The Hanover Insurance Group, Inc.
(NYSE: THG)

Bank of America Merrill Lynch Conference

February 13, 2020

The Hanover Insurance Group®

Key Messages

- Diversified franchise; achieving broad-based profitability through:
  - Unique agency-focused distribution strategy
  - Specialized and broad portfolio mix, which provides continual growth opportunities
- Extremely well-positioned to thrive in the current and dynamic market environment
- Financial results and top-quartile returns validate our strategy
- Ambitious, and achievable long-term target of 13%+ operating ROE

~$4.6B net written premium P&C franchise with exceptional opportunities

~$5.3B	$4.9B	12.8%	"A"
Market Capitalization*	2019 Revenue	2019 Adjusted Operating ROE[(1)]	Financial strength

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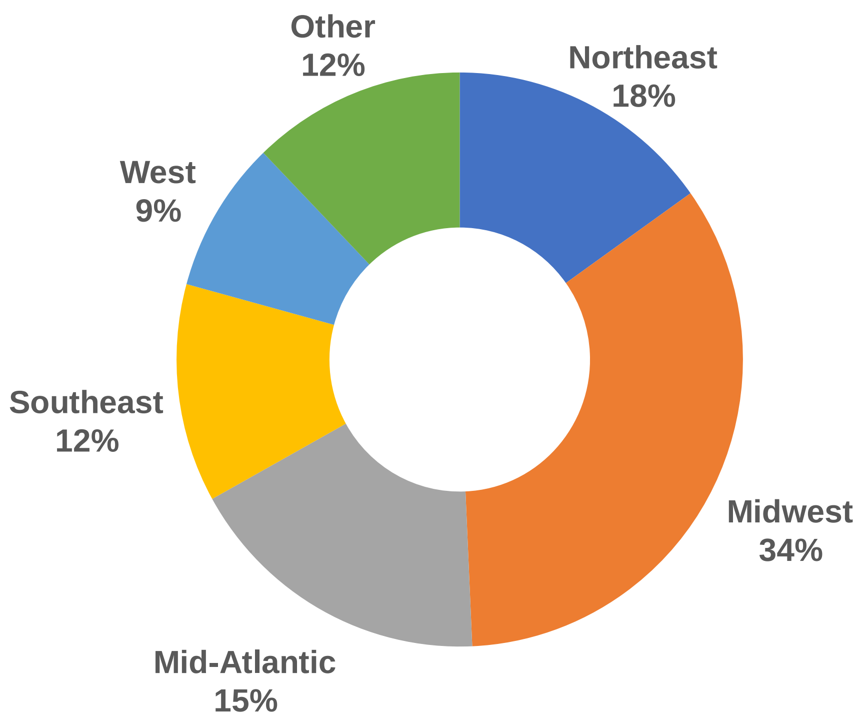
*As of the close of trading on 2/11/2020

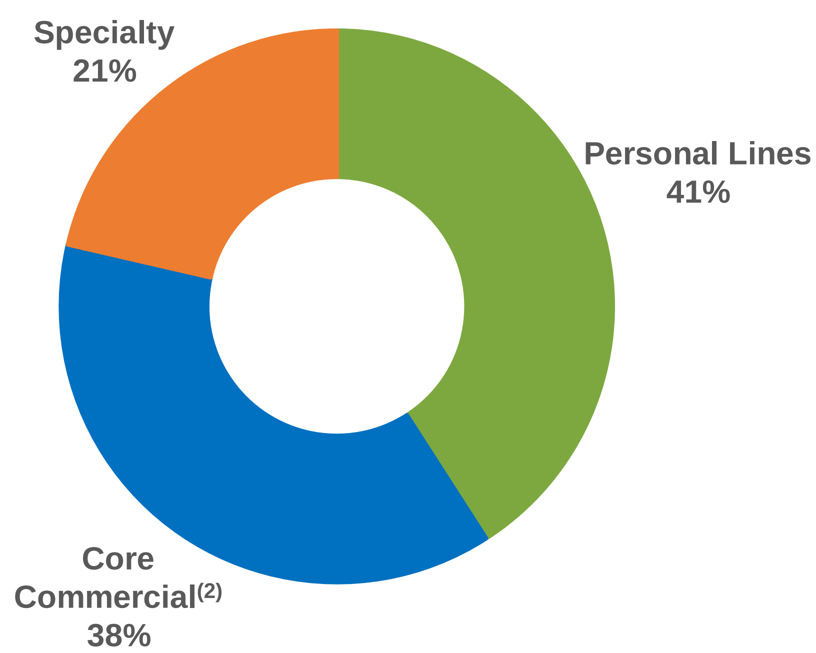
Well-diversified franchise with ***broad*** and ***relevant*** product mix

$4.6B 2019 Net Premiums Written

Geographic mix



Business mix



The Hanover Insurance Group®

Our Vision: To be the premier property and casualty franchise in the independent agency channel

Agency carrier of choice

Unique agency distribution approach

Targeted distribution

2,100 of the best agents in the U.S.

7% average agency market share

Underwriting expertise

Differentiated products

Insight through data and analytics

Local presence with 49 offices

Deep business insights

$60B of target market data profiled

Pursuit of informed opportunities

Strong and leverageable distribution platform

Agent segmentation		The Hanover focus	
Segment	**# of Agents in U.S.**	**# of Target Agents**	**The Hanover share**
1. Top 3 brokers	3	Limited	
1a. Top 4 – 10 brokers	7	7	4%
2. Top 200	200	150	5%
3. Regional agents	1,500	500	8%
4. Mid-size agents	≈7,000	1,000	16%
5. Small agents	≈26,000	450	22%
Total	**≈35,000**	**≈2,100**	**7%**

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Bringing agents along in our journey to enhance innovative solutions throughout the insurance value chain

Customer Acquisition	Selling, Underwriting, Binding	Customer Servicing
Finding and retaining customers through our agents	Underwriting data gathering / sharing	Policy administration and claims handling
insurago	**Workflow efficiency**	**Digital servicing**
Digital distribution	**Data analytics**	**Claims digital reporting and handling**
Digital customer acquisition	**Telematics and IOT pilots**	

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Leading specialized capabilities

