

HANOVER INSURANCE GROUP, INC.  
Form 10-K  
February 22, 2017

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, 2016

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  
(State or other jurisdiction of  
incorporation or organization)

04-3263626  
(I.R.S. Employer  
Identification No.)

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440 Lincoln Street, Worcester, Massachusetts 01653  
(Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code:

(508) 855-1000

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

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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 and posted on its corporate Website, if any, every Interactive Data File required to be submitted and posted 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, or a smaller reporting company. See the definitions of "large accelerated filer", "accelerated filer", and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer

(Do not check if a smaller reporting company)

Smaller reporting company

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

Based on the closing sales price of June 30, 2016, the aggregate market value of the voting and non-voting common stock held by non-affiliates of the registrant was \$3,607,314,213.

The number of shares outstanding of the registrant's common stock, \$0.01 par value, was 42,501,269 shares as of February 17, 2017.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of The Hanover Insurance Group, Inc.'s Proxy Statement to be filed pursuant to Regulation 14A relating to the 2017 Annual Meeting of Shareholders to be held May 16, 2017 are incorporated by reference in Part III.



THE HANOVER INSURANCE GROUP, INC.

ANNUAL REPORT ON FORM 10-K

FOR THE FISCAL YEAR ENDED DECEMBER 31, 2016

TABLE OF CONTENTS

Item	Description	Page
Part I		
1	<u>Business</u>	3
1A.	<u>Risk Factors</u>	21
1B.	<u>Unresolved Staff Comments</u>	37
2	<u>Properties</u>	37
3	<u>Legal Proceedings</u>	37
4	<u>Mine Safety Disclosures</u>	37
Part II		
5	<u>Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities</u>	38
6	<u>Selected Financial Data</u>	40
7	<u>Management's Discussion and Analysis of Financial Condition and Results of Operations</u>	41
7A.	<u>Quantitative and Qualitative Disclosures About Market Risk</u>	83
8	<u>Financial Statements and Supplementary Data</u>	84
9	<u>Changes in and Disagreements With Accountants on Accounting and Financial Disclosure</u>	144
9A.	<u>Controls and Procedures</u>	144
9B.	<u>Other Information</u>	144
Part III		
10	<u>Directors, Executive Officers and Corporate Governance</u>	145
11	<u>Executive Compensation</u>	147
12	<u>Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters</u>	148
13	<u>Certain Relationships and Related Transactions, and Director Independence</u>	148
14	<u>Principal Accounting Fees and Services</u>	148
Part IV		
15	<u>Exhibits, Financial Statement Schedules</u>	149
	<u>Exhibits Index</u>	150
16	<u>Form 10-K Summary</u>	154
	<u>Signatures</u>	155



Table of Contents

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 domestic products and services through independent agents and brokers in the United States (“U.S.”) and conduct business 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 (“U.K.”). 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 U.S. domiciled property and casualty subsidiaries; Chaucer; and other insurance and non-insurance subsidiaries. Our results of operations also include the results of our discontinued operations, consisting primarily of our former life insurance and accident and health businesses.

INFORMATION ABOUT OPERATING SEGMENTS

We conduct our business operations through four operating segments. These segments are Commercial Lines, Personal Lines, Chaucer 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 Results of Operations and in Note 14 – “Segment Information” in the Notes to the Consolidated Financial Statements included in Financial Statements and Supplementary Data of this Form 10-K.

Information with respect to geographic concentrations is included in the “Description of Business by Segment” in Part 1 – Item 1 and in Note 14 – “Segment Information” in the Notes to the Consolidated Financial Statements included in Financial Statements and Supplementary Data of this Form 10-K.

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. Our Chaucer segment is a specialist insurance underwriting group which operates through Lloyd’s and writes business globally. 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; and a discontinued voluntary pools business.

Our business strategy focuses on providing our agents and customers stability, financial strength, and competitive insurance products while prudently growing and diversifying our product and geographical business mix. We conduct our U.S. business with an emphasis on agency relationships and active agency management, disciplined underwriting,

pricing, quality claim handling, and customer service. Our Lloyd's business is focused on disciplined and specialized underwriting in selected markets. Annually, we write over \$5 billion in gross premiums, including approximately \$4 billion domestically. Based on net U.S. premiums written, we rank among the top 25 property and casualty insurers in the United States.



Table of Contents

## RISKS

The industry's profitability and cash flow can be, and historically has been, 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; size of jury awards; acts of terrorism; fluctuations in interest and currency 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 may be further impacted by the capital markets and current economic conditions, which could affect our liquidity, the amount of realized losses and impairments that will be recognized, 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, may 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 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 of this Form 10-K.

## LINES OF BUSINESS

We underwrite commercial and personal property and casualty insurance coverage through our Commercial Lines, Personal Lines and Chaucer operating segments.

## Commercial Lines

Our Commercial Lines segment generated \$2.5 billion, or 50.3%, of consolidated operating revenues and \$2.4 billion, or 50.3%, of net premiums written, for the year ended December 31, 2016.

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

YEAR ENDED DECEMBER 31, 2016 (in millions, except ratios)	Net Premiums		
	Written	% of Total	
Commercial multiple peril	\$ 792.9	33.6	%
Commercial automobile	307.1	13.0	
Workers' compensation	285.6	12.1	
Other commercial lines:			
Inland marine	231.0	9.8	

AIX program business	200.0	8.4	
Management and professional liability	195.0	8.3	
Surety	68.2	2.9	
Specialty property	65.8	2.8	
Other	215.9	9.1	
Total	\$ 2,361.5	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;
- AIX program business provides coverage to markets where there are specialty coverage or risk management needs, including commercial multiple peril, workers' compensation, commercial automobile, general liability and other commercial coverages;
- 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;
- 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 related manufacturing and distribution companies; and
- other commercial lines coverages include monoline general liability, umbrella, healthcare and miscellaneous commercial property. Our healthcare coverage includes product liability, medical professional liability and general liability coverages provided to 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 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 broaden 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 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 \$1.5 billion of the Commercial Lines segment. Our specialty lines of business include inland marine, program business, management and professional liability, 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 penetration. As part of our strategy, 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 \$1.6 billion, or 31.4%, of consolidated operating revenues and \$1.5 billion, or 32.4%, of net premiums written, for the year ended December 31, 2016.

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

YEAR ENDED DECEMBER 31, 2016 (in millions, except ratios)	Net Premiums			
	Written	% of Total		
Personal automobile	\$ 953.6	62.7	%	
Homeowners	529.7	34.8		
Other	37.9	2.5		
Total	\$ 1,521.2	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 build account-oriented business through our partner agencies, with a focus on greater geographic diversification. The market for our Personal Lines business continues to be very competitive, with continued pressure on independent agents from direct writers, as well as from the increased usage of 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.

#### Chaucer

Our Chaucer segment generated \$0.9 billion, or 18.1%, of consolidated operating revenues and \$0.8 billion, or 17.4%, of net premiums written, for the year ended December 31, 2016.

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

YEAR ENDED DECEMBER 31, 2016 (in millions, except ratios)	Net Premiums		
	Written	% of Total	
Marine and aviation	\$ 268.7	32.9	%
Property	141.8	17.4	
Energy	97.5	11.9	
Casualty and other	308.1	37.8	
Total	\$ 816.1	100.0	%

The Chaucer segment is comprised of international business written through Lloyd's, including:

Marine and aviation includes worldwide direct, facultative and treaty business. The marine account provides cover for hull, liability, war, terrorism, aviation war, cargo, political risk and trade credit, specie, fine art and ports and terminals. The aviation account insures airline hull and liability, general aviation, refuellers, aviation products, and satellite.

Property includes treaty business, as well as direct and facultative coverage for commercial and industrial risks against physical damage and business interruption. The treaty account covers cedants on a global basis, predominantly on an "excess of loss" basis for both per risk and catastrophe coverage, with a limited amount of proportional treaty and reinsurance assumed business.

Energy encompasses exploration and production, construction, downstream, operational power and renewables, insuring against physical damage, business interruption, control of well, seepage and pollution and liabilities. Energy also includes a nuclear account, which provides coverage across the nuclear fuel cycle from raw uranium and nuclear fuel to the shipment and storage of waste, with the majority of the exposure relating to power generation at nuclear power stations. In addition to providing coverage for physical damage to civil nuclear power stations, nuclear also provides limited liability coverage.

Casualty and other provides liability coverage internationally, including our expanded U.S. casualty business, for professional and commercial risks on a direct and treaty basis, credit and bond, crime and professional liability coverage for financial institutions, medical malpractice, excess workers' compensation and accident and health. Other lines also encompass liabilities arising from previous participations on risks insured by third-party Lloyd's syndicates, which provided liability coverage to financial institutions.

Included in Chaucer's net premiums written for the year ended December 31, 2016 was \$236.5 million of business that is assumed through reinsurance treaties. These net premiums written are reflected primarily in the property and casualty and other lines.

Chaucer is a specialist insurance underwriting group that participates in the Lloyd's market through the provision of capital to support the underwriting activities of syndicates at Lloyd's and the ownership of Chaucer Syndicates Limited ("CSL"), a managing agent. CSL manages two syndicates currently underwriting at Lloyd's, for which we provide capital to support their underwriting activities.

Chaucer provides capital to Syndicate 1084, which underwrites a range of property, marine, aviation, casualty and energy products for commercial clients worldwide; and Syndicate 1176, which primarily provides protection against physical damage and limited liability exposures from power generation at nuclear power stations. The energy line of business includes \$18.7 million of net premiums written from Syndicate 1176. Our economic interests in Syndicates 1084 and 1176 were 100% and 57%, respectively, in both the 2016 and 2015 underwriting years.

Chaucer has broad underwriting expertise to support its diversified underwriting portfolio that, we believe, provides many benefits, including capital diversification, volatility management and long-term protection of our underwriting capabilities. We actively manage our portfolio, transferring underwriting capital to increase premium volumes during periods of increased rates, while remaining selective or reducing our capital and premium volumes in those lines where rates are under pressure.

Overall, we believe that the strength and depth of our underwriting teams, together with the broad diversity of our underwriting portfolio and our membership in the Lloyd's market, underpin our ability to manage both the scale and composition of our business. Moreover, these strengths, combined with our continued active management of our portfolio and the underwriting opportunities available, provide a sound basis for the profitable development of the Chaucer business.

#### Other

The Other segment consists of: Opus, which provides investment advisory services to affiliates and also manages approximately \$1.4 billion of assets for unaffiliated institutions such as insurance companies, retirement plans and foundations; earnings on holding company assets; and our discontinued 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 one-third each of domestic standard Commercial Lines, international and domestic specialty lines, and domestic standard Personal Lines. Our Commercial and Personal Lines segments, comprising our principal domestic U.S. subsidiaries, distribute our products primarily through an independent agent network. Our Chaucer segment, comprising our international business, distributes primarily through insurance brokers in the Lloyd's market.

#### Commercial and Personal Lines

Our Commercial and Personal Lines agency distribution strategy and field structure are designed to maintain a strong focus on local markets and the flexibility to respond to specific market conditions. During 2016, we wrote 20.0% of our Commercial and Personal Lines business in Michigan and 9.5% in Massachusetts. Our structure is a key factor in the establishment and maintenance of productive, long-term relationships with mid-sized, well-established independent agencies. We maintain 42 local offices across 30 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. We actively market Commercial Lines policies throughout the U.S. in 37 states and Personal Lines policies in 18 states.

Table of Contents

The following table provides our top Commercial and Personal Lines geographical markets based on total net premiums written in the state in 2016.

YEAR ENDED DECEMBER 31, 2016 (in millions, except ratios)	Commercial Lines		Personal Lines		Total Commercial and Personal Lines	
	Net Premiums Written	% of Total	Net Premiums Written	% of Total	Net Premiums Written	% of Total
Michigan	\$ 125.8	5.3	% \$ 652.4	42.9	% \$ 778.2	20.0
Massachusetts	165.6	7.0	202.5	13.3	368.1	9.5
New York	233.6	9.9	117.0	7.7	350.6	9.0
California	298.9	12.7	-	-	298.9	7.7
New Jersey	133.2	5.6	55.0	3.6	188.2	4.8
Illinois	102.4	4.3	85.4	5.6	187.8	4.8
Texas	178.4	7.6	-	-	178.4	4.6
Connecticut	55.4	2.3	69.0	4.5	124.4	3.2
Georgia	72.9	3.1	38.1	2.5	111.0	2.9
Maine	61.9	2.6	46.7	3.1	108.6	2.8
Virginia	66.0	2.8	31.9	2.1	97.9	2.5
Florida	78.3	3.3	-	-	78.3	2.0
New Hampshire	41.6	1.8	33.0	2.2	74.6	1.9
Indiana	42.8	1.8	29.9	2.0	72.7	1.9
Wisconsin	40.3	1.7	32.1	2.1	72.4	1.9
Louisiana	38.3	1.6	33.1	2.2	71.4	1.8
Tennessee	42.4	1.8	27.9	1.8	70.3	1.8
North Carolina	58.2	2.5	3.0	0.2	61.2	1.6
Ohio	34.6	1.5	24.8	1.6	59.4	1.5
Minnesota	56.5	2.4	-	-	56.5	1.5
Other	434.4	18.4	39.4	2.6	473.8	12.3
Total	\$ 2,361.5	100.0	% \$ 1,521.2	100.0	% \$ 3,882.7	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, program business, management and professional liability, surety and specialty property. The Commercial Lines segment seeks to maintain strong agency relationships as a strategy to secure and retain our agents' best business. We monitor quality of business written through ongoing quality review efforts, accountability for which is shared at the local, regional and corporate levels.

We manage Personal Lines business with a focus on acquiring and retaining quality accounts. Currently, approximately 83% 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 2016, we underwrite approximately 6% of the state's total market.

