Taxes (“ASC 740”). These temporary differences are measured at the balance sheet date using enacted tax rates expected to apply to taxable income in the years the temporary differences are expected to reverse. These differences result primarily from insurance reserves, deferred acquisition costs, investments, and employee benefit plans.

The realization of deferred tax assets depends upon the existence of sufficient taxable income within the carryback or carryforward periods under the tax law in the applicable tax jurisdiction. Consideration is given to all available positive and negative evidence, including reversals of deferred tax liabilities, projected future taxable income, tax planning strategies and recent financial operations. Valuation allowances are established if, based on available information, it is determined that it is more likely than not that all or some portion of the deferred tax assets will not be realized. Changes in valuation allowances are generally reflected in income tax expense or as an adjustment to other comprehensive income (loss) depending on the nature of the item for which the valuation allowance is being recorded.

M. Stock-Based Compensation

The Company recognizes the fair value of compensation costs for all share-based payments, including employee stock options, in the financial statements. Unvested awards are generally expensed on a straight line basis, by tranche, over the vesting period of the award. The Company’s stock-based compensation plans are discussed further in Note 11 – “Stock-Based Compensation Plans”.

N. Earnings Per Share

Earnings per share (“EPS”) for the years ended December 31, 2018, 2017 and 2016 is based on a weighted average of the number of shares outstanding during each year. Basic and diluted EPS is computed by dividing income available to common stockholders by the weighted average number of shares outstanding for the period. The weighted average shares outstanding used to calculate basic EPS differ from the weighted average shares outstanding used in the calculation of diluted EPS due to the effect of dilutive employee stock options, nonvested stock grants and other contingently issuable shares. If the effect of such items is antidilutive, the weighted average shares outstanding used to calculate diluted EPS are equal to those used to calculate basic EPS.

Options to purchase shares of common stock whose exercise prices are greater than the average market price of the common shares are not included in the computation of diluted earnings per share because the effect would be antidilutive.

O. New Accounting Pronouncements

Recently Implemented Standards

In February 2018, the Financial Accounting Standards Board (“FASB”) issued ASC Update No. 2018-02 (Topic 220) Income Statement – Reporting Comprehensive Income: Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income. This ASC update allows for a reclassification into retained earnings of the stranded tax effects in AOCI resulting from the enactment of the TCJA. Current guidance requires the effect of a change in tax laws or rates on deferred tax balances to be reported in income from continuing operations in the accounting period that includes the period of enactment, even if the related income tax effects were originally charged or credited directly to AOCI. The amount of the reclassification would include the effect of the change in the U.S. federal corporate income tax rate on the gross deferred tax amounts at the date of the enactment of the TCJA related to items in AOCI. The updated guidance is effective for interim and annual periods beginning after December 15, 2018. Early adoption

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is permitted. The Company early adopted this guidance effective January 1, 2018 with a cumulative effect adjustment, which reclassified \$6.5 million of benefits from AOCI to retained earnings with no overall impact on the Company's financial position.

In March 2017, the FASB issued ASC Update No. 2017-07, (Topic 715) Compensation – Retirement Benefits: Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost. This guidance requires that an employer report in its income statement the service cost component of both net periodic pension and net periodic postretirement benefit cost in the same line item or items as other compensation costs arising from services rendered by pertinent employees during the period, and present in the income statement separately from the other components of benefit cost, if appropriate under the company's current presentation of its income statement. Additionally, the guidance allows only the service cost component to be eligible for capitalization when applicable. The updated guidance is effective for annual and interim periods beginning after December 15, 2017, and should be applied retrospectively for the presentation of the service cost component and other components of net periodic pension cost and net periodic postretirement benefit cost in the income statement, and prospectively for the capitalization of the service cost component of net periodic cost in assets. The Company implemented this guidance effective January 1, 2018. The effect of implementing this guidance was not material to the Company's financial position or results of operations as the Company does not have any service cost remaining related to its pension and postretirement plans.

In January 2017, the FASB issued ASC Update No. 2017-01, (Topic 805) Business Combinations – Clarifying the Definition of a Business. The amendments in this update provide a more robust framework to use in determining when a set of assets and activities constitute a business. This guidance narrows the definition of a business by providing specific requirements that contribute to the creation of outputs that must be present to be considered a business. The guidance further clarifies the appropriate accounting when substantially all of the fair value of the gross assets acquired (or disposed of) is concentrated in a single identifiable asset or a group of similar identifiable assets is that of an acquisition (disposition) of assets, not a business. This framework will reduce the number of transactions that an entity must further evaluate to determine whether transactions are business combinations or asset acquisitions. The updated guidance is effective for interim and annual periods beginning after December 15, 2017, and should be applied on a prospective basis. Early adoption is permitted only for transactions that have not been reported in financial statements that have been issued. The Company implemented this guidance effective January 1, 2018. The implementation of this guidance did not have an effect on the Company's financial position or results of operations.

In November 2016, the FASB issued ASC Update No. 2016-18 (Topic 230) Statement of Cash Flows – Restricted Cash (a consensus of the FASB Emerging Issues Task Force). The amendments in this update require that restricted cash and restricted cash equivalents be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. Current GAAP does not include specific guidance on the cash flow classification and presentation of changes in restricted cash. The updated guidance is effective for interim and annual periods beginning after December 15, 2017 and is required to be applied using a retrospective transition method to each period presented. The Company implemented this guidance effective January 1, 2018. Implementing this guidance did not have an impact on the Company's statement of cash flows, as restricted cash, if any, has already been included in total cash and cash equivalents.

In October 2016, the FASB issued ASC Update No. 2016-16, (Topic 740) Income Taxes – Intra-Entity Transfers of Assets Other Than Inventory. Under current GAAP, the tax effects of intra-entity transfers of assets (intercompany sales) are deferred until the assets are sold to an outside party or otherwise recovered through use. This ASC update eliminates this deferral of taxes for assets other than inventory and requires the recognition of taxes when the transfer occurs. The updated guidance is effective for interim and annual periods beginning after December 15, 2017, and

should be applied on a modified retrospective basis through a cumulative-effect adjustment to retained earnings. Early adoption is permitted, but this election must be made in the first interim period of the adoption year. The Company implemented this guidance effective January 1, 2018. Implementation of this guidance did not have a net impact on the Company's financial position or results of operations.

In August 2016, the FASB issued ASC Update No. 2016-15, (Topic 230) Classification of Certain Cash Receipts and Cash Payments. This ASC update provides specific guidance on the presentation of certain cash flow items where there is currently diversity in practice, including, but not limited to, debt prepayment or debt extinguishment costs, contingent consideration payments made after a business combination, proceeds from the settlement of insurance claims, and distributions received from equity method investees. The updated guidance is effective for interim and annual periods beginning after December 15, 2017, and should be applied retrospectively unless impracticable. The Company implemented this guidance effective January 1, 2018. The adoption of ASC Update No. 2016-15 did not have a significant impact on the Company's statement of cash flows.

In January 2016, the FASB issued ASC Update No. 2016-01, (Subtopic 825-10) Financial Instruments – Overall: Recognition and Measurement of Financial Assets and Financial Liabilities (“ASU No. 2016-01”). This ASC update requires unconsolidated equity investments to be measured at fair value with changes in the fair value recognized in net income, except for those accounted for under the equity method. This update eliminates the cost method for equity investments without readily determinable fair values, replacing it with other methods, including the use of Net Asset Value (“NAV”). Additionally, when a public entity is required to measure fair value for disclosure purposes and holds financial instruments measured at amortized cost, the updated guidance requires these instruments to be measured using exit price. It also requires financial assets and financial liabilities to be presented separately in the notes to the financial statements, grouped by measurement category and form of financial asset. The updated guidance is effective for

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annual periods beginning after December 15, 2017. In February 2018, the FASB issued ASC Update No. 2018-03, (Subtopic 825-10) Technical Corrections and Improvements to Financial Instruments – Overall. This ASC update clarifies the transition method for equity investments without readily determinable fair values. Specifically, if an entity elects to measure these investments at cost, less impairment, adjusted for changes resulting from observable price changes in orderly transactions for an identical or similar investment of the same issuer (the “measurement alternative”), then transition is prospective. For all others, transition is modified retrospective, requiring a cumulative effect adjustment. This ASU is effective for annual periods beginning after December 15, 2017, and interim periods within those years beginning after June 15, 2018. Early adoption is permitted for interim periods beginning after December 15, 2017 as long as ASU No. 2016-01 has been adopted. The Company implemented this guidance effective January 1, 2018 concurrent with ASU No. 2016-01 for certain limited partnerships without readily determinable fair values. The implementation of these standards resulted in a benefit to retained earnings, through a cumulative effect adjustment, of \$97.8 million, including a reclassification of after-tax unrealized gains of \$95.2 million from AOCI and an adjustment of \$2.6 million of gains to record partnership investments at NAV.

In May 2014, the FASB issued ASC Update No. 2014-09, (Topic 606) Revenue from Contracts with Customers. This ASC was issued to clarify the principles for recognizing revenue. Insurance contracts and financial instrument transactions are not within the scope of this updated guidance, and; therefore, only an insignificant amount of the Company’s revenue is subject to this updated guidance. In August 2015, the FASB issued ASC Update No. 2015-14, (Topic 606) Revenue from Contracts with Customers, which deferred the effective date of ASC Update No. 2014-09 by one year. Accordingly, the updated guidance is effective for periods beginning after December 15, 2017. The Company implemented this guidance effective January 1, 2018. The effect of implementing this guidance was not material to the Company’s financial position or results of operations.

Recently Issued Standards

In August 2018, the FASB issued ASC Update 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 (“ASC Update No. 2018-15”). This ASC update requires the capitalization of implementation costs incurred in a hosting arrangement that is a service contract consistent 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 guidance also requires an entity to expense the capitalized implementation costs of a hosting arrangement that is a service contract over the term of the hosting agreement, and apply impairment guidance consistent with long-lived assets. ASC Update No. 2018-15 also provides specific guidelines related to the presentation of these capitalized implementation costs and related expenses in the financial statements. The updated guidance is effective for interim and annual periods beginning after December 15, 2019, and should be applied either retrospectively or prospectively to all implementation costs incurred after the date of adoption. Early adoption is permitted, including interim periods. The Company does not expect the adoption of ASC Update No. 2018-15 to have a material impact on its financial position or results of operations.

In August 2018, the FASB issued ASC Update No. 2018-14 (Topic 715-20) Compensation – Retirement Benefits – Defined Benefit Plans – General – Disclosure Framework – Changes to the Disclosure Requirements for the Defined Benefit Plans. This ASC update modifies disclosures related to defined benefit pension or other postretirement plans. This ASC update removes the disclosure of amounts in accumulated other comprehensive income expected to be recognized over the next fiscal year and the effects of a one percentage point change of health care cost trends on net periodic benefit costs and postretirement benefit obligations and clarifies the specific requirements of disclosures related to the project benefit obligation and accumulated benefit obligation. This ASC Update also adds disclosures related to weighted average crediting rates for cash balance plans and requires disclosure of an explanation of any

significant gains and losses related to changes in benefit obligations for the period. The amendments in this ASC update are effective for fiscal years ending after December 15, 2020, and should be applied on a retrospective basis to all periods presented. Early adoption is permitted. Implementing this guidance is not expected to have an impact on the Company's financial position or results of operations as the update is disclosure related.

In August 2018, the FASB issued ASC Update No. 2018-13 (Topic 820) Fair Value Measurement, Disclosure Framework – Changes to the Disclosure Requirements for Fair Value Measurement. The update removes the requirement for disclosure of the following: 1) the amount and reasons for transfers between level 1 and level 2 of the fair value hierarchy, 2) the policy for timing of transfers between levels, and 3) the valuation processes for level 3 fair value measurements. This update also added a requirement to disclose the changes in unrealized gains and losses for the period included in other comprehensive income for recurring level 3 fair value measurements held at the end of the reporting period and the range and weighted average of significant unobservable inputs used to develop level 3 fair value measurements, in addition to other fair value disclosure modifications. The updated guidance is effective for interim and annual periods beginning after December 15, 2019, and should be applied prospectively for certain of the disclosure requirements and retrospectively to all periods presented upon the effective date for other disclosure requirements. An entity is permitted to early adopt any removed or modified disclosures upon issuance of the update and delay adoption of additional disclosures until periods beginning after December 15, 2019, the effective date of the standard. Implementing this guidance is not expected to have an impact on the Company's financial position or results of operations as the update is disclosure related.

In March 2017, the FASB issued ASC Update No. 2017-08, (Subtopic 310-20) Receivables – Nonrefundable Fees and Other Costs: Premium Amortization on Purchased Callable Debt Securities. This guidance shortens the amortization period of premiums on certain purchased callable debt securities to the earliest call date. The updated guidance is effective for annual and interim periods beginning after December 15, 2018, and should be applied on a modified retrospective basis through a cumulative-effect adjustment directly to

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retained earnings as of the beginning of the period of adoption. Early adoption is permitted, including adoption in an interim period. The Company does not expect the adoption of ASC Update No. 2017-08 will have a material effect on its financial position or results of operations.

In January 2017, the FASB issued ASC Update No. 2017-04, (Topic 350) Intangibles – Goodwill and Other: Simplifying the Test for Goodwill Impairment. This guidance eliminates step 2 from the goodwill impairment test. Instead, an entity should perform its goodwill impairment test by comparing the fair value of the reporting unit with its carrying amount, including any applicable income tax effects, and recognize an impairment for the amount by which the carrying amount exceeds the reporting unit’s fair value. However, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. The updated guidance is effective for annual or interim goodwill impairment tests performed in fiscal years beginning after December 15, 2019. Early adoption is permitted for interim or annual goodwill impairment tests performed on testing dates after January 1, 2017. The Company does not expect the adoption of ASC Update No. 2017-04 to have a material impact on its financial position or results of operations.

In June 2016, the FASB issued ASC Update No. 2016-13, (Topic 326) Financial Instruments – Credit Losses: Measurement of Credit Losses on Financial Instruments. This ASC update introduces new guidance for the accounting for credit losses on financial instruments within its scope. A new model, referred to as the current expected credit losses model, requires an entity to determine credit-related impairment losses for financial instruments held at amortized cost and to estimate these expected credit losses over the life of an exposure (or pool of exposures). The estimate of expected credit losses should consider both historical and current information, reasonable and supportable forecasts, as well as estimates of prepayments. The estimated credit losses and subsequent adjustment to such loss estimates will be recorded through an allowance account which is deducted from the amortized cost of the financial instrument, with the offset recorded in current earnings. ASC No. 2016-13 also modifies the impairment model for available-for-sale debt securities. The new model will require an estimate of expected credit losses only when the fair value is below the amortized cost of the asset, thus the length of time the fair value of an available-for-sale debt security has been below the amortized cost will no longer affect the determination of whether a credit loss exists. In addition, credit losses on available-for-sale debt securities will be limited to the difference between the security’s amortized cost basis and its fair value. In November 2018, the FASB issued ASC Update No. 2018-19, Codification Improvements to Topic 326, Financial Instruments–Credit Losses, which explicitly states that receivables arising from operating leases are not within the scope of Subtopic 326-20. ASC Update No. 2016-13 and related guidance is effective for interim and annual periods beginning after December 15, 2019. Early adoption is permitted for periods beginning after December 15, 2018. The Company expects to adopt ASC Update No. 2016-13 on January 1, 2020 and is evaluating the impact on its financial position and results of operations, which it does not expect to be material.

In February 2016, the FASB issued ASC Update No. 2016-02, (Topic 842) Leases. This ASC update requires a lessee to recognize a right-of-use asset, which represents the lessee’s right to use a specified asset for the lease term, and a corresponding lease liability, which represents a lessee’s obligation to make lease payments arising from a lease, measured on a discounted basis, for all leases that extend beyond 12 months. For finance or capital leases, interest on the lease liability will be recognized separately from amortization of the right-of-use asset in the statements of income and comprehensive income. In addition, the repayment of the principal portion of the lease liability will be classified as a financing activity while the interest component will be included in the operating section of the statement of cash flows. For operating leases, the asset and liability will be amortized as a single lease cost, such that the cost of the lease is allocated over the lease term, on a generally straight-line basis, with all cash flows included within operating activities in the statement of cash flows. ASC Update No. 2016-02 requires that implementation of this guidance be through a modified retrospective transition approach. In July 2018, the FASB issued ASC Update No. 2018-11, (Topic 842) Leases Targeted Improvements, which provides entities with an additional transition method to adopt

ASC Update No. 2016-02. Under this optional transition method, an entity can initially apply the new guidance at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. The Company will implement this guidance effective January 1, 2019 using the optional transition method provided in ASC Update No. 2018-11 and will elect to utilize the practical expedient package available in ASC Update 2016-02. The effect of implementing this guidance is expected to increase total assets and liabilities each by approximately \$35 million on January 1, 2019, which is not material to the Company's financial position. Furthermore, implementation of this guidance is not expected to have a material impact on the Company's results of operations.

Q. Reclassifications

Certain prior year amounts have been reclassified to conform to the current year presentation.

2. Discontinued Operations

Gain on Sale of Chaucer Business

On December 28, 2018, the Company completed the sale of Chaucer Holdings Limited to China Re. Total cash proceeds payable by China Re for this portion of the transaction is expected to total approximately \$793.7 million⁽¹⁾ and is subject to adjustment based upon 2018 accident year catastrophe losses in excess of 10% of 2018 net earned premium. The pre-tax gain on the sale is estimated to be \$174.4 million. THG paid customary transaction costs along with providing certain representations and warranties and agreeing to indemnify China Re for certain pre-sale contingent liabilities.

The following table summarizes the components of the estimated gain related to the sale of the Chaucer business as of December 28, 2018. This gain below excludes an expected gain on the Irish and Australian entities associated with the Chaucer business. The Company subsequently completed the sale of its Chaucer-related Irish entity on February 14, 2019. The sale of the Australian entities is pending, subject only to local regulatory approval, and is expected to close in the first quarter of 2019. The Company received \$28

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million of additional consideration for the Irish entity, and it expects to receive \$13 million of additional consideration related to the Australian entities.

YEAR ENDED DECEMBER 31 (in millions)	2018
Initial consideration received from sale ⁽¹⁾	\$779.0
Adjustment ⁽¹⁾	(17.0)
Contingent proceeds ^{(1) (2)}	31.7
Total cash proceeds expected from sale of Chaucer Holdings Limited ⁽¹⁾	793.7
Less:	
Carrying value of Chaucer business ⁽³⁾	530.0
Transaction and other sale related costs ⁽⁴⁾	30.6
Net realized losses on securities, pension and currency translation obligations related to Chaucer business ⁽⁵⁾	58.7
Total pre-tax reductions	619.3
Pre-tax gain on sale	174.4
Income tax expense ⁽⁶⁾	42.5
Gain on sale	\$131.9

- (1) Initial consideration for Chaucer Holdings Limited as determined in the sales and purchase agreement was \$779 million. This amount, along with \$28 million in cash proceeds received for the sale of the Irish entity on February 14, 2019, \$13 million in cash proceeds to be received upon the closing of the sale of the Australian entities, estimated contingent consideration of \$31.7 million, and an \$85 million pre-signing dividend from Chaucer that was received in the second quarter of 2018, results in expected total proceeds from the entire transaction of \$936.7 million. These amounts were partially offset by \$17.0 million paid to China Re to adjust the purchase price for amounts received by the Company from Chaucer prior to December 28, 2018.
- (2) Contingent proceeds, as reflected in the sales and purchase agreement, may be up to \$45 million and is determined based upon 2018 catastrophe losses. Based upon the Company's best estimate of Chaucer's 2018 catastrophe losses, expected contingent consideration is \$31.7 million.
- (3) The carrying value of the Chaucer business reflects its U.S. GAAP book value at December 28, 2018, excluding \$7.9 million of U.S.-related deferred tax assets that are no longer likely to be realized and therefore are reflected in the income tax expense category.
- (4) Transaction and other sale related costs primarily include brokerage, legal, actuarial, tax and other professional fees, employee retention costs, costs for the purchase of aggregate excess of loss catastrophe coverage in consideration of the contingent proceeds provision, along with certain other miscellaneous charges related to the execution of the transaction.
- (5) As part of the transaction, investments held by Chaucer were transferred to China Re resulting in the recognition of net realized investment losses that were previously reflected in accumulated other comprehensive income. Additionally, Chaucer's deferred pension obligations and currency translation obligations previously recognized in accumulated other comprehensive income were recognized as losses associated with the transaction.
- (6) The income tax expense represents the current tax obligation on the sale and the derecognition of deferred tax assets that are no longer likely to be realized.

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Income (loss) from Chaucer Business

The following table summarizes the results of Chaucer's operations:

YEARS ENDED DECEMBER 31 (in millions)	2018 (1)	2017	2016
Revenues			
Net premiums earned	\$850.0	\$853.0	\$838.6
Net investment income	54.9	52.0	45.7
Other income	7.5	6.7	7.1
	912.4	911.7	891.4
Losses and operating expenses			
Losses and LAE	515.5	549.5	419.3
Amortization of deferred acquisition costs	252.5	245.9	231.6
Other expenses	115.0	109.2	113.7
	883.0	904.6	764.6
Income from Chaucer business before income taxes and other items			
(previously presented as Chaucer's operating income)	29.4	7.1	126.8
Other items:			
Interest expense	(3.8)	(3.3)	(3.5)
Net realized and unrealized investment gains (losses)	(1.3)	2.6	(1.6)
Other income	0.4	2.2	4.6
Income from Chaucer business before income taxes	24.7	8.6	126.3
Income tax expense	(4.7)	(21.7)	(37.2)
Income (loss) from Chaucer business, net of taxes	\$20.0	\$(13.1)	\$89.1

(1) 2018 reflects the results of operations for the period in which THG owned Chaucer, which concluded with the sale of the Chaucer business on December 28, 2018.

The Company recognized \$0.8 million, \$1.1 million and \$22.3 million in foreign currency transaction losses in net income in 2018, 2017 and 2016, respectively.

The following table details the carrying amounts of major assets and liabilities reflected in the Consolidated Balance Sheets under the caption "Assets held-for-sale" and "Liabilities held-for-sale", respectively.

DECEMBER 31 (in millions)	2018	2017
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Assets:		
Investments	\$24.5	\$2,153.5
Cash and cash equivalents	3.3	78.5
Premiums and accounts receivable, net	2.8	471.9
Deferred acquisition costs	1.4	120.2
Reinsurance recoverable on paid and unpaid losses and unearned premiums	2.3	1,431.5
Goodwill	6.5	13.8
Other assets	16.6	197.2
Total assets	\$57.4	\$4,466.6
Liabilities:		
Loss and loss adjustment expense reserves	\$2.0	\$2,686.5
Unearned premiums	7.1	631.9
Reinsurance premium payable	1.5	293.3
Other liabilities	11.6	95.5
Total liabilities	\$22.2	\$3,707.2

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In accordance with Lloyd's operating guidelines, the Company deposited funds at Lloyd's to support Chaucer underwriting operations. These funds are available only to fund claim obligations. At December 31 2017, fixed maturities with a fair value of \$528.1 million and cash of \$7.1 million, respectively, were on deposit with Lloyd's.

The following table details the cash flows associated with the Chaucer business:

DECEMBER 31 (in millions)	2018	2017	2016
Net cash (used in) provided by operating activities	(22.8)	28.8	95.9
Net cash provided by (used in) investing activities	131.1	(96.9)	(104.7)

Prior to the sale, the Company was subject to concentration of risk with respect to reinsurance ceded with respect to the Lloyd's syndicates. The Lloyd's Syndicates total reinsurance receivable balance for the Chaucer business was \$443.0 million as of December 31, 2017.

The following table provides the effects of reinsurance.

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Premiums written:			
Direct	\$625.3	\$597.6	\$560.3
Assumed	685.3	646.9	546.3
Ceded ⁽¹⁾	(459.9)	(395.4)	(290.5)
Net premiums written	\$850.7	\$849.1	\$816.1
Premiums earned:			
Direct	\$611.9	\$568.7	\$584.0
Assumed	667.2	628.3	577.3
Ceded ⁽¹⁾	(429.1)	(344.0)	(322.7)
Net premiums earned	\$850.0	\$853.0	\$838.6
Losses and LAE:			
Direct	\$362.2	\$365.2	\$403.1
Assumed	568.7	570.7	258.8
Ceded ⁽²⁾	(415.4)	(386.8)	(243.2)
Net losses and LAE	\$515.5	\$549.1	\$418.7

- (1) The increase in ceded reinsurance premiums from 2016 through 2018 is primarily due to Chaucer's planned increase in reinsurance purchases.

(2)The increase in ceded losses and LAE from 2016 through 2018 is primarily due to higher catastrophe loss activity in certain Chaucer lines and due to the aforementioned increase in reinsurance purchases.