Differentiation is key

Core Commercial

Industry specialization and unique operating model

68% Account Business

Specialty

Robust and relevant specialty offerings

~$1.0B Diversified Portfolio

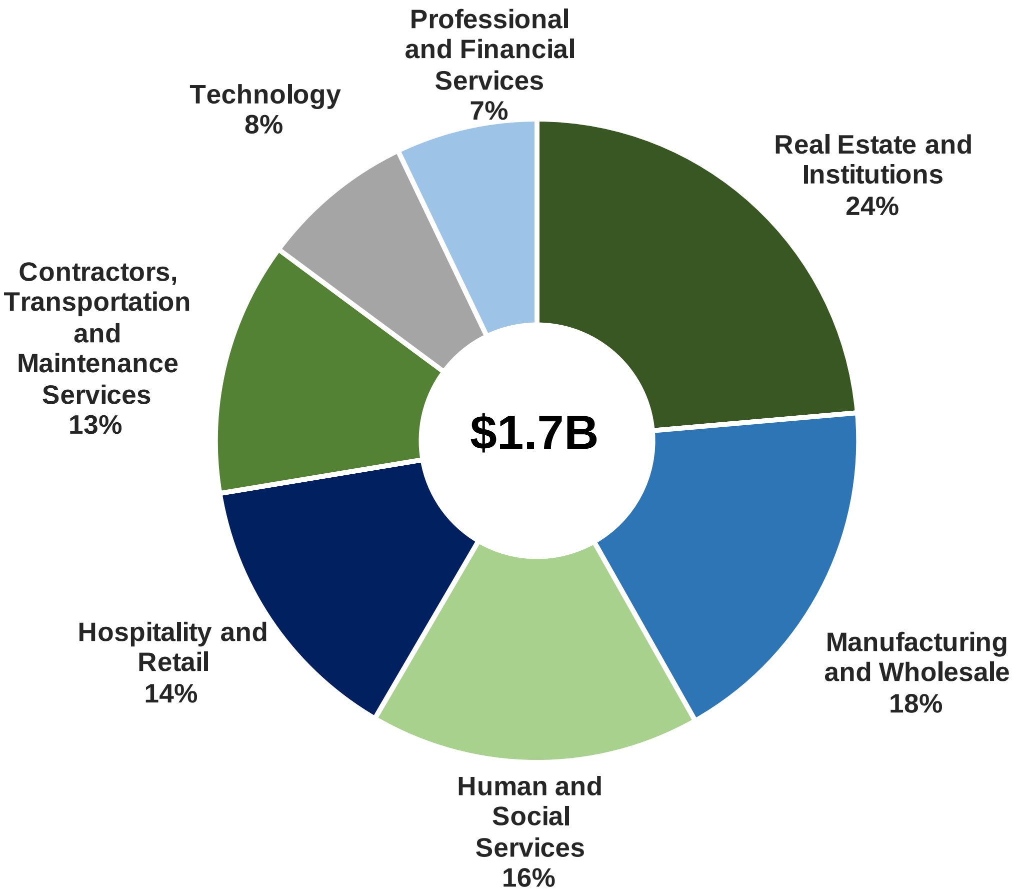
Personal Lines

Account offering for customers with complex needs

85% Account Business

Core Commercial − Industry specialization and unique operating model

2019 Net premiums written



Areas for growth opportunities

- Further agency penetration
- New state of the art platform
- Enhanced product capabilities – Business Owners' Advantage

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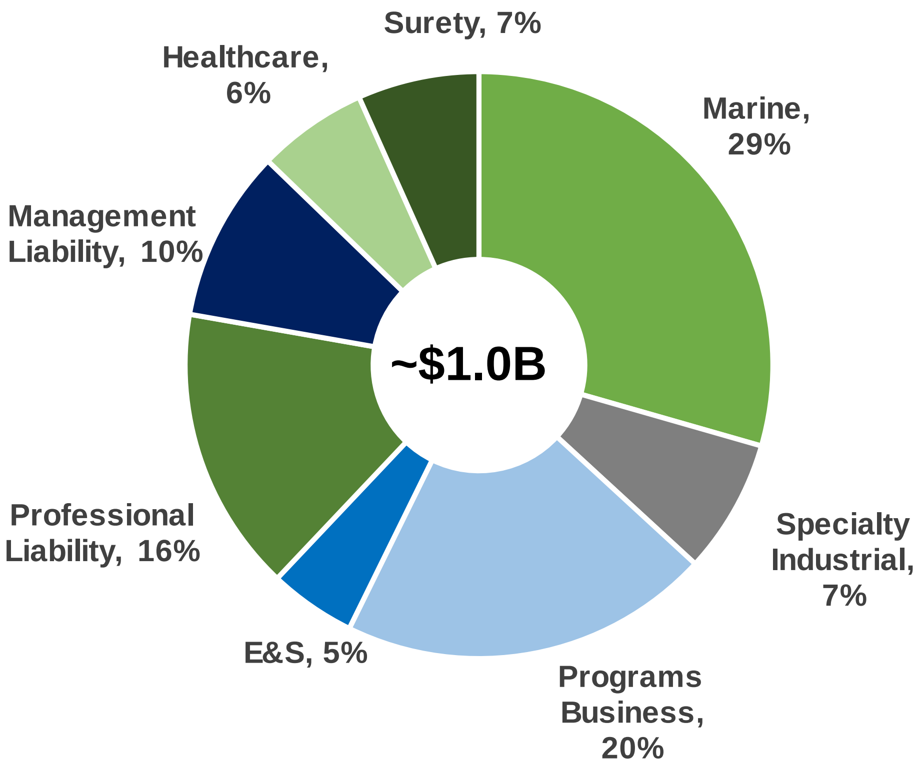
Robust and relevant Specialty offerings

Specialty
2019 Net premiums written



Areas for growth opportunities

- Expanding product capabilities, including financial institutions and cyber
- Enhancing existing E&S platforms
- Expanding shelf space with agent partners
- Leveraging Core Commercial