Approximately 66% of our Michigan Personal Lines business is in the personal automobile line and 32% is in the homeowners line. Michigan business represents approximately 45% of our total personal automobile net premiums written and 40% our total homeowners net premiums written. In Michigan, we are a principal market for many of our appointed agencies, with approximately \$1.7 million of total direct premiums written per agency in 2016.

Approximately 69% of our Massachusetts Personal Lines business is in the personal automobile line and 28% is in the homeowners line. Massachusetts business represents approximately 15% 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.

#### Chaucer

Chaucer underwrites business primarily from Lloyd's brokers and underwriting agencies. We primarily compensate brokers and underwriting agencies through commission payments.

In the Lloyd's market, brokers approach Chaucer with individual insurance and reinsurance risk opportunities for underwriter consideration. Brokers also gain access to Chaucer's products through selected underwriting agencies (also referred to as coverholders), to which Chaucer has granted limited authority to make underwriting decisions on individual risks. In general, risks written through underwriting agencies are smaller in terms of both exposure and premium. Risks are placed in Lloyd's through a subscription placement process whereby generally several syndicates take a share of a contract rather than one insurer taking 100% on a direct basis. This facilitates the spreading of large and complex risks across a number of insurers, while limiting the underwriting risk of each insurer.

We have an international network of offices to improve our access to high quality risks worldwide. This is expected to improve the diversification of our underwriting and our ability to manage our portfolio. We have offices in Denmark to improve access to business opportunities in Continental Europe, in Singapore, which includes an underwriting presence in China and Labuan, Malaysia to improve access to business opportunities in the Asia region, and in Miami, Florida to provide underwriting representation for business opportunities from Latin America. We also have an office in Oslo, Norway, to provide access to the Norwegian and regional North Sea energy sector.

The following table provides a geographical breakdown of Chaucer's total gross premiums written ("GPW") based on the location of risk:

YEAR ENDED DECEMBER 31, 2016	% of Total GPW in Chaucer Segment	
United States	25.8	%
Americas, excluding the United States	11.5	
Middle East and Africa	6.4	
Asia Pacific	5.9	
Europe	5.1	
United Kingdom	1.9	
Worldwide and other (1)	43.4	
Total	100.0	%

(1) "Worldwide and other" comprises insured risks that move across multiple geographic areas due to their mobile nature or insured risks that are fixed in locations that span more than one geographic area. These contracts include, for example, marine and aviation hull, satellite and offshore energy exploration and production risks that can



move across multiple geographic areas and assumed risks where the cedant insures risks in two or more geographic zones.

#### 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 strategy is intended to enable us to achieve measured growth and consistent profitability.

## Table of Contents

For all major product lines, we employ pricing teams which produce exposure and experience-based rating models to support underwriting and pricing decisions. In addition, in the Commercial and Personal Lines segments, 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.

The Commercial and Personal Lines segments are not dependent on a single customer or even a few customers, for which the loss of any one or more would have an adverse effect upon the insurance operations for these segments.

We market Chaucer product offerings through insurance brokers in the Lloyd's specialty market, which provides access to business from clients and coverholders. We are able to attract business through our recognized capability to serve as the lead underwriter in most classes we write, particularly in classes where such lead ability is sought by clients and recognized by following underwriters. This requires significant underwriting and claims handling expertise in very specialized lines of business. Our competitors include large international insurance companies and other Lloyd's managing underwriters. Broker relationships that are ten percent or more of total Chaucer 2016 gross premiums written are with Aon Benfield (18%), Marsh & McLennan Companies (16%), Willis Group (11%) and JLT Group (11%).

## 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 as claim payments and related loss adjustment expenses are our single largest expenditures.

### Commercial and Personal Lines

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.

### Chaucer

The Chaucer claims team is responsible for establishing case reserves, loss and LAE cost management, exposure mitigation and litigation management. Chaucer engages third-party administrators to handle claims in certain cases and authorizes selected agencies to manage claims under risks which they have bound on Chaucer's behalf.

For claims where Chaucer is the lead syndicate, our appointed claims adjusters establish the case reserves and may appoint attorneys, loss adjusters or other third-party experts. For claims where Chaucer is not the lead syndicate, the Lloyd's syndicate leading the risk establishes case reserves in conjunction with professional third-party adjusters, and then advises all other syndicates participating on the risk of the loss reserve requirements. In such cases, the Chaucer claims team reviews material claims and developments.

## 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 inherently unpredictable.

## Table of Contents

### Commercial and Personal Lines

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 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.

### Chaucer

Individual commercial and industrial risks within our property, marine and aviation and energy lines include protection against natural or man-made catastrophes worldwide. We accept these risks on direct, facultative, and proportional and excess of loss treaty bases. We seek to manage such risks through limiting the proportion of any individual risk or class of risk we assume and managing geographic concentration, and through the purchase of reinsurance.

We purchase reinsurance to limit our exposure to individual risks and catastrophic events. This includes facultative reinsurance, to limit the exposure on a specified risk; specific excess and proportional treaty, to limit exposure to individual contracts or risks within specified classes of business; and catastrophe excess of loss reinsurance, to limit exposure to any one event that might affect more than one individual contract.

The level of reinsurance that Chaucer purchases is dependent on a number of factors, including our underwriting risk appetite for catastrophe risk, the specific risks inherent in each line or class of business risk written and the pricing, coverage and terms and conditions available from the reinsurance market.

### TERRORISM

As a result of the continuing threat of terrorist attacks worldwide, the insurance industry maintains a high level of focus with respect to the potential for losses caused by terrorist acts. These losses may encompass people, property and business operations covered under workers' compensation, commercial multiple peril and other Commercial 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.

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. Additionally, 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).

The Terrorism Risk Insurance Act of 2002 established the Terrorism Risk Insurance Program (the "U.S. Program"). Coverage under the U.S. Program applies to workers' compensation, commercial multiple peril and certain other Commercial Lines policies for U.S. direct written policies. The Terrorism Risk Insurance Program Reauthorization Act of 2015 ("TRIPRA") extended the U.S. Program through December 31, 2020. All commercial property and casualty insurers licensed in the U.S. 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 U.S. 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 U.S. Program, we offer policyholders in specific lines of commercial insurance the option to elect terrorism coverage. In order for a loss to be covered under the U.S. 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 U.S. Program and in fact, may be deemed covered losses whether or not terrorism coverage was purchased. The current U.S. Program requires insurance carriers to retain 17% of any claims from a certified terrorist event in excess of the federally mandated deductible in 2017, subject to an annual industry-wide cap of \$100 billion. This retention will increase by 1% each calendar year until it reaches 20% in 2020. The federally mandated deductible represents 20% of direct earned premium for the covered lines of business of the prior year. In 2016, our deductible was \$381 million, which represents 17.4% of year-end 2015 statutory policyholder surplus of our U.S. domestic insurers, and is estimated to be \$396 million in 2017, representing 18.2% of 2016 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.

## Table of Contents

Chaucer's direct written U.S. policies are also covered under the provisions of TRIPRA. Generally, terrorism coverage is excluded from the commercial property classes and coverages that Chaucer writes, including in its world-wide nuclear energy business, although a limited portion of Chaucer's property and political risk business outside of the U.S. provides terrorism coverage. We manage this exposure through policy limits, monitoring of risk aggregation and reinsurance. For Chaucer's nuclear energy business, most of our liability coverage includes losses resulting from acts of terrorism, although Chaucer normally ensures that the net liability involved does not exceed 50% of the full exposure, whether property, liability or combined.

## REGULATION

### Commercial and Personal Lines

Our U.S. property and casualty insurance subsidiaries are subject to extensive regulation in the various 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 increasingly, 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 its 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.

Over the past several years, other state-sponsored insurers, reinsurers or involuntary pools have increased, particularly in those states which have Atlantic or Gulf Coast storm exposures. As a result, the potential assessment exposure of insurers doing business in such states and the attendant collection risks have increased. Such actions and related regulatory restrictions may limit our ability to reduce our potential exposure to hurricane-related losses.

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 the 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.

## Table of Contents

### Chaucer

Chaucer is regulated by both the Prudential Regulation Authority (“PRA”) and the Financial Conduct Authority (“FCA”), who together have responsibility for the U.K. financial services industry, including insurers, insurance intermediaries and the Lloyd’s market. The PRA is responsible for the prudential supervision of, among other financial institutions, the Lloyd’s market, with a particular focus on financial stability. The FCA focuses on conduct of business issues, with a particular focus on consumer protection and market integrity. In addition, Chaucer is supervised by the Council of Lloyd’s, which is the franchisor for all Lloyd’s operations.

The PRA, FCA and Council of Lloyd’s have common objectives in ensuring the appropriate regulation of the Lloyd’s market and, to minimize duplication, the PRA and FCA have arrangements with Lloyd’s for co-operation on supervision and enforcement. Lloyd’s, which is regulated by both the PRA and FCA, has responsibility under the Lloyd’s Act 1982 (“the Lloyd’s Act”) for the implementation of certain PRA and FCA prescribed rules relating to the operation of the Lloyd’s market. Lloyd’s prescribes, in respect of its managing agents and corporate members, minimum standards relating to their management and control, solvency and various other requirements. The PRA and FCA directly monitor compliance of Lloyd’s managing agents with the systems and controls that Lloyd’s prescribes.

The Council of Lloyd’s has wide discretionary powers to regulate Lloyd’s underwriting. For example, it may change the basis of allocation for syndicate expenses or the capital requirements for syndicate participations. Exercising any of these powers might affect the return on an investment of the corporate member, such as Chaucer, in a given underwriting year. In addition, the annual business plans of each syndicate are subject to the review and approval of the Lloyd’s Franchise Board, which is responsible for business planning and monitoring for all syndicates.

We participate in the Lloyd’s market through our ownership of CSL, a managing agent with responsibility for the management of Syndicates 1084 and 1176, for which we provide capital to support their underwriting activities. Our membership in Lloyd’s requires us to comply with its bylaws and regulations, the Lloyd’s Act and the applicable provisions of the Financial Services and Markets Act of 2000. These include the requirement to provide capital (referred to as “Funds at Lloyd’s”) in the form of cash, securities or letters of credit in an amount agreed with by Lloyd’s under the capital setting regime of the PRA. The completion of an annual capital adequacy exercise enables each corporate member to calculate the capital required. These requirements allow Lloyd’s to evaluate whether each corporate member has sufficient assets to meet its underwriting liabilities plus a required solvency margin.

If a corporate member of Lloyd’s is unable to meet its policyholder obligations, such obligations may be payable by the Lloyd’s Central Fund, which acts similar to a state guaranty fund in the U.S. If Lloyd’s determines that the Central Fund needs to be increased, it has the power to assess premium levies on all current Lloyd’s members. The Council of Lloyd’s has discretion to call or assess up to 3% of a member’s underwriting capacity as a Central Fund contribution.

### Solvency II

The European Union (“E.U.”) has adopted a directive, known as Solvency II, covering capital requirements, risk management and regulatory reporting for insurance organizations that imposes economic risk-based solvency requirements across all E.U. member states that comprise three pillars. First, there are quantitative capital requirements, based on a valuation of the entire balance sheet of an insurance organization. Second, Solvency II requires insurance organizations to undertake a qualitative regulatory review, including governance, internal controls, enterprise risk management and the supervisory review process. Third, to enhance market discipline, insurance organizations must report their financial conditions to regulators. We believe that we are in compliance with this regulatory regime, which commenced January 1, 2016.

### Other



In addition to the U.K. and E.U. regulations, Chaucer is subject to regulation in the U.S through the Lloyd's market. The Lloyd's market has licenses to engage in insurance business in Illinois, Kentucky and the U.S. Virgin Islands and operates as an eligible excess and surplus lines insurer in all other states and territories. Lloyd's is also an accredited reinsurer in all states and territories. Lloyd's maintains various trust funds in the state of New York to protect its U.S. business and is subject to regulation by the New York Insurance Department, which acts as the domiciliary department for Lloyd's U.S. trust funds. There are also deposit trust funds in other U.S. states to support Lloyd's excess and surplus lines insurance and reinsurance business.

See also Note 18 — "Commitments and Contingencies" in the Notes to Consolidated Financial Statements included in Financial Statements and Supplementary Data of this Form 10-K.

#### INVOLUNTARY RESIDUAL MARKETS

As a condition of our license to write business in various domestic states and international jurisdictions, 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, Florida, Louisiana or New York, 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 \$11.7 million in 2016, \$12.1 million in 2015 and \$11.7 million in 2014. There were no other mandatory residual market mechanisms that were significant to our 2016, 2015 or 2014 results of operations.

#### 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 and Results of Operations of this Form 10-K.

The following table reconciles reserves determined in accordance with accounting practices prescribed or permitted by U.S. insurance statutory authorities ("U.S. Statutory") and the U.K. financial services regulatory authorities ("U.K. Statutory") for our domestic and Chaucer operations, respectively, to reserves determined in accordance with generally accepted accounting principles in the United States of America ("U.S. GAAP"). The primary difference between the U.S. Statutory reserves and our U.S. GAAP reserves is the requirement, on a U.S. GAAP basis, to present reinsurance recoverables as an asset, whereas U.S. Statutory guidance provides that reserves are reflected net of the corresponding

reinsurance recoverables. There are no significant differences between U.K. Statutory reserves and our U.S. GAAP reserves. We do not use discounting techniques in establishing U.S. GAAP reserves for losses and LAE, nor have we participated in any loss portfolio transfers or other similar transactions.