For Chaucer’s 2016 U.S. casualty treaty lines, the Company entered into a whole account aggregate excess of loss contract. The contract covers the U.S. casualty treaty lines exposures, except specialty risks and workers’ compensation clash. This contract does not meet the risk transfer requirements of GAAP and was accounted for using the deposit accounting method. The impact of reinsurance contracts subject to deposit accounting were recognized through net investment income rather than losses. Net investment income for this contract of approximately \$8 million was recognized for each of the years ended December 31, 2018 and December 31, 2017 and \$3 million was recognized for the year ended December 31, 2016.

Discontinued life businesses

During 1999, the Company exited its accident and health insurance business, consisting of its Employee Benefit Services business, its Affinity Group Underwriters business and its accident and health assumed reinsurance pool business. Prior to 1999, these businesses comprised substantially all of the former Corporate Risk Management Services segment. Accordingly, the operating results of the discontinued segment have been reported in accordance with Accounting Principles Board Opinion No. 30, Reporting the Results of Operations—Reporting the Effects of Disposal of a Segment of a Business, and Extraordinary, Unusual and Infrequently Occurring Events and Transactions (“APB Opinion No. 30”). On January 2, 2009, Hanover Insurance directly assumed a portion of the accident and health business; and therefore continues to apply APB Opinion No. 30 to this business. In addition, the remainder of the Discontinued First Allmerica Financial Life Insurance Company (“FAFLIC”) accident and health business was reinsured by Hanover Insurance in connection with the sale of FAFLIC to Commonwealth Annuity.

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At December 31, 2018 and 2017, the portion of the discontinued accident and health business that was directly assumed had assets of \$81.6 million and \$76.9 million, respectively, consisting primarily of invested assets, and liabilities of \$81.4 million and \$83.1 million, respectively, consisting primarily of policy liabilities. At December 31, 2018 and 2017, the assets and liabilities of this business, as well as those of the reinsured portion of the accident and health business are classified as assets and liabilities of discontinued operations in the Consolidated Balance Sheets.

The Company's former life insurance businesses include indemnity obligations and other activities.

Discontinued operations for the years ended December 31, 2018, 2017 and 2016 resulted in gains of \$0.1 million, losses of \$16.8 million and losses of \$1.0 million, respectively, net of income tax benefits of \$9.3 million and \$2.8 million in 2017 and 2016, respectively. The increased losses in 2017 primarily relate to additional losses in the Company's long-term care pool, which is included in the portion of the discontinued accident and health business that was directly assumed.

3. INVESTMENTS

A. FIXED MATURITIES

The amortized cost and fair value of available-for-sale fixed maturities were as follows:

DECEMBER 31, 2018

(in millions)	Amortized Cost	Gross Unrealized	Gross Unrealized	Fair Value	OTTI Unrealized
		Gains	Losses		Losses
Fixed maturities:					
U.S. Treasury and government agencies	\$ 414.7	\$ 2.4	\$ 7.2	\$409.9	\$ —
Foreign government	7.3	0.1	—	7.4	—
Municipal	879.0	16.6	9.8	885.8	—
Corporate	3,476.6	26.1	92.0	3,410.7	6.6
Residential mortgage-backed	728.4	2.7	14.7	716.4	—
Commercial mortgage-backed	648.4	1.7	9.8	640.3	—
Asset-backed	91.5	0.2	0.7	91.0	—
Fixed maturities, excluding held-for-sale (Chaucer)	6,245.9	49.8	134.2	6,161.5	6.6
Fixed maturities, held-for-sale	24.9	—	0.4	24.5	—
Total fixed maturities	\$ 6,270.8	\$ 49.8	\$ 134.6	\$6,186.0	\$ 6.6

DECEMBER 31, 2017

(in millions)	Amortized Cost	Gross Unrealized	Gross Unrealized	Fair Value	OTTI Unrealized
		Gains	Losses		Losses
Fixed maturities:					
U.S. Treasury and government agencies	\$ 322.1	\$ 3.4	\$ 3.2	\$322.3	\$ —

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Foreign government	8.2	0.3	—	8.5	—
Municipal	910.1	29.7	5.8	934.0	—
Corporate	3,134.2	84.1	21.7	3,196.6	6.5
Residential mortgage-backed	632.3	5.8	4.9	633.2	—
Commercial mortgage-backed	590.3	7.2	2.5	595.0	—
Asset-backed	59.9	0.1	0.3	59.7	—
Fixed maturities, excluding held-for-sale (Chaucer)	5,657.1	130.6	38.4	5,749.3	6.5
Fixed maturities, held-for-sale	2,031.7	14.6	15.9	2,030.4	0.4
Total fixed maturities	\$ 7,688.8	\$ 145.2	\$ 54.3	\$ 7,779.7	\$ 6.9

OTTI unrealized losses in the tables above represent OTTI recognized in accumulated other comprehensive income. This amount excludes net unrealized gains on impaired securities relating to changes in the value of such securities subsequent to the impairment measurement date of \$7.4 million and \$11.0 million as of December 31, 2018 and 2017, respectively.

The Company participates in a security lending program for the purpose of enhancing income. Securities on loan to various counterparties had a fair value of \$4.8 million and \$23.4 million at December 31, 2018 and 2017, respectively, and were fully collateralized by cash. The fair value of the loaned securities is monitored on a daily basis, and the collateral is maintained at a level of at least 102% of the fair value of the loaned securities. Securities lending collateral is recorded by the Company in cash and cash equivalents, with an offsetting liability included in expenses and taxes payable.

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At December 31, 2018 and 2017, fixed maturities with fair values of \$299.9 million and \$286.9 million, respectively, were on deposit with various state governmental authorities or trustees.

The Company enters into various agreements that may require its fixed maturities to be held as collateral by others. At December 31, 2018 and 2017, fixed maturities with fair values of \$234.9 million and \$225.7 million, respectively, were held as collateral for the FHLB collateralized borrowing program. See Note 6—"Debt and Credit Arrangements" for additional information related to the Company's FHLB program.

The amortized cost and fair value by maturity periods for fixed maturities are shown in the following table. Actual maturities may differ from contractual maturities because borrowers may have the right to call or prepay obligations with or without call or prepayment penalties, or the Company may have the right to put or sell the obligations back to the issuers.

DECEMBER 31 (in millions)	2018	
	Amortized Cost	Fair Value
Due in one year or less	\$207.4	\$208.5
Due after one year through five years	1,830.9	1,830.0
Due after five years through ten years	2,465.1	2,398.7
Due after ten years	274.2	276.6
	4,777.6	4,713.8
Mortgage-backed and asset-backed securities	1,468.3	1,447.7
Fixed maturities, excluding held-for-sale (Chaucer)	6,245.9	6,161.5
Fixed maturities, held-for-sale	24.9	24.5
Total fixed maturities	\$6,270.8	\$6,186.0

B. UNREALIZED GAINS AND LOSSES

Unrealized gains and losses on available-for-sale and other securities are summarized in the following table.

YEARS ENDED DECEMBER 31 (in millions)	Equity Securities		
	Fixed Maturities	and Other	Total
2018			
Net appreciation, beginning of year	\$ 110.1	\$ 95.3	\$205.4
Net depreciation on available-for-sale securities	(203.7)	—	(203.7)
Provision for deferred income taxes	33.6	—	33.6
Amount realized with sale of Chaucer, net of tax	19.1	—	19.1
Cumulative effect adjustment for ASUs 2016-01 and 2018-02, net of tax	13.7	(95.3)	(81.6)
	(137.3)	(95.3)	(232.6)
Net depreciation, end of year	\$ (27.2)	\$ —	\$(27.2)

2017

Net appreciation, beginning of year	\$ 127.1	\$ 58.9	\$ 186.0
Net appreciation (depreciation) on available-for-sale securities	(15.0)	55.9	40.9
Provision for deferred income taxes	(11.2)	(19.5)	(30.7)
Change in OTTI losses recognized in other comprehensive income	9.2	—	9.2
	(17.0)	36.4	19.4
Net appreciation, end of year	\$ 110.1	\$ 95.3	\$ 205.4

2016

Net appreciation, beginning of year	\$ 116.5	\$ 33.4	\$ 149.9
Net appreciation on available-for-sale securities	36.9	39.2	76.1
Provision for deferred income taxes	(37.5)	(13.7)	(51.2)
Change in OTTI losses recognized in other comprehensive income	11.2	—	11.2
	10.6	25.5	36.1
Net appreciation, end of year	\$ 127.1	\$ 58.9	\$ 186.0

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Effective January 1, 2018, increases or decreases in fair value of equity securities are no longer reported as unrealized gains and losses in accumulated other comprehensive income. Instead, they are reported in net realized and unrealized investment gains (losses) in the Consolidated Statements of Income (see “Equity Securities” below).

C. FIXED MATURITY SECURITIES IN AN UNREALIZED LOSS POSITION

The following tables provide information about the Company’s available-for-sale fixed maturity securities that were in an unrealized loss position at December 31, 2018 and 2017 including the length of time the securities have been in an unrealized loss position:

DECEMBER 31, 2018 (in millions)	12 months or less		Greater than 12 months		Total	
	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value
Investment grade:						
U.S. Treasury and government agencies	\$1.1	\$66.0	\$ 6.1	\$ 210.9	\$7.2	\$276.9
Foreign governments	—	2.0	—	0.8	—	2.8
Municipal	0.8	110.0	9.0	248.0	9.8	358.0
Corporate	30.0	1,277.9	43.9	781.6	73.9	2,059.5
Residential mortgage-backed	2.6	201.2	12.1	323.7	14.7	524.9
Commercial mortgage-backed	3.4	293.0	6.4	175.5	9.8	468.5
Asset-backed	0.4	42.3	0.3	18.0	0.7	60.3
Total investment grade	38.3	1,992.4	77.8	1,758.5	116.1	3,750.9
Below investment grade:						
Municipal	—	—	—	0.9	—	0.9
Corporate	8.1	185.6	10.0	54.0	18.1	239.6
Total below investment grade	8.1	185.6	10.0	54.9	18.1	240.5
Fixed maturities, excluding held-for-sale (Chaucer)	46.4	2,178.0	87.8	1,813.4	134.2	3,991.4
Fixed maturities, held-for-sale	0.1	4.0	0.3	18.0	0.4	22.0
Total fixed maturities	\$46.5	\$2,182.0	\$ 88.1	\$ 1,831.4	\$134.6	\$4,013.4

DECEMBER 31, 2017 (in millions)	12 months or less		Greater than 12 months		Total	
	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value
Investment grade:						
U.S. Treasury and government agencies	\$1.1	\$146.3	\$ 2.1	\$ 62.3	\$3.2	\$208.6
Foreign governments	—	0.1	—	0.6	—	0.7
Municipal	1.7	183.8	4.1	101.2	5.8	285.0
Corporate	3.0	386.2	10.8	395.9	13.8	782.1
Residential mortgage-backed	1.4	196.3	3.5	159.0	4.9	355.3
Commercial mortgage-backed	0.9	139.2	1.6	61.9	2.5	201.1

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Asset-backed	0.3	34.6	—	2.4	0.3	37.0
Total investment grade	8.4	1,086.5	22.1	783.3	30.5	1,869.8
Below investment grade:						
Corporate	1.5	48.7	6.4	39.0	7.9	87.7
Fixed maturities, excluding held-for-sale (Chaucer)	9.9	1,135.2	28.5	822.3	38.4	1,957.5
Fixed maturities, held-for-sale	5.7	803.3	10.2	389.6	15.9	1,192.9
Total fixed maturities	\$15.6	\$1,938.5	\$ 38.7	\$ 1,211.9	\$54.3	\$3,150.4

The Company views gross unrealized losses on fixed maturities as being temporary since it is its assessment that these securities will recover in the near term, allowing the Company to realize the anticipated long-term economic value. The Company employs a systematic methodology to evaluate declines in fair value below amortized cost for fixed maturity securities. In determining OTTI, the Company evaluates several factors and circumstances, including the issuer's overall financial condition; the issuer's credit and financial strength ratings; the issuer's financial performance, including earnings trends and asset quality; any specific events which may influence the operations of the issuer; the general outlook for market conditions in the industry or geographic region in which the issuer operates; and the length of time and the degree to which the fair value of an issuer's securities remains below the Company's amortized cost. The Company also considers any factors that might raise doubt about the issuer's ability to make contractual payments as they come due and whether the Company expects to recover the entire amortized cost basis of the security.

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D. EQUITY SECURITIES

Equity securities are carried at fair value. Effective January 1, 2018, increases or decreases in the fair value of equity securities are reported in net realized and unrealized investment gains (losses) in the Consolidated Statements of Income. Previously, equity securities were categorized as available-for-sale and unrealized gains and losses were reported in AOCI, a separate component of shareholders' equity. On January 1, 2018, the Company recorded a cumulative effect adjustment which included the reclassification of net unrealized gains on equity securities of \$142.5 million, pre-tax, from AOCI to retained earnings. As of December 31, 2017, the Company held equity securities with a fair value of \$576.2 million and a cost of \$433.7 million.

E. OTHER INVESTMENTS

The Company's mortgage participations and other mortgage loans were \$405.7 million and \$365.8 million at December 31, 2018 and 2017, respectively. Participating interests in commercial mortgage loans are originated and serviced by a third-party. For these investments, the Company shares, on a pro-rata basis, in all related cash flows of the underlying mortgages. Mortgage participations and other mortgage loans were comprised of the following property types and geographic locations.

DECEMBER 31	2018	2017
(in millions)		
Property Type:		
Office	\$ 141.1	\$ 134.6
Apartments	85.5	64.9
Retail	66.9	64.1
Hotel	62.7	58.1
Industrial	50.6	45.0
Valuation allowance	(1.1)	(0.9)
Total	\$405.7	\$365.8

DECEMBER 31	2018	2017
(in millions)		
Geographic Region:		
Pacific	\$92.5	\$87.6
South Atlantic	82.1	76.9
West South Central	65.9	66.1
Mid-Atlantic	53.4	53.4
New England	35.3	28.8
East North Central	27.9	16.5
Mountain	12.5	5.0
Other	37.2	32.4
Valuation allowance	(1.1)	(0.9)
Total	\$405.7	\$365.8

At December 31, 2018, scheduled maturities of mortgage participations and other mortgage loans were as follows: due in 2020 - \$10.0 million; in 2021 - \$57.4 million; 2022 - \$28.1 million; 2023 - \$17.0 million and thereafter - \$293.2 million. There were no scheduled loan maturities in 2019. Actual maturities could differ from contractual maturities because borrowers may have the right to prepay obligations with or without prepayment penalties and loans may be refinanced. During 2018, the Company did not refinance any loans based on terms that differed from current market rates.

Other investments also include interests in limited partnerships of \$235.7 million and \$186.4 million at December 31, 2018 and December 31, 2017, respectively.

F. OTHER

At December 31, 2018 and 2017, the Company's exposure to concentration of investments in a single investee that exceeded 10% of shareholders' equity included securities of a U.S. government-sponsored agency, as well as mortgage participations with a highly rated single third party with a carry value of \$396.7 million and \$356.8 million, respectively.

At December 31, 2018, there were contractual investment commitments of up to \$162.9 million.

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4. INVESTMENT INCOME AND GAINS AND LOSSES

A. NET INVESTMENT INCOME

The components of net investment income from continuing operations were as follows:

YEARS ENDED DECEMBER 31	2018	2017	2016
(in millions)			
Fixed maturities	\$217.7	\$205.8	\$202.1
Limited partnerships	24.1	15.3	8.0
Equity securities	17.0	18.0	18.6
Mortgage loans	14.0	11.4	9.1
Other investments	4.8	3.4	3.4
Gross investment income	277.6	253.9	241.2
Less investment expenses	(10.2)	(10.0)	(9.6)
Net investment income	\$267.4	\$243.9	\$231.6

Effective January 1, 2018, with the implementation of ASC No. 2016-01, the change in fair value of limited partnerships previously reported using the cost method are reported in net investment income, of which \$5.3 million relates to holding gains on securities still owned at December 31, 2018.

The carrying values of fixed maturity securities on non-accrual status at December 31, 2018 and 2017 were not material. The effects of non-accruals for the years ended December 31, 2018, 2017 and 2016, compared with amounts of net investment income that would have been recognized in accordance with the original terms of the fixed maturities were also not material.

B. NET REALIZED AND UNREALIZED INVESTMENT GAINS AND LOSSES

Net realized and unrealized gains (losses) on investments from continuing operations, including OTTI, were as follows:

YEARS ENDED DECEMBER 31	2018	2017	2016
(in millions)			
Equity securities	\$(43.4)	\$19.8	\$25.4
Fixed maturities	(5.8)	3.6	(15.5)
Other investments	(1.5)	(2.3)	0.3
Net realized and unrealized investment gains (losses)	\$(50.7)	\$21.1	\$10.2

Effective January 1, 2018, as a result of the implementation of ASC No. 2016-01, net realized and unrealized investment losses include changes in the fair value of equity securities. Previously, equity securities were categorized as available-for-sale and unrealized gains and losses were reported in AOCI, a separate component of shareholders'

equity.

The following table provides pre-tax net realized and unrealized losses on equity securities from continuing operations:

YEAR ENDED DECEMBER 31 (in millions)	2018
Net losses recognized during the period	\$(43.4)
Less: net losses recognized on equity securities sold during the period	(3.9)
Net unrealized losses recognized during the period on equity securities still held	\$(39.5)

For the years ended December 31, 2017 and 2016, there were net unrealized gains on equity securities of \$56.8 million and \$37.8 million, respectively, recognized in AOCI.

Other-than-temporary-impairments

Included in the net realized and unrealized investment gains (losses) were OTTI of investment securities totaling \$4.6 million, \$5.6 million and \$27.4 million in 2018, 2017 and 2016, respectively.

For 2018, total OTTI from continuing operations was \$5.4 million. Of this amount, \$4.6 million was recognized in earnings and the remaining \$0.8 million was recorded as unrealized losses in AOCI. The \$4.6 million of OTTI recognized in earnings relates to \$2.6 million of fixed maturity securities and \$2.0 million of other invested assets.

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For 2017, total OTTI from continuing operations was \$5.9 million. Of this amount, \$5.6 million was recognized in earnings and the remaining \$0.3 million was recorded as unrealized losses in AOCI. The \$5.6 million of OTTI recognized in earnings relates to \$2.0 million of other invested assets, \$1.8 million of fixed maturity securities and \$1.8 million of equities.

For 2016, total OTTI from continuing operations was \$20.6 million. Of this amount, \$27.4 million was recognized in earnings including \$6.8 million which was transferred from unrealized losses in AOCI. The \$27.4 million of OTTI recognized in earnings was related primarily to \$16.0 million of fixed maturity securities that the Company intended to sell, \$8.4 million of credit impairments and \$2.7 million of equities.

The methodology and significant inputs used to measure the amount of credit losses on fixed maturities in 2018, 2017 and 2016 were as follows:

Corporate bonds - the Company utilized a financial model that derives expected cash flows based on probability-of-default factors by credit rating and asset duration and loss-given-default factors based on security type. These factors are based on historical data provided by an independent third-party rating agency. In addition, other market data relevant to the realizability of contractual cash flows may be considered.

The following table provides rollforwards of the cumulative amounts related to the Company's credit loss portion of the OTTI losses on fixed maturity securities from continuing operations for which the non-credit portion of the loss is included in other comprehensive income.

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Credit losses as of the beginning of the year	\$3.6	\$9.6	\$17.7
Credit losses on securities for which an OTTI was not previously recognized	1.0	0.4	6.1
Additional credit losses on securities for which an OTTI was previously recognized	0.1	0.1	2.3
Reductions for securities sold, matured or called	(0.9)	(6.1)	(4.3)
Reductions for securities reclassified as intend to sell	—	(0.4)	(12.2)
Credit losses as of the end of the year	\$3.8	\$3.6	\$9.6

The proceeds from sales of available-for-sale securities and the gross realized gains and gross realized losses on those sales, were as follows:

YEARS ENDED DECEMBER 31 (in millions)	Proceeds	Gross Gains	Gross Losses
2018			

		from		
		Sales		
Fixed maturities, excluding held-for-sale (Chaucer)	\$ 296.5	\$ 2.1	\$ 8.4	
Fixed maturities, held-for-sale	276.8	1.7	1.7	
Total fixed maturities	\$ 573.3	\$ 3.8	\$ 10.1	
2017				
Fixed maturities, excluding held-for-sale (Chaucer)	\$ 306.8	\$ 8.1	\$ 7.8	
Fixed maturities, held-for-sale	188.0	4.1	0.4	
Total fixed maturities	\$ 494.8	\$ 12.2	\$ 8.2	
2016				
Fixed maturities, excluding held-for-sale (Chaucer)	\$ 348.2	\$ 10.0	\$ 5.1	
Fixed maturities, held-for-sale	215.6	1.7	1.9	
Total fixed maturities	\$ 563.8	\$ 11.7	\$ 7.0	

Beginning in 2018, equity securities are no longer classified as available-for-sale. Proceeds from the sale of equity securities for the years ended December 31, 2017 and 2016 were \$128.8 million and \$245.0 million, respectively, resulting primarily in gross realized gains of \$18.8 million and \$31.1 million, respectively.

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5. FAIR VALUE

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability, i.e., exit price, in an orderly transaction between market participants. The Company emphasizes the use of observable market data whenever available in determining fair value. Fair values presented for certain financial instruments are estimates which, in many cases, may differ significantly from the amounts that could be realized upon immediate liquidation. A hierarchy of the three broad levels of fair value are as follows, with the highest priority given to Level 1 as these are the most observable, and the lowest priority given to Level 3:

Level 1 – Unadjusted quoted prices in active markets for identical assets or liabilities.

Level 2 – 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, or other inputs that are observable or can be corroborated by observable market data, including model-derived valuations.

Level 3 – Unobservable inputs that are supported by little or no market activity.

When more than one level of input is used to determine fair value, the financial instrument is classified as Level 2 or 3 according to the lowest level input that has a significant impact on the fair value measurement.

The following methods and assumptions were used to estimate the fair value of each class of financial instruments and have not changed since last year.

FIXED MATURITIES

Level 1 securities generally include U.S. Treasury issues and other securities that are highly liquid and for which quoted market prices are available. Level 2 securities are valued using pricing for similar securities and pricing models that incorporate observable inputs including, but not limited to yield curves and issuer spreads. Level 3 securities include issues for which little observable data can be obtained, primarily due to the illiquid nature of the securities, and for which significant inputs used to determine fair value are based on the Company's own assumptions.

The Company utilizes a third party pricing service for the valuation of the majority of its fixed maturity securities and receives one quote per security. When quoted market prices in an active market are available, they are provided by the pricing service as the fair value and such values are classified as Level 1. Since fixed maturities other than U.S. Treasury securities generally do not trade on a daily basis, the pricing service prepares estimates of fair value for those securities using pricing techniques based on a market approach. Inputs into the fair value pricing common to all asset classes include: benchmark U.S. Treasury security yield curves; reported trades of identical or similar fixed maturity securities; broker/dealer quotes of identical or similar fixed maturity securities and structural characteristics such as maturity date, coupon, mandatory principal payment dates, frequency of interest and principal payments, and optional redemption features. Inputs into the fair value applications that are unique by asset class include, but are not limited to:

- U.S. government agencies – determination of direct versus indirect government support and whether any contingencies exist with respect to the timely payment of principal and interest.
- Foreign government – estimates of appropriate market spread versus underlying related sovereign treasury curve(s) dependent on liquidity and direct or contingent support.
-

Municipals – overall credit quality, including assessments of the level and variability of: sources of payment such as income, sales or property taxes, levies or user fees; credit support such as insurance; state or local economic and political base; natural resource availability; and susceptibility to natural or man-made catastrophic events such as hurricanes, earthquakes or acts of terrorism.

• Corporate fixed maturities – overall credit quality, including assessments of the level and variability of: economic sensitivity; liquidity; corporate financial policies; management quality; regulatory environment; competitive position; ownership; restrictive covenants; and security or collateral.

• Residential mortgage-backed securities – estimates of prepayment speeds based upon: historical prepayment rate trends; underlying collateral interest rates; geographic concentration; vintage year; borrower credit quality characteristics; interest rate and yield curve forecasts; government or monetary authority support programs; tax policies; delinquency/default trends; and, in the case of non-agency collateralized mortgage obligations, severity of loss upon default and length of time to recover proceeds following default.

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Commercial mortgage-backed securities – overall credit quality, including assessments of the value and supply/demand characteristics of: collateral type such as office, retail, residential, lodging, or other; geographic concentration by region, state, metropolitan statistical area and locale; vintage year; historical collateral performance including defeasance, delinquency, default and special servicer trends; and capital structure support features.

Asset-backed securities – overall credit quality, including assessments of the underlying collateral type such as credit card receivables, auto loan receivables and equipment lease receivables; geographic diversification; vintage year; historical collateral performance including delinquency, default and casualty trends; economic conditions influencing use rates and resale values; and contract structural support features.

Generally, all prices provided by the pricing service, except actively traded securities with quoted market prices, are reported as Level 2.