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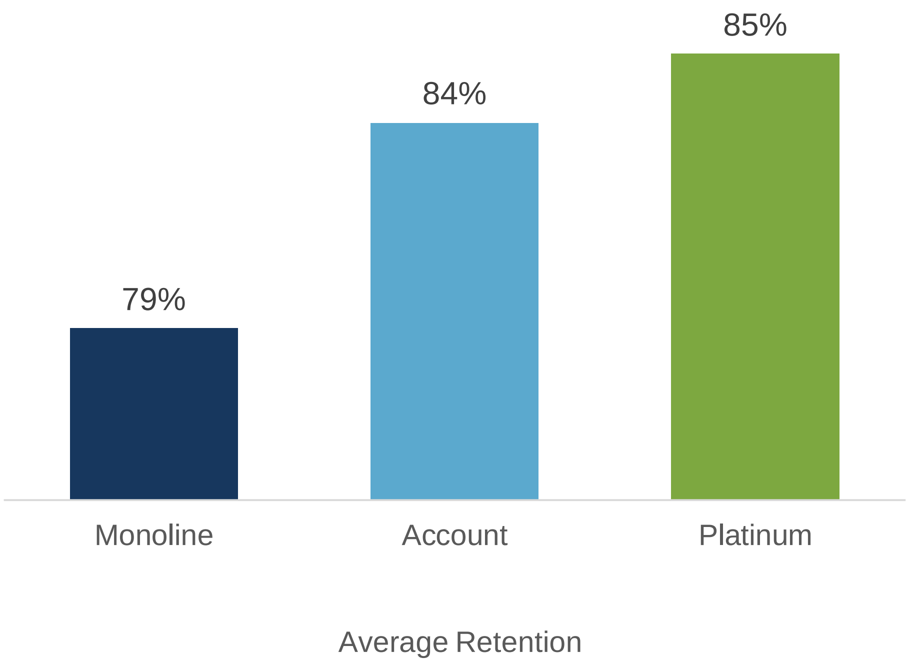
Complete, whole account-oriented Personal Lines offering for customers with complex needs

2019 Net premiums written
$1.9 billion

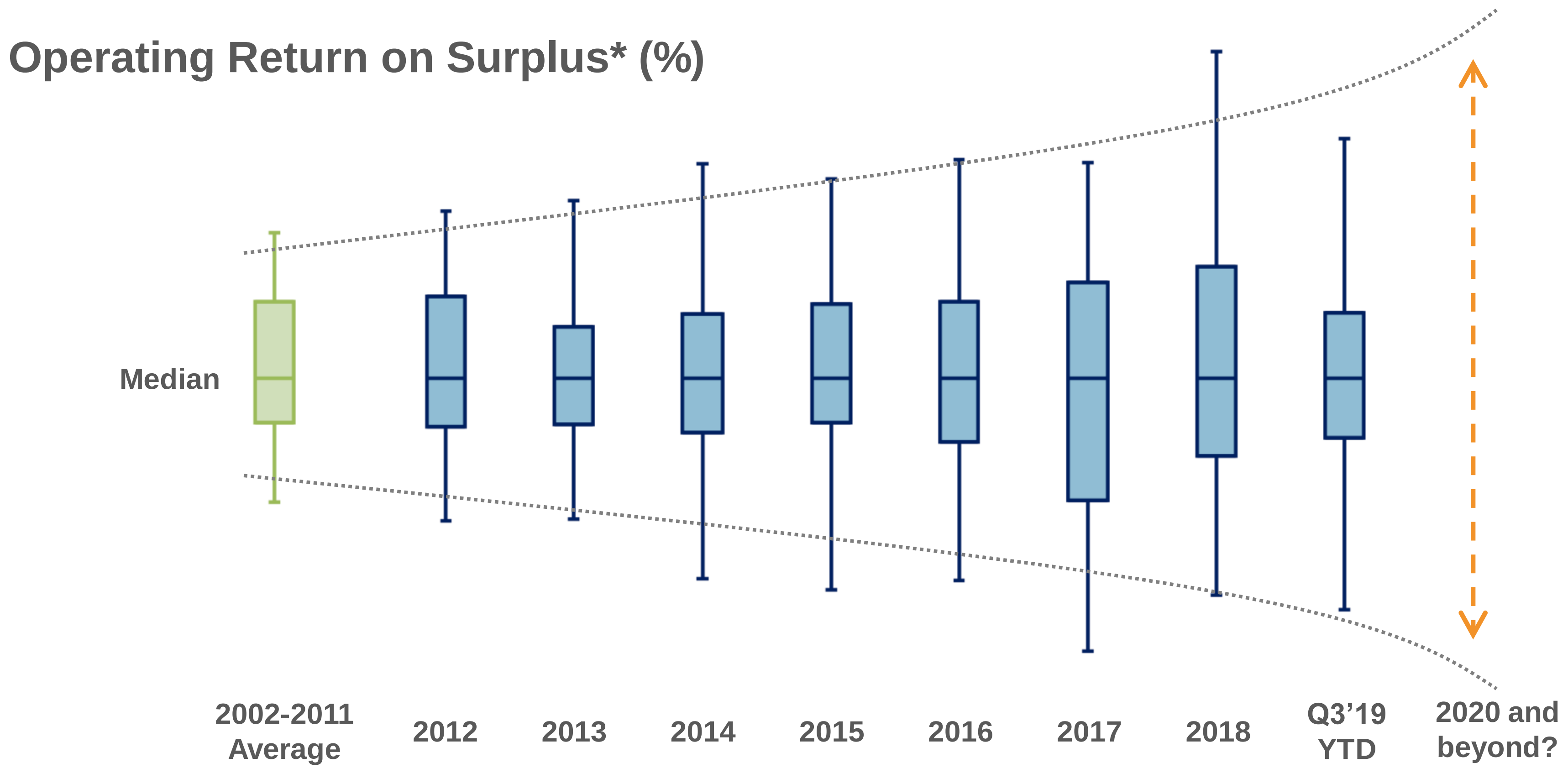
Maintain retention advantage with account and Hanover Platinum experience offering



Areas for growth opportunities

- Leveraging agent-centric distribution strategy to grow higher profit business
- New agency appointments in under-penetrated geographies

P&C Industry Is Getting Increasingly Complex – Profitability is diverging by carrier

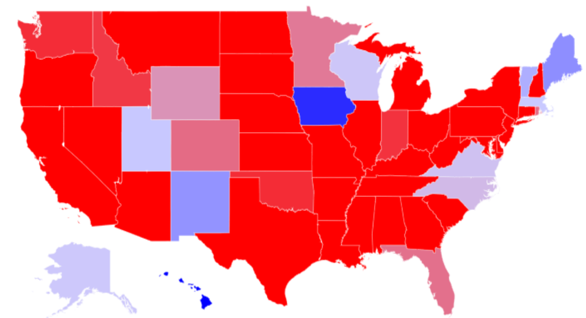


Source: S&P Global Market Intelligence. *Based on statutory filings for all P&C companies with NWP greater than $2.5 billion