DECEMBER 31 (in millions)	2016	2015	2014
U.S. Statutory reserve for losses and LAE	\$ 3,402.1	\$ 2,995.6	\$ 2,819.0
U.K. Statutory reserve for losses and LAE	2,289.4	2,369.4	2,421.0
Total Statutory reserve for losses and LAE	5,691.5	5,365.0	5,240.0
U.S. GAAP adjustments:			
Reinsurance recoverables on unpaid losses of our U.S. insurance subsidiaries	1,349.2	1,295.3	1,256.3
Reserves for discontinued operations	(88.8)	(89.2)	(113.6)
Other	(2.5)	3.3	9.0
U.S. GAAP reserve for losses and LAE	\$ 6,949.4	\$ 6,574.4	\$ 6,391.7

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

#### ANALYSIS OF LOSS AND LOSS ADJUSTMENT EXPENSE RESERVE DEVELOPMENT

Information regarding loss and loss adjustment expense reserve development appears in Note 17 – “Liabilities For Outstanding Claims, Losses and Loss Adjustment Expenses” in the Notes to Consolidated Financial Statements included in Financial Statements and Supplementary Data of this Form 10-K.

## Table of Contents

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 Management’s Discussion and Analysis of Financial Condition and Results of Operations of this Form 10-K, 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. The process for establishing reserves is subject to considerable variability and requires the use of informed estimates and judgments. Important details, such as specific loss development expectations for particular years, events or individual insurance contracts cannot be determined by analyzing the highly summarized information provided within this annual report. In addition to analyzing loss data and development patterns at a more granular level, we incorporate additional information into our reserving process, such as pricing and market conditions, the presence or absence of large losses including catastrophes, changes in our business mix, including the split of short-tailed and long-tailed classes of business, and other factors. In this regard, a mechanical application of standard actuarial methodologies in evaluating the adequacy of our reserves and extrapolating future favorable or unfavorable development would not be appropriate, in particular as it relates to Chaucer.

Additionally, due to the highly specialized nature of the Lloyd’s business, many of our business classes at Chaucer are characterized by low frequency, but potentially high severity loss events. This results in claims experience and development patterns that are less predictable and more volatile than most of our domestic Personal and Commercial lines businesses. In addition, Chaucer’s reinsurance business and high excess property layers often experience delays in claim reporting which increases the risk of delayed recognition of loss reserve development. Thus additional knowledge and understanding of the exposures and often complex underlying claims issues is required to arrive at a reliable reserve. Also, the composition of the Chaucer portfolio has changed meaningfully throughout the period since our acquisition in 2011, making historical reserve development patterns less relevant to our current business mix. 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.

## 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 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). 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.

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 their financial statements, 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 TRIPRA, our retention of U.S. domestic losses in 2017 from such events, if deemed certified terrorist events, is limited to 17% of losses in excess of an approximate \$396 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 "Terrorism" for additional information.

Reference is made to Note 16 — "Reinsurance" in the Notes to Consolidated Financial Statements included in Financial Statements and Supplementary Data of this Form 10-K. Reference is also made to "Involuntary Residual Markets".

10

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## Table of Contents

### Commercial and Personal Lines

Our 2017 reinsurance program for our Commercial Lines and Personal Lines segments is substantially consistent with our 2016 program design. The following discussion summarizes both our 2016 and 2017 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 were 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.
- 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 no co-participations.
- 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-participation of 50% for management liability.
- For 2016 and 2017, 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 ranging from 5% to 30% for individual layers placed within the treaty.
- 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, facultative and other forms of reinsurance that cover the writings from AIX specialty and proprietary programs. There are approximately 48 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 2017 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 2017 casualty excess of loss treaty is effective January 1, 2017 for a twelve month period.

### Chaucer

Chaucer’s 2017 reinsurance program is substantially consistent with the 2016 program design. The 2016 and 2017 Chaucer reinsurance programs contain a combination of reinsurance treaties that either provide coverage across several lines or are specific to individual lines of business or classes of business within certain lines. Generally, for each line or class of Chaucer’s business, there are a variety of proportional, excess of loss (mainly occurrence basis), facultative and other treaty forms, which work in conjunction to manage against severity, and to a certain extent, frequency. Chaucer’s 2017 net retentions are generally consistent with the 2016 levels.

The Chaucer programs described below are substantially in place as of February 1, 2017 and we expect to implement throughout the year any remaining parts of the program as described; however, there can be no assurances that we will be successful in placing reinsurance for each line as planned. The following discussion summarizes both our 2016 and 2017 reinsurance programs for the Chaucer segment, but does not purport to be a complete description of the program

or the various restrictions or limitations which may apply. The limit figures below are presented net of treaty co-participation.

We purchase proportional and non-proportional reinsurance, which is intended to provide sufficient underwriting capacity to effectively conduct business in the Lloyd's market and to protect against frequency and severity of losses.

11

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## Table of Contents

For the property lines reinsurance coverage in 2016 and 2017:

- The direct property catastrophe occurrence reinsurance for selected international territories provides coverage up to approximately \$44 million and \$45 million, respectively, less retentions of approximately \$8 million for both years.
- The assumed property catastrophe reinsurance for selected international territories provides coverage up to approximately \$108 million and \$140 million, less retentions of approximately \$19 million and \$15 million, respectively. Additionally, the assumed property catastrophe occurrence reinsurance for the United States provides coverage up to approximately \$114 million and \$150 million, respectively, less retentions of approximately \$25 million for both years.
- The direct property per risk excess of loss reinsurance provides coverage up to approximately \$10 million and \$15 million, respectively, less retentions of approximately \$3 million for both years.
- The assumed property per risk excess of loss reinsurance provides coverage up to approximately \$10 million for both years, less retentions of approximately \$5 million for both years.

The casualty direct and facultative portfolio has reinsurance coverage in 2016 and 2017 of up to approximately \$38 million and \$50 million, respectively, less a retention of approximately \$2 million for both years. The US casualty treaty portfolio has workers' compensation catastrophe reinsurance coverage of up to \$78 million in 2016 and 2017, less a retention of \$8 million for both years.

For the energy, marine and aviation lines reinsurance coverage in 2016 and 2017:

- The nuclear energy lines occurrence reinsurance provides coverage up to approximately \$163 million and \$174 million, less retentions of approximately \$42 million and \$46 million, respectively, at consistent rates of exchange.
  - The non-nuclear energy lines occurrence reinsurance provides coverage up to approximately \$140 million and \$130 million, less retentions of approximately \$15 million and \$13 million, respectively.
- The direct marine lines excess of loss reinsurance provides coverage, on a per occurrence basis, up to approximately \$102 million and \$105 million, respectively, less retentions of approximately \$5 million for both years.
- The assumed marine excess of loss reinsurance provides coverage, on an occurrence basis, up to approximately \$37 million and \$42 million, respectively, less retentions of approximately \$6 million for both years.
- The direct political violence lines reinsurance provides coverage, on a per occurrence basis, up to approximately \$107 million and \$115 million, respectively, less retentions of approximately \$8 million for both years.
- The direct political risks lines reinsurance provides coverage on a per risk basis, up to approximately \$13 million and \$15 million, respectively, less retentions of \$3 million for both years. The direct credit lines reinsurance provides coverage on a per risk basis, up to approximately \$7 million and \$8 million, respectively, less retentions of \$3 million for both years. In addition, event coverage is provided for both lines of business up to \$33 million, less retentions of \$13 million for both years.
- The aviation lines reinsurance provides coverage, on a per occurrence basis, up to approximately \$63 million and \$68 million, respectively, less retentions of approximately \$3 million for both years.

For Chaucer's 2016 U.S. casualty treaty lines, we have 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, and provides coverage up to a 117% loss ratio, less retention of a 47% loss ratio. This contract does not meet the risk transfer requirements of GAAP and is accounted for using the deposit accounting method. The deposit asset for this contract was approximately \$28 million as of December 31, 2016. For 2017, we expect to renew this treaty with similar coverage, terms and conditions and will evaluate whether it meets risk transfer requirements at the time of placement.

## Reinsurance Recoverables

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. This estimate depends upon a number of factors, including an estimate of the amount of reserves attributable to business written in various lines and in various years. This estimate is 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 both United States and state mandatory reinsurance or other 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 \$925.9 million of our total reinsurance recoverables on paid and unpaid losses and unearned premiums at December 31, 2016 and include, among others, 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 \$545,000. 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% of our total personal automobile gross reserves at December 31, 2016 and 2015. Reinsurance recoverables related to MCCA were \$911.2 million and \$906.5 million at December 31, 2016 and 2015, 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, 2016, we believe that we have no significant exposure to uncollectible reinsurance balances from this entity.

In addition to the reinsurance ceded to various residual market mechanisms, facilities and pooling arrangements we have \$1,685.9 million of reinsurance assets due from traditional reinsurers as of December 31, 2016. These amounts are due principally from highly-rated reinsurers, defined as rated A- or higher by A.M. Best Rating Agency or other equivalent rating. The following table displays balances recoverable from our ten largest reinsurance groups at December 31, 2016, along with the group’s rating from the indicated rating agency. The contractual obligations under reinsurance agreements are typically with individual subsidiaries of the group or syndicates at Lloyd’s and are not typically guaranteed by other group members or syndicates at Lloyd’s. Reinsurance recoverables are comprised of paid losses recoverable, outstanding losses recoverable, incurred but not reported losses recoverable, and ceded unearned premium.

REINSURERS (in millions)	A.M. Best Rating	Reinsurance Recoverable
Lloyd's Syndicates	A	\$ 506.8
Munich Reinsurance Companies	A+	160.2
HDI Group	A	137.9
Alleghany Corporation	A	102.9
XL Group PLC	A	97.6
Swiss Re Ltd.	A+	68.7
Partner Re Ltd. Companies	A	63.0
Toa Reinsurance Company Ltd.	A+	57.4
Third Point Reinsurance Ltd.	A-	54.4
Aspen Insurance Holdings Ltd.	A	34.6



Subtotal	1,283.5
All other reinsurers	402.4
Residual markets, facilities and pooling arrangements	925.9
Total	\$ 2,611.8

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 \$13.1 million as of December 31, 2016, or 0.5% 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, our collection experience and the development of our ceded loss reserves. There have been no significant balances determined to be uncollectible and thus no significant charges recorded during 2016 for uncollectible reinsurance recoverables.

## Table of Contents

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. Similarly, the Chaucer segment generally requires all reinsurers to have a rating from S&P of “A-” or better and minimum level of net assets of \$500 million. In addition, for lower rated reinsurers, certain reinsurers for our United States 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.

## DISCONTINUED OPERATIONS

Discontinued operations primarily include our former life insurance businesses, which were sold prior to 2009, and our discontinued accident and health business.

Our former life insurance businesses include indemnity obligations for which we have established reserves.

The discontinued accident and health business includes interests in 25 accident and health reinsurance pools and arrangements that we retained subsequent to the sale of First Allmerica Financial Life Insurance Company (“FAFLIC”), all of which were assumed by Hanover Insurance in connection with the transaction. We ceased writing new premiums in this business in 1999, subject to certain contractual obligations. The reinsurance pool business consists primarily of the medical and disability portions of workers’ compensation risks, long-term care, assumed personal accident, individual medical, long-term disability, and special risk business. This business also includes residual health insurance policies. Total claim reserves for the assumed accident and health business were \$88.4 million at December 31, 2016, net of recoverables from third-party reinsurers of \$0.4 million at December 31, 2016. Assets and liabilities related to the discontinued accident and health business are reflected as assets and liabilities of discontinued operations.

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. We believe that the reserves recorded related to this business are adequate. However, since reserve and loss cost estimates related to the discontinued accident and health business are dependent on several assumptions, including, but not limited to, future health care costs, persistency of medical care inflation, investment performance, claims, particularly in the long-term care business, morbidity and mortality assumptions, 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.

Discontinued operations, in total, generated a net loss of \$1.0 million during 2016, primarily related to our discontinued accident and health business.

## INVESTMENT PORTFOLIO

We held \$8.7 billion of investment assets, including cash and cash equivalents, at December 31, 2016. Approximately 84% of our investment assets were comprised of fixed maturities, which included both investment grade and below investment grade public and private debt securities; 7% consisted of equity securities; 6% included other investments which consisted primarily of mortgage participations, limited partnerships and overseas deposits; and the remaining

3% were comprised of cash and cash equivalents. These investments are generally of high quality and our fixed maturities and equities are broadly diversified across sectors of the fixed income and equity markets.

Opus manages our investment portfolio, including the selection and monitoring of external asset managers for our non-U.S. dollar fixed maturity portfolios, U.S. commercial mortgage loan participations and certain other investments. 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. For certain portfolios in which fixed maturities are denominated in U.K. pounds sterling and Euros, we employ two external asset managers with international market expertise to manage these portfolios. Assets managed by these asset managers totaled approximately \$298 million of non-U.S. dollar-denominated investments at December 31, 2016. We select and monitor managers based on investment style, performance and corporate governance.

The majority of our assets are invested in the fixed income markets. Through fundamental research and credit analysis, with a focus on value investing, we 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 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.

## Table of Contents

Investments held by our insurance subsidiaries are subject to diversification requirements under state insurance laws and other regulatory requirements. The investment portfolio duration is approximately 4.5 years and is generally maintained in the range of 1 to 2 times the duration of our insurance liabilities. 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 the Financial Condition and Results of Operations of this Form 10-K.

## 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. 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, 2016, we had approximately 4,900 employees, with approximately 4,500 located in the United States, and 400 internationally, almost all of whom are located in the United Kingdom. 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 of this Form 10-K.

## AVAILABLE INFORMATION

We file our annual report on Form 10-K, quarterly reports on Form 10-Q, periodic information on Form 8-K, our proxy statement, and other required information with the Securities and Exchange Commission (“SEC”). Shareholders may read and copy any materials on file with the SEC at the SEC’s Public Reference Room at 100 F Street, NE, Washington, DC 20549. Shareholders may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains an Internet website, <http://www.sec.gov>, which contains reports, proxy and information statements and other information with respect to our filings.

Our website address is <http://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.

Table of Contents

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. When used in this Form 10-K, the words “believes”, “anticipates”, “expects”, “projections”, “outlook”, “should”, “could”, “plan”, “guidance”, “likely”, “on 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 “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 implementation or repeal of national healthcare legislation, lower reimbursement rates for the same procedure 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, terrorist actions and global conflicts;
- 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, 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, 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 such as trade credit; 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 and, with respect to our Chaucer segment, internationally), 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.