The Company holds privately placed fixed maturity securities and certain other fixed maturity securities that do not have an active market and for which the pricing service cannot provide fair values. The Company determines fair values for these securities using either matrix pricing utilizing the market approach or broker quotes. The Company will use observable market data as inputs into the fair value techniques, as discussed in the determination of Level 2 fair values, to the extent it is available, but is also required to use a certain amount of unobservable judgment due to the illiquid nature of the securities involved. Unobservable judgment reflected in the Company's matrix model accounts for estimates of additional spread required by market participants for factors such as issue size, structural complexity, high bond coupon or other unique features. These matrix-priced securities are reported as Level 2 or Level 3, depending on the significance of the impact of unobservable judgment on the security's value. Additionally, the Company may obtain non-binding broker quotes which are reported as Level 3.

EQUITY SECURITIES

Level 1 consists of publicly traded securities, including exchange traded funds, valued at quoted market prices. Level 2 includes securities that are valued using pricing for similar securities and pricing models that incorporate observable inputs. Level 3 consists of common or preferred stock of private companies for which observable inputs are not available.

The Company utilizes a third-party pricing service for the valuation of the majority of its equity securities and receives one quote for each equity security. When quoted market prices in an active market are available, they are provided by the pricing service as the fair value and such values are classified as Level 1. The Company holds certain equity securities that have been issued by privately held entities that do not have an active market and for which the pricing service cannot provide fair values. Generally, the Company estimates fair value for these securities based on the issuer's book value and market multiples and reports them as Level 3. Additionally, the Company may obtain non-binding broker quotes which are reported as Level 3.

OTHER INVESTMENTS

Other investments primarily include mortgage participations and limited partnerships not subject to the equity method of accounting. The fair values of limited partnerships not subject to the equity method of accounting are based on the net asset value provided by the general partner adjusted for recent financial information and are excluded from the fair value hierarchy.

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The estimated fair value of the financial instruments were as follows:

(in millions)	December 31, 2018		December 31, 2017	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Financial Assets carried at ⁽¹⁾ :				
Fair Value through AOCI:				
Fixed maturities	\$6,161.5	\$6,161.5	\$5,749.3	\$5,749.3
Equity securities	—	—	576.2	576.2
Other investments	—	—	3.6	3.6
Fair Value through Net Income:				
Equity securities	464.4	464.4	—	—
Other investments	175.0	175.0	—	—
Amortized Cost/Cost:				
Other investments	414.4	418.9	512.8	518.3
Cash and cash equivalents	1,020.7	1,020.7	297.9	297.9
Total financial instruments, excluding held-for-sale	8,236.0	8,240.5	7,139.8	7,145.3
Financial instruments, held-for-sale (Chaucer)	27.8	27.8	2,232.0	2,232.0
Total financial instruments	\$8,263.8	\$8,268.3	\$9,371.8	\$9,377.3
Financial Liabilities carried at:				
Amortized Cost:				
Debt	\$777.9	\$825.0	\$786.9	\$865.7

(1) Due to the adoption of ASU No. 2016-01, certain classifications are not comparable to the prior year. See Note 1 – “New Accounting Pronouncements”.

The Company has processes designed to ensure that the values received from its third-party pricing service are accurately recorded, that the data inputs and valuation approaches and techniques utilized are appropriate and consistently applied, and that the assumptions are reasonable and consistent with the objective of determining fair value. The Company performs a review of the fair value hierarchy classifications and of prices received from its pricing service on a quarterly basis. The Company reviews the pricing services’ policies describing its methodology, processes, practices and inputs, including various financial models used to value securities. Also, the Company reviews the portfolio pricing, including a process for which securities with changes in prices that exceed a defined threshold are verified to independent sources, if available. If upon review, the Company is not satisfied with the validity of a given price, a pricing challenge would be submitted to the pricing service along with supporting documentation for its review. The Company does not adjust quotes or prices obtained from the pricing service unless the pricing service agrees with the Company’s challenge. During 2018 and 2017, the Company did not adjust any prices received from its pricing service.

Changes in the observability of valuation inputs may result in a reclassification of certain financial assets or liabilities within the fair value hierarchy. Reclassifications between levels of the fair value hierarchy are reported as of the beginning of the period in which the reclassification occurs. As previously discussed, the Company utilizes a third party pricing service for the valuation of the majority of its fixed maturities and equity securities. The pricing service has indicated that it will only produce an estimate of fair value if there is objectively verifiable information to produce

a valuation. If the pricing service discontinues pricing an investment, the Company will use observable market data to the extent it is available, but may also be required to make assumptions for market based inputs that are unavailable due to market conditions.

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The following tables provide, for each hierarchy level, the Company's assets that were measured at fair value on a recurring basis.

(in millions)	DECEMBER 31, 2018			
	Total	Level 1	Level 2	Level 3
Fixed maturities:				
U.S. Treasury and government agencies	\$409.9	\$154.9	\$255.0	\$—
Foreign government	7.4	—	7.4	—
Municipal	885.8	—	864.7	21.1
Corporate	3,410.7	—	3,409.9	0.8
Residential mortgage-backed, U.S. agency backed	713.7	—	713.7	—
Residential mortgage-backed, non-agency	2.7	—	2.7	—
Commercial mortgage-backed	640.3	—	627.2	13.1
Asset backed	91.0	—	91.0	—
Total fixed maturities	6,161.5	154.9	5,971.6	35.0
Equity securities	464.4	463.3	—	1.1
Other investments	3.5	—	—	3.5
Total investment assets at fair value, excluding held-for-sale				
(Chaucer)	6,629.4	618.2	5,971.6	39.6
Investment assets, held-for-sale	24.5	5.7	18.8	—
Total investment assets at fair value	\$6,653.9	\$623.9	\$5,990.4	\$39.6

(in millions)	DECEMBER 31, 2017			
	Total	Level 1	Level 2	Level 3
Fixed maturities:				
U.S. Treasury and government agencies	\$322.3	\$140.0	\$182.3	\$—
Foreign government	8.5	—	8.5	—
Municipal	934.0	—	909.4	24.6
Corporate	3,196.6	—	3,195.7	0.9
Residential mortgage-backed, U.S. agency backed	605.0	—	605.0	—
Residential mortgage-backed, non-agency	28.2	—	28.2	—
Commercial mortgage-backed	595.0	—	580.8	14.2
Asset backed	59.7	—	59.7	—
Total fixed maturities	5,749.3	140.0	5,569.6	39.7
Equity securities	567.8	566.7	—	1.1
Other investments	3.6	—	—	3.6
Total investment assets at fair value, excluding held-for-sale				
(Chaucer)	6,320.7	706.7	5,569.6	44.4
Investment assets, held-for-sale	2,153.5	138.0	2,013.3	2.2
Total investment assets at fair value	\$8,474.2	\$844.7	\$7,582.9	\$46.6

Limited partnerships measured at fair value using NAV based on an ownership interest in partners' capital have not been included in the hierarchy tables. At December 31, 2018 and 2017, the fair values of these investments were \$171.5 million and \$149.4 million, respectively, approximately 2% of total investment assets, excluding assets-held-for-sale.

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The following tables provide, for each hierarchy level, the Company's estimated fair values of financial instruments that were not carried at fair value.

(in millions)	DECEMBER 31, 2018			
	Total	Level 1	Level 2	Level 3
Assets:				
Cash and cash equivalents	\$1,020.7	\$1,020.7	\$—	\$—
Other investments	418.9	—	8.7	410.2
Total financial instruments, excluding held-for-sale	1,439.6	1,020.7	8.7	410.2
Financial instruments, held-for-sale (Chaucer)	3.3	3.3	—	—
Total financial instruments	\$1,442.9	\$1,024.0	\$8.7	\$410.2
Liabilities:				
Debt	\$825.0	\$—	\$825.0	\$—

(in millions)	DECEMBER 31, 2017			
	Total	Level 1	Level 2	Level 3
Assets:				
Cash and cash equivalents	\$297.9	\$297.9	\$—	\$—
Equity securities	8.4	—	8.4	—
Other investments	368.9	—	—	368.9
Total financial instruments, excluding held-for-sale	675.2	297.9	8.4	368.9
Financial instruments, held-for-sale (Chaucer)	78.5	78.5	—	—
Total financial instruments	\$753.7	\$376.4	\$8.4	\$368.9
Liabilities:				
Debt	\$865.7	\$—	\$865.7	\$—

The following tables provide a reconciliation for all assets measured at fair value on a recurring basis using significant unobservable inputs (Level 3).

(in millions)	YEAR ENDED DECEMBER 31, 2018					
	Fixed Maturities			Commercial	Equity	
	Municipal	Corporate	backed	Total	Other	Total
Balance at beginning of year, excluding held-for-sale (Chaucer)	\$24.6	\$ 0.9	\$ 14.2	\$39.7	\$ 4.7	\$44.4

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Transfers out of Level 3	(0.5)	—	—	(0.5)	—	(0.5)
Total gains (losses):						
Included in total net realized and						
unrealized investment gains (losses)	0.1	—	—	0.1	(0.1)	—
Included in other comprehensive						
income - net depreciation on						
available-for-sale securities	(0.2)	—	(0.3)	(0.5)	—	(0.5)
Sales	(2.9)	(0.1)	(0.8)	(3.8)	—	(3.8)
Balance at end of year (1)	\$21.1	\$ 0.8	\$ 13.1	\$35.0	\$ 4.6	\$ 39.6

(1) There were no Level 3 held-for-sale securities (Chaucer) at December 31, 2018.

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YEAR ENDED DECEMBER 31, 2017	Fixed Maturities			Equity		Total Assets
	Municipal	Corporate	Commercial mortgage-backed	Total	and Other	
(in millions)						
Balance at beginning of year, excluding						
held-for-sale (Chaucer)	\$28.8	\$ 4.0	\$ 15.0	\$47.8	\$ 5.2	\$53.0
Transfers out of Level 3	(1.9)	—	—	(1.9)	—	(1.9)
Total gains (losses):						
Included in total net realized and						
unrealized investment gains	—	0.3	—	0.3	—	0.3
Included in other comprehensive						
income - net depreciation on						
available-for-sale securities	(0.2)	(0.2)	—	(0.4)	(0.5)	(0.9)
Sales	(2.1)	(3.2)	(0.8)	(6.1)	—	(6.1)
Balance at end of year, excluding						
held-for-sale	24.6	0.9	14.2	39.7	4.7	44.4
Balance at end of year, held-for-sale						
(Chaucer)	2.2	—	—	2.2	—	2.2
Balance at end of year, including						
held-for-sale	\$26.8	\$ 0.9	\$ 14.2	\$41.9	\$ 4.7	\$46.6

During the years ended December 31, 2018 and 2017, the Company transferred fixed maturities between Level 2 and Level 3 primarily as a result of assessing the significance of unobservable inputs on the fair value measurement. There were no transfers between Level 1 and Level 2 during 2018 or 2017. There were no Level 3 liabilities held by the Company for years ended December 31, 2018 and 2017.

The following table provides quantitative information about the significant unobservable inputs used by the Company in the fair value measurements of Level 3 assets, excluding amounts relating to the Chaucer business held-for-sale. Where discounted cash flows were used in the valuation of fixed maturities, the internally-developed discount rate was adjusted by the significant unobservable inputs shown in the table.

DECEMBER 31,	Valuation	Significant	2018		2017	
			Fair	Range	Fair	Range

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(in millions)	Technique	Unobservable Inputs	Value	(Wtd Average)	Value	(Wtd Average)
Fixed maturities:						
Municipal	Discounted cash flow	Discount for:	\$21.1		\$24.6	
		Small issue size		0.7 - 6.8% (3.4%)		0.7 - 6.8% (3.5%)
		Credit stress		1.3% (1.3%)		0.9 - 1.5% (1.2%)
		Above-market coupon		0.3 - 0.5% (0.5%)		0.3 - 0.5% (0.4%)
Corporate	Discounted cash flow	Discount for:	0.8		0.9	
		Small issue size		2.5% (2.5%)		2.5% (2.5%)
		Above-market coupon		0.3% (0.3%)		0.3% (0.3%)
Commercial mortgage-backed	Discounted cash flow	Discount for:	13.1		14.2	
		Small issue size		1.9 - 3.1% (2.7%)		1.9 - 3.1% (2.6%)
		Above-market coupon		0.5% (0.5%)		0.5% (0.5%)
		Lease structure		0.3% (0.3%)		0.3% (0.3%)
Equity securities	Market comparables	Net tangible asset market multiples	1.1	1.0X (1.0X)	1.1	1.0X (1.0X)
	Other	Discounted cash flow				
		Discount rate	3.5	18.0% (18.0%)	3.6	18.0% (18.0%)

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Significant increases (decreases) in any of the above inputs in isolation would result in a significantly lower (higher) fair value measurement. There were no interrelationships between these inputs which might magnify or mitigate the effect of changes in unobservable inputs on the fair value measurement.

6. DEBT AND CREDIT ARRANGEMENTS

Debt consists of the following:

DECEMBER 31 (in millions)	2018	2017
Senior debentures maturing April 15, 2026	\$375.0	\$375.0
Senior debentures maturing October 15, 2025	62.6	62.6
Subordinated debentures maturing March 30, 2053	175.0	175.0
Subordinated debentures maturing February 3, 2027	50.1	59.7
FHLB borrowings (secured)	125.0	125.0
Total principal debt	787.7	797.3
Unamortized debt issuance costs	(9.8)	(10.4)
Total	\$777.9	\$786.9

The Company has outstanding 7.625% unsecured senior debentures with a par value of \$62.6 million as of December 31, 2018 and 2017 and mature on October 15, 2025. Additionally, the Company has outstanding unsecured senior debentures that were issued on April 8, 2016 with a par value of \$375.0 million, as of December 31, 2018 and 2017 and mature on April 15, 2026. Both of the Company's outstanding senior debentures are subject to certain restrictive covenants, including limitations on the issuance or disposition of stock of restricted subsidiaries and limitations on liens, and pay interest semi-annually.

The Company has outstanding \$175.0 million aggregate principal amount of 6.35% subordinated unsecured debentures due March 30, 2053. These debentures pay interest quarterly. The Company may redeem these debentures in whole at any time, or in part from time to time, on or after March 30, 2018, at a redemption price equal to their principal amount plus accrued and unpaid interest. In addition, the Company's subordinated debentures maturing February 3, 2027 have a par value of \$50.1 million as of December 31, 2018 and \$59.7 million as of December 31, 2017 and pay cumulative dividends semi-annually at 8.207%.

During the third quarter of 2018, the Company repurchased subordinated debentures maturing February 3, 2027 with a net carrying value of \$9.6 million at a cost of \$11.5 million, resulting in a loss of \$1.9 million.

In 2009, Hanover Insurance received a \$125.0 million advance through its membership in the FHLB. This collateralized advance bears interest at a fixed rate of 5.50% per annum over a twenty-year term. As collateral to FHLB, the Company pledged government agency securities with a fair value of \$234.7 million and \$223.6 million, for the aggregate borrowings of \$125.0 million as of December 31, 2018 and December 31, 2017, respectively. The fair value of the collateral pledged must be maintained at certain specified levels of the borrowed amount, which can vary depending on the type of assets pledged. If the fair value of this collateral declines below these specified levels, the Company would be required to pledge additional collateral or repay outstanding borrowings. The Company is permitted to voluntarily repay the outstanding borrowings at any time, subject to a repayment fee. As a requirement of

membership in the FHLB, the Company maintains a certain level of investment in FHLB stock. Total holdings of FHLB stock were \$8.7 million and \$8.5 million at December 31, 2018 and 2017, respectively. At December 31, 2018, the Company notified FHLB of its intent to repay its \$125 million advance and recorded a pre-tax charge of \$26.3 million related to the pre-payment provision.

At December 31, 2018, the Company had a \$200.0 million credit agreement which expires in May 2019. The Company had no borrowings under this agreement as of December 31, 2018.

Interest expense was \$45.1 million, \$45.2 million, and \$51.4 million in 2018, 2017 and 2016, respectively. At December 31, 2018, the Company was in compliance with the covenants associated with all of its debt indentures and credit arrangements.

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7. INCOME TAXES

Provisions for income taxes have been calculated in accordance with the provisions of ASC 740. Income from continuing operations before income taxes and a summary of the components of income tax expense in the Consolidated Statements of Income are shown below:

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Income from continuing operations before income taxes	\$282.5	\$292.9	\$66.0
Income tax expense:			
Current	\$46.2	\$3.1	\$26.2
Deferred	(2.7)	73.7	(27.2)
Total income tax expense (benefit)	\$43.5	\$76.8	\$(1.0)

The income tax expense attributable to the consolidated results of continuing operations is different from the amount determined by multiplying income from continuing operations before income taxes by the U.S. statutory federal income tax rate of 21% in 2018 and 35% in both 2017 and 2016. The sources of the difference and the tax effects of each were as follows:

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Expected income tax expense	\$59.3	\$102.5	\$23.1
Effect of the enactment of the Tax Cuts and Jobs Act	(4.3)	(3.9)	—
Tax difference related to investment disposals and maturities	(9.2)	(12.7)	(20.7)
Stock-based compensation windfall benefit	(2.3)	(5.3)	—
Nondeductible expenses	1.6	1.0	1.0
Dividend received deduction	(1.2)	(3.2)	(3.3)
Tax-exempt interest	(0.4)	(0.9)	(1.1)
Change in liability for uncertain tax positions	—	(0.5)	—
Other, net	—	(0.2)	—
Income tax expense	\$43.5	\$76.8	\$(1.0)
Effective tax rate	15.4%	26.2 %	-1.5 %

The following are the components of the Company's deferred tax assets and liabilities, (excluding those associated with its discontinued operations.)

DECEMBER 31 (in millions)	2018	2017
Deferred tax assets:		

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Loss, LAE and unearned premium reserves, net	\$ 129.8	\$ 115.7
Employee benefit plans	14.5	18.7
Tax credit carryforwards	—	23.1
Investments, net	4.1	—
Other	16.3	11.5
	164.7	169.0
Less: Valuation allowance	0.2	0.2
	164.5	168.8
Deferred tax liabilities:		
Deferred acquisition costs	95.0	90.2
Investments, net	—	41.8
Software capitalization	18.3	18.0
Other	0.6	1.8
	113.9	151.8
Net deferred tax asset	\$ 50.6	\$ 17.0

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Deferred tax assets are reduced by a valuation allowance if it is more likely than not that all or some portion of the deferred tax assets will not be realized. The Company believes it is more likely than not that the deferred tax assets will be realized.

In prior years, the Company completed several transactions which resulted in, for tax purposes only, realized gains in its investment portfolio. As a result of these transactions, the Company was able to utilize capital losses carried forward and to release the valuation allowance recorded against the deferred tax asset related to these losses. The releases of valuation allowances were recorded as a benefit in accumulated other comprehensive income. Previously unrealized benefits of \$9.2 million, \$12.7 million and \$20.7 million, are recognized as part of income from continuing operations during 2018, 2017 and 2016, respectively. The remaining amount of \$35.6 million in accumulated other comprehensive income will be released into income from continuing operations in future years, as the investment securities subject to these transactions are sold or mature.

The table below provides a reconciliation of the beginning and ending liability for uncertain tax positions as follows:

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Liability at beginning of year, net	\$ 3.0	\$ 2.7	\$ 3.0
Additions for tax positions of current year	—	0.9	0.4
Subtractions as a result of a lapse of the applicable statute of limitations	—	(0.6)	(0.7)
Liability at end of year, net	\$ 3.0	\$ 3.0	\$ 2.7

There are no tax positions at December 31, 2018, 2017 and 2016 for which the ultimate deductibility is highly certain, but for which there is uncertainty about the timing of such deductibility. Because of the impact of deferred tax accounting, other than interest and penalties, a change in the timing of deductions would not impact the annual effective tax rate.

The Company recognizes interest and penalties related to unrecognized tax benefits in federal income tax expense. For the years ended December 31, 2018, 2017 and 2016 the Company recognized a de minimis amount of net interest and has not recognized any penalties associated with unrecognized tax benefits.

In 2019, the Company is expecting to release \$1.7 million of liability due to the expiration of a statute of limitations.

The Company or its subsidiaries file income tax returns in the U.S. federal jurisdiction and various state jurisdictions, as well as foreign jurisdictions. The Company and its subsidiaries are subject to U.S. federal and state income tax examinations and foreign examinations for years after 2014.

U.S. Tax Reform

On December 22, 2017, the Tax Cuts and Jobs Act (“TCJA”, “U.S. Tax Reform”, or “the Act”) was enacted in the U.S. The Act substantially changed many aspects of the U.S. Tax code, including a reduction in the U.S. corporate income tax rate from 35% to 21%. While the new corporate rate is effective on January 1, 2018, the Company has recognized the impact of the rate change on its deferred tax balances as of the enactment date. The effect of this re-measurement of the Company’s deferred tax balances was a provision of \$9.4 million for the year ended December 31, 2017. This

provision was recorded as a component of income tax expense in continuing operations and as a component of the Chaucer business and reflected a tax benefit of \$4.1 million and an expense of \$13.5 million, respectively. This amount included the revaluation of deferred taxes initially recorded through other comprehensive income and recorded through discontinued operations, such as unrealized appreciation on investments, employee benefit plan-related items, foreign currency translation adjustments and reserve adjustments for discontinued business. Deferred taxes related to the revaluation of the Company's pension plans at December 31, 2017, as well as changes in unrealized gains and losses occurring after the Act's enactment date, were recorded at 21% in other comprehensive income.

The Act also created a territorial tax system, which will generally allow companies to repatriate future non-U.S. sourced earnings without incurring additional U.S. taxes, by providing a 100% exemption on dividends received from certain non-U.S. subsidiaries. Although most of the Company's non-U.S. income had been previously subject to U.S. taxes, a portion of its non-U.S. income had been indefinitely reinvested overseas and was not subject to U.S. tax until repatriated. These non-U.S. earnings were subject to a one-time mandatory toll charge totaling \$12.7 million, which was recorded as a component of income tax expense in discontinued Chaucer business for the year ended December 31, 2017.

In addition, the Act limited various existing deductions such as executive compensation and introduced new income taxes on certain low-taxed non-U.S. income. Under the Act, the exemption from the \$1 million limitation on certain executive compensation has been eliminated. As a result, the Company recognized a provision of \$0.2 million for the year ended December 31, 2017.

The Act modified the provisions applicable to the determination of the tax basis of unpaid loss reserves. These modifications impact the payment pattern and applicable interest rate. The Act instructed the Treasury Department to provide discount factors and other guidance necessary to determine the appropriate transition adjustment. This information was released in November 2018 and the

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transition adjustment has been determined to total \$126.2 million, resulting in a deferred tax liability of \$26.5 million. This transitional amount will be taken into account ratably over eight years beginning in calendar year 2018. These provisions have no overall effect on the net deferred tax asset or income tax expense for the years ended December 31, 2017 and 2018.

The cumulative effect of the enactment of TCJA was an expense of \$22.3 million for the year ended December 31, 2017, comprising the aforementioned three components. The Company's estimates were not based upon provisional amounts, as defined in the SEC's Staff Accounting Bulletin No. 118.

8. PENSION PLANS

DEFINED BENEFIT PLANS

The Company recognizes the funded status of its defined benefit plans in its Consolidated Balance Sheets. The funded status is measured as the difference between the fair value of plan assets and the projected benefit obligation of the Company's defined benefit plans. The Company is required to aggregate separately all overfunded plans from all underfunded plans. Prior to its sale of Chaucer on December 28, 2018, the Company's pension obligation included defined benefit pension retirement benefits for Chaucer's employees.

U.S. Defined Benefit Plans

Prior to 2005, THG provided retirement benefits to substantially all of its employees under defined benefit pension plans. These plans were based on a defined benefit cash balance formula, whereby the Company annually provided an allocation to each covered employee based on a percentage of that employee's eligible salary, similar to a defined contribution plan arrangement. In addition to the cash balance allocation, certain transition group employees who had met specified age and service requirements as of December 31, 1994 were eligible for a grandfathered benefit based primarily on the employees' years of service and compensation during their highest five consecutive plan years of employment. The Company's policy for the plans is to fund at least the minimum amount required by the Employee Retirement Income Security Act of 1974 ("ERISA").

As of January 1, 2005, the defined benefit pension plans were frozen and since that date, no further cash balance allocations have been credited to participants. Participants' accounts are credited with interest daily, based upon the General Agreement of Trades and Tariffs rate (the 30-year Treasury Bond interest rate). In addition, the grandfathered benefits for the transition group were also frozen at January 1, 2005 levels with an annual transition pension adjustment calculated at an interest rate equal to 5% per year up to 35 years of completed service, and 3% thereafter. As of December 31, 2018, based on current estimates of plan liabilities and other assumptions, the projected benefit obligation of the qualified defined benefit pension plan exceeds plan assets by approximately \$18.8 million.

Assumptions

U.S. Defined Benefit Plans

In order to measure the expense associated with these plans, management must make various estimates and assumptions, including discount rates used to value liabilities, assumed rates of return on plan assets, employee turnover rates and anticipated mortality rates, for example. The estimates used by management are based on the Company's historical experience, as well as current facts and circumstances. In addition, the Company uses outside actuaries to assist in measuring the expense and liability associated with these plans.