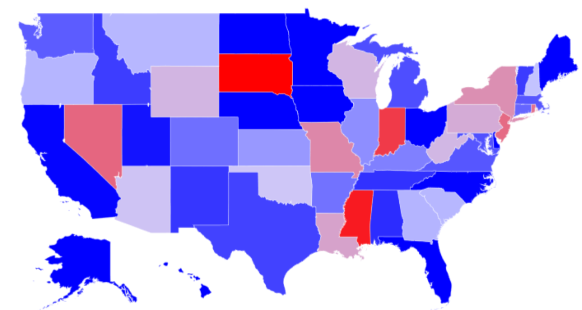
…and significantly varying by geography

Commercial Lines statutory combined ratio by state*

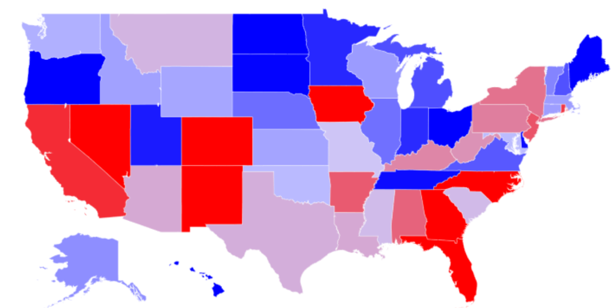
Soft Market (2002)



Hard Market (2006)



Complex Market (2018)



<85% 95% 105%<

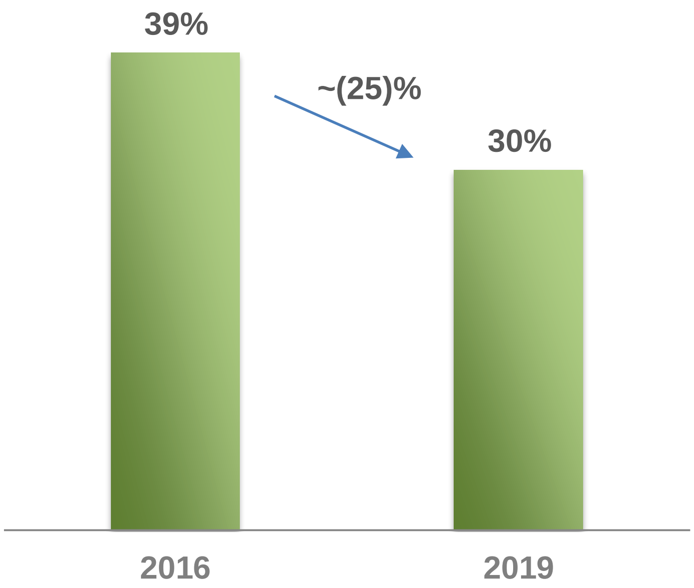
Source: S&P Global Market Intelligence

* Based on combined statutory filings for the P&C industry

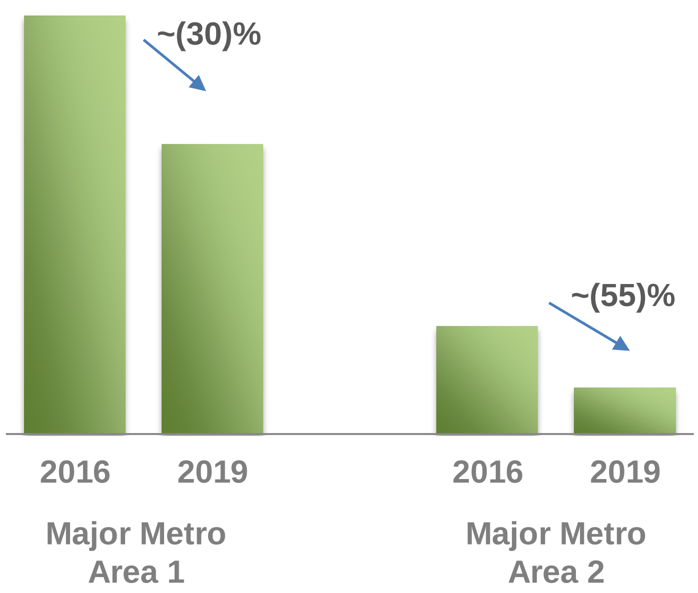
Granular portfolio management is key to profitable growth in current environment

Example: mitigating social inflation in Middle Market General Liability

Premium reduction in Middle Market real estate, retail, hospitality and restaurants*



…in more litigious geographies*



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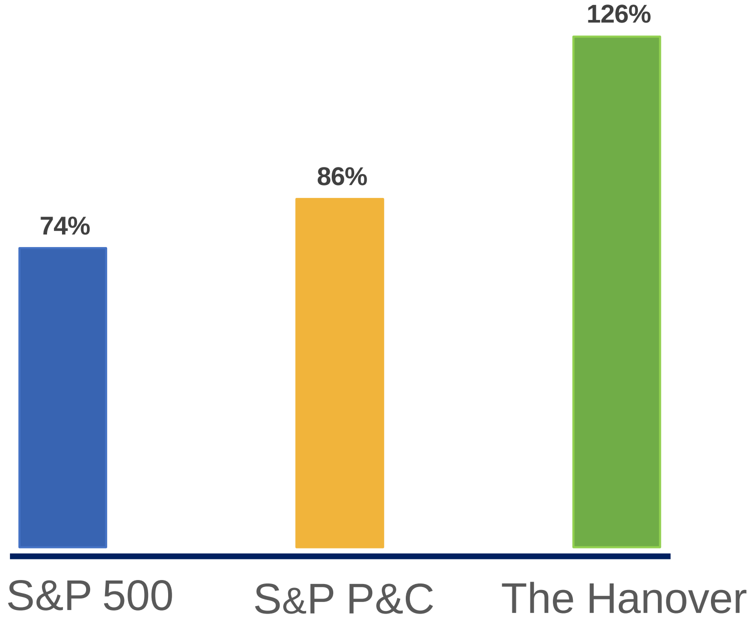
* Both exhibits are based on the company's middle market general liability portfolio. It should not be considered an exhaustive list of actions the company has taken over the last several years to help manage the impact of social inflation and a more litigious environment across its businesses

Financial results validate The Hanover strategy
Made great financial strides over the last several years

5 Year Total Shareholder Return*



2019

12.8%
Adjusted operating ROE(1)

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*Assumes $100 invested on December 31, 2014, in the Hanover Insurance Group Inc.'s stock or applicable indices, including the reinvestment of dividends

2019 in retrospect – accomplishments

- Delivered broad-based profitability and growth
  - Measured growth
  - Liability trends performed in-line with expectations
  - Elevated property loss experience
- Expanded our products and capabilities
- Further integrated innovative solutions into our business
- Developed talent and culture
- Thoughtfully managed our shareholders' capital

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Ambitious, and achievable long-term goals
Strong financial platform for profitable growth

13%+ target operating ROE

Targeted profitable growth

Prioritizing margin over growth

Stable/ Improving loss ratio

Pricing increases and mix optimization

Financial Rigor and Expense Leverage

Continued expense discipline

24-26% marginal expense ratio

Thoughtful capital management and allocation

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Strategic focus and financial rigor drive top-quartile ROE