15

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## Table of Contents

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, 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 upon which the actuaries can rely. 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. 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, including through several acquired subsidiaries, the development of new niche and specialty lines and the introduction of new or expanded lines of business at Chaucer, present new risks. Certain new 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 private company 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.

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 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 and solar flares 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 like Superstorm Sandy 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, supplemental payments on previously closed claims caused by the development of latent damages or new theories of liability and inflationary pressures could also have a negative impact on future loss reserve development.

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 could therefore be materially affected by adverse loss development for events that we insured in prior periods.

## Table of Contents

Due to geographical concentration in our U.S. 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 U.S. property and casualty insurance net premiums written and earnings in Michigan, Massachusetts and other states in the Northeast, including New York. For the year ended December 31, 2016, approximately 20% and 10% of our net premiums written in our U.S. 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 events, whether as a result of potential global climate change or otherwise. Financial strength rating agencies are placing increased emphasis on capital and reinsurance adequacy for insurers with certain geographic concentrations of risk which 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 too 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, which could also 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. However, Chaucer's international operations subject us to greater diversity in the types and geographic distribution of potential catastrophe losses. For example, Chaucer incurred catastrophe losses in 2016 from wildfires in Canada and earthquakes in Ecuador and New Zealand, in 2015 from a port explosion in China and in 2014 from snowstorms in Japan, a hurricane in Mexico and tornado and hail storms in the U.S.

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.

## Table of Contents

We purchase catastrophe reinsurance as protection against catastrophe losses. Based upon an ongoing review of our reinsurers' financial statements, 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.

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: engaging in thorough underwriting, utilizing limits, deductibles and exclusions to mitigate policy risk, reviewing the terms and conditions of our policies, focusing on our 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" of this Form 10-K, not all of our 2017 reinsurance programs for the Commercial and Personal Lines and Chaucer business are fully placed. 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, 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, 2016, our reinsurance receivable (including from the MCCA) amounted to approximately \$2.6 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 or, in cases where we are a reinsurer, to our reinsureds. 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.

Climate change may adversely impact our results of operations.

There are concerns that the higher level of weather-related catastrophes and other losses incurred by the industry in prior years is indicative of changing weather patterns, whether as a result of climate-warming trends caused by human activities (“global climate change”) 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 the current economic and competitive environment, and higher reinsurance costs. As noted above, certain catastrophe models assume an increase in frequency and severity of certain weather 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, particularly in jurisdictions that restrict pricing and underwriting flexibility.

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.

Table of Contents

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 U.S. 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 otherwise are 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, 2016, we experienced an underwriting loss of \$12.7 million from participation in these mechanisms and pooling arrangements, compared to underwriting losses of \$13.2 million and \$15.1 million in 2015 and 2014, 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, Florida, Louisiana and New York 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 significant adverse impact as a result of losses incurred in those states due to hurricane exposure, 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, 2016, our estimated reinsurance recoverable from the MCCA was \$911.2 million. In most years, the MCCA operates with a deficit which may fluctuate significantly based on investment returns, discount rates, incurred claims, annual assessments and other factors.

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 participation in virtually all property and casualty voluntary pools, but remain subject to claims related to periods in 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 recent 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, 2016, our reserves for these pools totaled \$40.0 million.

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

Our U.S. insurance businesses are subject to supervision and regulation by the state insurance authority in each state in which 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 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 which we might otherwise avoid or charge different premium rates, restrictions on the ability to withdraw from certain lines of business, the establishment of standards of solvency, the licensing of insurers and agents, compensation of 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, drivers 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 Superstorm Sandy, the states of New Jersey and New York were considering proposals such as homeowners' "Bill of Rights", restrictions on storm deductibles and additional mandatory claim handling guidelines. More recently, the California Insurance Commissioner requested that all insurers operating in California voluntarily divest from any investments they may have in thermal coal. 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 any evidence of discriminatory intent. The prospects for this proposal under the current president's administration are unknown at this time. Some states are also considering mandating owners of firearms to purchase liability insurance.

## Table of Contents

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 prospects for these initiatives are in question since the last U.S. election. 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 SCHIP Extension Act mandates reporting and other requirements applicable to property and casualty insurance companies which 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.

With respect to our U.S. insurance business, 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 the line 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, federal and foreign legislation or regulation, or judicial developments, including those resulting in:

- decreases in rates;
- 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;
- 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 or recover non-economic damages (such as “pain and suffering”).

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 which 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, local and foreign governments, also consider legislation that could increase our tax costs. For example, organizations such as the Organization for Economic Cooperation and Development propose legislation to regulatory agencies that, if enacted, may have a material impact on our income tax



provision. Additionally, the 2016 election results make U.S. tax reform more likely in the near future. This tax reform may include reductions in the U.S. corporate income tax rate, potential changes in the cost of cross border reinsurance, and changes to the tax base, which may impact our effective tax rate in future years, as well as the carrying value of our net deferred tax asset.

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.

With respect to our U.K. insurance business, Chaucer's regulated subsidiaries are subject to the U.K.'s PRA and FCA regulations and are subject to limitations and approval requirements with respect to payments of dividends, return of capital and becoming a borrower, guarantor or provider of security interest on any financial obligations and other aspects of its operations.

## Table of Contents

The PRA and FCA have substantial powers of intervention in relation to the Lloyd's managing agents, such as Chaucer, which they regulate, including the power to remove their authorization to manage Lloyd's syndicates. In addition, each year the PRA requires Lloyd's to satisfy an annual solvency test that measures whether Lloyd's has sufficient assets in the aggregate to meet all outstanding liabilities of its members, both current and run-off. If Lloyd's fails this test, the PRA may require Lloyd's to cease trading and/or its members to cease or reduce underwriting. The FCA focuses on conduct of business issues with a particular focus on consumer protection and market integrity. Future regulatory changes or rulings by the PRA and FCA could interfere with our business strategy or financial assumptions, possibly resulting in a material adverse effect on our profitability.

Additionally, the Lloyd's worldwide insurance and reinsurance business is subject to various regulations, laws, treaties and other applicable policies of the European Union, as well as each nation, state and locality in which it operates. Material changes in governmental requirements and laws could have an adverse effect on Lloyd's and its member companies, including Chaucer.

From time to time, we are also involved in investigations and proceedings by U.S., U.K., 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.

As a specialist in Lloyd's insurance group, Chaucer is subject to a number of risks which could materially and adversely affect us.

As a specialist in Lloyd's insurance group, Chaucer is subject to a number of specific risk factors and uncertainties, including without limitation:

- its reliance on insurance and reinsurance brokers and Lloyd's distribution channels to distribute and market its products (so called "coverholders"), including its reliance on four major brokers who each were responsible for ten percent or more of Chaucer's gross written premium in 2016;
- its obligations to maintain funds at Lloyd's to support its underwriting activities;
- its risk-based capital requirement being assessed periodically by Lloyd's and being subject to variation;
- its reliance on ongoing approvals from Lloyd's, the PRA and FCA and other regulators to conduct its business, including a requirement that its Annual Business Plan be approved by Lloyd's before the start of underwriting for each account year;
- its obligations to contribute to the Lloyd's Central Fund and pay levies to Lloyd's;
- its financial strength rating is derived from the rating assigned to Lloyd's, and Chaucer has very limited ability to directly affect the overall Lloyd's rating;
- its ongoing ability to utilize Lloyd's trading licenses in order to underwrite business outside the United Kingdom, including Chaucer's ability to write business in the European market if the United Kingdom withdraws, as planned, from the European Union and Lloyd's does not obtain alternative licensing permissions;
- its ongoing exposure to levies and charges in order to underwrite at Lloyd's; and
- the requirement to maintain deposits in the United States for U.S. site risks it underwrites.

Whenever a member of Lloyd's is unable to pay its policyholder obligations, such obligations may be payable by the Lloyd's Central Fund. If Lloyd's determines that the Central Fund needs to be increased, it has the power to assess premium levies on current Lloyd's members up to 3% of a member's underwriting capacity in any one year. We do not believe that any assessment is likely in the foreseeable future and have not provided allowance for such an assessment. However, based on our 2017 estimated underwriting capacity at Lloyd's of £731.4 million, the December 31, 2016 exchange rate of 1.23 dollars per GBP and assuming the maximum 3% assessment, we could be assessed up to approximately \$27.1 million in 2017.

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 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, including with respect to the matter captioned “Durand Litigation” under “Commitments and Contingencies – Legal Proceedings” in Note 18 in the Notes to the Consolidated Financial Statements included in Financial Statements and Supplementary Data of this Form 10-K, could materially affect our results of operations and financial condition.

Table of Contents

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 states of the United 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 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 2016, we had a total assessment of \$4.1 million levied against us, with refunds of \$0.1 million received in 2016 for a total net assessment of \$4.0 million. As of December 31, 2016, we have \$0.6 million of reserves related to guaranty fund assessments. In the future, these assessments may increase above levels experienced in the current and 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.

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 and the Lloyd's market.

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

We periodically review agencies, including managing general agencies, with which we do business to identify those that do not meet our profitability standards or are not strategically aligned with our business. 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 which limit our ability to terminate agents or which 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.

In addition, we could be adversely affected if our agencies, including managing general agencies, with which we do business exceed the authority that we have given them 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.

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 Chaucer businesses and recent or future acquisitions, and expansion into new geographic areas. We could also be affected by an inability to retain profitable policies in force and attract profitable policies in our Commercial Lines, Personal Lines and Chaucer segments, particularly in light of a competitive product pricing environment and the adoption by competitors of strategies to increase agency appointments and commissions, increase advertising, and more effectively utilize "big data".

There are increased underwriting risks associated with premium growth and the introduction of new products or programs in our Commercial Lines, Personal Lines and Chaucer businesses. Additionally, we have increased underwriting risks associated with the appointment of new agencies and managing general agencies and with the

expansion into new geographical areas, including international expansion.

The introduction of new Commercial Lines products, including through our acquired subsidiaries 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 in which we historically have conducted business.

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) which we believe, despite pricing discounts, will ultimately be more profitable business. We may also experience adverse selection, which occurs when insureds with larger risks purchase our products because of favorable pricing, 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 in our identified growth states, there can be no assurance that we won't experience higher loss trends than anticipated.

Table of Contents

Chaucer's proposed non-Lloyd's insurance company to be based in Ireland is intended to provide an alternative platform for writing certain insured risks, and will be subject to oversight by the Central Bank of Ireland. There can be no assurances that the anticipated benefits of operating in this new jurisdiction will materialize as planned.

Additionally, the expansion of Chaucer's political risk and trade credit business, including in Africa and through the planned Irish insurer, and development of its accident and health business, present new risks.

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. 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 our 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 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 systems 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 routinely transmit and receive personal, confidential and proprietary information by e-mail and other electronic means. While we attempt to utilize secure transmission capabilities with third-party vendors and others with whom we do business, we may be unable to put in place secure capabilities with all of such vendors and third parties and, in addition, these third parties may not have appropriate controls in place to protect the confidentiality of the information.

Our systems, like others in the financial services industry, are potentially vulnerable to cyber security risks, and we are subject to potential disruption caused by such activities. Large corporations such as ours are subject to near daily attacks on their systems. Such attacks may have various goals, from seeking confidential information to causing operational disruption. Although to date such activities have not resulted in material disruptions to our operations or, to our knowledge, material breach of any security or confidential information, no assurance can be provided that such disruptions or breach will not occur in the future. As cyber attacks become more prevalent and the methods used to perpetrate them change, we may be required to devote additional personnel or systems resources to protecting our data security or investigating or remediating any perceived vulnerabilities. Such resources could be costly in time and expenses and could detract from resources spent on our core property and casualty insurance operations.

Additionally, we could be subject to liability if confidential customer information is misappropriated from our computer systems, those of our vendors or others with whom we do business, or otherwise. Despite whatever security measures may be in place, any such systems may be vulnerable to physical break-ins, computer viruses, programming errors, attacks by third parties or similar disruptive problems. 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.

We outsource certain technology and business process functions to third parties and may do so increasingly in the future. If we do not effectively develop, implement and monitor our outsourcing strategy, third-party providers do not perform as anticipated or we experience technological or other problems with a transition, we may not realize

productivity improvements or cost efficiencies and may experience operational difficulties, increased costs and a loss of business. Our outsourcing of certain technology and business process functions to third parties may expose us to enhanced risk related to data security, which could result in monetary and reputational damages. In addition, our ability to receive services from third-party providers outside of the United States might be impacted by cultural differences, political instability, unanticipated regulatory requirements or policies inside or outside of the United States. As a result, our ability to conduct our business might be adversely affected.

Integration of acquired businesses involves a number of risks, and there can be no assurance that we will be successful integrating recent and future acquisitions.

There can be no assurance that we will be able to successfully integrate recent and any 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 systems;
- 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, including the effect of exchange rate fluctuations;
  - 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, regulations relating to the conduct of business activities such as the U.K. Bribery Act, sanctions imposed by the U.S., E.U. or U.K. on doing business with certain foreign countries or other persons, 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 recent and 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.

Our international operations expose us to additional risks which could cause a material adverse effect on our business, financial position and results of operations.