The Company measures the funded status of its plans as of the date of its year-end statement of financial position. The Company utilizes a measurement date of December 31st to determine its benefit obligations, consistent with the date of its Consolidated Balance Sheets.

Weighted average assumptions used to determine pension benefit obligations are as follows:

DECEMBER 31	2018	2017	2016
U.S.			
Discount rate - qualified plan	4.50%	3.88%	4.25%
Discount rate - non-qualified plan	4.50%	3.88%	4.25%
Cash balance interest crediting rate	3.50%	3.50%	3.50%

The Company utilizes a measurement date of January 1st to determine its periodic pension costs. Weighted average assumptions used to determine net periodic pension costs for the defined benefit plans are as follows:

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YEARS ENDED DECEMBER 31	2018	2017	2016
U.S. Qualified plan			
Discount rate	3.88 %	4.25 %	4.88 %
Expected return on plan assets	4.75 %	5.00 %	5.25 %
Cash balance interest crediting rate	3.50 %	3.50 %	3.50 %
U.S. Non-qualified plan			
Discount rate	3.88 %	4.25 %	4.75 %

The expected rates of return were determined by using historical mean returns for each asset class, adjusted for certain factors believed to have an impact on future returns. These returns are generally weighted to the plan's actual asset allocation, and are net of administrative expenses. For the U.S. defined benefit plans, the expected return on plan assets for 2018 of 4.75% reflects long-term expectations and remains generally consistent with 2017. The Company reviews and updates, at least annually, its expected return on plan assets based on changes in the actual assets held by the plans and market conditions.

Plan Assets

U.S. Qualified Defined Benefit Plan

The Company utilizes a target allocation approach, which focuses on creating a mix of assets that will generate modest growth from equity securities while minimizing volatility in the Company's earnings from changes in the markets and economic environment. Various factors are taken into consideration in determining the appropriate asset mix, such as census data, actuarial valuation information and capital market assumptions. The Company reviews and updates, at least annually, the target allocation and makes changes periodically.

The following table provides 2018 target allocations and actual invested asset allocations for 2018 and 2017.

	2018			
	TARGET			
DECEMBER 31	LEVELS	2018	2017	
Fixed income securities:				
Fixed maturities	83	% 85	% 83	%
Money market funds	2	% 2	% 1	%
Total fixed income securities	85	% 87	% 84	%
Equity securities:				
Domestic	12	% 10	% 12	%
International	3	% 3	% 4	%
Total equity securities	15	% 13	% 16	%
Total plan assets	100	% 100	% 100	%

The following tables present, for each hierarchy level, the U.S. qualified defined benefit plan's investment assets that are measured at fair value at December 31, 2018 and 2017. Refer to Note 5 – "Fair Value" for a description of the different levels in the Fair Value Hierarchy.

DECEMBER 31 (in millions)	2018			2017				
	Total	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3
Fixed income securities:								
Fixed maturities	\$35.1	\$9.3	\$ —	\$25.8	\$38.8	\$13.1	\$ —	\$25.7
Money market mutual funds	9.1	9.1	—	—	5.3	5.3	—	—
Mutual funds	36.3	36.3	—	—	42.6	42.6	—	—
Total investments at fair value	\$80.5	\$54.7	\$ —	\$25.8	\$86.7	\$61.0	\$ —	\$25.7

Fixed Income Securities and Mutual Funds

Securities classified as Level 1 at December 31, 2018 and 2017 include actively traded mutual funds and publicly traded securities, which are valued at quoted market prices. Securities classified as Level 3 at December 31, 2018 and 2017 include assets held in a fixed account of an insurance company. The fair value of the investment is estimated using a comparable public market financial institution derived fair value curve that uses non-observable inputs for market liquidity and unique credit characteristics of its underlying securities.

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The Plan also holds investments measured at fair value using NAV based on the value of the underlying investments, which is determined independently by the investment manager and have not been included in the table above. These include investments in commingled pools and investment-grade fixed income securities held in a custom fund, and other commingled pools that primarily invest in publicly traded common stocks and international equity securities. The daily NAV, which is not published as a quoted market price for these investments, is used as the basis for transactions. Redemption of these funds is not subject to restriction. The fair values of these investments are as follows:

DECEMBER 31	2018	2017
Fixed maturities	\$346.4	\$343.5
Equity securities:		
Domestic	9.3	12.6
International	14.6	17.3
Total equity	23.9	29.9
Total investments carried at NAV	\$370.3	\$373.4

The table below provides a reconciliation for all assets measured at fair value on a recurring basis using significant unobservable inputs (Level 3).

YEAR ENDED DECEMBER 31 (in millions)	2018
Balance at beginning of period	\$25.7
Plus: Assets transferred from investments measured at fair value using NAV	2.1
Less: Assets transferred to Level 1 investments	(2.7)
Actual return on plan assets related to assets still held	0.7
Balance at end of year	\$25.8

Obligations and Funded Status

The Company recognizes the current net underfunded status of its plans in its Consolidated Balance Sheets. Changes in the funded status of the plans are reflected as components of either net income or accumulated other comprehensive loss or income. The components of accumulated other comprehensive loss or income are reflected as either a net actuarial gain or loss or a net prior service cost.

The following table reflects the benefit obligations, fair value of plan assets and funded status of the U.S. plans at December 31, 2018 and 2017.

DECEMBER 31	U.S. Qualified Pension Plan	U.S. Non-Qualified Pension Plan
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(in millions)	2018	2017	2018	2017
Change in benefit obligation:				
Benefit obligation, beginning of period ⁽¹⁾	\$501.2	\$506.8	\$36.6	\$38.0
Interest cost	18.4	20.4	1.4	1.5
Actuarial losses (gains)	(17.5)	7.3	(1.3)	0.1
Benefits paid	(32.6)	(33.3)	(2.9)	(3.0)
Benefit obligation, end of year ⁽¹⁾	469.5	501.2	33.8	36.6
Change in plan assets:				
Fair value of plan assets, beginning of period	460.1	453.3	—	—
Actual return on plan assets	(16.8)	40.1	—	—
Contributions	40.0	—	2.9	3.0
Benefits paid	(32.6)	(33.3)	(2.9)	(3.0)
Fair value of plan assets, end of year	450.7	460.1	—	—
Funded status of the plans	\$(18.8)	\$(41.1)	\$(33.8)	\$(36.6)

(1) The accumulated benefit obligation for these plans is equal to the projected benefit obligation.

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The following table reflects the benefit obligations and fair value for the Chaucer plan as of December 31, 2017 and related changes in those balances, as well as the changes to those balances during 2018 prior to the plan's disposition in conjunction with the sale of Chaucer on December 28, 2018.

DECEMBER 31 (in millions)	Chaucer	
	Pension Plan 2018	2017
Change in benefit obligation:		
Benefit obligation, beginning of period ⁽¹⁾	\$ 146.1	\$ 132.2
Plan amendment	0.3	—
Interest cost	3.7	3.9
Actuarial losses (gains)	(8.6)	3.2
Benefits paid	(3.9)	(5.8)
Foreign currency translation	(8.3)	12.6
Disposition of benefit obligations with the sale of Chaucer	(129.3)	—
Benefit obligation, end of year ⁽¹⁾	—	146.1
Change in plan assets:		
Fair value of plan assets, beginning of period	144.6	116.5
Actual return on plan assets	(5.8)	14.4
Contributions	—	7.7
Benefits paid	(3.9)	(5.8)
Foreign currency translation	(8.1)	11.8
Disposition of plan assets with the sale of Chaucer	(126.8)	—
Fair value of plan assets, end of year	—	144.6
Funded status of the plans	\$	\$ (1.5)

(1) The accumulated benefit obligation for the plan is equal to the projected benefit obligation.

Components of Net Periodic Pension Cost

The components of total net periodic pension cost are as follows:

YEARS ENDED DECEMBER 31	2018	2017	2016
(in millions)			
Interest cost	\$ 19.8	\$ 21.9	\$ 24.9
Expected return on plan assets	(20.6)	(21.4)	(23.5)
Recognized net actuarial loss	9.6	13.5	11.2
Net periodic pension cost	\$ 8.8	\$ 14.0	\$ 12.6

Net periodic pension benefit for Chaucer's pension plan of \$2.3 million, \$0.3 million and \$0.9 million in 2018, 2017 and 2016, respectively, have been reported in discontinued operations and are not included in the amounts disclosed above.

During 2016, the Chaucer plan was closed to future salary accruals, which eliminated any remaining benefits to be accumulated in future periods, and resulted in a \$2.4 million curtailment gain. An equal and offsetting expense was

included in recognized net actuarial losses. These items are reflected in discontinued operations and not included in the amounts disclosed in the table above.

The following table reflects the total amounts recognized in accumulated other comprehensive income relating to the U.S. defined benefit pension plans as of December 31, 2018 and 2017.

	DECEMBER 31	2018	2017
	(in millions)		
Net actuarial loss	\$ 109.7	\$ 100.8	

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The unrecognized net actuarial gains (losses) which exceed 10% of the greater of the projected benefit obligation or the fair value of plan assets are amortized as a component of net periodic pension cost over the next five years. The total estimated amount of actuarial losses that will be amortized from accumulated other comprehensive income into net periodic pension cost in 2019 is \$11.9 million.

Contributions

In accordance with ERISA guidelines, the Company is not required to fund its U.S. qualified benefit plan in 2019. The Company expects to contribute \$3.1 million to its U.S. non-qualified pension plans to fund 2019 benefit payments. During 2018, the Company made a discretionary contribution of \$40.0 million to its qualified benefit plan. At this time, no additional discretionary contributions are expected to be made into any of the U.S. plans during 2019, and the Company does not expect that any funds will be returned from the plans to the Company during 2019.

Benefit Payments

The Company estimates that benefit payments over the next 10 years will be as follows:

YEARS ENDED DECEMBER 31	2019	2020	2021	2022	2023	2024-2028
(in millions)						
U.S. qualified pension plan	\$38.5	\$37.4	\$38.7	\$37.3	\$37.1	\$ 163.7
U.S. non-qualified pension plan	\$3.1	\$3.0	\$3.0	\$2.9	\$2.7	\$ 12.4

The benefit payments are based on the same assumptions used to measure the Company's benefit obligations at the end of 2018. Benefit payments related to the qualified plan will be made from plan assets held in trust and not included with Company assets, whereas those payments related to the non-qualified plans will be provided for by the Company.

DEFINED CONTRIBUTION PLAN

In addition to the defined benefit plans, THG provides a qualified defined contribution 401(k) plan for its U.S. employees, whereby the Company matches employee elective 401(k) contributions, up to a maximum of 6% of eligible compensation in 2018, 2017, and 2016. The Company's expense for this matching provision was \$21.7 million, \$21.3 million and \$21.4 million for 2018, 2017, and 2016, respectively. In addition to this matching provision, the Company can elect to make an annual contribution to employees' accounts. Additional contributions amounted to \$2.2 million and were contributed to the plan during 2017.

Chaucer also provides a defined contribution plan for its employees which includes employer contributions. Prior to its sale, the Company's expense included \$4.5 million, \$4.8 million and \$3.9 million for 2018, 2017 and 2016, respectively, related to these benefits; such costs are reflected in discontinued operations.

9. OTHER POSTRETIREMENT BENEFIT PLANS

In addition to the Company's pension plans, the Company has postretirement medical benefits that it provides to former agents of its discontinued life businesses and retirees and their dependents. The plans, which are funded by the Company through either a Health Reimbursement Arrangement ("HRA") or directly, provide access to benefits

including hospital and major medical, with certain limits, and have varying co-payments and deductibles, depending on the plan. Generally, employees who were actively employed on December 31, 1995 became eligible with at least 15 years of service after the age of 40. Effective January 1, 1996, the Company revised these benefits so as to establish limits on future benefit payments to beneficiaries of retired participants and to restrict eligibility to then current employees. Effective January 1, 2018, the Plan was amended to further limit benefits and no longer provide benefits to current employees. Employees who retired prior to then were limited to a post-age 65 benefit. The population of agents receiving postretirement benefits was frozen as of December 31, 2002, when the Company ceased its distribution of proprietary life and annuity products. This plan is unfunded.

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The Company has recognized the funded status of its postretirement benefit plans in its Consolidated Balance Sheets. Since the plans are unfunded, the amount recognized in the Consolidated Balance Sheets is equal to the accumulated benefit obligation of the plans. The components of accumulated other comprehensive income or loss are reflected as either a net actuarial gain or loss or a net prior service cost.

Obligation and Funded Status

The following table reflects the funded status of these plans:

DECEMBER 31 (in millions)	2018	2017
Change in benefit obligation:		
Accumulated postretirement benefit obligation, beginning of year	\$10.1	\$11.6
Interest cost	0.4	0.4
Net actuarial gain	(0.9)	(0.3)
Benefits paid	(1.2)	(1.6)
Accumulated postretirement benefit obligation, end of year	8.4	10.1
Fair value of plan assets, end of year	—	—
Funded status of plans	\$(8.4)	\$(10.1)

Benefit Payments

The Company estimates that benefit payments over the next 10 years will be as follows:

YEARS ENDING DECEMBER 31 (in millions)	
2019	\$1.1
2020	1.0
2021	0.9
2022	0.8
2023	0.8
2024 - 2028	3.1

The benefit payments are based on the same assumptions used to measure the Company's benefit obligation at the end of 2018 and reflect benefits attributable to estimated future service.

Components of Net Periodic Postretirement Expense (Benefit)

The components of net periodic postretirement expense (benefit) were as follows:

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YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Interest cost	\$0.4	\$0.4	\$0.5
Recognized net actuarial loss	0.2	0.2	0.2
Amortization of prior service cost (benefit)	(0.3)	(1.4)	(1.4)
Net periodic postretirement cost (benefit)	\$0.3	\$(0.8)	\$(0.7)

The following table reflects the balances in accumulated other comprehensive income relating to the Company's postretirement benefit plans:

DECEMBER 31 (in millions)	2018	2017
Net actuarial loss	\$2.5	\$3.6
Net prior service cost (benefit)	(0.1)	(0.4)
	\$2.4	\$3.2

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The estimated amortization to be recognized in net periodic benefit cost in 2019 is de minimis.

Assumptions

Employers are required to measure the funded status of their plans as of the date of their year-end statement of financial position. As such, the Company has utilized a measurement date of December 31, 2018 and 2017, to determine its postretirement benefit obligations, consistent with the date of its Consolidated Balance Sheets. Weighted average discount rate assumptions used to determine postretirement benefit obligations and periodic postretirement costs are as follows:

YEARS ENDED DECEMBER 31	2018	2017
Postretirement benefit obligations discount rate	4.38%	3.75%
Postretirement benefit cost discount rate	3.75%	4.13%

The following table provides the assumed health care cost trend rates used for 2018 and 2017. A one-percentage point change in these assumptions would be de minimis.

DECEMBER 31	2018	2017
Health care cost trend rate assumed for next year	6.50%	6.50%
Rate to which the cost trend is assumed to decline (ultimate trend rate)	4.50%	4.50%
Year the rate reaches the ultimate trend rate	2024	2024

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10. OTHER COMPREHENSIVE INCOME

The following table provides changes in other comprehensive income.

YEARS ENDED DECEMBER 31	2018			2017			2016		
(in millions)	Pre-Tax	Tax Benefit (Expense)	Net of Tax	Pre-Tax	Tax Benefit (Expense)	Net of Tax	Pre-Tax	Tax Benefit (Expense)	Net of Tax
Unrealized gains (losses) on available-									
for-sale securities:									
Unrealized gains (losses) arising									
during period	\$(209.7)	\$ 44.0	\$(165.7)	\$77.0	\$(27.9)	\$49.1	\$95.9	\$(33.4)	\$62.5
Amount of realized (gains) losses									
from sales and other	2.5	(9.7)	(7.2)	(30.8)	(1.4)	(32.2)	(36.5)	(8.0)	(44.5)
Portion of other-than-temporary									
impairment losses recognized									
in earnings	3.5	(0.7)	2.8	3.9	(1.4)	2.5	27.9	(9.8)	18.1
Unrealized losses (gains) realized									
with sale of Chaucer business	24.2	(5.1)	19.1	—	—	—	—	—	—
Net unrealized gains (losses)	(179.5)	28.5	(151.0)	50.1	(30.7)	19.4	87.3	(51.2)	36.1
Pension and postretirement benefits:									
Net gains (losses) arising in the									
period from net actuarial (gains)									
losses and prior service costs	(21.3)	4.3	(17.0)	17.0	(3.4)	13.6	(43.1)	12.8	(30.3)
Amortization of net actuarial losses	9.7	(2.0)	7.7	14.0	(4.6)	9.4	9.9	(3.5)	6.4

(gains) and prior service costs										
recognized as net periodic benefit cost										
Pension obligations recognized with										
sale of Chaucer business	21.2	(4.8)	16.4	—	—	—	—	—	—	—
Total pension and postretirement benefits	9.6	(2.5)	7.1	31.0	(8.0)	23.0	(33.2)	9.3	(23.9)	
Cumulative foreign currency translation adjustment:										
Foreign currency translation										
recognized during the period	(2.2)	0.5	(1.7)	3.7	(1.3)	2.4	(5.1)	1.8	(3.3)	
Currency translation obligation										
recognized with sale of Chaucer										
business	29.4	(6.2)	23.2	—	—	—	—	—	—	—
Total cumulative foreign currency translation adjustment	27.2	(5.7)	21.5	3.7	(1.3)	2.4	(5.1)	1.8	(3.3)	
Other comprehensive income (loss)	\$ (142.7)	\$ 20.3	\$ (122.4)	\$ 84.8	\$ (40.0)	\$ 44.8	\$ 49.0	\$ (40.1)	\$ 8.9	

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Reclassifications out of accumulated other comprehensive income were as follows:

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016	
	Amount Reclassified from			Affected Line Item in the
Details about Accumulated Other	Accumulated			Statement
Comprehensive Income Components	Other Comprehensive Income			Where Net Income is
Unrealized gains (losses) on				Presented
available-for- sale securities	\$ (3.2)	\$ 26.6	\$ 36.2	Net realized gains (losses)
				from sales and other
				Net other-than-temporary
				impairment losses
				on investments
	(2.6)	(3.6)	(27.4)	recognized in earnings
	(5.8)	23.0	8.8	Total before tax
	10.3	4.2	17.7	Tax benefit
	4.5	27.2	26.5	Continuing operations; net
				of tax
	(19.1)	—	—	Gain on sale of Chaucer
				business
	(0.2)	2.5	(0.2)	Discontinued operations -
				Chaucer business
	0.1	—	(0.1)	Discontinued life business;
	(14.7)	29.7	26.2	net of tax
				Net of tax
Amortization of defined benefit				Loss adjustment expenses
pension and postretirement plans	(9.5)	(12.4)	(9.7)	and other operating
	1.9	4.3	3.4	expenses ⁽¹⁾
	(7.6)	(8.1)	(6.3)	Tax benefit
				Continuing operations; net
				of tax
	(16.4)	—	—	Gain on sale of Chaucer
				business
	(0.1)	(1.3)	(0.1)	Discontinued operations -
	(24.1)	(9.4)	(6.4)	Chaucer business
				Net of tax
Currency translation obligation				
recognized with sale of				
Chaucer business	(23.2)	—	—	Gain on sale of Chaucer
				business

Total reclassifications for the period	\$ (62.0)	\$ 20.3	\$ 19.8	Benefit (detriment) to income, net of tax
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(1) The amount reclassified from accumulated other comprehensive income for the pension and postretirement benefits was allocated approximately 40% to loss adjustment expenses and 60% to other operating expenses for each of the years ended December 31, 2018, 2017 and 2016.

11. STOCK-BASED COMPENSATION PLANS

On May 20, 2014, shareholders approved The Hanover Insurance Group 2014 Long-Term Incentive Plan (the “2014 Stock Plan”). With respect to new share-based award issuances, the 2014 Stock Plan replaced The Hanover Insurance Group, Inc. 2006 Long-Term Incentive Plan (the “2006 Stock Plan”) and authorized the issuance of 6,100,000 shares in a new share pool plus any shares subject to outstanding awards under the 2006 Stock Plan that may become available for reissuance as a result of the cash settlement, forfeiture, expiration or cancellation of such awards. The 2014 Stock Plan provides for the granting of the same types of awards as the 2006 Stock Plan, including stock options and stock appreciation rights (“SARS”), restricted and unrestricted stock, stock units, performance and market-based stock awards, and cash awards. In accordance with the 2014 Stock Plan, the issuance of one share of common stock in the form of an option or SAR will reduce the share pool by one share, whereas the issuance of one share of common stock for the other types of stock awards provided by the plan will reduce the pool by 3.8 shares. As of December 31, 2018, there were 4,343,301 shares available for grants under the 2014 Stock Plan.

Additionally, on May 20, 2014, shareholders approved The Hanover Insurance Group 2014 Employee Stock Purchase Plan (the “ESPP Plan”) and the Chaucer Share Incentive Plan (the “SIP Plan”), authorizing the issuance of 2,500,000 and 750,000 shares, respectively, under such plans. As of December 31, 2018, 2,371,060 shares were available for grant under the ESPP Plan. As a result of the sale of the Chaucer business in 2018, new grants of stock to the SIP Plan were terminated and the SIP Plan was transferred as part of the sale on December 28, 2018. Total shares awarded under this SIP Plan since 2014 were 74,189.

Compensation cost, excluding the discontinued operations related to the Chaucer business, for the years ended December 31, 2018, 2017, and 2016 totaled \$14.9 million, \$10.5 million and \$10.5 million, respectively. Related tax benefits were \$3.1 million, \$3.7 million and \$3.7 million, respectively. Compensation cost attributable to the Chaucer business, net of taxes, for the years ended December 31, 2017 and 2016 totaled \$1.2 million and \$1.0 million, respectively, and were reflected in discontinued operations.

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STOCK OPTIONS

Under the 2014 Stock Plan, options may be granted to eligible employees, directors or consultants at an exercise price equal to the market price of the Company's common stock on the date of grant. Option shares may be exercised subject to the terms prescribed by the Compensation Committee of the Board of Directors (the "Committee") at the time of grant. Options granted in 2018, 2017 and 2016 generally vest over 3 years with 33 1/3% vesting in each year. Options must be exercised not later than ten years from the date of grant.

Information on the Company's stock options is summarized below.

YEARS ENDED DECEMBER 31	2018		2017		2016	
		Weighted		Weighted		Weighted
		Average		Average		Average
(in whole shares and dollars)	Shares	Exercise Price	Shares	Exercise Price	Shares	Exercise Price
Outstanding, beginning of year	1,062,177	\$ 75.53	1,396,152	\$ 68.63	1,619,948	\$ 56.57
Granted	301,152	110.98	460,610	90.85	587,340	82.17
Exercised	(210,190)	69.41	(464,726)	63.12	(589,666)	48.99
Forfeited or cancelled	(54,063)	89.09	(329,859)	85.22	(221,470)	68.61
Outstanding, end of year	1,099,076	\$ 85.75	1,062,177	\$ 75.53	1,396,152	\$ 68.63
Exercisable, end of year	515,286	\$ 69.83	423,883	\$ 62.41	441,256	\$ 53.59

Cash received for options exercised for the years ended December 31, 2018, 2017 and 2016 was \$14.3 million, \$20.5 million and \$15.8 million, respectively. The intrinsic value of options exercised for the years ended December 31, 2018, 2017 and 2016 was \$9.6 million, \$15.6 million and \$21.1 million, respectively.

The excess tax expense realized from options exercised for the years ended December 31, 2018, 2017 and 2016 was \$1.6 million, \$4.0 million, and \$5.6 million, respectively. The aggregate intrinsic value at December 31, 2018 for shares outstanding and shares exercisable was \$34.1 million and \$24.2 million, respectively. At December 31, 2018, the weighted average remaining contractual life for shares outstanding and shares exercisable was 7.5 years and 6.2 years, respectively. Additional information about employee options outstanding and exercisable at December 31, 2018 is included in the following table:

Range of Exercise Prices	Options Outstanding		Weighted Average Remaining Exercise Price	Options Currently Exercisable	
	Number	Weighted Average		Number	Weighted Average Exercise Price

Contractual

		Lives			
\$36.81 to \$46.47	64,367	3.44	\$ 41.61	64,367	\$ 41.61
\$57.99	93,778	5.14	57.99	93,778	57.99
\$70.24 to \$72.66	165,924	6.16	70.27	165,924	70.27
\$74.88 to \$82.74	190,120	7.30	80.75	112,847	80.49
\$87.50 to \$91.19	285,280	8.20	90.66	78,370	90.89
\$110.57 to \$124.14	299,607	9.18	110.98	—	—

The fair value of each option is estimated on the date of grant using the Black-Scholes option pricing model. For all options granted through December 31, 2018, the exercise price equaled the market price on the grant date. Compensation cost related to options is based upon the grant date fair value and expensed on a straight-line basis over the service period for each separately vesting portion of the option as if the option was, in substance, multiple awards.

The weighted average grant date fair value of options granted during the years ended December 31, 2018, 2017 and 2016 was \$16.30, \$13.05 and \$10.83, respectively.