Continuous portfolio management to deliver increased shareholder returns

Second Quartile

2009

7.0%
Operating ROE(1)

Peer Average 7.9%

Third Quartile

2015

10.6%
Operating ROE(1)

Peer Average 8.7%

Top Quartile

2019

12.8%
Adjusted Operating ROE(1)*

Peer Average 8.7%

*Adjusted for the un-deployed equity from the sale of Chaucer
**Peer set includes TRV, AFG, AIG, HIB, CB, ALL, CNA, HMN, DGICA, SAFT, MCY, SIGI, CINF, STFC, UFCS, KMPR, ORI, ARGO, RLI, PRA, EIG, WRB, MKL

Disciplined capital management

Capital returned from 2011-2018:*

~$1.0B

Capital returned in 2019:

~$950M

Share repurchases

$470M

Regular dividends

$570M

From the sale of Chaucer

Share repurchases

$550M

Special dividend

$300M

Regular dividends

~$100M

Financial Strength Ratings:

- AM Best – A
- S&P – A
- Moody's – A2

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*Excluding capital returned from the sale of Chaucer

Extremely well-positioned to thrive in the current dynamic market environment

- Unique agency-focused distribution strategy continues to differentiate The Hanover
- Balanced, and robust portfolio provides broad-based profitability across the business
- Leveraging our industry leading agency insights to identify attractive market opportunities
- Top-tier talent and expertise to win in the current market

Appendix

Strong and experienced Executive Leadership

John “Jack” Roche

President and Chief Executive Officer

- Appointed president and chief executive officer of The Hanover in November 2017
- Served in several senior leadership positions since joining The Hanover in 2006, responsible for personal and commercial lines, field operations, marketing and distribution, as well as commercial lines underwriting and product management
- Served in senior management roles at the St. Paul Travelers Companies
- Began his career at Fireman’s Fund and Atlantic Mutual Insurance
- Serves on the board of directors for The Institutes and American Property Casualty Insurance Association

Jeff Farber

Executive Vice President,
Chief Financial Officer

- Successful track record in the insurance and financial services industries over the last 30 years
- Held senior executive roles at American International Group
- Served as chief financial officer of GAMCO Investors, Inc., a publicly-traded asset manager
- Held senior accounting and finance roles at The Bear Stearns Companies, Inc.
- Began career at Deloitte & Touche LLP, rising to partner in the firm

Richard “Dick” Lavey

Executive Vice President,
President, Hanover Agency Markets

- 30 years in property and casualty industry, 15 with The Hanover
- Multiple leadership roles in the home office as well as the field, including President of Field Operations, President of Personal Lines, Chief Marketing Officer and Chief Growth Innovation Officer
- Vice president of strategic initiatives for The Hartford’s property and casualty organization and vice president, strategic marketing for The Hartford’s small commercial division
- Began career at The Travelers Insurance Company
- Phi Beta Kappa graduate of The College of The Holy Cross and MBA degree from Harvard Business School

Bryan Salvatore

Executive Vice President,
President, Specialty

- 25 years of experience in the specialty business
- Served for 20 years with Zurich North America, including nearly five years as president of the company’s specialty products business
- Led the rebuilding of Zurich’s presence in the accident and health insurance space
- Director in the programs division of Frank Crystal & Co., Inc., a leading brokerage firm

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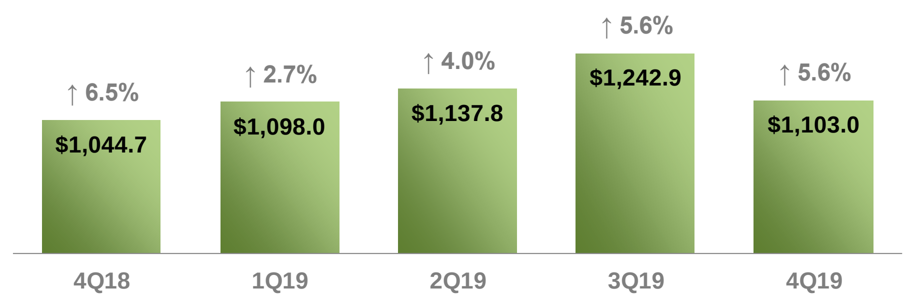
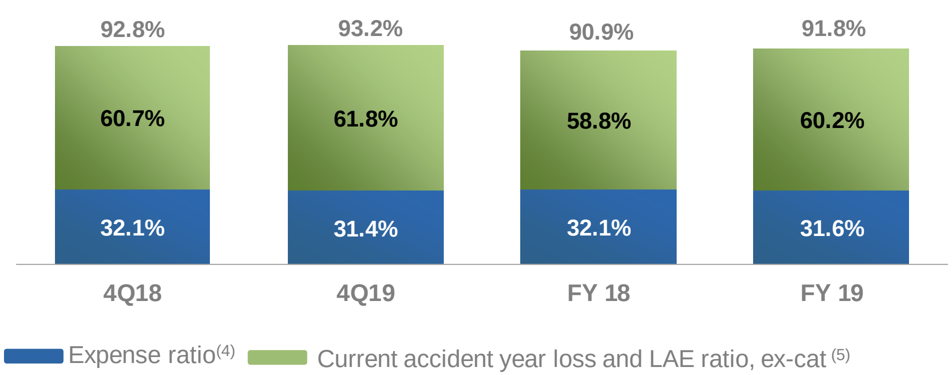
Full year and fourth quarter 2019 financial results

($ in millions)	Three months ended December 31		Year ended December 31	
	2018	2019	2018	2019
Net premiums written	$1,044.7	$1,103.0	$4,384.8	$4,581.7
Growth	6.5%	5.6%	6.7%	4.5%
Net premiums earned	$1,082.0	$1,144.3	$4,254.4	$4,474.5
Combined ratio	97.4%	96.2%	96.1%	95.6%
Combined ratio, ex-cat[3]	92.8%	93.1%	90.9%	91.8%
Current accident year combined ratio, ex-cat[3]	92.8%	93.2%	90.9%	91.8%

Net premiums written and growth ($ in millions)



Current accident year combined ratio, ex-cat



Financial Update

- Strong results demonstrated by operating EPS[6] of $8.16 and operating ROE of 12.0%[1] for the year
- Improved net premiums written growth to 4.5% in the year, while continuing to make thoughtful underwriting decisions in commercial auto and program business
- Approved $150M accelerated share repurchase and $100M special dividend in the fourth quarter, marking the final deployment of remaining Chaucer proceeds