Our operations extend to countries outside the U.S., and operating globally increases the scope of our risks and exposes us to certain additional risks, including but not limited to:

- an expansion in the scope of the risks to which our U.S. operations are subject as an insurance company, such as risk of adverse loss development, litigation, investment risks and the possibility of significant catastrophe losses (as a result of natural disasters, nuclear accidents, severe weather and terrorism) occurring outside the U.S.;
- compliance with a variety of national and local laws, regulations and practices of the countries in which we do business and adherence to any changes in such laws, regulations and practices affecting the insurance industry in such countries;
- the effect of the Brexit Referendum and related consequences on (i) Chaucer's licensing permissions in European Union member states if Lloyd's does not obtain alternative licensing permissions; (ii) market conditions in the U.K. and the European market; and (iii) foreign exchange volatility;
- adverse changes, including as a result of political instability, in the economies in which we operate; and
- requirements, such as those enforced by Her Majesty's Treasury, Asset Freezing Unit (U.K.) and the U.S. Treasury's Office of Foreign Asset Controls, to comply with various U.K., U.S., E.U. or other sanctions imposed on doing business with, or affecting, certain countries, their citizens, specially designated nationals or other persons doing business with any such countries or persons.



Table of Contents

Intense competition could negatively affect our ability to maintain or increase our profitability.

We compete, and will continue to compete, with a large number of companies, including international, national and regional insurers, mutual companies, 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 which may not have shareholders and may have different profitability targets than publicly or privately owned companies. Chaucer competes with numerous other Lloyd’s syndicates and managing agents, domestic and international insurers and government or government-sponsored insurance or reinsurance mechanisms. 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 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. and international property and casualty insurance markets 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;
- increased competition from off-shore tax advantaged insurance companies; and
- changing practices caused by the internet 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.

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 and other non-traditional insurance providers, who aim to leverage their information about and direct access to customers, may increase competition. Increased competition could make it difficult for us to obtain new customers, retain existing customers or maintain policies in force by existing customers. It could also result in increasing our service, administrative, policy acquisition or general expense due to the need for additional advertising and marketing of our products. In addition, our administrative, technology and management information systems expenditures could increase substantially as we try to maintain or improve our competitive position.

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 in which we operate, or that we will be able to expand our operations into new markets. If we fail to do so, our business could be materially adversely affected.

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, since rating information is broadly disseminated and generally used

throughout the industry.

Our insurance company subsidiaries are rated by A.M. Best, Moody's, and Standard & Poor's. These ratings reflect a rating agency's opinion of our insurance subsidiaries' financial strength, operating performance, strategic position 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 in the current economic environment where rating agencies may increase their capital requirements or other criteria for various rating levels. In addition, Chaucer's rating is derived from the rating assigned to Lloyd's, and Chaucer has very limited ability to directly affect the overall Lloyd's rating.

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.

Table of Contents

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

The capacity for a U.S. 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 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 National Association of Insurance Commissioners, or NAIC, uses a system for assessing the adequacy of statutory capital for U.S. 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. We believe that any failure to maintain appropriate levels of statutory surplus would have an adverse impact on our ability to grow our business profitably.

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, and we have increased expenses and made acquisitions 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 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, 2016, goodwill and intangible assets that are not amortized totaled \$246.8 million and represented 8.6% of shareholders' equity. Our legacy Hanover and Citizens businesses represent 53% of this balance; Chaucer represents 21% of this balance; AIX represents 20% of this balance; and, the remaining acquisitions combined represent 6% 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.

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. We have established a reserve related to these contractual indemnifications. Although we believe that this reserve is adequate, we cannot provide assurance that costs related to these indemnifications when they ultimately settle, will not exceed our current reserve.

## Table of Contents

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. During 1999, we ceased writing new premiums in this business, subject to certain contractual obligations. The reinsurance pool business consisted primarily of the medical and disability portions of workers' compensation risks, long-term care pools, 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 25 pools with remaining liabilities.

Under these 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 these pools is primarily that other companies that reinsured this business from us may seek to avoid or fail to timely pay their reinsurance obligations (especially in light of the fact that historically these pools sometimes involved multiple layers of overlapping reinsurers, or so-called "spirals") or may become insolvent. Thus, we are exposed to both assumed losses and to credit risk related to these pools. We are not currently engaged in any significant disputes in respect to this business. At this time, we do not anticipate that any significant portion of recorded reinsurance recoverables will be uncollectible. However, we cannot provide assurance that all recoverables are collectible and should these recoverables prove to be uncollectible, our results of operations and financial position may be negatively affected.

We believe our reserves for the accident and health assumed and ceded reinsurance business appropriately reflect current claims, unreported losses and likely investment returns on related assets supporting these reserves. 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, 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 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. In addition, the passage of the Federal Healthcare Act has caused us to have to expand our benefits for a portion of the residual healthcare policies with limited ability to increase premiums.

Other market fluctuations and general economic, market and political conditions may also negatively affect our business, profitability and investment portfolio.

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 as there are more companies ceasing to do business and there are fewer business start-ups, particularly as small 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 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.

Chaucer's business is similarly subject to risks related to the economy. In addition to the risks noted above, adverse economic conditions could negatively affect our ability to obtain letters of credit utilized by Chaucer to underwrite business through Lloyd's.

At December 31, 2016, we held approximately \$9 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 U.S. domestic market; however, we have exposure to international markets as well, with approximately 15% of our cash and investment assets invested in foreign markets. 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 and geopolitical risks. Many of 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.

Table of Contents

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 from current near-historic lows could result in increased defaults as borrowers are unable to pay the additional borrowing costs on variable rate securities or obtain refinancing. We cannot assure you 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. In recent years, global financial markets experienced unprecedented and challenging conditions, including a tightening in the availability of credit, the failure of several large financial institutions and concerns about the creditworthiness of the sovereign debt of several European and other countries. As a result, certain government bodies and central banks worldwide, including the U.S. Treasury Department and the U.S. Federal Reserve, provided for unprecedented intervention programs, the efficacy of which remain uncertain.

In addition, our current borrowings from the Federal Home Loan Bank of Boston ("FHLBB") are secured by collateral. If the fair value of pledged collateral falls below specific levels, we would be required to pledge additional collateral or repay any outstanding FHLBB borrowings.

Market conditions also affect the value of assets under our employee pension plans, including our U.S. Cash Balance Plan and Chaucer pension 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, 2016, our U.S. plan assets included approximately 85% of fixed maturities and 15% of equity securities and other assets. At December 31, 2016, our Chaucer pension plan assets included approximately 55% of equities, 35% of fixed maturities, and 10% of real estate funds. The Chaucer pension plan had net liabilities that exceeded assets by approximately \$16 million as of December 31, 2016. Additionally, our net liabilities exceed assets by approximately \$54 million and \$38 million for our U.S. qualified and U.S. non-qualified (which is an unfunded plan) pension plans, respectively, at December 31, 2016. Declines in the market value of plan assets and interest rates from levels at December 31, 2016, 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, including judicial determinations of ultimate benefit obligations pursuant to the Durand case discussed elsewhere, or otherwise, could result in a need to fund more into the qualified plans to maintain an appropriate funding level.

We may experience unrealized losses on our investments, especially during a period of heightened volatility, 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 the 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, 2016, our financial position is benefited by \$190.0 million as a result of unrealized gains, 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 and Results of Operations of this Form 10-K. 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.



Table of Contents

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 which would be recognized as realized losses in our results of operations, reduce net income and earnings per share and adversely affect our liquidity. Temporary declines in market value 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 investment losses in the future. Likewise, there can be no assurance that our investment portfolio will retain the net unrealized gains reflected on the balance sheet as of December 31, 2016, since such gains are dependent on prevailing interest rates, credit ratings and creditworthiness and general economic and other factors.

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, equity prices and foreign exchange rates, 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, equity prices and foreign currency exchange rates. If significant, declines in equity prices, changes in interest rates, changes in credit spreads and the strengthening or weakening of foreign currencies against the U.S. dollar 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.

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

Inflationary pressures in the geographies in which we operate may negatively impact reserves and the value of investments. In particular, inflationary pressures in the U.S. with respect to medical and health care, automobile repair and construction costs, 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.

Our operations may be adversely impacted by foreign currency fluctuations.

Our reporting currency is the U.S. dollar. The functional currencies of our Chaucer segment are the U.S. dollar, U.K. pound sterling and the Canadian dollar. Exchange rate fluctuations relative to the functional currencies may materially impact our financial position. Further, our Chaucer segment transacts business and maintains assets and liabilities in currencies different than its functional currency, which exposes us to changes in currency exchange rates. In addition, locally required capital levels are invested in local currencies in order to satisfy regulatory requirements and to support local insurance operations regardless of currency fluctuations. We attempt to manage our foreign currency exposure through matching of assets and liabilities, and may also utilize derivatives from time to time. Despite our mitigation efforts, exposure to foreign exchange loss could have a material adverse effect on our reported earnings and book value. Chaucer's trade credit business is also susceptible to losses as a result of exchange rate fluctuations.

Table of Contents

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 U.S. insurance subsidiaries, pre-approval is required with respect to “extraordinary dividends”, and distributions from Chaucer are subject to various requirements imposed by Lloyd’s and the PRA and FCA.

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. 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. For example, our holding company has provided a guaranty for the benefit of our Chaucer segment to support the letter of credit agreement supplied to support Chaucer’s Funds at Lloyd’s requirements.

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. 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.

Our Chaucer business is required to satisfy Lloyd’s minimum capital standards. We satisfy Lloyd’s “member deposit funds” requirement (referred to as Funds at Lloyd’s or “FAL”), in part, through a standby letter of credit. If the letters of credit were drawn, we would expect to use a syndicated credit facility to pay such obligation, which would increase our debt borrowings. Our ability to borrow under this facility is conditioned upon the satisfaction of covenants and other requirements contained in the facility. If the syndicated credit facility was not available to repay this letter of credit facility, we would need to obtain capital elsewhere, and face the risk that alternative financing, such as through cash or other borrowings, would not be available at acceptable terms, if at all. In addition, no assurance can be given as to how much business Lloyd’s will permit Chaucer to underwrite in any single year or as to the viability and cost of change to our current capital structure.

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 which 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, members of Lloyd’s syndicates, reinsurers, regulators, states’ attorneys general, Lloyd’s, the PRA and FCA, or other international regulators, or others. We may incur charges associated with any errors and omissions previously made or which 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 the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act and similar worldwide anti-bribery laws, which 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, including anti-bribery legislation in the U.K. that took effect in 2011, 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, which often carry substantial penalties. We cannot assure you that our internal control policies and procedures always will protect us from reckless or other inappropriate acts committed by our affiliates, employees, agents or coverholders. 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 lease office space located at 30 Fenchurch Street, London, United Kingdom. We also lease offices throughout the United States and in select locations worldwide 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 included in Financial Statements and Supplementary Data of this Form 10-K.

#### ITEM 4—MINE SAFETY DISCLOSURES

Not applicable.

Table of Contents

## 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 17, 2017, we had approximately 18,543 shareholders of record and 42,501,269 shares outstanding. On the same date, the trading price of our common stock was \$90.46 per share.

## COMMON STOCK PRICES

The following tables set forth the high and low sales prices of our common stock for the periods indicated:

2016	High (1)	Low (1)
First Quarter	\$ 90.68	\$ 76.90
Second Quarter	\$ 91.15	\$ 80.41
Third Quarter	\$ 84.58	\$ 74.10
Fourth Quarter	\$ 91.66	\$ 74.88

2015	High (1)	Low (1)
First Quarter	\$ 73.47	\$ 67.74
Second Quarter	\$ 74.90	\$ 68.55
Third Quarter	\$ 83.28	\$ 74.76
Fourth Quarter	\$ 87.42	\$ 76.00

(1) Common stock prices were obtained from a third-party service provider.

## DIVIDENDS

The Board of Directors declared dividends in 2016 and 2015 as follows:

Per Share Amount	2016	2015
First Quarter	\$ 0.46	\$ 0.41
Second Quarter	\$ 0.46	\$ 0.41
Third Quarter	\$ 0.46	\$ 0.41
Fourth Quarter	\$ 0.50	\$ 0.46

We currently expect that comparable cash dividends will be paid in the future; however, the payment of future 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 and for our foreign

subsidiaries, to restrictions imposed by the PRA and Lloyd's. See "Liquidity and Capital Resources" in Management's Discussion and Analysis of Financial Condition and Results of Operations and Note 13 – "Dividend Restrictions" in the Notes to Consolidated Financial Statements included in Financial Statements and Supplementary Data of this Form 10-K.

30

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Table of Contents

## ISSUER PURCHASES OF EQUITY SECURITIES

The Board of Directors has authorized a stock repurchase program which provides for aggregate repurchases of up to \$900 million. Under the repurchase authorizations, we may repurchase our common stock from time to time, in amounts and prices and at such times as deemed 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. Total repurchases under this program as of December 31, 2016 were 14.0 million shares at a cost of \$716.4 million.

Shares purchased in the fourth quarter of 2016 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)
October 1 - 31, 2016	-	\$ -	-	\$ 184
November 1 - 30, 2016 (1)	6,020	78.99	5,250	184
December 1 - 31, 2016 (2)	89,819	91.53	-	184
Total	95,839	\$ 90.75	5,250	\$ 184

(1)Includes 770 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.

(2)Reflects 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.