The following significant assumptions were used to determine the fair value for options granted in the years indicated.

	2018	2017	2016
Dividend yield	1.740% to 1.954 %	2.193% to 2.286 %	2.04% to 2.46 %
Expected volatility	17.943% to 18.500 %	18.341% to 21.694 %	18.08% to 21.31 %
Weighted average expected volatility	18.20 %	19.52 %	19.57 %
Risk-free interest rate	2.365% to 2.969 %	1.324% to 2.201 %	0.77% to 1.97 %
Expected term, in years	2.5 to 6.0	2.5 to 6.0	2.5 to 5.5

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The expected dividend yield is based on the Company's dividend payout rate(s), in the year noted. Expected volatility is based generally on the Company's historical daily stock price volatility. The risk-free rate for periods within the contractual life of the option is based on the U.S. Treasury yield curve in effect at the time of grant. The expected term of options granted represents the period of time that options are expected to be outstanding and is derived primarily using historical exercise, forfeit and cancellation behavior, along with certain other factors expected to differ from historical data.

The fair value of shares that vested during the years ended December 31, 2018 and 2017 was \$9.3 million and \$8.3 million, respectively. As of December 31, 2018, the Company had unrecognized compensation expense of \$3.7 million related to unvested stock options that is expected to be recognized over a weighted average period of 1.5 years.

RESTRICTED STOCK UNITS

Stock grants may be awarded to eligible employees at a price established by the Committee (which may be zero). Under the 2014 Stock Plan, the Company may award shares of restricted stock, restricted stock units, as well as shares of unrestricted stock. Restricted stock grants may vest based upon performance criteria, market criteria or continued employment and be in the form of shares or units. Vesting periods are established by the Committee.

The Company granted market-based restricted share units in 2018, 2017 and 2016. These units generally vest after 3 years of continued employment and after the achievement of certain stock performance targets. The Company also granted time-based restricted stock units to eligible employees in 2018, 2017 and 2016 that generally vest after 3 years of continued employment.

The following table summarizes information about employee restricted stock units:

YEARS ENDED DECEMBER 31	2018		2017		2016	
	Weighted Average Grant Date	Weighted Average Grant Date	Weighted Average Grant Date	Weighted Average Grant Date	Weighted Average Grant Date	Weighted Average Grant Date
	Shares	Fair Value	Shares	Fair Value	Shares	Fair Value
Time-based restricted stock units:						
Outstanding, beginning of year	298,528	\$ 83.45	269,063	\$ 73.91	301,897	\$ 54.54
Granted	152,529	111.66	130,075	90.40	143,107	83.43
Vested	(72,710)	72.69	(70,590)	59.29	(139,183)	42.97
Forfeited ⁽¹⁾	(45,866)	94.04	(30,020)	84.88	(36,758)	69.07
Outstanding, end of year	332,481	\$ 97.28	298,528	\$ 83.45	269,063	\$ 73.91
Performance and market-based restricted stock units:						
Outstanding, beginning of year	102,586	\$ 81.21	115,057	\$ 78.82	196,142	\$ 47.89
Granted	35,063	118.60	60,101	79.48	126,796	73.42
Vested	(14,032)	70.24	(17,642)	56.45	(144,141)	40.95

Forfeited ⁽¹⁾	(53,779)	89.79	(54,930)	82.27	(63,740)	58.54
Outstanding, end of year ⁽²⁾	69,838	\$ 95.58	102,586	\$ 81.21	115,057	\$ 78.82

(1) As a result of the sale of Chaucer and included in forfeitures in 2018 are 19,655 shares of time-based restricted stock units, 43,449 shares of performance-based restricted stock units and 2,705 shares of market-based restricted stock units that were awarded to Chaucer employees.

(2) At December 31, 2018, only market-based awards were outstanding.

In 2018, 2017 and 2016, the Company granted market-based awards totaling 31,688, 56,571, and 87,213, respectively, to certain members of senior management, which are included in the table above as performance and market-based restricted stock activity. The vesting of these stock units is based on the relative total shareholder return (“TSR”) of the Company. This metric is generally based on relative TSR for a three year period as compared to a group of Property and Casualty peer companies. The fair value of market-based awards was estimated at the date of grant using a valuation model. These units have the potential to range from 0% to 150% of the shares disclosed.

In 2018, market-based restricted stock units of 3,115 were included as granted due to completion levels in excess of 100% for units granted in 2015. The weighted average grant date fair value of these awards was \$70.24. In 2017, market-based restricted stock units of 5,881 were included as granted due to completion levels in excess of 100% for units granted in 2014. The weighted average grant date fair value of these awards was \$56.45. In 2016, performance and market-based stock units of 2,268 and 30,134 were included as granted due to completion levels in excess of 100% for units granted in 2014 and 2013, respectively. The weighted average grant date fair value of these awards was \$57.00 and \$41.77, respectively.

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The intrinsic value of restricted stock and restricted stock units that vested during the years ended December 31, 2018, 2017 and 2016 was \$2.9 million, \$2.3 million and \$5.4 million, respectively. The intrinsic value for performance and market-based restricted stock units that vested in 2018, 2017 and 2016 was \$0.6 million, \$0.6 million and \$5.8 million, respectively. There were 10,330 shares, 53,840 shares and 63,740 shares of market-based awards that forfeited in 2018, 2017 and 2016, respectively. Also, during 2018 and 2017, there were 43,449 shares and 1,090 shares, respectively, of performance-based awards that forfeited.

At December 31, 2018, the aggregate intrinsic value of restricted stock units was \$39.1 million and the weighted average remaining contractual life was 1.3 years. The aggregate intrinsic value of market-based restricted stock units was \$8.2 million and the weighted average remaining contractual life was 1.4 years. As of December 31, 2018, there was \$19.7 million of total unrecognized compensation cost related to unvested restricted stock units and performance and market-based restricted stock units. The cost is expected to be recognized over a weighted average period of 1.8 years. Compensation cost associated with restricted stock, restricted stock units and performance and market-based restricted stock units is generally calculated based upon grant date fair value, which is determined using current market prices.

12. EARNINGS PER SHARE AND SHAREHOLDERS' EQUITY TRANSACTIONS

The following table provides weighted average share information used in the calculation of the Company's basic and diluted earnings per share:

DECEMBER 31	2018	2017	2016
(in millions, except per share data)			
Basic shares used in the calculation of earnings per share	42.4	42.5	42.8
Dilutive effect of securities:			
Employee stock options	0.3	0.3	0.2
Non-vested stock grants	0.3	0.2	0.2
Diluted shares used in the calculation of earnings per share	43.0	43.0	43.2
Per share effect of dilutive securities on income from			
continuing operations	\$(0.07)	\$(0.05)	\$(0.04)
Per share effect of dilutive securities on net income	\$(0.12)	\$(0.05)	\$(0.04)

Diluted earnings per share during 2018, 2017 and 2016 excludes 0.3 million, 0.4 million and 0.6 million, respectively, of common shares issuable under the Company's stock compensation plans, because their effect would be antidilutive.

Prior to December 30, 2018, the Board of Directors had authorized a stock repurchase program, which, including subsequent amendments to increase the number of shares subject to repurchase, provided for aggregate repurchases of up to \$900 million. This program was terminated on December 30, 2018 in conjunction with the establishment of the new program discussed below. Prior to termination, the Company purchased 0.5 million shares of its common stock at a cost of \$57.7 million during 2018. Total repurchases under this program were 14.9 million at a cost of \$811.2 million. On December 30, 2018, the Board of Directors authorized a new stock repurchase program which provides for aggregate repurchases of up to \$600 million. Under the repurchase authorization, the Company may repurchase, from time to time, common shares in amounts, at prices and at such times as the Company deems appropriate, subject

to market conditions and other considerations. Repurchases may be executed using open market purchases, privately negotiated transactions, accelerated repurchase programs or other transactions. The Company is not required to purchase any specific number of shares or to make purchases by any certain date under this program. As of December 31, 2018, the Company had \$600.0 million available for repurchases under this repurchase authorization. On January 2, 2019, pursuant to the terms of an accelerated share repurchase (“ASR”) agreement executed on December 30, 2018, the Company paid \$250.0 million and received an initial delivery of approximately 1.8 million shares of common stock, which is approximately 80% of the total number of shares expected to be repurchased under this agreement.

On December 30, 2018, the Board of Directors of the Company declared a special dividend of \$4.75 per share to be paid on January 25, 2019. The Company held liabilities of \$193.4 million at December 31, 2018 for payment of this obligation.

13. DIVIDEND RESTRICTIONS

U.S. INSURANCE SUBSIDIARIES

The individual law of all states, including New Hampshire and Michigan, where Hanover Insurance and Citizens are domiciled, respectively, restrict the payment of dividends to stockholders by insurers. These laws affect the dividend paying ability of Hanover Insurance and Citizens.

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Pursuant to New Hampshire's statute, the maximum dividends and other distributions that an insurer may pay in any twelve month period, without prior approval of the New Hampshire Insurance Commissioner, is limited to the lesser of 10% of such insurer's statutory policyholder surplus as of the preceding December 31, or statutory net income less net realized gains. Hanover Insurance declared and paid dividends to its parent totaling \$140.0 million, \$296.8 million and \$218.8 million in 2018, 2017 and 2016, respectively. In 2017, the \$296.8 million dividend included \$80.0 million of extra ordinary dividends. At January 1, 2019, the maximum dividend payable without prior approval is \$76.7 million. In May 2019, the maximum dividend declared payable without prior approval will increase by \$140.0 million to a total amount of \$216.7 million.

Pursuant to Michigan's statute, the maximum dividends and other distributions that an insurer may pay in any twelve month period, without prior approval of the Michigan Insurance Commissioner, is limited to the greater of 10% of policyholders' surplus as of December 31 of the immediately preceding year or the statutory net income less net realized gains, for the immediately preceding calendar year. Citizens declared dividends to its parent, Hanover Insurance, totaling \$87.9 million, \$99.9 million and \$70.0 million in 2018, 2017 and 2016, respectively. At January 1, 2019, the maximum dividend payable without prior approval is \$19.2 million. In December 2019, the maximum dividend declared payable without prior approval will increase by \$87.9 million to a total amount of \$107.1 million.

The statutes in both New Hampshire and Michigan require that prior notice to the respective Insurance Commissioner of any proposed dividend be provided and such Commissioner may, in certain circumstances, prohibit the payment of the proposed dividend.

CHAUCER

Dividend payments previously paid by Chaucer to THG were regulated by U.K. law, whereby advance notice was provided to the U.K.'s Prudential Regulatory Authority. Dividend payments of \$85.0 million and \$79.5 million were made in 2018 and 2016, respectively.

14. SEGMENT INFORMATION

The Company's primary business operations include insurance products and services provided through three operating segments: Commercial Lines, Personal Lines and Other. Commercial Lines includes commercial multiple peril, commercial automobile, workers' compensation, and other commercial coverages, such as inland marine, specialty program business, management and professional liability, surety and specialty property. Personal Lines includes personal automobile, homeowners and other personal coverages. Included in the Other segment are Opus Investment Management, Inc., which markets investment management services to institutions, pension funds and other organizations; earnings on holding company assets; holding company and other expenses, including certain costs associated with retirement benefits due to the Company's former life insurance employees and agents; and, a run-off voluntary pools business. On December 28, 2018, the Company completed the sale of Chaucer, the major portion of our Lloyd's international specialty business, to China Re. The Chaucer-related Irish entity was subsequently sold on February 14, 2019. The sale of the Australian entities is pending, subject only to local regulatory approval, and is expected to close in the first quarter of 2019. Accordingly, as of December 31, 2018, and for all prior periods, Chaucer's results of operations have been classified as Discontinued Operations in the Consolidated Statements of Income and assets and liabilities related to the Chaucer business have been classified as held-for-sale in the Consolidated Balance Sheets (see Note 2 – "Discontinued Operations"). Certain ongoing expenses have been reclassified from Chaucer to the other three operating segments. The separate financial information is presented consistent with

the way results are regularly evaluated by the chief operating decision maker in deciding how to allocate resources and in assessing performance.

The Company reports interest expense related to debt separately from the earnings of its operating segments. For 2018, this consisted of interest on the Company's senior debentures, subordinated debentures, collateralized borrowings with the FHLB, and a letter of credit facility through the completion of the sale of Chaucer on December 28, 2018.

Management evaluates the results of the aforementioned segments based on operating income before taxes, excluding interest expense on debt. Operating income before taxes excludes certain items which are included in net income, such as net realized and unrealized investment gains (losses). Such gains and losses are excluded since they are determined by interest rates, financial markets and the timing of sales. Also, operating income before taxes excludes net gains and losses on disposals of businesses, gains and losses related to the repayment of debt, discontinued operations, costs to acquire businesses, restructuring costs, the cumulative effect of accounting changes and certain other items. Although the items excluded from operating income before taxes may be important components in understanding and assessing the Company's overall financial performance, management believes that the presentation of operating income before taxes enhances an investor's understanding of the Company's results of operations by highlighting net income attributable to the core operations of the business. However, operating income before taxes should not be construed as a substitute for income before income taxes and operating income should not be construed as a substitute for net income.

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Summarized below is financial information with respect to the Company's business segments.

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Operating revenues:			
Commercial Lines	\$2,739.5	\$2,573.8	\$2,485.0
Personal Lines	1,791.3	1,662.3	1,552.4
Other	14.2	10.7	6.3
Total	4,545.0	4,246.8	4,043.7
Net realized and unrealized investment gains (losses)	(50.7)	21.1	10.2
Total revenues	\$4,494.3	\$4,267.9	\$4,053.9
Operating income (loss) before interest expense and income taxes:			
Commercial Lines:			
Underwriting income (loss)	\$85.0	\$12.2	\$(123.2)
Net investment income	182.2	165.8	158.5
Other expense	(1.5)	(0.6)	(0.6)
Commercial Lines operating income	265.7	177.4	34.7
Personal Lines:			
Underwriting income	66.6	83.7	103.1
Net investment income	73.7	70.1	69.5
Other income	5.9	4.9	5.1
Personal Lines operating income	146.2	158.7	177.7
Other:			
Underwriting loss	(4.2)	(4.2)	(9.9)
Net investment income	11.5	8.0	3.6
Other expense	(12.7)	(12.6)	(13.2)
Other operating loss	(5.4)	(8.8)	(19.5)
Operating income before interest expense and income taxes	406.5	327.3	192.9
Interest on debt	(45.1)	(45.2)	(51.4)
Operating income before income taxes	361.4	282.1	141.5
Non-operating income (loss) items:			
Net realized and unrealized investment gains (losses)	(50.7)	21.1	10.2
Net loss from repayment of debt	(28.2)	—	(88.3)
Other non-operating items	—	(10.3)	2.6
Income from continuing operations before income taxes	\$282.5	\$292.9	\$66.0

The following table provides identifiable assets for the Company's business segments and discontinued operations:

DECEMBER 31 (in millions)	2018	2017
	Identifiable Assets	

U.S. Companies	\$12,238.4	\$10,915.0
Assets held-for-sale ⁽¹⁾	57.4	4,466.6
Assets of discontinued life business	103.9	88.0
Total	\$12,399.7	\$15,469.6

- (1) See also Note 2 – “Discontinued Operations” for a discussion on the sale of the Chaucer business.

The Company reviews the assets of its U.S. Companies collectively and does not allocate them among the Commercial Lines, Personal Lines and Other segments.

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15. LEASE COMMITMENTS

Rental expenses for operating leases from continuing operations amounted to \$16.7 million, \$14.8 million and \$15.6 million in 2018, 2017 and 2016, respectively. These expenses relate primarily to building leases of the Company. At December 31, 2018, future minimum rental payments under non-cancelable operating leases were \$41.1 million, payable as follows: 2019 - \$13.5 million; 2020 - \$11.0 million; 2021 - \$8.3 million and 2022 - \$4.5 million and 2023 and thereafter - \$3.8 million. It is expected that in the normal course of business, leases that expire will generally be renewed or replaced by leases on similar property and equipment.

Rental expenses for operating leases related to the former Chaucer business amounted to \$3.8 million, \$3.3 million and \$2.9 million in 2018, 2017 and 2016, respectively. These expenses relate primarily to building leases of Chaucer and are included in discontinued operations.

16. REINSURANCE

In the normal course of business, the Company seeks to reduce the losses that may arise from catastrophes or other events that cause unfavorable underwriting results by reinsuring certain levels of risk in various areas of exposure with other insurance enterprises or reinsurers. Reinsurance transactions are accounted for in accordance with the provisions of ASC 944.

Amounts recoverable from reinsurers are estimated in a manner consistent with the claim liability associated with the reinsured policy. Reinsurance contracts do not relieve the Company from its obligations to policyholders. Failure of reinsurers to honor their obligations could result in losses to the Company; consequently, allowances are established for amounts deemed uncollectible. The Company determines the appropriate amount of reinsurance based on evaluations of the risks accepted and analyses prepared by consultants and on market conditions (including the availability and pricing of reinsurance). The Company also believes that the terms of its reinsurance contracts are consistent with industry practice in that they contain standard terms with respect to lines of business covered, limit and retention, arbitration and occurrence. The Company believes that its reinsurers are financially sound, based upon an ongoing review of financial strength ratings assigned to them by rating agencies, their reputations in the reinsurance marketplace, collections history, advice from third parties and the analysis and guidance of THG's reinsurance advisors.

As a condition to conduct certain business in various states, the Company is required to participate in residual market mechanisms, facilities and pooling arrangements such as the Michigan Catastrophic Claims Association ("MCCA"). The Company is subject to concentration of risk with respect to reinsurance ceded to the MCCA. Funding for MCCA comes from assessments against automobile insurers based upon their share of insured automobiles in the state. Insurers are allowed to pass along this cost to Michigan automobile policyholders. The Company ceded to the MCCA premiums earned and losses and LAE incurred of \$70.9 million and \$108.8 million in 2018, \$62.8 million and \$81.4 million in 2017, and \$58.6 million and \$75.0 million in 2016. The MCCA represented 59.3% of the total reinsurance receivable balance at December 31, 2018. Reinsurance recoverables related to MCCA were \$977.1 million and \$930.6 million at December 31, 2018 and 2017, respectively. Because the MCCA is supported by assessments permitted by statute, and there have been no significant uncollectible balances from MCCA identified during the three years ending December 31, 2018, the Company believes that it has no significant exposure to uncollectible reinsurance balances from this entity.

The following table provides the effects of reinsurance.

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Premiums written:			
Direct	\$4,816.0	\$4,540.0	\$4,265.7
Assumed	27.6	23.6	25.1
Ceded	(458.8)	(454.5)	(408.1)
Net premiums written	\$4,384.8	\$4,109.1	\$3,882.7
Premiums earned:			
Direct	\$4,673.6	\$4,399.9	\$4,162.6
Assumed	26.6	23.6	24.4
Ceded	(445.8)	(443.1)	(397.5)
Net premiums earned	\$4,254.4	\$3,980.4	\$3,789.5
Percentage of assumed to net premiums earned	0.6	% 0.6	% 0.6
Losses and LAE:			
Direct	\$2,986.2	\$2,934.6	\$2,785.1
Assumed	25.2	20.5	30.6
Ceded ⁽¹⁾	(286.8)	(375.5)	(269.7)
Net losses and LAE	\$2,724.6	\$2,579.6	\$2,546.0

(1) The higher level of ceded losses and LAE in 2017 as compared to 2016 and 2018 is primarily due to higher non-catastrophe large loss activity occurring in certain domestic lines.

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17. LIABILITIES FOR OUTSTANDING CLAIMS, LOSSES AND LOSS ADJUSTMENT EXPENSES

Reserving Process Overview

Management's process for establishing loss reserves is a comprehensive process that involves input from multiple functions throughout the organization, including actuarial, finance, claims, legal, underwriting, distribution and business operations management. A review of loss reserves for each of the classes of business which the Company writes is conducted regularly, generally quarterly. This review process takes into consideration a variety of trends that impact the ultimate settlement of claims. Where appropriate, the review includes a review of overall payment patterns and the emergence of paid and reported losses relative to expectations.

The loss reserve estimation process relies on the basic assumption that past experience, adjusted for the effects of current developments and likely trends, is an appropriate basis for predicting future outcomes. As part of this process, the Company uses a variety of analytical methods that consider experience, trends and other relevant factors. Incurred but not reported ("IBNR") reserves are generally calculated by first projecting the ultimate cost of all claims that have been reported or expected to be reported in the future and then subtracting reported losses and loss adjustment expenses. IBNR reserves include both incurred-but-not-reported liabilities plus expected development on reported claims included in the liability for unpaid claims and claim adjustment expenses. Reported losses include cumulative paid losses and loss adjustment expenses plus outstanding case reserves. The Company's ultimate IBNR reserves are estimated by management and reserving actuaries on an aggregate basis for each line of business or coverage for loss and loss expense liabilities not reflected within the case reserves. Case reserves are established by claim personnel individually on a claim by claim basis and based on information specific to the occurrence and terms of the underlying policy. Case reserves are periodically reviewed and modified based on new or additional information pertaining to the claim.

For events designated as catastrophes, the Company generally calculates IBNR reserves directly as a result of an estimated IBNR claim count and an estimated average claim amount for each event. Such an assessment involves a comprehensive analysis of the nature of the event, of policyholder exposures within the affected geographic area and of available claims intelligence.

Carried reserves for each line of business and coverage are determined based on the quarterly loss reserving process. In making the determination, the Company considers numerous quantitative and qualitative factors. Quantitative factors include actual payments made and changes in case reserve estimates in the period, as compared to previously experienced patterns, the maturity of the accident year, trends observed over the recent past, the level of volatility within a particular class of business, the estimated effects of reinsurance, including reinstatement premiums, general economic trends, and other factors. Qualitative factors may include legal and regulatory developments, changes in claim handling and case reserving practices, recent entry into new markets or products, changes in underwriting practices, concerns that the Company does not have sufficient or quality historical reported and paid loss and LAE information with respect to a particular line or segment of business, effects of the economy and political outlook, perceived anomalies in the historical results, evolving trends or other factors.

Reserve Rollforward and Prior Year Development

The Company regularly updates its reserve estimates as new information becomes available and further events occur which may impact the resolution of unsettled claims. Reserve adjustments are reflected in results of operations as adjustments to losses and LAE. Often these adjustments are recognized in periods subsequent to the period in which the underlying policy was written and loss event occurred. These types of subsequent adjustments are described as

“prior years’ loss reserves”. Such development can be either favorable or unfavorable to the Company’s financial results and may vary by line of business. In this section, all amounts presented include catastrophe losses and LAE, unless otherwise indicated.

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The table below provides a reconciliation of the gross beginning and ending reserve for unpaid losses and loss adjustment expenses.

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Gross loss and LAE reserves, beginning of year	\$5,058.5	\$4,660.0	\$4,201.9
Reinsurance recoverable on unpaid losses	1,455.0	1,349.2	1,295.3
Net loss and LAE reserves, beginning of year	3,603.5	3,310.8	2,906.6
Net incurred losses and LAE in respect of losses			
occurring in:			
Current year	2,733.5	2,579.8	2,307.8
Prior years	(8.9)	(0.2)	238.2
Total incurred losses and LAE	2,724.6	2,579.6	2,546.0
Net payments of losses and LAE in respect of losses			
occurring in:			
Current year	1,232.3	1,203.8	1,063.0
Prior years	1,264.3	1,083.1	1,078.8
Total payments	2,496.6	2,286.9	2,141.8
Net reserve for losses and LAE, end of year	3,831.5	3,603.5	3,310.8
Reinsurance recoverable on unpaid losses	1,472.6	1,455.0	1,349.2
Gross reserve for losses and LAE, end of year	\$5,304.1	\$5,058.5	\$4,660.0

The following table provides a summary of (favorable)/unfavorable loss and LAE reserve development.

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Commercial multiple peril	\$(4.0)	\$2.9	\$68.8
Workers' compensation	(31.0)	(9.1)	(46.7)
Commercial automobile	23.2	2.3	27.5
Other commercial lines:			
AIX program business	17.0	(1.9)	75.1
General liability	(21.1)	(1.9)	56.0
Surety	(9.0)	0.1	35.3
Umbrella	2.3	0.9	(8.9)
Other lines	(18.3)	(4.1)	12.2
Total other commercial lines	(29.1)	(6.9)	169.7
Total Commercial Lines	(40.9)	(10.8)	219.3
Personal automobile	14.3	3.4	4.8
Homeowners and other personal lines	16.5	6.0	5.8
Total Personal Lines	30.8	9.4	10.6

Total Other Segment	1.2	1.2	8.3
Total loss and LAE reserve development, including			
catastrophes	\$(8.9)	\$(0.2)	\$238.2

Within other commercial lines, general liability is comprised of both monoline general liability and certain management and professional liability coverages and other lines is primarily comprised of lawyers professional liability, fidelity, marine, miscellaneous property, and healthcare lines. Loss and LAE reserve development in the Other segment is related to run-off voluntary assumed reinsurance pools business.

As a result of continuing trends in the Company's business, reserves including catastrophes have been re-estimated for all prior accident years and were decreased by \$8.9 million in 2018, decreased by \$0.2 million in 2017 and increased by \$238.2 million in 2016.