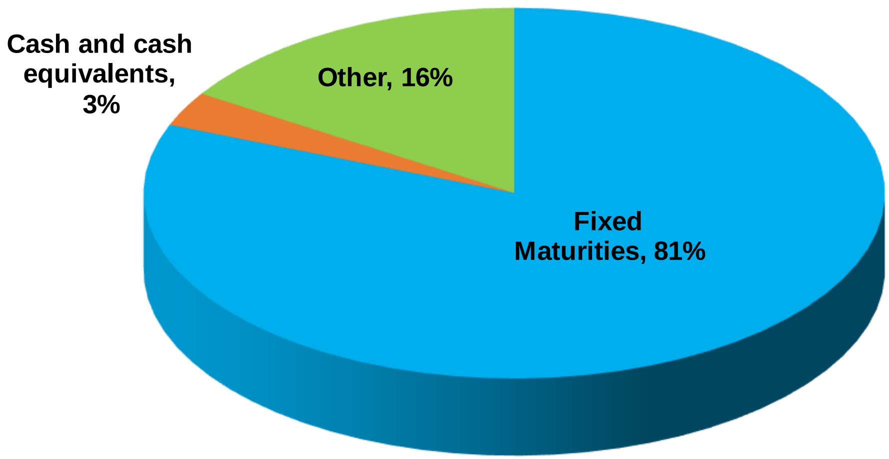
Strategic Update

- Execution of our distribution strategy – enhancing economics with best agents, as they focus on operational efficiency and modernizing their businesses
- Continuous product development across the business:
  - Hanover Prestige continues to provide a new source of business across Personal Lines footprint
  - Personal Lines expansion into Vermont, increasing our Personal Lines product offering to 19 states
  - Introduced Hanover Cyber Advantage, a stand-alone product for Commercial Lines clients
- Investing in innovation across the insurance value chain:
  - Digital claims handling, photo-appraisal platforms and self-serve tools
  - Leveraging third-party data to streamline agency and customer interactions
  - Implementing robotics, live chat capabilities and drone technology to improve policy processing and claims handling

Growth in net investment income

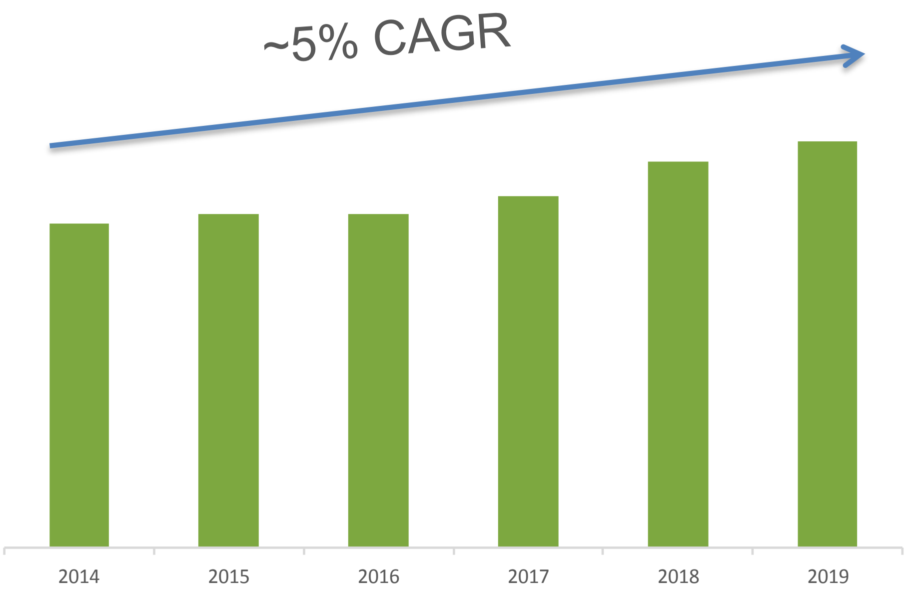
High quality, well-laddered and stable portfolio

Investment portfolio* - $8.2B



Net investment income

($ in millions)



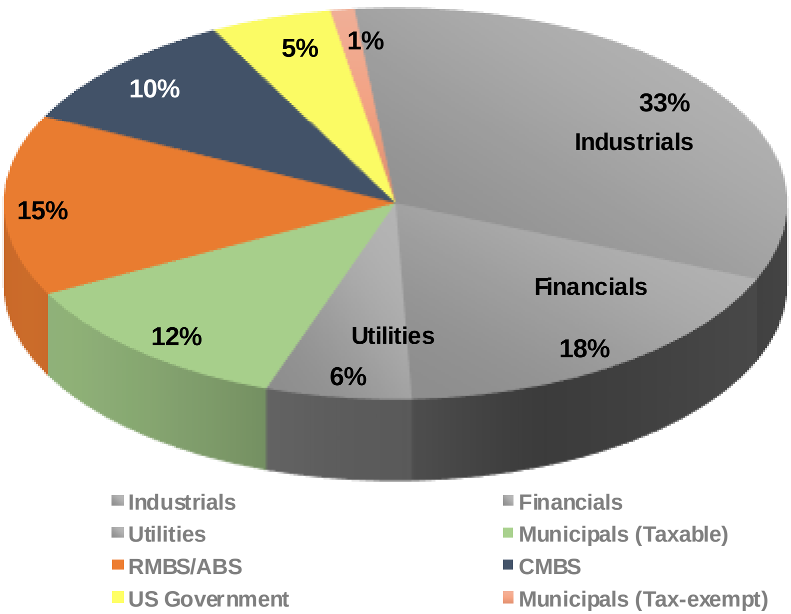
Fixed Income Characteristics:

- 95% of fixed maturity securities are investment grade
- Weighted average quality: A+
- Duration: 4.3 years

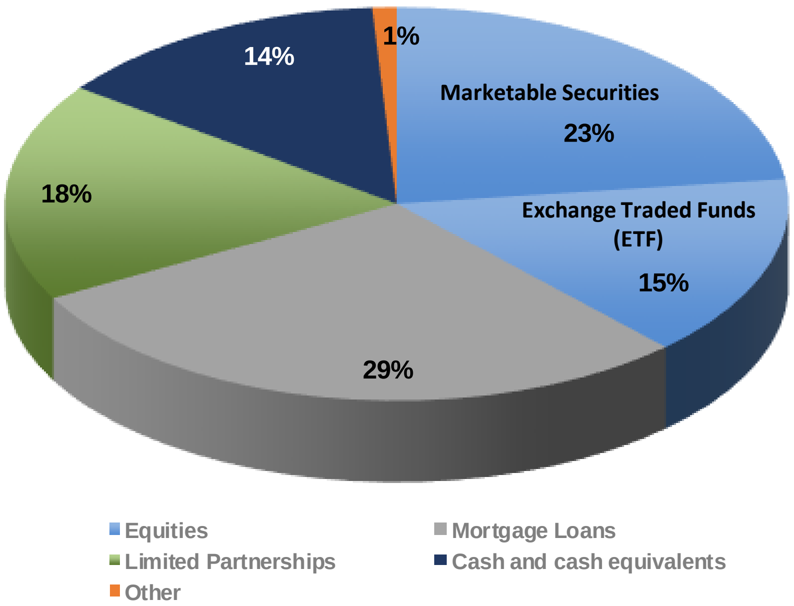
*For the year ended December 31, 2019

Investment portfolio holdings – total invested assets and cash of $8.2B
As of December 31, 2019