Table of Contents

## ITEM 6 - SELECTED FINANCIAL DATA

## FIVE YEAR SUMMARY OF SELECTED FINANCIAL HIGHLIGHTS

YEARS ENDED DECEMBER 31 (in millions, except per share data)	2016	2015	2014	2013	2012
Statements of Income					
Revenues					
Premiums	\$ 4,628.1	\$ 4,704.8	\$ 4,710.3	\$ 4,450.5	\$ 4,239.1
Net investment income	279.4	279.1	270.3	269.0	276.6
Net realized investment gains	8.6	19.5	50.1	33.5	23.6
Fees and other income	29.7	30.6	36.9	40.7	51.4
Total revenues	4,945.8	5,034.0	5,067.6	4,793.7	4,590.7
Losses and Expenses					
Losses and loss adjustment expenses	2,964.7	2,884.1	2,927.5	2,761.1	2,974.4
Amortization of deferred acquisition costs	1,035.2	1,033.2	1,040.0	971.0	938.1
Net loss from repayment of debt	88.3	24.1	0.1	27.7	5.1
Gain on disposal of U.K. motor business	(1.1)	(38.4)	-	-	-
Other operating expenses	666.4	691.6	722.0	704.8	644.4
Total losses and expenses	4,753.5	4,594.6	4,689.6	4,464.6	4,562.0
Income before income taxes	192.3	439.4	378.0	329.1	28.7
Income tax expense (benefit)	36.2	108.6	95.7	83.4	(17.4)
Income from continuing operations	156.1	330.8	282.3	245.7	46.1
Discontinued operations	(1.0)	0.7	(0.3)	5.3	9.8
Net income	\$ 155.1	\$ 331.5	\$ 282.0	\$ 251.0	\$ 55.9
Net income per common share (diluted)	\$ 3.59	\$ 7.40	\$ 6.28	\$ 5.59	\$ 1.23
Dividends declared per common share	\$ 1.88	\$ 1.69	\$ 1.52	\$ 1.36	\$ 1.23
Balance Sheets (at December 31)					
Total assets	\$ 14,220.4	\$ 13,781.2	\$ 13,748.9	\$ 13,367.3	\$ 13,478.6
Debt	786.4	803.1	892.7	892.5	843.1
Total liabilities	11,362.9	10,936.8	10,904.9	10,772.8	10,883.2
Shareholders' equity	2,857.5	2,844.4	2,844.0	2,594.5	2,595.4



Table of Contents

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

TABLE OF CONTENTS

<u>Introduction</u>	42
<u>Executive Overview</u>	42
<u>Description of Operating Segments</u>	43
<u>Results of Operations - Consolidated</u>	43
<u>Results of Operations - Segments</u>	45
<u>Investments</u>	65
<u>Other Items</u>	69
<u>Quantitative and Qualitative Disclosures about Market Risk</u>	70
<u>Income Taxes</u>	71
<u>Critical Accounting Estimates</u>	72
<u>Statutory Surplus of U.S. Insurance Subsidiaries</u>	76
<u>Lloyd’s Capital Requirement</u>	76
<u>Liquidity and Capital Resources</u>	77
<u>Off-Balance Sheet Arrangements</u>	80
<u>Contingencies and Regulatory Matters</u>	80
<u>Rating Agencies</u>	80
<u>Risks and Forward-Looking Statements</u>	80
<u>Glossary of Selected Insurance Terms</u>	81



## Table of Contents

### 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 U.S. domiciled property and casualty companies; Chaucer Holdings Limited ("Chaucer"), our United Kingdom ("U.K.") domiciled specialist insurance underwriting group which operates through the Society and Corporation of Lloyd's ("Lloyd's"); and other insurance and non-insurance subsidiaries. Results of operations include our discontinued operations, consisting primarily of our former life insurance businesses and our accident and health business.

### EXECUTIVE OVERVIEW

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

Net income was \$155.1 million in 2016, compared to \$331.5 million in 2015. In 2016, net income was adversely affected by lower operating income driven by unfavorable development on prior years' loss and loss adjustment expense ("LAE") reserves, partially offset by lower catastrophe and current accident year losses. (See discussion below). Additionally, net income was adversely affected by prepayment charges of \$56.0 million, net of tax, which we paid in the second quarter in connection with the redemption of \$380.0 million in higher coupon debt following our issuance of \$375.0 million of 4.50% senior debentures.

Operating income before interest expense and income taxes (a non-GAAP financial measure; see also "Results of Operations – Consolidated" below) was \$322.8 million in 2016 compared to \$466.1 million in 2015, a decrease of \$143.3 million. This decrease is due to unfavorable development on prior years' loss and LAE reserves ("prior years' loss reserves"), partially offset by lower catastrophe losses and current accident year losses. Unfavorable development on prior years' loss reserves was \$140.3 million in 2016, compared to favorable development of \$94.3 million in 2015. Pre-tax catastrophe losses were \$125.1 million in 2016, compared to \$181.3 million during 2015. As explained later in this document, a portion of the change in operating income before interest expense and income taxes is also attributable to the effect of foreign exchange fluctuations. The fourth quarter of 2016 included a reserve charge of \$174.1 million as a result of our fourth quarter reserve review. See also "2016 Fourth Quarter Domestic Business Loss and LAE Reserve Increase" section below for further discussion.

We are continuing efforts to improve our underwriting results in both our Commercial and Personal Lines, through rate increases and improvements to our mix of business. At Chaucer, we continued to experience significant competitive pressure on rates in 2016, which is expected to persist in 2017. In response to these challenging market conditions, we actively manage Chaucer's underwriting portfolio, using our expertise, distinctive underwriting capabilities and market knowledge to target specific attractive underwriting opportunities.

### Commercial Lines

We believe our 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. The small commercial and middle market businesses are 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, distinctive products, franchise value through limited distribution, and industry segmentation. Growth in our specialty lines continues to be an important part of our strategy.

We believe these efforts have driven, and will continue to drive, improvement in our overall mix of business and our underwriting profitability. Commercial Lines net premiums written grew by 3.5% in 2016, driven by both our core commercial and specialty businesses. This growth is primarily due to rate and exposure increases, strong retention and targeted new business expansion.

Underwriting results declined in 2016, as compared to 2015, due to a significant increase in unfavorable development on prior years' loss reserves, partially offset by lower current accident year losses and lower catastrophe losses. Excluding the aforementioned reserve charge in the fourth quarter of 2016, current accident year results improved across most lines. 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.

#### 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). Approximately 83% of our policies in force are account business. We are focused on making investments that help maintain profitability, build a distinctive position in the market, help diversify us geographically from our largest historical core states of Michigan, Massachusetts and New York, and provide us with profitable growth opportunities.

## Table of Contents

Net premiums written grew by 5.2% in 2016, primarily due to increased rates in both the homeowners and personal automobile lines, as well as improved new business trends and higher retention. Underwriting results improved in 2016, as compared to 2015, primarily due to lower catastrophe losses and improved current accident year loss performance, partially offset by unfavorable development on prior years' loss reserves and higher expenses. We continue to seek rate increases that keep pace with underlying loss cost trends, subject to regulatory and competitive considerations.

### Chaucer

Chaucer deploys specialist underwriters in over 30 major insurance and reinsurance classes, including marine and aviation, property, energy, casualty and other coverages. We obtain business through Lloyd's, the leading international insurance and reinsurance market, which provides us with access to specialist business in over 200 countries and territories worldwide through its international licenses, brand reputation and strong security rating. Our underwriting strength, diverse portfolio and Lloyd's membership underpin our ability to actively manage the scale, composition and profitable development of this business.

Underwriting results declined in 2016, as compared to 2015, primarily due to higher current accident year losses, lower favorable development on prior years' loss reserves, and higher expenses, partially offset by lower catastrophe losses. Chaucer's net premiums written declined by 8.2% in 2016, primarily due to a planned increase in ceded reinsurance premiums, as we continue to manage our overall underwriting risk given the challenging market conditions.

## DESCRIPTION OF OPERATING SEGMENTS

Primary business operations include insurance products and services currently provided through four operating segments. Our domestic operating segments are Commercial Lines, Personal Lines, and Other. Our international operating segment is Chaucer. 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. Chaucer includes marine and aviation, property, energy, casualty and other coverages (which includes international liability, specialist liability coverages, and syndicate participations) and, prior to June 30, 2015, U.K. motor. Effective June 30, 2015, we transferred our U.K. motor business to an unaffiliated U.K.-based insurance provider. Accordingly, results from the Chaucer segment no longer include this business subsequent to June 30, 2015. 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; and, a discontinued voluntary pools business. 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, collateralized borrowings with the Federal Home Loan Bank of Boston ("FHLBB"), and letter of credit facility.

## RESULTS OF OPERATIONS – CONSOLIDATED

### 2016 Compared to 2015

Consolidated net income was \$155.1 million in 2016, compared to \$331.5 million in 2015. The decrease of \$176.4 million is primarily due to lower operating income of \$95.6 million, principally from \$105.4 million of unfavorable

development on prior years' loss reserves, or approximately 2% of total net reserves (including development on catastrophe losses), partially offset by lower catastrophe losses and current accident year losses. Consolidated net income for the year ended December 31, 2016 also included net losses from the repayment of debt of \$57.4 million, net of tax, compared to \$15.7 million, net of tax, for the year ended December 31, 2015. Additionally, the year ended December 31, 2015, included after-tax gains of \$40.6 million from the disposal of the U.K. motor business.

#### 2015 Compared to 2014

Consolidated net income was \$331.5 million in 2015, compared to \$282.0 million in 2014. The increase of \$49.5 million is primarily due to higher operating income of \$47.3 million, principally from lower catastrophe losses and a lower expense ratio. Additionally, consolidated net income in 2015 included the \$40.6 million net gain from the disposal of the U.K. motor business. These increases were partially offset by lower net realized investment gains and an increase in net losses from repayments of debt. Net realized investment gains decreased during 2015 primarily as a result of an increase in other-than-temporary impairments ("OTTI"), and from lower gains from the sale of securities. Additionally, the year ended December 31, 2014 included after-tax losses of \$7.9 million from the settlement of a portion of the defined benefit pension plan obligation.



Table of Contents

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)	2016	2015	2014
Operating income (loss) before interest expense and income taxes:			
Commercial Lines	\$ 35.9	\$ 143.3	\$ 139.9
Personal Lines	178.4	149.3	99.0
Chaucer	126.8	183.7	177.6
Other	(18.3)	(10.2)	(9.7)
Operating income before interest expense and income taxes	322.8	466.1	406.8
Interest expense on debt	(54.9)	(60.6)	(65.8)
Operating income before income taxes	267.9	405.5	341.0
Income tax expense on operating income	(83.5)	(125.5)	(108.3)
Operating income	184.4	280.0	232.7
Non-operating items:			
Net realized investment gains	8.6	19.5	50.1
Net loss from repayment of debt	(88.3)	(24.1)	(0.1)
Gain on disposal of U.K. motor business	1.1	38.4	-
Loss from settlement of pension obligation	-	-	(12.1)
Other	3.0	0.1	(0.9)
Income tax benefit on non-operating items	47.3	16.9	12.6
Income from continuing operations, net of taxes	156.1	330.8	282.3
Net (loss) gain from discontinued operations, net of taxes	(1.0)	0.7	(0.3)
Net income	\$ 155.1	\$ 331.5	\$ 282.0
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 four 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.

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. Catastrophes and prior years' reserve development 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 and Results of Operations includes development on prior years' catastrophe reserves and, unless otherwise indicated, such development is excluded from discussions on prior year loss and LAE reserve development.

Table of Contents

## 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.

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

YEARS ENDED DECEMBER 31 (in millions)	2016	2015	2014
Operating revenues			
Net premiums written	\$ 4,698.8	\$ 4,616.8	\$ 4,810.1
Net premiums earned	\$ 4,628.1	\$ 4,704.8	\$ 4,710.3
Net investment income	279.4	279.1	270.3
Other income	29.7	30.6	36.9
Total operating revenues	4,937.2	5,014.5	5,017.5
Losses and operating expenses			
Losses and LAE	2,964.7	2,884.1	2,927.5
Amortization of deferred acquisition costs	1,035.2	1,033.2	1,040.0
Other operating expenses	614.5	631.1	643.2
Total losses and operating expenses	4,614.4	4,548.4	4,610.7
Operating income before interest expense and income taxes	\$ 322.8	\$ 466.1	\$ 406.8
2016 Compared to 2015			

Operating income before interest expense and income taxes was \$322.8 million for the year ended December 31, 2016, compared to \$466.1 million for the year ended December 31, 2015, a decrease of \$143.3 million. This decrease was primarily due to higher unfavorable prior years' loss reserve development, partially offset by lower catastrophe and current accident year losses. Unfavorable development on prior years' loss reserves was \$140.3 million for the year ended December 31, 2016, compared to favorable development of \$94.3 million for the year ended December 31, 2015, a change of \$234.6 million. Catastrophe-related activity for the year ended December 31, 2016 was \$125.1 million, compared to \$181.3 million for the year ended December 31, 2015, a decrease of \$56.2 million. Lower current accident year losses in our domestic segment were partially offset by higher losses in our Chaucer segment.

Net premiums written increased by \$82.0 million for the year ended December 31, 2016, compared to the year ended December 31, 2015. This increase was primarily the result of growth in our domestic lines, partially offset by a planned increase in ceded reinsurance premiums in the Chaucer business.

## 2015 Compared to 2014

Operating income before interest expense and income taxes was \$466.1 million for the year ended December 31, 2015, compared to \$406.8 million for the year ended December 31, 2014, an increase of \$59.3 million. This increase was due primarily to lower catastrophe losses, a lower expense ratio and higher net investment income, partially offset by higher large loss activity in the Chaucer segment and lower favorable development on prior years' loss reserves.

Catastrophe-related activity for the year ended December 31, 2015 was \$181.3 million, compared to \$223.0 million for the year ended December 31, 2014, a decrease of \$41.7 million.

Favorable development on prior years' loss reserves was \$94.3 million for the year ended December 31, 2015, compared to \$99.1 million for the year ended December 31, 2014, a decrease of \$4.8 million.

Excluding the effect of our transfer of the U.K. motor business, net premiums written increased by \$112.7 million for the year ended December 31, 2015, compared to the year ended December 31, 2014. This increase was primarily driven by pricing increases, increased retention, and targeted new business expansion primarily in Commercial Lines. U.K. motor net premium written was \$(8.3) million and \$297.7 million in 2015 and 2014, respectively.