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2018

In 2018, net favorable loss and LAE development was \$8.9 million, primarily as a result of net favorable Commercial Lines development of \$40.9 million, partially offset by unfavorable Personal Lines development of \$30.8 million. Commercial Lines favorable development was primarily due to lower than expected losses of \$31.0 million within the workers' compensation line in accident years 2015 through 2017, \$29.1 million in other commercial lines, primarily in our professional and management liability and monoline general liability lines, related to the 2014 through 2016 accident years, and our surety line in accident years 2015 and 2017, partially offset by higher than expected losses in AIX programs and business classes which have since been terminated. Also partially offsetting the favorable Commercial Lines development was higher than expected losses of \$23.2 million in the commercial automobile line, driven by higher bodily injury severity in the 2014, 2016, and 2017 accident years. Personal Lines unfavorable development was primarily due to higher than expected losses of \$14.3 million in the personal automobile line, driven by bodily injury severity in the 2015 and 2016 accident years and \$13.8 million in homeowners in accident years 2015 through 2017. In addition, Other segment unfavorable development of \$1.2 million was due to higher than expected losses in our runoff voluntary pools business.

2017

In 2017, net favorable loss and LAE development was \$0.2 million, primarily as a result of net favorable development of \$10.8 million for Commercial Lines, partially offset by unfavorable development of \$9.4 million for Personal Lines. Commercial Lines favorable development was primarily due to lower than expected losses within the workers' compensation line in accident years 2012 through 2016. Personal Lines unfavorable development was primarily due to higher than expected losses in homeowners for accident year 2016. In addition, Other segment unfavorable development of \$1.2 million was due to higher than expected losses in our runoff voluntary pools business.

2016

In 2016, net unfavorable loss and LAE development was \$238.2 million, primarily as a result of net unfavorable development of \$219.3 million for Commercial Lines. The net unfavorable Commercial Lines development primarily resulted from higher than expected losses in other commercial lines of \$169.7 million, which includes the AIX program business. This was primarily driven by AIX programs and business classes, general liability coverages in accident years 2012 through 2015, and surety bonds in accident years 2012 through 2015. The Company also experienced higher than expected losses within the commercial multiple peril lines of \$68.8 million for accident years 2012 through 2015 and commercial automobile of \$27.5 million in accident years 2012 through 2014, both primarily within liability coverages. Partially offsetting the unfavorable development was lower than expected losses of \$46.7 million within the workers' compensation line, primarily related to accident years 2013 through 2015, and, to a lesser extent, the commercial umbrella line primarily related to the 2015 accident year.

As a result of the 2016 fourth quarter reserve review, carried reserves for prior accident years, excluding catastrophes, were increased by \$174.1 million in the fourth quarter of 2016, of which \$161.5 million related to Commercial Lines. The majority of this adjustment was attributed to long-tailed commercial liability coverages, including AIX program business and was largely driven by worsening trends in the number and nature of high severity losses and higher than anticipated legal defense costs. The Company reacted to this adverse emergence by updating its assumptions about loss severity, loss development patterns, expected loss ratios and loss adjustment expenses for the most recent accident years, placing greater weight on the adverse severity trends experienced in the most recent calendar years. The adverse prior year development for the Other segment was due to run-off voluntary assumed reinsurance pools business. The reserve increase was primarily based on an updated third-party actuarial study received in the fourth

quarter for a pool that primarily consists of asbestos and environmental exposures.

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Carried Reserves

The table below summarizes the gross, ceded and net reserve for losses and LAE and reconciles to the incurred claims development in the following section. Accordingly, the commercial multiple peril, workers' compensation, commercial automobile liability lines and general liability and umbrella - occurrence presentation includes AIX program business.

YEARS ENDED DECEMBER 31, (in millions)	2018			2017		
	Gross	Ceded	Net	Gross	Ceded	Net
Commercial multiple peril	\$1,206.5	\$(110.8)	\$1,095.7	\$1,104.9	\$(108.9)	\$996.0
Workers' compensation	775.9	(183.0)	592.9	757.8	(180.8)	577.0
Commercial automobile liability	433.5	(25.5)	408.0	428.1	(27.6)	400.5
General liability and umbrella - occurrence	534.1	(133.5)	400.6	508.5	(126.2)	382.3
General liability - claims made	245.9	(16.2)	229.7	231.6	(17.9)	213.7
Other lines	400.6	(78.4)	322.2	408.3	(108.8)	299.5
Total Commercial Lines and other	3,596.5	(547.4)	3,049.1	3,439.2	(570.2)	2,869.0
Personal automobile liability	1,514.0	(917.3)	596.7	1,453.8	(878.8)	575.0
Homeowners	158.2	(6.0)	152.2	133.5	(4.4)	129.1
Other personal lines	35.4	(1.9)	33.5	32.0	(1.6)	30.4
Total Personal Lines	1,707.6	(925.2)	782.4	1,619.3	(884.8)	734.5
Total loss and LAE reserves	\$5,304.1	\$(1,472.6)	\$3,831.5	\$5,058.5	\$(1,455.0)	\$3,603.5

General liability and umbrella - occurrence is primarily comprised of our commercial monoline general liability and umbrella coverages. General liability - claims made is primarily comprised of our commercial professional and management liability lines. Within total Commercial Lines and other, other lines is primarily comprised of marine, surety, miscellaneous commercial property, product liability, voluntary pools, healthcare and fidelity lines. Included in the above table, primarily in other lines, are \$57.6 million and \$59.4 million of gross asbestos and environmental reserves as of December 31, 2018 and 2017, respectively.

Incurred claims development tables

For the following net reserve components, commercial multiple peril, workers' compensation, commercial automobile liability, general liability and umbrella - occurrence, general liability - claims made, personal automobile liability and homeowners, the Company is presenting incurred claims development tables by accident year. The commercial multiple peril, workers' compensation, commercial automobile liability and general liability and umbrella - occurrence lines presentation includes AIX program business. In each of these tables, the Company is presenting the number of years for which claims are typically outstanding, which is consistent with the period at which substantially all of the reserve development has emerged based on past history. The tables presented below include cumulative incurred loss and allocated loss adjustment expenses ("ALAE"), cumulative paid loss and ALAE and IBNR balances at December 31, 2018. IBNR includes both incurred but not reported liabilities and expected development on reported claims. In addition, cumulative incurred claim counts are presented as of December 31, 2018 and claim duration is presented in a separate table disclosing the average annual percentage payout of incurred claims by age, net of reinsurance. Claim duration is calculated as an average of paid loss and ALAE divided by incurred loss and ALAE by elapsed year. The incurred claims development tables presented are reconciled to the net carried reserves in the preceding table as of December 31, 2018.

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Incurred claim count information presented represents claim frequency by individual claimant and measures the frequency of direct claim settlements that have resulted in or are expected to result in claim payments. Claim count information is presented in a manner consistent with that used in the quarterly loss reserving process. A single claim event, particularly in automobile lines, may result in multiple individual claimants and, therefore, multiple claim counts. Incurred claim counts are comprised of outstanding claims and those that are closed with a loss payment and exclude those that are closed without a loss payment. A single claim event may result in multiple claims closed with a payment when a claim is subsequently reopened with further payment. In this case, a reopened claim payment is counted as an incremental claim settlement. Claim count information is not available for direct and assumed participations in various involuntary pools and residual market mechanisms, which represent approximately 5% or less of the total gross earned premium and gross incurred claims for the lines presented. Incurred claim counts are also not adjusted for the effect of claims ceded as part of reinsurance programs, although the incurred losses and cumulative paid losses presented in the following tables are presented net of reinsurance ceded.

Commercial multiple peril (in millions)									As of
Incurred Losses and ALAE, Net of Reinsurance									December 31, 2018
YEARS ENDED DECEMBER 31,									Cumulative
Accident	2012	2013	2014	2015	2016	2017	2018	IBNR	Claim
Year	Unaudited	Unaudited	Unaudited	Unaudited					Count
2012	\$ 480.0	\$ 462.8	\$ 456.2	\$ 459.7	\$475.6	\$474.9	\$476.6	\$8.8	16,983
2013		380.0	362.5	367.9	391.8	392.1	393.0	10.2	14,830
2014			443.9	439.6	464.8	459.4	449.1	22.6	15,922
2015				446.0	456.3	463.7	467.4	33.0	15,731
2016					447.1	449.6	448.7	55.5	15,981
2017						538.7	544.8	122.2	16,674
2018							578.2	228.3	16,716
Total							\$3,357.8		

Cumulative Paid Losses and ALAE, Net of Reinsurance
YEARS ENDED DECEMBER 31,

Accident	2012	2013	2014	2015	2016	2017	2018
Year	Unaudited	Unaudited	Unaudited	Unaudited			
2012	\$ 175.8	\$ 307.5	\$ 350.8	\$ 389.3	\$424.2	\$442.8	\$454.9
2013		137.6	221.5	262.3	306.4	334.6	355.9
2014			171.7	267.8	316.0	363.4	395.2
2015				161.9	260.1	315.6	363.2
2016					140.3	237.9	290.2
2017						170.9	296.4
2018							178.8
Total							\$2,334.6
Total reserves for 2012 – 2018 accident years (incurred - paid)							1,023.2
Total reserves for 2011 and prior accident years							53.2

Unallocated loss adjustment expense	19.3
Net reserves at December 31, 2018	\$1,095.7

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Workers'
compensation
(in millions)

Incurred Losses and ALAE, Net of Reinsurance
YEARS ENDED DECEMBER 31,

As of
December 31,
2018

Accident Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	IBNR	Cumulative Incurred Claim Count
2009	\$93.8	\$87.6	\$82.5	\$80.3	\$79.4	\$79.2	\$77.5	\$77.5	\$77.9	\$78.7	\$1.9	8,032
2010		115.5	116.9	115.8	115.9	116.3	114.9	114.7	115.9	116.5	3.3	10,174
2011			141.4	144.2	144.3	145.5	143.8	146.7	148.3	147.9	7.1	12,465
2012				176.3	171.1	165.2	157.2	162.9	163.7	163.7	10.2	13,042
2013					179.3	167.4	160.1	154.4	155.3	155.4	12.3	11,683
2014						182.1	172.9	154.7	152.1	150.3	15.2	10,880
2015							189.6	164.2	157.5	150.3	22.5	11,417
2016								189.6	180.5	164.6	24.5	15,790
2017									186.1	172.1	35.4	16,405
2018										187.2	69.4	15,711
Total										\$1,486.7		

Cumulative Paid Losses and ALAE, Net of Reinsurance
YEARS ENDED DECEMBER 31,

Accident Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2009	\$19.2	\$41.2	\$54.6	\$61.6	\$65.4	\$68.6	\$69.8	\$70.8	\$72.4	\$73.1
2010		22.1	57.2	76.9	89.5	96.5	101.0	104.2	106.3	107.2
2011			30.0	71.3	97.3	114.0	122.9	128.0	130.9	132.8
2012				30.4	74.8	102.6	120.1	130.7	136.0	141.4
2013					30.9	74.6	101.2	114.0	122.8	127.4
2014						30.6	70.5	92.3	105.6	112.5
2015							28.0	65.7	87.2	99.4
2016								33.9	78.1	99.5
2017									32.8	73.0
2018										35.6
Total										\$1,001.9
Total reserves for 2009 – 2018 accident years (incurred - paid)										484.8
Total reserves for 2008 and prior accident years										91.1
Unallocated loss adjustment expense and other										17.0
Net reserves at December 31, 2018										\$592.9

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Commercial automobile liability (in millions) Incurred Losses and ALAE, Net of Reinsurance YEARS ENDED DECEMBER 31,							As of December 31, 2018 Cumulative Incurred Claim Count	
Accident Year	2013 Unaudited	2014 Unaudited	2015 Unaudited	2016	2017	2018	IBNR	
2013	\$ 177.7	\$ 179.4	\$ 205.3	\$227.5	\$225.6	\$231.0	\$1.4	15,274
2014		168.5	163.3	177.3	181.7	185.1	6.4	13,477
2015			163.4	168.3	166.9	167.8	10.0	12,838
2016				157.0	157.7	163.0	16.4	11,629
2017					159.5	170.1	43.4	11,343
2018						182.8	110.7	10,338
Total						\$1,099.8		

Cumulative Paid Losses and ALAE, Net of Reinsurance
YEARS ENDED DECEMBER 31,

Accident Year	2013 Unaudited	2014 Unaudited	2015 Unaudited	2016	2017	2018
2013	\$ 35.9	\$ 89.6	\$ 137.6	\$176.3	\$200.6	\$214.9
2014		33.1	70.8	102.7	137.1	168.2
2015			32.2	63.8	96.4	129.3
2016				27.8	60.7	98.3
2017					26.9	71.2
2018						29.2
Total						\$711.1
Total reserves for 2013 – 2018 accident years (incurred - paid)						388.7
Total reserves for 2012 and prior accident years						14.4
Unallocated loss adjustment expense						4.9
Net reserves at December 31, 2018						\$408.0

Table of ContentsGeneral liability and
umbrella - occurrence
(in millions)Incurred Losses and ALAE, Net of Reinsurance
YEARS ENDED DECEMBER 31,As of
December 31,
2018

Accident Year	2011	2012	2013	2014	2015	2016	2017	2018	IBNR	Cumulative Incurred Claim Count
	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited					
2011	\$ 47.6	\$ 43.8	\$ 38.2	\$ 42.2	\$ 51.0	\$55.6	\$55.4	\$57.5	\$3.3	1,398
2012		77.2	59.3	62.2	64.3	71.1	74.2	69.1	3.7	1,779
2013			84.1	67.4	71.5	88.6	84.4	81.2	8.2	2,031
2014				100.9	82.3	98.6	101.4	98.3	10.6	2,133
2015					104.2	99.3	99.6	97.0	21.3	2,550
2016						95.6	100.7	101.5	33.9	2,015
2017							97.7	107.6	54.2	1,844
2018								99.8	74.4	1,917
Total								\$712.0		

Cumulative Paid Losses and ALAE, Net of Reinsurance
YEARS ENDED DECEMBER 31,

Accident Year	2011	2012	2013	2014	2015	2016	2017	2018
	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited			
2011	\$ 1.6	\$ 6.7	\$ 19.4	\$ 31.1	\$ 39.8	\$45.8	\$47.8	\$50.6
2012		2.2	12.6	29.8	43.8	52.1	60.6	63.0
2013			2.4	11.0	26.8	43.1	56.1	63.5
2014				3.1	14.5	31.4	52.8	70.4
2015					3.3	15.2	30.8	48.5
2016						3.1	15.0	31.6
2017							4.4	17.0
2018								4.1
Total								\$348.7
Total reserves for 2011 – 2018 accident years (incurred - paid)								363.3
Total reserves for 2010 and prior accident years								25.8
Unallocated loss adjustment expense and other								11.5
Net reserves at December 31, 2018								\$400.6

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General liability - claims made (in millions) Incurred Losses and ALAE, Net of Reinsurance YEARS ENDED DECEMBER 31,							As of December 31, 2018 Cumulative Incurred Claim Count	
Accident Year	2013 Unaudited	2014 Unaudited	2015 Unaudited	2016	2017	2018	IBNR	
2013	\$ 54.9	\$ 55.4	\$ 60.6	\$71.4	\$69.2	\$68.4	\$0.9	645
2014		61.7	69.9	83.9	86.2	82.5	2.9	907
2015			93.2	98.8	98.4	90.2	4.9	1,035
2016				103.6	101.7	97.1	18.4	1,082
2017					103.3	104.6	35.5	1,310
2018						120.9	59.5	2,586
Total						\$563.7		

Cumulative Paid Losses and ALAE, Net of Reinsurance
YEARS ENDED DECEMBER 31,

Accident Year	2013 Unaudited	2014 Unaudited	2015 Unaudited	2016	2017	2018
2013	\$ 9.3	\$ 36.2	\$ 53.7	\$61.1	\$64.5	\$65.7
2014		11.0	38.8	59.1	71.5	75.4
2015			10.0	43.6	64.2	76.0
2016				11.1	42.9	66.1
2017					12.3	42.3
2018						17.3
Total						\$342.8
Total reserves for 2013– 2018 accident years (incurred - paid)						220.9
Total reserves for 2012 and prior accident years						4.0
Unallocated loss adjustment expense						4.8
Net reserves at December 31, 2018						\$229.7

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Personal automobile liability (in millions)						As of	
Incurred Losses and ALAE, Net of Reinsurance						December 31, 2018	
YEARS ENDED DECEMBER 31,						Cumulative	
Accident Year	2014 Unaudited	2015 Unaudited	2016	2017	2018	IBNR	Incurred Claim Count
2014	\$ 323.1	\$ 304.1	\$ 308.8	\$ 310.2	\$ 312.5	\$4.7	43,356
2015		327.4	334.1	328.6	332.4	5.6	42,358
2016			337.9	344.5	355.3	11.5	42,214
2017				363.6	362.3	35.0	42,200
2018					394.2	151.7	39,164
Total					\$ 1,756.7		

Cumulative Paid Losses and ALAE, Net of Reinsurance							
YEARS ENDED DECEMBER 31,							
Accident Year	2014 Unaudited	2015 Unaudited	2016	2017	2018		
2014	\$ 107.2	\$ 188.6	\$ 241.1	\$ 279.4	\$ 298.4		
2015		112.9	205.4	261.5	301.9		
2016			112.8	213.1	288.0		
2017				115.0	229.2		
2018					121.7		
Total					\$ 1,239.2		
Total reserves for 2014 – 2018 accident years (incurred - paid)						617.5	
Total reserves for 2013 and prior accident years						65.4	
Unallocated loss adjustment expense						13.8	
Net reserves at December 31, 2018						\$ 596.7	

Homeowners (in millions)						As of	
Incurred Losses and ALAE, Net of Reinsurance						December 31,	
YEARS ENDED DECEMBER 31,						2018	Cumulative
Accident Year	2015 Unaudited	2016	2017	2018	IBNR	Incurred	Claim Count
2015	\$ 267.1	\$ 272.0	\$ 272.0	\$ 274.2	1.7	30,436	
2016		222.1	226.5	231.4	3.2	25,456	
2017			291.4	296.5	3.4	33,394	
2018				312.9	46.0	30,487	
Total				\$ 1,115.0			

Cumulative Paid Losses and ALAE, Net of Reinsurance

YEARS ENDED DECEMBER 31,

Accident 2015

Year	Unaudited	2016	2017	2018
2015	\$ 199.9	\$ 253.8	\$ 260.6	\$ 267.5
2016		154.3	207.9	218.2
2017			204.5	271.6
2018				213.7
Total				\$ 971.0
Total reserves for 2015 – 2018 accident years (incurred but not paid)				
Total reserves for 2014 and prior accident years				4.8
Unallocated loss adjustment expense				3.4
Net reserves at December 31, 2018				\$ 152.2

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The following table is information about average historical claims duration as of December 31, 2018. The table is computed based on the paid and incurred claims data, net of reinsurance, for the accident years presented in the preceding claims development tables.

Average Annual Percentage Payout of Incurred Claims by Age, Net of Reinsurance:

Unaudited

	1	2	3	4	5	6	7	8	9	10
Commercial multiple peril	34.0%	22.7%	10.7%	10.0%	7.2 %	4.7 %	2.5%			
Workers' compensation	20.0%	27.0%	15.9%	9.6 %	5.6 %	3.5 %	2.4%	1.4%	1.4%	0.8%
Commercial automobile liability	16.9%	21.7%	20.1%	18.3%	13.7%	6.2 %				
General liability and umbrella										
- occurrence	3.4 %	11.7%	19.4%	20.1%	15.3%	10.6%	3.5%	4.9%		
General liability - claims made	12.6%	34.4%	24.3%	12.9%	4.8 %	1.7 %				
Personal automobile liability	32.5%	28.4%	18.3%	12.2%	6.1 %					
Homeowners	69.2%	21.8%	3.4 %	2.5 %						

18. COMMITMENTS AND CONTINGENCIES

Legal Proceedings

Durand Litigation

On March 12, 2007, a putative class action suit captioned Jennifer A. Durand v. The Hanover Insurance Group, Inc., and The Allmerica Financial Cash Balance Pension Plan, was filed in the United States District Court for the Western District of Kentucky. The named plaintiff, a former employee of the Company's former life insurance and annuity business who received a lump sum distribution from the Company's Cash Balance Plan (the "Plan") at or about the time of her separation from the Company, claims that she and others similarly situated did not receive the appropriate lump sum distribution because in computing the lump sum, the Company and the Plan understated the accrued benefit in the calculation. The plaintiff claims that the Plan underpaid her distributions and those of similarly situated participants by failing to pay an additional so-called "whipsaw" amount reflecting the present value of an estimate of future interest credits from the date of the lump sum distribution to each participant's retirement age of 65 ("whipsaw claim").

The plaintiff filed an Amended Complaint adding two new named plaintiffs and additional claims on December 11, 2009. Two of the three new claims set forth in the Amended Complaint were dismissed by the District Court, which action was upheld in November 2015 by the U.S. Court of Appeals, Sixth Circuit. The District Court, however, did allow to stand the new claim in the Amended Complaint for breach of fiduciary duty and failure to meet notice requirements arising under the Employee Retirement Income Security Act of 1974 ("ERISA") from the various interest crediting and lump sum distribution matters of which plaintiffs complain, but only as to plaintiffs' "whipsaw" claim that remained in the case. On December 17, 2013, the Court entered an order certifying a class to bring "whipsaw" and related breach of fiduciary duty claims consisting of all persons who received a lump sum distribution between March 1, 1997 and December 31, 2003.

On February 16, 2018, the Court entered an order limiting the claims of those participants who received lump sum distributions prior to March 13, 2002 to alleged violations of ERISA's disclosure requirements and breaches of fiduciary duty. Subsequently, the parties entered into settlement discussions and have reached a settlement, which the Court preliminarily approved on December 18, 2018. The Court will consider whether to give final approval to the settlement at a hearing on March 22, 2019. Provided the Court approves the settlement, the Company does not believe the resulting settlement amount will be material to the Company's financial position or have a material effect on its results of operations.

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Other Matters

The Company has been named a defendant in various other legal proceedings arising in the normal course of business. In addition, the Company is involved, from time to time, in examinations, investigations and proceedings by governmental and self-regulatory agencies. The potential outcome of any such action or regulatory proceedings in which the Company has been named a defendant or the subject of an inquiry or investigation, and its ultimate liability, if any, from such action or regulatory proceedings, is difficult to predict at this time. The ultimate resolutions of such proceedings are not expected to have a material effect on its financial position, although they could have a material effect on the results of operations for a particular quarter or annual period.

Residual Markets

The Company is required to participate in residual markets in various states, which generally pertain to high risk insureds, disrupted markets or lines of business or geographic areas where rates are regarded as excessive. The results of the residual markets are not subject to the predictability associated with the Company's own managed business, and are significant to both the personal and commercial automobile lines of business.

19. STATUTORY FINANCIAL INFORMATION

The Company's insurance subsidiaries are required to file annual statements with state regulatory authorities prepared on an accounting basis prescribed or permitted by such authorities (statutory basis), as codified by the National Association of Insurance Commissioners ("NAIC"). Permitted statutory accounting practices encompass all accounting practices that are not prescribed; such practices differ from state to state, may differ from company to company within a state, and may change in the future. The Company's U.S. insurance subsidiaries did not have any permitted practices as of or for the years ended December 31, 2018, 2017, and 2016.

Statutory capital and surplus differs from shareholders' equity reported in accordance with U.S. GAAP primarily because under the statutory basis of accounting, deferred acquisition costs are expensed when incurred and the recognition of deferred tax assets is based on different recoverability assumptions.

The following table provides statutory net income for the years ended December 31 and statutory capital and surplus as of December 31 for the periods indicated:

(in millions)	2018	2017	2016
Statutory Net Income			
U.S. Insurance Subsidiaries	\$296.1	\$254.5	\$158.0
Statutory Capital and Surplus			
U.S. Insurance Subsidiaries	2,172.5	2,077.1	2,173.4

The minimum statutory capital and surplus necessary to satisfy the Company's regulatory requirements was \$518.4 million, \$500.7 million and \$460.1 million, which equals the Authorized Control Level at December 31, 2018, 2017, and 2016, respectively. Beginning in 2017, the NAIC modified the RBC formula to require the inclusion of catastrophe risk. Accordingly, the Authorized Control Level for 2016 has been restated to reflect this change.

20. QUARTERLY RESULTS OF OPERATIONS (UNAUDITED)

The quarterly results of operations for 2018 and 2017 are summarized below.