Fixed Maturities $6.7B



Equities and Other $1.5B



Fixed income characteristics:

- 95% of fixed maturity securities are investment grade
- Weighted average quality: A+
- Duration: 4.3 years

Forward-Looking Statements

Forward-Looking Statements and Non-GAAP Financial Measures

Forward-Looking Statements

Certain statements in this document and comments made by management may be “forward-looking statements” as defined in the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical facts, may be forward-looking statements. Words such as, but not limited to, “believes,” “anticipates,” “expects,” “projects,” “forecasts,” “potential,” “should,” “could,” “continue,” “outlook,” “guidance,” and other similar expressions are intended to identify forward-looking statements. Forward-looking statements by their nature address matters that are, to different degrees, uncertain. The Company cautions investors that any such forward-looking statements are estimates, beliefs, expectations and/or projections that involve significant judgement, and that historical results, trends and forward-looking statements are not guarantees and are not necessarily indicative of future performance. Actual results could differ materially from those anticipated.

These statements include, but are not limited to, the Company’s statements regarding:

- Capital management and uses of capital for share repurchases, special or ordinary cash dividends, business investments or growth, or otherwise, and outstanding shares in future periods as a result of various share repurchase mechanisms, and overall comfort with capital levels;
- The Company’s outlook and its ability to achieve components or the sum of the respective period guidance on its future results of operations including: the combined ratio, excluding or including both prior-year reserve development and/or catastrophe losses; catastrophe losses; net investment income; growth of net premiums written and/or net premiums earned in total or by line of business; expense ratio; operating return on equity; and/or the effective tax rate; the ability to achieve top-quartile returns and long-term target of 13%+ operating ROE;
- Variability of catastrophe losses due to risk concentrations, changes in weather patterns including global warming, terrorism or other events, as well as the complexity in estimating losses from large catastrophe events due to delayed reporting of the existence, nature or extent of losses or where “demand surge,” regulatory assessments, litigation, coverage and technical complexities or other factors may significantly impact the ultimate amount of such losses;
- Current accident year losses and loss selections (“picks”), excluding catastrophes, and prior accident year loss reserve development patterns, particularly in complex “longer tail” liability lines, as well as the inherent variability in property and non-catastrophe weather losses;
- The confidence or concern that the current level of reserves is adequate and/or sufficient for future claim payments, whether due to losses that have been incurred but not reported, circumstances that delay the reporting of losses, business complexity, adverse judgments or developments with respect to case reserves, the difficulties and uncertainties inherent in projecting future losses from historical data, changes in replacement and medical costs, or other factors;
- Characterization of some business as being “more profitable” in light of inherent uncertainty of ultimate losses incurred, especially for “longer tail” businesses;
- Efforts to manage expenses, including the Company’s long-term expense savings targets, while allocating capital to business investment, which is at management’s discretion;
- Mix improvement, underwriting initiatives, coverage restrictions and pricing segmentation actions, among others, to grow businesses believed to be more profitable or reduce premiums attributable to products believed to be less profitable; balance rate actions and retention; offset long-term and/or short-term loss trends due to increased frequency; increased “social inflation” from a more litigious environment and higher average cost of resolution, increased property replacement costs, and/or social movements;
- The ability to generate growth in targeted segments through new agency appointments; rate increases (as a result of its market position, agency relationships or otherwise), retention improvements or new business; expansion into new geographies; new product introductions; or otherwise; and
- Investment returns and the effect of macro-economic interest rate trends and geopolitical circumstances on new money yields and overall investment returns.

Additional Risks and Uncertainties

Investors are further cautioned and should consider the risks and uncertainties in the Company’s business that may affect such estimates and future performance that are discussed in the Company’s most recently filed reports on Form 10-K and Form 10-Q and other documents filed by The Hanover Insurance Group, Inc. with the Securities and Exchange Commission (“SEC”) and that are also available at www.hanover.com under “Investors.” These risks and uncertainties include, but are not limited to:

- Adverse claims experience, including those driven by large or increased frequency of catastrophe events (including terrorism) and severe weather;
- The uncertainty in estimating weather-related losses, and the limitations and assumptions used to model other property and casualty losses (particularly with respect to products with longer tails [such as casualty and bodily injury claims] or involving emerging issues related to losses incurred as the result of new lines of business, such as cyber or financial institutions coverage, or reinsurance contracts and reinsurance recoverables), leading to potential adverse development of loss and loss adjustment expense reserves;
- Litigation and the possibility of adverse judicial decisions, including those which expand policy coverage beyond its intended scope or award “bad faith” or other non-contractual damages, and the impact of “social inflation” affecting judicial awards and settlements;

Forward-Looking Statements and Non-GAAP Financial Measures

Additional Risks and Uncertainties (Continued)

- The ability to increase or maintain insurance rates in line with anticipated loss costs as a result of competition and respective state's department of insurance mandates to either raise or lower rates and the impact on retention;
- Investment impairments, which may be affected by, among other things, the Company's ability and willingness to hold investment assets until they recover in value, as well as credit and interest rate risk and general financial and economic conditions;
- Disruption of the independent agency channel, including the impact of competition and consolidation in the industry and among agents and brokers;
- Competition, particularly from competitors who have resource and capability advantages;
- The global macroeconomic environment, including inflation, global trade wars and interest rate fluctuations, which, among other things, could result in reductions in market values of fixed maturity and other investments;
- Adverse state and federal regulation, legislative and/or regulatory actions (including recent significant revisions to Michigan's automobile personal injury protection system and related litigation);
- Financial ratings actions, in particular downgrades to our ratings;
- Operational and technology risks and evolving technological and product innovation, including the risk of cyber-security attacks or breaches on the Company's systems or resulting in claim payments (including from products not intended to provide cyber coverage);
- Uncertainties in estimating indemnification liabilities recorded in conjunction with obligations undertaken in connection with the sale of various businesses and discontinued operations; and
- The ability to collect from reinsurers, reinsurance pricing, and the performance of the discontinued voluntary pools business (including those in the Other segment or in Discontinued Operations).