Table of Contents

## 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 2016, the GBP weakened meaningfully against most currencies. 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"). In contrast, during 2015 and 2014, the GBP strengthened against most currencies. The following table summarizes the total effect of Chaucer's foreign exchange transactional gains and losses on comprehensive income:

YEARS ENDED DECEMBER 31	2016	2015	2014
in millions			
Effect of revaluing loss and LAE reserves	\$ (36.9)	\$ 13.4	\$ 11.8
Effect of revaluing overseas deposits and cash	11.5	(0.5)	(4.6)
Effect of revaluing premium receivables	3.4	(1.2)	(2.9)
Total FX effect on operating income before interest expense and income taxes	(22.0)	11.7	4.3
FX losses reflected in net realized investment gains	(0.7)	(3.4)	(1.3)
Total FX effect on income before income taxes	(22.7)	8.3	3.0
Unrealized FX gains (losses) from investment securities	8.3	(1.2)	(4.7)
Total pre-tax effect of transactional FX (losses) gains on comprehensive income	(14.4)	7.1	(1.7)
Income tax benefit (expense)	5.0	(2.5)	0.6
Total effect of transactional FX (losses) gains on comprehensive income	\$ (9.4)	\$ 4.6	\$ (1.1)

During 2016, foreign exchange losses reduced pre-tax operating income by approximately \$22.0 million compared to foreign exchange gains on pre-tax operating income of approximately \$11.7 million and \$4.3 million in 2015 and 2014, respectively. This was due primarily to the revaluation of loss and LAE reserves in various currencies, particularly the Euro, the Australian Dollar and the Japanese Yen, partially offset by the revaluation of investments in overseas deposits and cash. In addition, during 2016, pre-tax unrealized foreign exchange gains from Euro-denominated investment securities were \$8.3 million, which was reflected as an increase to accumulated other comprehensive income. During 2015 and 2014 the pre-tax unrealized foreign exchange impact from Euro-denominated investment securities was a loss of \$1.2 million and \$4.7 million, respectively.

Although we endeavor to balance assets and liabilities for our foreign currencies, a certain level of net exposure to exchange rate fluctuations persists. We monitor and seek to limit the extent of this exposure. These transactional foreign exchange gains and losses are unlikely to be material to our financial position, although they may be more significant to our financial results of operations in any one period.

Table of Contents

## PRODUCTION AND UNDERWRITING RESULTS

The following table summarizes premiums written on a gross and net basis, net premiums earned and loss, LAE, expense and combined ratios for the Commercial Lines, Personal Lines and Chaucer 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, 2016							
(dollars in millions)	Gross Premiums Written	Net Premiums Written	Net Premiums Earned	Catastrophe Loss Ratios	Loss & LAE Ratios	Expense Ratios	Combined 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
Chaucer	1,106.6	816.1	838.6	1.0	50.0	40.4	90.4
Total	\$ 5,397.4	\$ 4,698.8	\$ 4,628.1	2.7	64.1	34.5	98.6
YEAR ENDED DECEMBER 31, 2015							
(dollars in millions)	Gross Premiums Written	Net Premiums Written	Net Premiums Earned	Catastrophe Loss Ratios	Loss & LAE Ratios	Expense Ratios	Combined Ratios
Commercial Lines	\$ 2,592.5	\$ 2,281.9	\$ 2,227.0	4.0	64.0	36.4	100.4
Personal Lines	1,530.5	1,445.6	1,426.6	5.3	66.0	28.2	94.2
Chaucer	1,321.5	889.3	1,051.2	1.6	49.2	38.3	87.5
Total	\$ 5,444.5	\$ 4,616.8	\$ 4,704.8	3.9	61.3	34.4	95.7
YEAR ENDED DECEMBER 31, 2014							
(dollars in millions)	Gross Premiums Written	Net Premiums Written	Net Premiums Earned	Catastrophe Loss Ratios	Loss & LAE Ratios	Expense Ratios	Combined Ratios
Commercial Lines	\$ 2,442.5	\$ 2,155.9	\$ 2,081.4	4.2	63.1	37.1	100.2
Personal Lines	1,517.3	1,422.8	1,407.1	7.6	69.6	28.1	97.7
Chaucer	1,505.6	1,231.4	1,221.8	2.4	51.9	38.1	90.0
Total	\$ 5,465.4	\$ 4,810.1	\$ 4,710.3	4.7	62.2	34.7	96.9

Table of Contents

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, 2016		
(dollars in millions)	Net Premiums Written	Loss & LAE Ratios	Catastrophe 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	43.1	2.9
Total Personal Lines	1,521.2	63.6	3.2
Total	\$ 3,882.7	67.2	3.1

	YEAR ENDED DECEMBER 31, 2015		
(dollars in millions)	Net Premiums Written	Loss & LAE Ratios	Catastrophe Loss Ratios
Commercial Lines:			
Commercial multiple peril	\$ 752.6	61.7	7.4
Commercial automobile	306.0	78.2	0.2
Workers' compensation	267.8	50.6	-
Other commercial	955.5	64.9	3.7
Total Commercial Lines	2,281.9	64.0	4.0
Personal Lines:			
Personal automobile	900.0	71.1	0.5
Homeowners	507.4	59.7	14.0
Other personal	38.2	32.2	2.6
Total Personal Lines	1,445.6	66.0	5.3
Total	\$ 3,727.5	64.8	4.5

	YEAR ENDED DECEMBER 31, 2014		
(dollars in millions)	Net Premiums Written	Loss & LAE Ratios	Catastrophe Loss Ratios
Commercial Lines:			
Commercial multiple peril	\$ 705.1	62.2	10.4
Commercial automobile	302.6	76.6	0.4
Workers' compensation	247.8	68.0	-
Other commercial	900.4	57.7	1.8
Total Commercial Lines	2,155.9	63.1	4.2
Personal Lines:			
Personal automobile	884.1	72.5	1.0
Homeowners	499.0	67.1	19.5
Other personal	39.7	38.3	2.5

Total Personal Lines	1,422.8	69.6	7.6
Total	\$ 3,578.7	65.8	5.6

40

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Table of Contents

The following table summarizes premiums written on a gross and net basis and net premiums earned by line of business for the Chaucer segment.

	YEAR ENDED DECEMBER 31, 2016		
(in millions)	Gross Premiums Written	Net Premiums Written	Net Premiums Earned
Chaucer:			
Marine and aviation	\$ 356.9	\$ 268.7	\$ 267.3
Property	230.1	141.8	144.1
Energy	158.7	97.5	125.5
Casualty and other	360.9	308.1	301.7
Total Chaucer	\$ 1,106.6	\$ 816.1	\$ 838.6

	YEAR ENDED DECEMBER 31, 2015		
(in millions)	Gross Premiums Written	Net Premiums Written	Net Premiums Earned
Chaucer:			
Marine and aviation	\$ 354.2	\$ 286.9	\$ 277.6
Property	236.1	166.9	169.1
Energy	198.6	136.2	174.8
U.K. motor	187.5	(8.3)	135.4
Casualty and other	345.1	307.6	294.3
Total Chaucer	\$ 1,321.5	\$ 889.3	\$ 1,051.2

	YEAR ENDED DECEMBER 31, 2014		
(in millions)	Gross Premiums Written	Net Premiums Written	Net Premiums Earned
Chaucer:			
Marine and aviation	\$ 374.6	\$ 304.8	\$ 284.1
Property	245.4	179.2	187.6
Energy	247.2	173.0	200.0
U.K. motor	319.1	297.7	305.9
Casualty and other	319.3	276.7	244.2
Total Chaucer	\$ 1,505.6	\$ 1,231.4	\$ 1,221.8

Table of Contents

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

(in millions)	YEAR ENDED DECEMBER 31, 2016				
	Commercial Lines	Personal Lines	Chaucer	Other	Total
Underwriting profit (loss), excluding prior year					
reserve development and catastrophes	\$ 171.1	\$ 155.1	\$ (7.0)	\$ (2.5)	\$ 316.7
Prior year (unfavorable) favorable loss and LAE reserve					
development on non-catastrophe losses	(223.0)	(4.3)	95.3	(8.3)	(140.3)
Prior year favorable (unfavorable) catastrophe development	3.7	(6.3)	37.5	-	34.9
Current year catastrophe losses	(73.8)	(40.7)	(45.5)	-	(160.0)
Underwriting (loss) profit	(122.0)	103.8	80.3	(10.8)	51.3
Net investment income	158.5	69.5	45.7	5.7	279.4
Fees and other income	8.5	11.4	7.1	2.7	29.7
Other operating expenses	(9.1)	(6.3)	(6.3)	(15.9)	(37.6)
Operating income (loss) before interest expense and income taxes	\$ 35.9	\$ 178.4	\$ 126.8	\$ (18.3)	\$ 322.8
	YEAR ENDED DECEMBER 31, 2015				
	Commercial Lines	Personal Lines	Chaucer	Other	Total
(in millions)					
Underwriting profit (loss), excluding prior year					
reserve development and catastrophes	\$ 121.2	\$ 128.1	\$ 28.2	\$ (1.6)	\$ 275.9
Prior year (unfavorable) favorable loss and LAE reserve					
development on non-catastrophe losses	(45.2)	19.7	120.1	(0.3)	94.3
Prior year (unfavorable) favorable catastrophe development	(2.0)	(9.1)	32.9	-	21.8
Current year catastrophe losses	(86.7)	(66.7)	(49.7)	-	(203.1)
Underwriting (loss) profit	(12.7)	72.0	131.5	(1.9)	188.9
Net investment income	156.3	72.5	45.9	4.4	279.1
Fees and other income	8.4	12.2	7.0	3.0	30.6
Other operating expenses	(8.7)	(7.4)	(0.7)	(15.7)	(32.5)
Operating income (loss) before interest expense and income taxes	\$ 143.3	\$ 149.3	\$ 183.7	\$ (10.2)	\$ 466.1

(in millions)	YEAR ENDED DECEMBER 31, 2014				
	Commercial Lines	Personal Lines	Chaucer	Other	Total
Underwriting profit (loss), excluding prior year reserve development and catastrophes	\$ 88.7	\$ 123.4	\$ 46.7	\$ (1.7)	\$ 257.1
Prior year (unfavorable) favorable loss and LAE reserve development on non-catastrophe losses	(9.2)	5.1	104.6	(1.4)	99.1
Prior year (unfavorable) favorable catastrophe development	(4.9)	-	23.2	-	18.3
Current year catastrophe losses	(82.9)	(106.4)	(52.0)	-	(241.3)
Underwriting (loss) profit	(8.3)	22.1	122.5	(3.1)	133.2
Net investment income	149.4	71.9	44.2	4.8	270.3
Fees and other income	8.2	12.0	13.7	3.0	36.9
Other operating expenses	(9.4)	(7.0)	(2.8)	(14.4)	(33.6)
Operating income (loss) before interest expense and income taxes	\$ 139.9	\$ 99.0	\$ 177.6	\$ (9.7)	\$ 406.8

Table of Contents

2016 Compared to 2015

Commercial Lines

Commercial Lines net premiums written were \$2,361.5 million for the year ended December 31, 2016, compared to \$2,281.9 million for the year ended December 31, 2015. This \$79.6 million increase was primarily driven by pricing increases, strong retention, and targeted new business expansion.

Commercial Lines underwriting loss for the year ended December 31, 2016 was \$122.0 million, compared to \$12.7 million for the year ended December 31, 2015, a change of \$109.3 million. Unfavorable development on prior years' loss reserves ("prior year development") for the year ended December 31, 2016 was \$223.0 million, compared to \$45.2 million for the year ended December 31, 2015, an unfavorable change of \$177.8 million, primarily due to higher than expected losses in other commercial lines of \$168.0 million, which includes our AIX program business of \$75.3 million. This was principally driven by losses in accident years 2014 and prior, primarily from programs which have since been terminated, as well as higher than expected losses in our general liability lines of \$56.0 million, and higher than expected losses in surety lines of \$35.3 million. We also experienced unfavorable prior year development in our commercial multiple peril line of \$74.2 million and in our commercial automobile line of \$27.5 million. These items were partially offset by favorable prior year development in our workers' compensation line of \$46.7 million. Catastrophe-related losses decreased for the year ended December 31 2016 at \$70.1 million, compared to \$88.7 million for the year ended December 31, 2015.

Commercial Lines current accident year underwriting profit, excluding catastrophes, was \$171.1 million for the year ended December 31, 2016, compared to \$121.2 million for the year ended December 31, 2015. This \$49.9 million improvement was primarily due to improved current accident year loss performance, primarily due to property coverages in our commercial multiple peril and inland marine lines, premium growth and lower expenses.

We are continuing efforts to improve our underwriting results, including through increased rates; however, our ability to increase Commercial Lines net premiums written while maintaining or improving underwriting results is expected to be affected by price competition and the challenging economic environment. We continue to monitor these trends and consider them in our rate actions.

Personal Lines

Personal Lines net premiums written were \$1,521.2 million for the year ended December 31, 2016, compared to \$1,445.6 million for the year ended December 31, 2015, an increase of \$75.6 million. This was primarily due to increased rates in both the personal automobile and homeowners lines of business, as well as improved new business trends and higher retention.

Net premiums written in the personal automobile line of business for the year ended December 31, 2016 were \$953.6 million, compared to \$900.0 million for the year ended December 31, 2015, an increase of \$53.6 million. This increase was primarily due to rate increases, as well as an increase in policies in force of 1.4%. Net premiums written in the homeowners line of business for the year ended December 31, 2016 were \$529.7 million, compared to \$507.4 million for the year ended December 31, 2015, an increase of \$22.3 million. This is attributable to rate increases, as well as an increase in policies in force of 1.8%.

Personal Lines underwriting profit for the year ended December 31, 2016 was \$103.8 million, compared to \$72.0 million for the year ended December 31, 2015, an improvement of \$31.8 million. Catastrophe losses for the year ended December 31, 2016 were \$47.0 million, compared to \$75.8 million for the year ended December 31, 2015, a decrease of \$28.8 million. Unfavorable development on prior years' loss reserves for the year ended December 31,

2016 was \$4.3 million, compared to favorable prior year development of \$19.7 million for the year ended December 31, 2015, a decline of \$24.0 million.