THREE MONTHS ENDED				
(in millions, except per share data)				
	March			
2018	31	June 30	Sept. 30	Dec. 31
Total revenues	\$1,091.5	\$1,133.4	\$1,166.6	\$1,102.8
Income from continuing operations	\$50.5	\$82.4	\$104.0	\$2.1
Net income	\$67.7	\$99.3	\$100.4	\$123.6
Income from continuing operations per share:				
Basic	\$1.19	\$1.94	\$2.45	\$0.05
Diluted	\$1.17	\$1.91	\$2.41	\$0.05
Net income per share:				
Basic	\$1.59	\$2.34	\$2.36	\$2.92
Diluted	\$1.57	\$2.31	\$2.33	\$2.88
Dividends declared per share ⁽¹⁾	\$0.54	\$0.54	\$0.54	\$5.35

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THREE MONTHS ENDED				
(in millions, except per share data)				
	March			
2017	31	June 30	Sept. 30	Dec. 31
Total revenues	\$1,036.2	\$1,053.3	\$1,085.9	\$1,092.5
Income from continuing operations	\$28.4	\$56.3	\$59.5	\$71.9
Net income	\$45.2	\$78.4	\$11.1	\$51.5
Income from continuing operations per share:				
Basic	\$0.67	\$1.32	\$1.40	\$1.69
Diluted	\$0.66	\$1.32	\$1.38	\$1.67
Net income per share:				
Basic	\$1.06	\$1.84	\$0.26	\$1.21
Diluted	\$1.05	\$1.83	\$0.26	\$1.20
Dividends declared per share	\$0.50	\$0.50	\$0.50	\$0.54

(1) As a result of the sale of Chaucer, (see Note 2 – “Discontinued Operations”), on December 30, 2018 the Board of Directors declared a special dividend of \$4.75 per share (see Note 12 – “Earnings Per Share and Shareholders’ Equity Transactions”).

Due to the use of weighted average shares outstanding when calculating earnings per common share, the sum of the quarterly per common share data may not equal the per common share data for the year.

In accordance with ASU No. 2016-01, changes in fair value of equity securities are now reflected in income from continuing operations; whereas previously these changes were captured in AOCI. The fourth quarter of 2018 reflects \$50.1 million of losses related to such changes in fair value.

Additionally, during the fourth quarter of 2018, the Company recognized \$26.3 million of prepayment fees related to its FHLB advance (see Note 6 – “Debt and Credit Arrangements”).

21. SUBSEQUENT EVENTS

On January 2, 2019, pursuant to the terms of an ASR agreement, the Company paid \$250.0 million and received an initial delivery of approximately 1.8 million shares of our common stock, which is approximately 80% of the total number of shares expected to be repurchased under this agreement.

On February 14, 2019, the Company completed the sale of its Chaucer-related Irish entity for proceeds of \$28 million.

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ITEM 9—CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A—CONTROLS AND PROCEDURES

DISCLOSURE CONTROLS AND PROCEDURES EVALUATION

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of our disclosure controls and procedures, as such term is defined under Rule 13a-15(e) promulgated under the Securities Exchange Act of 1934, as amended (the “Exchange Act”).

Limitations on the Effectiveness of Controls

Our management, including our Chief Executive Officer and Chief Financial Officer, do not expect that our disclosure controls over financial reporting will prevent all error and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system’s objectives will be 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. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls is based in part on 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. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Conclusion Regarding the Effectiveness of Disclosure Controls and Procedures

Based on our controls evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of the end of the period covered by this annual report, our disclosure controls and procedures were effective to provide reasonable assurance that (i) the information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms and (ii) material information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Management’s Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the updated Internal Control – Integrated Framework issued in 2013 by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our evaluation under the updated framework in Internal Control – Integrated Framework, our management concluded

that our internal control over financial reporting was effective as of December 31, 2018.

The effectiveness of our internal control over financial reporting as of December 31, 2018 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is included herein.

CHANGES IN INTERNAL CONTROL

Our management, including the Chief Executive Officer and the Chief Financial Officer, conducted an evaluation of the internal control over financial reporting, as required by Rule 13a-15(d) of the Exchange Act, to determine whether any changes occurred during the period covered by this Annual Report on Form 10-K that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that there was no such change during the last quarter of the fiscal year covered by this Annual Report on Form 10-K that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B-OTHER INFORMATION

None.

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PART III

ITEM 10—DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

DIRECTORS OF THE REGISTRANT

Except for the portions about executive officers and our Code of Conduct that are set forth below, this information is incorporated herein by reference to the Proxy Statement for the Annual Meeting of Shareholders to be held on May 14, 2019 to be filed pursuant to Regulation 14A under the Exchange Act.

EXECUTIVE OFFICERS OF THE REGISTRANT

Set forth below is biographical information concerning our executive officers.

Mark L. Berthiaume, 62

Executive Vice President, Chief Technology Innovation Officer

Mr. Berthiaume has been head of Technology since joining THG in 2014. Prior to joining the Company, from 2001 to 2014, Mr. Berthiaume held a number of senior roles with The Chubb Corporation, last serving as Senior Vice President, International Chief Information Officer. Previously, Mr. Berthiaume was Vice President, Specialty Insurance Chief Information Officer of Orion Capital/Royal and Sunalliance Insurance Group, from 1995 to 2001, and prior to that he held a number of systems development and support positions with several insurance companies, including THG.

Kathleen E. deCastro, 47

Executive Vice President, Chief Human Resources Officer

Ms. deCastro joined the Company as Chief Human Resources Officer in July 2018. Before joining the Company, she was Head of Human Resources for Sun Life Financial, US from 2017 to 2018. Ms. DeCastro spent the prior 19 years with The Hartford Financial Services Group in a number of human resources leadership roles, most recently serving as Senior Vice President and Chief Talent Officer from 2016 to 2017. Prior to joining the Hartford in 1998, Ms. deCastro was a senior human resources consultant for Cigna Healthcare.

Jeffrey M. Farber, 54

Executive Vice President, Chief Financial Officer

Mr. Farber joined THG in October 2016 after spending the previous five years with American International Group (AIG). He joined AIG as Senior Vice President and Deputy Chief Financial Officer and then was appointed Chief Risk Officer, Commercial and Consumer Business. Prior to AIG, Mr. Farber served as Executive Vice President and Chief Financial Officer of GAMCO Investors, Inc., a public company asset manager. Previously, he held senior accounting and finance roles at The Bear Stearns Companies, Inc., most recently as Senior Managing Director, Controller and Senior Vice President, responsible for finance, tax and global procurement. He began his career at Deloitte & Touche LLP, rising to partner in the firm.

J. Kendall Huber, 64

Executive Vice President, General Counsel and Assistant Secretary

Mr. Huber has been General Counsel and Assistant Secretary since joining THG in 2000. Prior to joining THG, Mr. Huber was Executive Vice President, General Counsel and Secretary of Promus Hotel Corporation from 1999 to 2000. Previously, Mr. Huber was Vice President and Deputy General Counsel of Legg Mason, Inc. from 1998 to 1999, and of USF&G Corporation, where he was employed from 1990 to 1998. Mr. Huber was previously with the law firm now known as DLA Piper and a Lieutenant, U.S. Navy Judge Advocate General's Corps.

Richard W. Lavey, 51

Executive Vice President

President, Hanover Agency Markets

Mr. Lavey has served as Executive Vice President, and President Hanover Agency Markets since November 2017. Mr. Lavey previously served as Executive Vice President, Chief Growth Innovation Officer from February 2017 to November 2017. Prior to that time, he was President, Personal Lines of THG since November 2014 and Chief Marketing Officer since 2011, assuming responsibility for Field Operations in 2016. Mr. Lavey joined THG in 2004 and during this time has also served in the following roles: Chief Distribution Officer, Senior Vice President, Operations and Marketing; Regional President, Northeast; and Vice President, Field Operations and Marketing & Distribution. Prior to joining the Company, Mr. Lavey worked for The Hartford Financial Services Group, Inc. and The Travelers Corp.

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John C. Roche, 55

President and Chief Executive Officer

Mr. Roche became President and Chief Executive Officer in November 2017. Prior to that he led the Company's personal and commercial lines businesses as Executive Vice President and President, Hanover Agency Markets. Since joining the Company in 2006, Mr. Roche has served in several senior leadership positions, including President, Business Insurance; Vice President, Field Operations, Marketing and Distribution; and Vice President, Commercial Lines Underwriting and Product Management. Prior to joining the Company, he served in senior roles at the St. Paul Travelers Companies. He began his career at Fireman's Fund and Atlantic Mutual, where he held a number of underwriting and management positions.

Bryan J. Salvatore, 54

Executive Vice President

President, Specialty

Mr. Salvatore joined the Company in June 2017 as Executive Vice President and President, Specialty. Prior to joining the Company, he spent 20 years with Zurich North America in a number of leadership roles, most recently serving as President of the company's specialty products business since 2012. Prior to joining Zurich in 1997, Mr. Salvatore was a Director in the programs division of Frank Crystal & Co., Inc., a leading brokerage firm.

Ann K. Tripp, 60

Senior Vice President, Chief Investment Officer

President, Opus Investment Management, Inc.

Ms. Tripp has been Chief Investment Officer and President of Opus Investment Management, Inc. since 2006. She joined the Company in 1987, and prior to becoming our Chief Investment Officer, served in a variety of increasingly senior roles within our investment department. Ms. Tripp is also the Investment Officer of the Hanover Insurance Group Foundation and serves on the board and sub-committees of several area non-profit organizations.

Mark J. Welzenbach, 59

Executive Vice President, Chief Claims Officer

Mr. Welzenbach was appointed Chief Claims Officer of THG shortly after joining the Company in 2005. Before joining the Company, Mr. Welzenbach was Senior Vice President, Claims for The Hartford Financial Services Group, Inc. from 1995 to 2005. Prior to that, he was Director of Claims from 1991 to 1995 for Travelers Insurance Company. Mr. Welzenbach began his career as a practicing attorney.

OTHER SENIOR CORPORATE OFFICER OF THE REGISTRANT

Warren E. Barnes, 57

Senior Vice President and Corporate Controller

Principal Accounting Officer

Mr. Barnes was appointed Principal Accounting Officer in 2015. Mr. Barnes joined the Company in 1993, and has been its Controller since 1997. Before joining the Company, Mr. Barnes was employed from 1985 to 1993 by the public accounting firm then known as Price Waterhouse. He is a certified public accountant in the Commonwealth of Massachusetts.

Pursuant to section 4.4 of the Company's by-laws, each officer shall hold office until the first meeting of the Board of Directors following the next annual meeting of the shareholders and until his or her respective successor is chosen and qualified unless a shorter period shall have been specified by the terms of his or her election or appointment, or in each case until such officer sooner dies, resigns, is removed or becomes disqualified.

ANNUAL MEETING OF SHAREHOLDERS

The Board of Directors of THG has scheduled the 2019 Annual Meeting of Shareholders for May 14, 2019. The record date for determining the shareholders of the Company entitled to notice of and to vote at such Annual Meeting is March 18, 2019.

CODE OF CONDUCT

Our Code of Conduct is available, free of charge, on our website at www.hanover.com under "About Us – Corporate Governance – Company Policies". The Code of Conduct applies to our directors, officers and employees, including our Chief Executive Officer, Chief Financial Officer and Controller. In addition, we expect our agents, contractors and others with whom we do business to act in accordance with our Code of Conduct. We will disclose any future amendments to the Code of Conduct (other than technical,

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administrative or non-substantive amendments) within four business days following the date of such amendment. While we do not expect to grant waivers to our Code of Conduct, any such waivers to our Chief Executive Officer, Chief Financial Officer or Controller will be posted on our website at www.hanover.com, as required by applicable law or New York Stock Exchange requirements. A printed copy of the Code of Conduct will be provided free of charge by contacting the Company's Corporate Secretary at the Company's headquarters, 440 Lincoln Street, Worcester, MA 01653.

ITEM 11-EXECUTIVE COMPENSATION

Incorporated herein by reference from the Proxy Statement for the Annual Meeting of Shareholders to be held May 14, 2019, to be filed pursuant to Regulation 14A under the Securities Exchange Act of 1934.

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ITEM 12—SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Securities Authorized for Issuance Under Equity Compensation Plans

The following table sets forth information as of December 31, 2018 with respect to compensation plans under which equity securities of the Company are authorized for issuance.

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights ⁽¹⁾	Weighted average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans ⁽²⁾
Equity compensation plans approved by security holders	1,539,606	\$ 85.75	6,714,361
Equity compensation plans not approved by security holders	—	—	—
Total	1,539,606	\$ 85.75	6,714,361

(1) Includes 440,530 shares of Common Stock which may be issued upon vesting of outstanding restricted stock units and market-based restricted stock units (assuming the maximum award amount) of which, 3,053 represent dividend equivalent shares associated with the 2018 awards. The weighted average exercise price does not take these awards into account.

(2) On May 20, 2014, shareholders approved The Hanover Insurance Group 2014 Long-Term Incentive Plan (the “2014 Stock Plan”). With respect to new share-based award issuances, the 2014 Stock Plan replaced The Hanover Insurance Group, Inc. 2006 Long-Term Incentive Plan (the “2006 Stock Plan”) and authorized the issuance of 6,100,000 shares in a new share pool plus any shares subject to outstanding awards under the 2006 Stock Plan that may become available for reissuance as a result of the cash settlement, forfeiture, expiration or cancellation of such awards. In accordance with the 2014 Stock Plan, the issuance of one share of common stock in the form of an

option or SAR will reduce the share pool by one share, whereas the issuance of one share of common stock for the other types of stock awards provided by the plan will reduce the pool by 3.8 shares. Additionally, on May 20, 2014, the shareholders approved The Hanover Insurance Group 2014 Employee Stock Purchase plan and the Chaucer Share Incentive Plan, authorizing the issuance of 2,500,000 and 750,000 shares, respectively, under such plans. A total of 74,189 shares were issued under the Chaucer Share Incentive Plan. As a result of the sale of Chaucer to China Re, no further shares will be issued under this plan.

Additional information related to Security Ownership of Certain Beneficial Owners and Management is incorporated herein by reference from the Proxy Statement for the Annual Meeting of Shareholders to be held May 14, 2019, to be filed pursuant to Regulation 14A under the Securities Exchange Act of 1934.

ITEM 13—CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Incorporated herein by reference from the Proxy Statement for the Annual Meeting of Shareholders to be held May 14, 2019, to be filed pursuant to Regulation 14A under the Securities Exchange Act of 1934.

ITEM 14—PRINCIPAL ACCOUNTING FEES AND SERVICES

Incorporated herein by reference from the Proxy Statement for the Annual Meeting of Shareholders to be held May 14, 2019, to be filed pursuant to Regulation 14A under the Securities Exchange Act of 1934.

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PART IV

ITEM 15–EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(A)(1) FINANCIAL STATEMENTS

The consolidated financial statements and accompanying notes thereto are included on pages 76 to 134 of this Form 10-K.

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<u>Consolidated Statements of Income for the years ended December 31, 2018, 2017 and 2016</u>	77
<u>Consolidated Statements of Comprehensive Income for the years ended December 31, 2018, 2017 and 2016</u>	78
<u>Consolidated Balance Sheets as of December 31, 2018 and 2017</u>	79
<u>Consolidated Statements of Shareholders' Equity for the years ended December 31, 2018, 2017 and 2016</u>	80
<u>Consolidated Statements of Cash Flows for the years ended December 31, 2018, 2017 and 2016</u>	81
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(A)(2) FINANCIAL STATEMENTS SCHEDULES

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(A)(3) EXHIBIT INDEX

- 2.1 Stock Purchase Agreement, dated as of August 22, 2005, between The Goldman Sachs Group, Inc., as Buyer, and the Registrant, as Seller (the schedules and exhibits have been omitted pursuant to Item 601(b)(2) of Regulation S-K), previously filed as Exhibit 2.1 to the Registrant's Current Report on Form 8-K filed with the Commission on August 24, 2005 and incorporated herein by reference.
- 2.2 Stock Purchase Agreement, dated as of July 30, 2008, by and between the Registrant and Commonwealth Annuity and Life Insurance Company (the schedules and exhibits have been omitted pursuant to Item 601(b)(2) of Regulation S-K), previously filed as Exhibit 2.1 to the Registrant's Current Report on Form 8-K filed with the Commission on August 4, 2008 and incorporated herein by reference.
- 2.3 Agreement for the Sale and Purchase of Shares in the Capital of The Hanover Insurance International Holdings Limited, Chaucer Insurance Company Designated Activity Company and Hanover Australia HoldCo Pty Ltd., dated September 13, 2018, by and between the Registrant and China Reinsurance (Group) Corporation (the schedules and exhibits have been omitted pursuant to Item 601(b)(2) of Regulation S-K), previously filed as Exhibit 2.1 to the Registrant's Current Report on Form 8-K filed with the Commission on September 13, 2018 and incorporated herein by reference.
- 2.4 Supplemental Agreement by and between the Registrant and China Reinsurance (Group) Corporation, dated December 28, 2018 relating to the Agreement for the Sale and Purchase of Shares in the Capital of The Hanover Insurance International Holdings Limited, Chaucer Insurance Company Designated Activity Company and Hanover Australia HoldCo Pty Ltd., dated September 13, 2018, by and between the Registrant and China Reinsurance (Group) Corporation, previously filed as Exhibit 2.1 to the Registrant's Current Report on Form 8-K filed with the Commission on January 3, 2019 and incorporated herein by reference.
- 3.1 Certificate of Incorporation of the Registrant, previously filed as Exhibit 3.1 to the Registrant's Annual Report on Form 10-K filed with the Commission on March 16, 2006 and incorporated herein by reference.
- 3.2 Amended By-Laws of the Registrant, previously filed as Exhibit 3.2 to the Registrant's Current Report on Form 8-K filed with the Commission on November 21, 2006 and incorporated herein by reference.
- 4.1 Specimen Certificate of the Registrant's Common Stock, previously filed as Exhibit 4 to the Registrant's Annual Report on Form 10-K filed with the Commission on March 16, 2006 and incorporated herein by reference.
- 4.2 Form of Indenture relating to the Debentures between the Registrant, as issuer, and State Street Bank & Trust Company, as trustee, previously filed as Exhibit 4.1 to the Registrant's Registration Statement on Form S-1 (File No. 33-96764) filed with the Commission on September 11, 1995 and incorporated herein by reference. (P)
- 4.3 Form of Global Debenture relating to the Registrant's 7 5/8% Senior Debentures due 2025, previously filed as Exhibit 4.2 to the Registrant's Annual Report on Form 10-K filed with the Commission on March 16, 2006 and

incorporated herein by reference.

- 4.4 Indenture, dated February 3, 1997, relating to the Registrant's Junior Subordinated Debentures, previously filed as Exhibit 3 to the Registrant's Current Report on Form 8-K filed with the Commission on February 5, 1997 and incorporated herein by reference.
- 4.5 First Supplemental Indenture, dated July 30, 2009, amending the indenture dated February 3, 1997 relating to the Junior Subordinated Debentures of the Registrant, previously filed as Exhibit 4.5 to the Registrant's Annual Report on Form 10-K filed with the Commission on March 1, 2010 and incorporated herein by reference.
- 4.6 Form of Global Security representing \$300,000,000 principal amount of Junior Subordinated Debentures of the Registrant, previously filed as Exhibit 4.6 to the Registrant's Annual Report on Form 10-K filed with the Commission on March 1, 2010 and incorporated herein by reference.
- 4.7 Indenture, dated as of March 20, 2013, by and between the Registrant, as issuer, and U.S. Bank National Association, as trustee, previously filed as Exhibit 4.1 to the Registrant's Registration Statement on Form S-3 (File No: 333-187373) filed with the Commission on March 20, 2013 and incorporated herein by reference.
- 4.8 First Supplemental Indenture (to the Indenture dated as of March 20, 2013), dated as of March 27, 2013, related to the 6.35% Subordinated Debentures due 2053, between the Registrant, as issuer, and U.S. Bank National Association, as trustee, previously filed as Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed with the Commission on March 27, 2013 and incorporated herein by reference.

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- 4.9 Form of Security Certificate representing the 6.35% Subordinated Debentures due 2053, previously filed as Exhibit 4.2 to the Registrant's Current Report on Form 8-K filed with the Commission on March 27, 2013 and incorporated herein by reference.
- 4.10 Base Indenture, dated as of April 8, 2016, between the Registrant, as issuer, and U.S. Bank National Association, as trustee, previously filed as Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed with the Commission on April 8, 2016 and incorporated herein by reference.
- 4.11 First Supplemental Indenture (to the Base Indenture dated as of April 8, 2016), as of April 8, 2016, between the Registrant, as issuer, and U.S. Bank National Association, as trustee, previously filed as Exhibit 4.2 to the Registrant's Current Report on Form 8-K filed with the Commission on April 8, 2016 and incorporated herein by reference.
- 4.12 Form of Security Certificate representing the 4.5% Notes due 2026, previously filed as Exhibit 4.3 to the Registrant's Current Report on Form 8-K filed with the Commission on April 8, 2016 and incorporated herein by reference.
- +10.1 State Mutual Life Assurance Company of America Excess Benefit Retirement Plan, previously filed as Exhibit 10.5 to the Registrant's Registration Statement on Form S-1 (No. 33-91766) filed with the Commission on May 1, 1995 and incorporated herein by reference. (P)
- +10.2 The Hanover Insurance Group Cash Balance Pension Plan, as amended, previously filed as Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on November 2, 2017 and incorporated herein by reference.
- +10.3 The Hanover Insurance Group Retirement Savings Plan, as amended.
- +10.4 The Hanover Insurance Group, Inc. Amended and Restated Non-Qualified Retirement Savings Plan, previously filed as Exhibit 10.30 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 24, 2011 and incorporated herein by reference.
- +10.5 The Hanover Insurance Group, Inc. 2006 Long-Term Incentive Plan, as amended, previously filed as Annex I to the Registrant's Definitive Proxy Statement on Schedule 14A filed with the Commission on March 29, 2012 and incorporated herein by reference.
- +10.6 Form of Non-Qualified Stock Option Agreement under The Hanover Insurance Group, Inc. 2006 Long-Term Incentive Plan, previously filed as Exhibit 10.33 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 27, 2009 and incorporated herein by reference.
- +10.7 Form of Non-Qualified Stock Option Agreement under The Hanover Insurance Group, Inc. 2006 Long-Term Incentive Plan, previously filed as Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on November 8, 2011 and incorporated herein by reference.
- +10.8 Amendment to Outstanding Stock Options Issued under the Registrant's 2006 Long-Term Incentive Plan, previously filed as Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on November 8, 2011 and incorporated herein by reference.

- +10.9 Form of Non-Qualified Stock Option Agreement under The Hanover Insurance Group, Inc. 2006 Long-Term Incentive Plan, previously filed as Exhibit 10.38 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 26, 2013 and incorporated herein by reference.
- +10.10 Amendment to outstanding Stock Options issued under The Hanover Insurance Group, Inc. 2006 Long-Term Incentive Plan, previously filed as Exhibit 10.11 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 25, 2016 and incorporated herein by reference.
- +10.11 The Hanover Insurance Group 2014 Long-Term Incentive Plan, previously filed as Annex I to the Registrant's Definitive Proxy Statement on Schedule 14A filed with the Commission on April 3, 2014 and incorporated herein by reference.
- +10.12 Form of Non-Qualified Stock Option Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan, previously filed as Exhibit 10.2 to the Registrant's Current Report on Form 8-K filed with the Commission on May 20, 2014 and incorporated herein by reference.
- +10.13 Amendment to outstanding Stock Options issued under The Hanover Insurance Group 2014 Long-Term Incentive Plan, previously filed as Exhibit 10.18 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 25, 2016 and incorporated herein by reference.

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- +10.14 Form of Non-Qualified Stock Option Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan, previously filed as Exhibit 10.19 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 25, 2016 and incorporated herein by reference.
- +10.15 Form of Non-Qualified Stock Option Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan for Chief Financial Officer, previously filed as Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on November 4, 2016 and incorporated herein by reference.
- +10.16 Form of Non-Qualified Stock Option Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan, previously filed as Exhibit 10.16 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 27, 2018 and incorporated herein by reference.
- +10.17 Form of Non-Qualified Stock Option Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan for Chief Financial Officer, previously filed as Exhibit 10.17 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 27, 2018 and incorporated herein by reference.
- +10.18 Form of Performance-Based Restricted Stock Unit Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan, previously filed as Exhibit 10.3 to the Registrant's Current Report on Form 8-K filed with the Commission on May 20, 2014 and incorporated herein by reference.
- +10.19 Form of Performance-Based Restricted Stock Unit Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan, previously filed as Exhibit 10.21 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 25, 2016 and incorporated herein by reference.
- +10.20 Form of Performance-Based Restricted Stock Unit Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan for Chief Financial Officer, previously filed as Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on November 4, 2016 and incorporated herein by reference.
- +10.21 Form of Performance-Based Restricted Stock Unit Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan, previously filed as Exhibit 10.21 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 27, 2018 and incorporated herein by reference.
- +10.22 Form of Performance-Based Restricted Stock Unit Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan for Chief Financial Officer, previously filed as Exhibit 10.22 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 27, 2018 and incorporated herein by reference.
- +10.23 Form of Restricted Stock Unit Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan, previously filed as Exhibit 10.4 to the Registrant's Current Report on Form 8-K filed with the Commission on May 20, 2014 and incorporated herein by reference.
- +10.24 Form of Restricted Stock Unit Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan, previously filed as Exhibit 10.24 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 27, 2018 and incorporated herein by reference.
- +10.25

Form of Restricted Stock Unit Agreement under The Hanover Insurance Group 2014 Long-Term Incentive Plan, previously filed as Exhibit 10.25 to the Registrant's Annual Report on Form 10-K filed with the Commission on February 27, 2018 and incorporated herein by reference.

- +10.26 The Hanover Insurance Group, Inc. 2014 Executive Short-Term Incentive Compensation Plan, previously filed as Annex IV to the Registrant's Definitive Proxy Statement on Schedule 14A filed with the Commission on April 3, 2014 and incorporated herein by reference.
- +10.27 The Hanover Insurance Group, Inc. Amended and Restated Employment Continuity Plan, previously filed as Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on August 11, 2008 and incorporated herein by reference.
- +10.28 Form of Side Letter Agreement for New Participants in The Hanover Insurance Group Amended and Restated Employment Continuity Plan waiving right to IRC §280G "Gross-Up" Payments, previously filed as Exhibit 10.6 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on July 29, 2016 and incorporated herein by reference.
- +10.29 Description of 2017— 2018 Non-Employee Director Compensation, previously filed as Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on August 3, 2017 and incorporated herein by reference.

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- +10.30 Description of 2018— 2019 Non-Employee Director Compensation, previously filed as Exhibit 10.1 to the Registrant’s Quarterly Report on Form 10-Q filed with the Commission on August 3, 2018 and incorporated herein by reference.
- +10.31 The Hanover Insurance Group, Inc. Non-Employee Director Deferral Plan, previously filed as Exhibit 10.28 to the Registrant’s Annual Report on Form 10-K filed with the Commission on February 27, 2009 and incorporated herein by reference.
- +10.32 Offer Letter, dated September 21, 2016, by and between Jeffrey M. Farber and the Registrant, previously filed as Exhibit 10.1 to the Registrant’s Current Report on Form 8-K filed with the Commission on September 23, 2016 and incorporated herein by reference.
- +10.33 IRC Section 162(m) Deferral Letter for Certain Executive Officers of the Registrant, previously filed as Exhibit 10.34 to the Registrant’s Annual Report on Form 10-K filed with the Commission on February 27, 2009 and incorporated herein by reference.
- +10.34 The Hanover Insurance Group Amended and Restated 2014 Employee Stock Purchase Plan, previously filed as Exhibit 10.3 to the Registrant’s Registration Statement on Form S-8 (File No. 333-196107) filed with the Commission on May 20, 2014 and incorporated herein by reference.
- +10.35 Offer Letter, dated May 17, 2017, by and between Bryan J. Salvatore and the Registrant, previously filed as Exhibit 10.39 to the Registrant’s Annual Report on Form 10-K filed with the Commission on February 27, 2018 and incorporated herein by reference.
- +10.36 Form of Leadership Severance Arrangement, previously filed as Exhibit 10.40 to the Registrant’s Annual Report on Form 10-K filed with the Commission on February 27, 2018 and incorporated herein by reference.
- +10.37 Service Agreement dated February 20, 2017 by and between Chaucer Underwriting Services Limited and John Fowle.
- +10.38 Retention Arrangement dated May 23, 2018 by and between Chaucer Underwriting Services Limited and John Fowle.
- +10.39 Chaucer 2015 Long-Term Cash Incentive Plan.
- +10.40 Chaucer 2016 Long-Term Cash Incentive Plan.
- 10.41 Form of Accident and Health Coinsurance Agreement between The Hanover Insurance Company, as Reinsurer, and First Allmerica Financial Life Insurance Company (the schedules and certain exhibits have been omitted pursuant to Item 601(b)(2) of Regulation S-K), previously filed as Exhibit 10.1 to the Registrant’s Current Report on Form 8-K filed with the Commission on August 4, 2008 and incorporated herein by reference.
- 10.42 Credit Agreement dated November 12, 2013, among the Registrant, as Borrower, JPMorgan Chase Bank, N.A., as administrative agent, and various other lender parties, previously filed as Exhibit 10.1 to the Registrant’s Current Report on Form 8-K filed with the Commission on November 18, 2013 and incorporated

herein by reference.

- 10.43 Amendment No. 1, dated June 7, 2018, to Credit Agreement dated November 12, 2013, among the Registrant, as borrower, and JPMorgan Chase Bank, N.A., as administrative agent, and various lender parties, previously filed as Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on August 3, 2018 and incorporated herein by reference.
- 10.44 Amendment No. 2, dated September 11, 2018, to Credit Agreement dated November 12, 2013, among the Registrant, as borrower, and JPMorgan Chase Bank, N.A., as administrative agent, previously filed as Exhibit 10.2 to the Registrant's Current Report on Form 8-K filed with the Commission on September 13, 2018 and incorporated herein by reference.
- 10.45 Form of Accelerated Share Repurchase Confirmation between the Registrant and JPMorgan Chase Bank, National Association, London Branch, dated December 30, 2018, previously filed as Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed with the Commission on January 3, 2019 and incorporated herein by reference.
- 21 Subsidiaries of THG
- 23 Consent of Independent Registered Public Accounting Firm
- 24 Power of Attorney
- 31.1 Certification of Chief Executive Officer, pursuant to 15 U.S.C. 78m, 78o(d), as adopted pursuant to section 302 of the Sarbanes-Oxley Act of 2002.

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- 31.2 Certification of the Chief Financial Officer, pursuant to 15 U.S.C. 78m, 78o(d), as adopted pursuant to section 302 of the Sarbanes-Oxley Act of 2002.
- 32.1 Certification of the Chief Executive Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to section 906 of the Sarbanes-Oxley Act of 2002.
- 32.2 Certification of the Chief Financial Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to section 906 of the Sarbanes-Oxley Act of 2002.
- 99.1 Internal Revenue Service Ruling dated April 15, 1995 previously filed as Exhibit 99.1 to the Registrant's Registration Statement on Form S-1 (No. 33-91766) filed with the Commission on May 1, 1995 and incorporated herein by reference. (P)
- 101 The following materials from The Hanover Insurance Group, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2018 formatted in eXtensible Business Reporting Language ("XBRL"): (i) Consolidated Statements of Income for the years ended December 31, 2018, 2017 and 2016; (ii) Consolidated Statements of Comprehensive Income for the years ended December 31, 2018, 2017 and 2016; (iii) Consolidated Balance Sheets at December 31, 2018 and 2017; (iv) Consolidated Statements of Shareholders' Equity for the years ended December 31, 2018, 2017 and 2016; (v) Consolidated Statements of Cash Flows for the years ended December 31, 2018, 2017 and 2016; (vi) related notes to these consolidated financial statements; and (vii) Financial Statement Schedules.

+Management contract or compensatory plan or arrangement.

(P) Paper exhibits

ITEM 16 – FORM 10-K SUMMARY

None.

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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.

THE HANOVER INSURANCE GROUP, INC.
Registrant

Date: February 21, 2019 By: /S/ JOHN C. ROCHE
John C. Roche,
President, Chief Executive Officer and Director

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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.

Date: February 21, 2019 By: /S/ JOHN C. ROCHE
John C. Roche,
President, Chief Executive Officer and Director

Date: February 21, 2019 By: /S/ JEFFREY M. FARBER
Jeffrey M. Farber,
Executive Vice President and Chief Financial Officer

Date: February 21, 2019 By: /S/ WARREN E. BARNES
Warren E. Barnes,
Senior Vice President, Corporate Controller and

Principal Accounting Officer

Date: February 21, 2019 By: *
Kevin J. Bradicich,
Director

Date: February 21, 2019 By: *
Jane D. Carlin,
Director

Date: February 21, 2019 By: *
P. Kevin Condron,
Chairman of the Board

Date: February 21, 2019 By: *
Cynthia L. Egan,
Director

Date: February 21, 2019 By: *
Daniel T. Henry,

Director

Date: February 21, 2019 By: *
Wendell J. Knox,
Director

Date: February 21, 2019 By: *
Kathleen S. Lane,
Director

Date: February 21, 2019 By: *
Michael D. Price,
Director

Date: February 21, 2019 By: *
Joseph R. Ramrath,
Director

Date: February 21, 2019 By: *
Harriett Tee Taggart,
Director

Date: February 21, 2019 *By: /S/ JEFFREY M. FARBER
Jeffrey M. Farber,
Attorney-in-fact

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SCHEDULE I

THE HANOVER INSURANCE GROUP, INC.

SUMMARY OF INVESTMENTS – OTHER THAN INVESTMENTS IN RELATED PARTIES

DECEMBER 31, 2018

(in millions)

Type of investment	Cost ⁽¹⁾	Fair Value	Amount at which shown in the balance sheet
Fixed maturities:			
Bonds:			
United States Government and government agencies and authorities	\$1,140.2	\$1,123.6	\$1,123.6
States, municipalities and political subdivisions	879.0	885.8	885.8
Foreign governments	7.3	7.4	7.4
Public utilities	410.3	403.1	403.1
All other corporate bonds	3,809.1	3,741.6	3,741.6
Total fixed maturities	6,245.9	6,161.5	6,161.5
Equity securities:			
Common stocks:			
Public utilities	63.9	90.7	90.7
Banks, trusts and insurance companies	28.5	27.4	27.4
Industrial, miscellaneous and all other	290.6	346.3	346.3
Total equity securities	383.0	464.4	464.4
Mortgage loans on real estate	405.7	410.2	405.7
Real estate	7.9	7.9	7.9
Other long-term investments	230.3	247.9	247.9
Total investments, excluding held-for-sale	7,272.8	7,291.9	7,287.4
Total investments, held-for-sale (Chaucer)	24.9	24.5	24.5
Total investments	\$7,297.7	\$7,316.4	\$7,311.9

(1) For equity securities and other long-term investments, represents original cost; for fixed maturities, represents original cost reduced by repayments and adjusted for amortization of premiums and accretion of discounts.

The condensed financial information should be read in conjunction with the consolidated financial statements and notes thereto.

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SCHEDULE II

THE HANOVER INSURANCE GROUP, INC.

CONDENSED FINANCIAL INFORMATION OF REGISTRANT

PARENT COMPANY ONLY

STATEMENTS OF INCOME

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Revenues			
Net investment income	\$11.8	\$7.6	\$4.9
Net realized losses from sales and other	(0.5)	(0.2)	—
Interest income from loan to subsidiary	0.3	0.2	22.4
Other income	0.5	0.5	0.5
Total revenues	12.1	8.1	27.8
Expenses			
Interest expense	37.8	38.1	46.1
Employee benefit related expenses	5.1	7.4	7.0
Interest expense on loan from subsidiary	6.8	7.0	6.3
Loss from repayment of debt	1.9	—	88.3
Other operating expenses	12.1	10.5	8.6
Total expenses	63.7	63.0	156.3
Net loss before income taxes and equity in income of subsidiaries	(51.6)	(54.9)	(128.5)
Income tax benefit	21.4	44.4	75.6
Equity in income of subsidiaries	288.4	196.1	207.0
Income from continuing operations	258.2	185.6	154.1
Gain from sale of Chaucer business (net of income tax expense of \$42.5 in 2018)	131.9	—	—
Income from discontinued life business (net of income tax (expense) benefit of \$(0.2), \$(0.1) and \$1.7 in 2018, 2017 and 2016)	0.9	0.6	1.0
Net income	391.0	186.2	155.1
Other comprehensive (loss) income, net of tax	(122.4)	44.8	8.9
Comprehensive income	\$268.6	\$231.0	\$164.0

The condensed financial information should be read in conjunction with the consolidated financial statements and notes thereto.

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SCHEDULE II (CONTINUED)

THE HANOVER INSURANCE GROUP, INC.

CONDENSED FINANCIAL INFORMATION OF REGISTRANT

PARENT COMPANY ONLY

BALANCE SHEETS

DECEMBER 31	2018	2017
(in millions, except per share data)		
Assets		
Fixed maturities - at fair value (amortized cost of \$380.5 and \$281.9)	\$374.3	\$280.9
Equity securities - at fair value	1.1	1.1
Cash and cash equivalents ⁽¹⁾	827.4	32.7
Investments in subsidiaries	2,800.1	3,455.4
Net receivable from subsidiaries	25.0	31.3
Other assets ⁽²⁾	34.6	2.6
Total assets	\$4,062.5	\$3,804.0
Liabilities		
Expenses and state taxes payable ⁽³⁾	\$275.2	\$7.9
Current income tax payable	46.9	3.2
Interest payable	7.8	8.1
Debt	777.9	787.1
Total liabilities	1,107.8	806.3
Shareholders' Equity		
Preferred stock, par value \$0.01 per share, 20.0 million shares authorized, none issued	—	—
Common stock, par value \$0.01 per share, 300.0 million shares authorized, 60.5 million shares issued	0.6	0.6
Additional paid-in-capital	1,871.8	1,857.0
Accumulated other comprehensive income (loss)	(116.5)	107.6
Retained earnings	2,182.3	1,975.0
Treasury stock at cost (18.2 and 18.0 million shares)	(983.5)	(942.5)
Total shareholders' equity	2,954.7	2,997.7
Total liabilities and shareholders' equity	\$4,062.5	\$3,804.0

(1) Included in 2018 were net cash proceeds of \$762.0 million as a result of the sale of the Chaucer business to China Re on December 28, 2018.

(2) In 2018, other assets include a \$31.7 million receivable for estimated contingent consideration related to the sale of the Chaucer business.

(3) Included in 2018 was a payable related to a special dividend of \$193.4 million declared on December 30, 2018.

The condensed financial information should be read in conjunction with the consolidated financial statements and notes thereto.

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SCHEDULE II (CONTINUED)

THE HANOVER INSURANCE GROUP, INC.

CONDENSED FINANCIAL INFORMATION OF REGISTRANT

PARENT COMPANY ONLY

STATEMENTS OF CASH FLOWS

YEARS ENDED DECEMBER 31 (in millions)	2018	2017	2016
Cash flows from operating activities			
Net income	\$391.0	\$186.2	\$155.1
Adjustments to reconcile net income to net cash provided by operating activities:			
Gain from sale of Chaucer business	(131.9)	—	—
Net realized investment losses	0.6	0.2	—
Loss from retirement of debt	1.9	—	88.3
Equity in net income of subsidiaries	(288.4)	(196.1)	(207.0)
Dividends received from subsidiaries	86.4	55.1	228.1
Deferred income tax expense (benefit)	(5.3)	18.9	(39.0)
Change in expenses and taxes payable	59.7	(27.4)	6.6
Change in net receivable from subsidiaries	8.9	9.0	50.5
Other, net	(0.4)	(0.1)	7.3
Net cash provided by operating activities	122.5	45.8	289.9
Cash flows from investing activities			
Proceeds from disposals and maturities of fixed maturities	82.8	94.1	82.4
Purchase of fixed maturities	(4.0)	—	—
Net cash received from sale of Chaucer business	762.0	—	—
Net cash used for business acquisitions	—	(12.3)	(2.2)
Net cash provided by investing activities	840.8	81.8	80.2
Cash flows from financing activities			
Proceeds from debt borrowings	—	—	370.7
Proceeds from long-term intercompany borrowings	—	—	125.0
Net cash related to short-term intercompany borrowings	(19.8)	—	(102.7)
Repurchases of debt	(11.6)	—	(571.9)
Repurchase of common stock	(57.7)	(37.2)	(105.6)
Dividends paid to shareholders	(94.3)	(86.8)	(80.4)
Proceeds from exercise of employee stock options	14.8	23.1	16.2
Other financing activities	—	(4.1)	(19.9)
Net cash used in financing activities	(168.6)	(105.0)	(368.6)
Net change in cash and cash equivalents	794.7	22.6	1.5
Cash and cash equivalents, beginning of year	32.7	10.1	8.6

Cash and cash equivalents, end of year	\$827.4	\$32.7	\$10.1
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Included in other operating cash flows was the cash portion of dividends received from unconsolidated subsidiaries. Additionally, investment assets of \$179.8 million, \$261.6 million and \$78.5 million were transferred to the parent company in 2018, 2017 and 2016, respectively, to settle dividend obligations and other intercompany borrowings and balances.

The condensed financial information should be read in conjunction with the consolidated financial statements and notes thereto.

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SCHEDULE III

THE HANOVER INSURANCE GROUP, INC.

SUPPLEMENTARY INSURANCE INFORMATION

DECEMBER 31, 2018

(in millions)

Segments	Deferred acquisition costs	Future policy benefits, losses, claims and loss expenses	Unearned premiums	Other policy claims and benefits payable	Premium revenue	Net investment income (1)	Benefits, claims, losses and settlement expenses	Amortization of deferred acquisition costs	Other operating expenses (2), (3)	Premiums written
Commercial Lines	\$ 296.9	\$ 3,550.6	\$ 1,369.5	\$ 8.0	\$ 2,548.4	\$ 182.2	\$ 1,568.3	\$ 587.5	\$ 318.0	\$ 2,610.7
Personal Lines	153.9	1,707.6	908.3	—	1,706.0	73.7	1,155.0	304.3	185.8	1,774.1
Other	—	37.9	—	—	—	11.5	1.3	—	54.3	—
Interest on Debt	—	—	—	—	—	—	—	—	45.1	—
Eliminations	—	—	—	—	—	—	—	—	(7.8)	—
Total ⁽⁴⁾	\$ 450.8	\$ 5,296.1	\$ 2,277.8	\$ 8.0	\$ 4,254.4	\$ 267.4	\$ 2,724.6	\$ 891.8	\$ 595.4	\$ 4,384.8

DECEMBER 31, 2017

(in millions)

Segments	Deferred acquisition costs	Future policy benefits, losses, claims and loss expenses	Unearned premiums	Other policy claims and benefits payable	Premium revenue	Net investment income (1)	Benefits, claims, losses and settlement expenses	Amortization of deferred acquisition costs	Other operating expenses (2)	Premiums written
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	expenses									
Commercial Lines	\$ 286.4	\$ 3,399.3	\$ 1,299.5	\$ 8.2	\$ 2,399.6	\$ 165.8	\$ 1,531.4	\$ 557.9	\$ 312.8	\$ 2,462.0
Personal Lines	143.6	1,619.3	833.7	—	1,580.8	70.1	1,046.9	282.8	178.5	1,647.1
Other	—	38.7	—	—	—	8.0	1.3	—	26.0	—
Interest on Debt	—	—	—	—	—	—	—	—	45.2	—
Eliminations	—	(7.0)	(1.5)	—	—	—	—	—	(7.8)	—
Total ⁽⁴⁾	\$ 430.0	\$ 5,050.3	\$ 2,131.7	\$ 8.2	\$ 3,980.4	\$ 243.9	\$ 2,579.6	\$ 840.7	\$ 554.7	\$ 4,109.1

DECEMBER 31, 2016
(in millions)

Segments	Future policy benefits, losses, Deferred claims acquisition and costs	Future policy benefits, losses, Deferred claims acquisition and expenses	Other policy claims and benefits payable	Other policy claims and benefits payable revenue	Net investment income (1)	Benefits, claims, losses and settlement expenses	Amortization of deferred acquisition costs (2), (3)	Other operating expenses	Premiums written	
Commercial Lines	\$ 269.6	\$ 3,069.5	\$ 1,231.5	\$ 6.4	\$ 2,318.0	\$ 158.5	\$ 1,601.5	\$ 537.4	\$ 308.9	\$ 2,361.5
Personal Lines	133.2	1,554.0	763.6	—	1,471.5	69.5	936.1	266.2	172.4	1,521.2
Other	—	40.3	—	—	—	3.6	8.4	—	113.2	—
Interest on Debt	—	—	—	—	—	—	—	—	51.4	—
Eliminations	—	(10.2)	(3.1)	—	—	—	—	—	(7.6)	—
Total ⁽⁴⁾	\$ 402.8	\$ 4,653.6	\$ 1,992.0	\$ 6.4	\$ 3,789.5	\$ 231.6	\$ 2,546.0	\$ 803.6	\$ 638.3	\$ 3,882.7

- (1) The Company manages investment assets for its Commercial Lines, Personal Lines and Other segments on a combined basis, based on the requirements of its combined property and casualty companies. Net investment income is allocated to these segments based on actuarial information related to the underlying businesses.
- (2) For other operating expenses that are not directly attributable to a single segment for combined property and casualty companies, expenses are generally allocated based upon either net premiums written or net premiums earned.
- (3) In 2018 and 2016, the Other segment includes \$28.2 million and \$88.3 million of losses on the repayment of debt, respectively.
- (4) Information for all periods excludes results and balances related to the Chaucer business – See Note 2 – “Discontinued Operations” in the Notes to Consolidated Financial Statements.

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SCHEDULE IV

THE HANOVER INSURANCE GROUP, INC.

REINSURANCE

Incorporated herein by reference to Note 16 —“Reinsurance” in the Notes to Consolidated Financial Statements.

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SCHEDULE V

THE HANOVER INSURANCE GROUP, INC.

VALUATION AND QUALIFYING ACCOUNTS

DECEMBER 31

(in millions)	Balance at beginning of period	Additions Charged to			Deductions	Balance at end of period
		costs and expenses	other accounts ⁽¹⁾			
2018						
Allowance for doubtful accounts	\$ 4.3	\$9.5	\$ —	\$ (9.6)	\$ 4.2	
Allowance for uncollectible reinsurance recoverables	9.7	0.6	(6.4)	—	3.9	
	\$ 14.0	\$10.1	\$ (6.4)	\$ (9.6)	\$ 8.1	
2017						
Allowance for doubtful accounts	\$ 3.7	\$9.4	\$ —	\$ (8.8)	\$ 4.3	
Allowance for uncollectible reinsurance recoverables ⁽²⁾	13.1	0.3	0.1	(3.8)	9.7	
	\$ 16.8	\$9.7	\$ 0.1	\$ (12.6)	\$ 14.0	
2016						
Allowance for doubtful accounts	\$ 3.2	\$8.7	\$ —	\$ (8.2)	\$ 3.7	
Allowance for uncollectible reinsurance recoverables ⁽²⁾⁽³⁾	9.7	3.4	0.1	(0.1)	13.1	
	\$ 12.9	\$12.1	\$ 0.1	\$ (8.3)	\$ 16.8	

(1) Amounts charged to other accounts include foreign exchange gains and losses. Additionally, in 2018 the Company sold its Chaucer business; and accordingly, the \$6.4 million balance associated with this business was reduced as part of the sale.

(2) The balance at beginning of period and the balance at end of period include \$6.3 million and \$6.4 million, respectively, for the year-ended 2017 and \$6.2 million and \$6.3 million, respectively, for the year-ended 2016 related to the former Chaucer business.

(3) Activity primarily relates to the impairment in 2016 and subsequent write-off in 2017 of a receivable that is associated with a single reinsurance counterparty that was placed into conservation by the state of California in July 2016. This counterparty is not involved in the Company's ongoing reinsurance program and the entire receivable related to this counterparty resulted from a one-time block reinsurance transaction that occurred in 2012 as part of the Company's exposure management actions.

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SCHEDULE VI

THE HANOVER INSURANCE GROUP, INC.

SUPPLEMENTAL INFORMATION CONCERNING PROPERTY AND CASUALTY INSURANCE OPERATIONS

YEARS ENDED DECEMBER 31

(in millions)

Affiliation with Registrant	Deferred acquisition costs	Reserves for unpaid claims and claim adjustment expenses (1)	Discount, if any, deducted from previous column (2)	Unearned premiums (1)	Earned premiums	Net investment income
Consolidated Property and Casualty Subsidiaries (3)						
2018	\$ 450.8	\$ 5,304.1	\$ —	\$ 2,277.8	\$ 4,254.4	\$ 267.4
2017	\$ 430.0	\$ 5,058.5	\$ —	\$ 2,131.7	\$ 3,980.4	\$ 243.9
2016	\$ 402.8	\$ 4,660.0	\$ —	\$ 1,992.0	\$ 3,789.5	\$ 231.6

	Current year	Prior years	Amortization of deferred acquisition costs	Paid claims and claim adjustment expenses	Premiums written
Claims and claim adjustment expenses incurred related to					
2018	\$ 2,733.5	\$(8.9)	\$ 891.8	\$ 2,496.6	\$ 4,384.8
2017	\$ 2,575.1	\$(0.2)	\$ 840.7	\$ 2,282.2	\$ 4,109.1
2016	\$ 2,307.8	\$ 238.2	\$ 803.6	\$ 2,141.8	\$ 3,882.7

- (1) Reserves for unpaid claims and claim adjustment expenses are shown gross of \$1,472.6 million, \$1,455.0 million and \$1,349.2 million of reinsurance recoverable on unpaid losses in 2018, 2017 and 2016, respectively. Unearned premiums are shown gross of prepaid premiums of \$117.6 million, \$101.8 million and \$90.9 million in 2018, 2017 and 2016, respectively. Reserves for unpaid claims and claims adjustment expense also include policyholder dividends.
- (2) The Company does not use discounting techniques.
- (3) Information for all periods excludes results and balances related to the discontinued Chaucer business. See Note 2 – “Discontinued Operations” in the Notes to Consolidated Financial Statements for further information on that business.

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