Personal Lines current accident year underwriting profit, excluding catastrophes, was \$155.1 million in the year ended December 31, 2016, compared to \$128.1 million for the year ended December 31, 2015. This \$27.0 million increase was primarily a result of lower weather-related property losses, primarily in our homeowners line of business, as well as rate increases.

Although we have been able to obtain rate increases in our Personal Lines markets and believe that our ability to obtain these increases will continue, our ability to maintain Personal Lines net premiums written and to maintain and improve underwriting results may be affected by price competition, recent years' weather-related losses, our exposure management actions, and regulatory and legal developments. We monitor these trends and consider them in our rate actions.

#### Chaucer

Chaucer's net premiums written were \$816.1 million for the year ended December 31, 2016, compared to \$889.3 million for the year ended December 31, 2015. This decline of \$73.2 million was primarily due to a planned increase in ceded reinsurance premiums as we manage our overall underwriting risk given the challenging market conditions, as well as from lower premium volumes in our energy line where underwriting conditions continued to reflect the effects of low oil prices, and in our aviation line, partially offset by growth in our marine and casualty lines.

Table of Contents

Chaucer's underwriting profit for the year ended December 31, 2016 was \$80.3 million, compared to \$131.5 million for the year ended December 31, 2015, a decrease of \$51.2 million. This decrease is primarily due to higher current accident year losses, lower favorable prior year reserve development and higher expenses, partially offset by lower catastrophe losses. Favorable development on prior years' loss reserves for the year ended December 31, 2016 was \$95.3 million, compared to \$120.1 million for the year ended December 31, 2015, a decrease of \$24.8 million, including the effect of foreign exchange fluctuations (see "Foreign Exchange" section above for further discussion). Catastrophe losses for the year ended December 31, 2016 were \$8.0 million, compared to \$16.8 million for the year ended December 31, 2015, a decrease of \$8.8 million.

Chaucer's current accident year underwriting loss, excluding catastrophes, was \$7.0 million in the year ended December 31, 2016, compared to an underwriting profit of \$28.2 million for the year ended December 31, 2015. This \$35.2 million change was primarily due to higher large losses in the marine line, including trade credit coverages related to poor market conditions and underlying commodity price-sensitive accounts, and an increased frequency of losses in our property line, partially offset by lower large losses in the energy line.

We continue to experience significant competition across the international insurance industry. Current pricing conditions in all markets continue to be affected by high industry capacity and competition, and a continued absence of major losses in our markets. There can be no assurance that we will be able to maintain adequate rates in light of economic conditions in our markets. Additionally, because of the inherently volatile nature of losses in many of our product lines, we may continue to experience large losses or an elevated level of losses from these or other product lines.

Other

Other operating losses were \$18.3 million for the year ended December 31, 2016, compared to \$10.2 million for the year ended December 31, 2015, an increase of \$8.1 million primarily due to unfavorable prior year reserve development in our run-off voluntary pools business.

2015 Compared to 2014

Commercial Lines

Commercial Lines net premiums written were \$2,281.9 million for the year ended December 31, 2015, compared to \$2,155.9 million for the year ended December 31, 2014. This \$126.0 million increase was primarily driven by pricing increases, increased retention, and targeted new business expansion.

Commercial Lines underwriting loss for the year ended December 31, 2015 was \$12.7 million, compared to \$8.3 million for the year ended December 31, 2014, a decline of \$4.4 million. Unfavorable development on prior years' loss reserves for the year ended December 31, 2015 was \$45.2 million, compared to \$9.2 million for the year ended December 31, 2014, an increase of \$36.0 million. Catastrophe-related losses increased slightly for the year ended December 31, 2015 at \$88.7 million, compared to \$87.8 million for the year ended December 31, 2014. Unfavorable prior year development was due to higher than expected losses in other commercial lines of \$53.7 million, which includes our AIX program business. This was principally driven by losses in accident years 2013 and prior, primarily from programs which have since been terminated and from higher than expected losses in our general liability lines, partially offset by favorable development in our commercial umbrella and healthcare lines, also included in other commercial lines. We also experienced unfavorable prior year development in our commercial automobile line of \$23.4 million. These items were partially offset by favorable prior year development in our workers' compensation line of \$46.9 million.

Commercial Lines current accident year underwriting profit, excluding catastrophes, was \$121.2 million for the year ended December 31, 2015, compared to \$88.7 million for the year ended December 31, 2014. This \$32.5 million improvement was primarily due to growth in earned premium, underwriting expense efficiencies, and improved loss performance in all major lines of business that resulted from our pricing and underwriting actions.

#### Personal Lines

Personal Lines net premiums written were \$1,445.6 million for the year ended December 31, 2015, compared to \$1,422.8 million for the year ended December 31, 2014, an increase of \$22.8 million. This was due primarily to increased rates and improved retention in both the personal automobile and homeowners lines of business.

Net premiums written in the personal automobile line of business for the year ended December 31, 2015 were \$900.0 million compared to \$884.1 million for the year ended December 31, 2014, an increase of \$15.9 million. This increase was primarily due to rate increases, partially offset by a decline in policies in force of 3.2%. Net premiums written in the homeowners line of business for the year ended December 31, 2015 were \$507.4 million, compared to \$499.0 million for the year ended December 31, 2014, an increase of \$8.4 million. This is attributable to rate increases which offset a decline in policies in force of 1.9%.

## Table of Contents

Personal Lines underwriting profit for the year ended December 31, 2015 was \$72.0 million, compared to \$22.1 million for the year ended December 31, 2014, an improvement of \$49.9 million. Catastrophe losses for the year ended December 31, 2015 were \$75.8 million, compared to \$106.4 million for the year ended December 31, 2014, a decrease of \$30.6 million. Favorable development on prior years' loss reserves for the year ended December 31, 2015 was \$19.7 million, compared to \$5.1 million for the year ended December 31, 2014, an increase of \$14.6 million, primarily from the homeowners line.

Personal Lines current accident year underwriting profit, excluding catastrophes, was \$128.1 million in the year ended December 31, 2015, compared to \$123.4 million for the year ended December 31, 2014. This \$4.7 million improvement was primarily a result of our ongoing pricing and underwriting actions in both lines of business, partially offset by higher large loss experience in the homeowners line, largely due to fire.

### Chaucer

Chaucer's net premiums written were \$889.3 million for the year ended December 31, 2015, compared to \$1,231.4 million for the year ended December 31, 2014. This decline of \$342.1 million was primarily due to the aforementioned transfer of the U.K. motor business. Excluding the U.K. motor business, net premiums written declined by \$36.1 million or 3.9%, primarily due to lower volumes in the energy, marine and property lines, partially offset by growth in the specialist liability line.

Chaucer's underwriting profit for the year ended December 31, 2015 was \$131.5 million, compared to \$122.5 million for the year ended December 31, 2014, an increase of \$9.0 million. This increase is primarily due to higher favorable development on prior years' loss reserves, lower catastrophe losses and lower expenses, partially offset by higher large loss activity in the energy line. Favorable development on prior years' loss reserves for the year ended December 31, 2015 was \$120.1 million, compared to \$104.6 million for the year ended December 31, 2014, an increase of \$15.5 million. Catastrophe losses for the year ended December 31, 2015 were \$16.8 million, compared to \$28.8 million for the year ended December 31, 2014, a decrease of \$12.0 million.

Chaucer's current accident year underwriting profit, excluding catastrophes, was \$28.2 million in the year ended December 31, 2015, compared to \$46.7 million for the year ended December 31, 2014. This \$18.5 million decline was primarily due to higher large losses in the energy line, partially offset by lower losses in the aviation and property lines.

### Other

Other operating losses were \$10.2 million for the year ended December 31, 2015, compared to \$9.7 million for the year ended December 31, 2014, an increase of \$0.5 million.

## 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 and 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, 2016 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, 2016 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 52% of our aggregate net loss reserves at December 31, 2016 were for IBNR losses and loss expenses.

#### Critical Judgments and Key Assumptions

We determine the amount of our loss reserves based on an estimation process that is very complex and considers information from both company specific and industry data, as well as general economic and other information. The estimation process is 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, 2016 were \$4.7 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, such as certain new program business written by AIX, Chaucer's U.S. casualty treaty and international liability lines, our professional liability specialty lines, our excess and surplus specialty lines, and business written in the western part of the United States. In some of these 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. The Chaucer business acquired in 2011 contains several liability lines, of which financial institution and professional liability, U.S. casualty treaty liability, international liability and energy liability, contribute the most uncertainty. Chaucer's U.S. casualty treaty lines have grown in 2015 and 2016, due to our expanded underwriting capabilities.

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 developed unfavorably by \$140.3 million for the year ended December 31, 2016, and developed favorably by \$94.3 million, and \$99.1 million for the years ended December 31, 2015, and 2014, respectively. Additionally, our estimated loss and LAE reserves for catastrophe claims occurring in prior years developed favorably by \$34.9 million, \$21.8 million and \$18.3 million for the years ended December 31, 2016, 2015 and 2014, respectively. However, 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 \$46 million impact on operating income, based on 2016 full year premiums.

## Table of Contents

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.

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 have seen recent increasing trends in medical costs, wages and legal costs, which are key considerations in setting reserve assumptions for workers’ compensation and other liability lines. We are also monitoring the continued advancements in technology and design found in automobiles and homes and the potential for increased claims settlement costs that may result from repairs or replacement of such equipment. Increases are reflected in our current reserve estimates, but continued increases could 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.

### 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. The Chaucer business, while having more longer-tail coverages than our traditional U.S. business, contains a substantial book of worldwide property insurance and reinsurance business, including certain high excess property layers, marine property, aviation property and energy property business, which has relatively short development patterns. 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. However, this is less true for our Chaucer assumed reinsurance business and high excess property layers where there is often a longer period of time between the date a claim is incurred and the date the claim is reported to us, as the reinsurer, as compared with our

direct insurance operations. This delay in reporting and recognition of the extent of a loss may be greater where Chaucer is not the lead syndicate handling a claim. Therefore, the risk of delayed recognition of loss reserve development is higher for our assumed reinsurance and high excess property layers than for our direct insurance lines.

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, contract surety and other types of third-party coverage. Chaucer's longer-tailed lines include aviation liability, trade credit and political risk classes, marine liability, energy liability, nuclear liability, U.S. casualty treaty liability, international liability, specialist liability, and financial institutions and professional liability. 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 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.

## Table of Contents

Most of our indirect business from discontinued voluntary and involuntary pools is 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.

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 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., energy, construction, engineering and political risks), 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 in our Chaucer segment, 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.

## Table of Contents

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 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 are 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 this 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 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, 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.



## Table of Contents

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.

The Chaucer segment contains run-off business comprised of liability lines, notably financial institutions and professional liability business. There is particular uncertainty around the reserve estimates in respect of business written in 2007 and 2008 which have been subject to claims arising out of the financial turmoil in that time period, particularly in the financial institutions book. These claims are unlikely to be settled for some time since they contain numerous coverage issues and in many cases involve class action lawsuits that are likely to take several years to resolve. We have utilized substantially all of our available reinsurance with respect to losses and LAE related to financial institutions business written in 2008.

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 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.

For events designated as catastrophes which affect our Chaucer business segment, we initially calculate IBNR reserves using a ground up exposure by exposure analysis based on each cedant or insured. These are supported by broker supplied information, catastrophe modeling and industry event estimates. As more specific claim level data becomes available over time for each catastrophe event, these initial estimates are revised and updated by looking at the paid and incurred claim development and by considering it in comparison to previous catastrophe loss events.

#### 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 likely scenarios, the reader should not consider the following sensitivity analysis as illustrative of a net reserve range.

Table of Contents

- Personal and Commercial Automobile Bodily Injury – reserves recorded for bodily injury on U.S. voluntary business were \$595.8 million as of December 31, 2016. 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 \$53 million, either positive or negative, respectively, at December 31, 2016.
- Personal Automobile Personal Injury Protection Medical Payment – reserves recorded for personal injury protection medical payment on U.S. voluntary business were \$144.2 million as of December 31, 2016. 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., 1.02 changed to 1.01 or 1.03) would have changed total reserves by approximately \$67 million, either positive or negative, at December 31, 2016.
- Workers' Compensation – reserves recorded for workers' compensation on U.S. voluntary business were \$369.2 million as of December 31, 2016. 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 \$83 million, either positive or negative, at December 31, 2016.
- Monoline and Multiple Peril General Liability – reserves recorded for monoline and multiple peril general liability on U.S. voluntary business were \$672.0 million as of December 31, 2016. 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 \$63 million, either positive or negative, at December 31, 2016.
- Specialty Programs – reserves recorded (including allocated LAE) for the AIX Companies were \$342.3 million as of December 31, 2016. 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 \$50 million at December 31, 2016.
- New classes of business – claims reserves recorded for new classes of Chaucer business (primarily within international liability, U.S. casualty treaty and new lines written in overseas offices) were \$221.7 million as of December 31, 2016. An increase in the ultimate loss ratio by 5%, 10% and 15% in the 2014 and prior, 2015 and 2016 years of account, respectively, on these classes would have increased total reserves by approximately \$33 million at December 31, 2016.
- Casualty classes of business – claims reserves recorded for casualty classes of Chaucer business were \$457.6 million as of December 31, 2016. An increase in the ultimate loss ratio of 2.5% across all classes and years of account would have increased total reserves by approximately \$41 million at December 31, 2016.
- Trade Credit Coverages – Chaucer has experienced losses in its trade credit coverages within the marine line primarily attributable to the worldwide drop in commodity prices in 2016. Claims reserves for these losses as of December 31, 2016 were \$21 million. If Chaucer were to experience another 10 individual claims, at the same average cost of the 28 notified to date, and were to not make any subrogation type recoveries (on existing or the new claims) then this would have increased total reserves by approximately \$21 million at December 31, 2016.

Table of Contents

Carried Reserves and Reserve Rollforward

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