Investors should not place undue reliance on forward-looking statements, which speak only as of the date they are made, and should understand the risks and uncertainties inherent in or particular to the Company's business. We do not undertake the responsibility to update or revise our forward-looking statements.

<u>Non-GAAP Financial Measures</u>

The discussion in this presentation of The Hanover's financial performance includes reference to certain financial measures that are not derived from generally accepted accounting principles, or GAAP, such as operating income, operating income before taxes (and interest expense), combined ratios and loss ratios, excluding catastrophes and/or prior-year development and accident year loss ratios, excluding catastrophes. A reconciliation of non-GAAP measures to the closest GAAP measure is included in the end notes to this presentation, the press release dated February 4, 2020 or the financial supplement, which are posted on our website. The reconciliation of current accident year loss ratio and combined ratio excluding catastrophes to the most directly comparable GAAP measure, total loss ratio and combined ratio, is found in the end notes on the final pages of this document. Operating income (operating income per diluted share) is a non-GAAP measure. It is defined as net income excluding the after-tax impact of net realized and unrealized investment gains and losses, as well as results from discontinued operations, divided by, in the case of per share reported figures, the average number of diluted shares of common stock. In referral to one of the Company's three segments, operating income is segment income before taxes.

Operating return on equity ("ROE") and adjusted operating ROE are non-GAAP measures. See end note (1) for a detailed explanation of how these measures are calculated. Operating ROE is based on non-GAAP operating income and adjusted operating ROE is a measure of operating income as a return on only the portion of shareholders' equity attributable to continuing operations, and therefore, the "un-deployed equity" attributable to Chaucer is excluded from shareholders' equity and the related net investment income from the reinvestment of the un-deployed equity is excluded from net and operating income for the year ended December 31, 2019. This eliminates the dilutive impact of any excess capital that would have been included in shareholders' equity and net investment income included in operating income for the corresponding periods presented, and which as of year-end has been fully deployed. In addition, the portion of shareholder equity attributed to unrealized appreciation (depreciation) on fixed maturity investments, net of tax, is also excluded. The Company believes that these measures are helpful in that they provide insight to the capital used by, and results of, the continuing business exclusive of interest, taxes and other non-operating items, and, in this case of "adjusted operating ROE", undeployed equity attributed to Chaucer. For year ended December 31, 2015, net income and operating income also included Chaucer, which the company sold in 2018. These measures should not be by construed as substitutes for GAAP ROE, which is based on net income and shareholders' equity of the entire Company and without adjustments.

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End notes*

(1) Operating Return on Average Equity and Adjusted Operating Return on Average Equity (“Operating ROE” and “Adjusted Operating ROE”) are non-GAAP measures. Operating ROE is calculated by dividing annualized operating income after tax for the applicable period (see under the heading in this presentation “Non-GAAP Financial Measures” and end note (6)), by the average of total shareholders’ equity, excluding net unrealized appreciation (depreciation) on available-for-sale securities and derivative instruments, net of tax, for 2009; average shareholders’ equity, excluding net unrealized appreciation (depreciation) on investments and derivative instruments, net of tax for 2015; and average of total shareholders’ equity, excluding net unrealized appreciation (depreciation) on fixed maturity investments, net of tax, for 2019 for the beginning, ending, and interim quarters are used. For the calculation of Adjusted Operating ROE for year ended December 31, 2019, shareholders’ equity is adjusted for “the [then] undeployed equity” for measurement periods post-close and for net unrealized appreciation (depreciation) on fixed maturity investments, net of tax (end note (7)). Please see end note (7) for a detailed reconciliation of adjusted shareholders’ equity with and without both net unrealized appreciation (depreciation) on fixed maturity investments, net of tax, and including the payment of the $250 million ASR agreement for the full year 2019 calculation. This eliminates the dilutive impact that the un-deployed equity attributable to Chaucer had for year ended December 31, 2019. Additionally, for the calculation of Adjusted Operating ROE, Operating Income, net of tax, is adjusted for the net investment income related to undeployed equity attributable to Chaucer, net of tax. Operating ROE and Adjusted Operating ROE should not be construed as substitutes for GAAP ROE. See calculations in the table on the following, including the calculation of Net Income ROE using net income, and average shareholders’ equity without adjustments:

*All numbers within these end notes are as of the end of each respective period and have not been restated, unless otherwise noted.

End notes continued

(1) Continued.

	Year ended		
	December 31	December 31	December 31
Net Income ROE (non-GAAP)	2009	2015	2019
Net Income (GAAP)	$197.2	$331.5	$425.1
Average shareholders' equity (GAAP)	2,168.3	2,874.9	2,965.2
Return on equity (non-GAAP)	9.1%	11.5%	14.3%
Operating Income ROE			
Operating income, net of tax	$157.5	$280.0	$331.6
Average shareholders' equity, excluding net unrealized (depreciation) appreciation on available-for-sale securites and derivative instruments, net of tax, for year ended December 31, 2009; average shareholders' equity, excluding net realized apprecation (depreciation) on investments and derivative instruments, net of tax, for year ended December 31, 2015; average shareholders' equity, excluding net realized apprecation (depreciation) on investments and derivative instruments, net of tax; and average shareholders' equity, excluding net unrealized appreciation (depreciation) on fixed maturity investments, net of tax, and including the ASR payment for year ended December 31, 2019	2,253.6	2,633.0	2,773.7
Operating return on equity	7.0%	10.6%	12.0%
Adjusted Operating Income ROE			
Operating income, net of tax			$331.6
Less: Annualized net investment income related to un-deployed equity attributable to Chaucer, net of tax			9.3
Operating income, excluding the net investment income related to the un-deployed equity attributable to Chaucer, net of tax			322.3
Average adjusted shareholders' equity, excluding both net unrealized appreciation (depreciation) on fixed maturity investments, net of tax, and un-deployed equity; and including the ASR payment			2,508.5
Adjusted operating return on equity			12.8%

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End notes continued

(2) Core Commercial business provides commercial property and casualty coverages to small and mid-sized businesses in the U.S., generally with annual premiums per policy up to $250,000, primarily through the commercial multiple peril, commercial auto and workers' compensation lines of business, as reported on the current quarter financial supplement. Price increases in Commercial Lines and Core Commercial Lines represent the average change in premium on renewed policies caused by the estimated net effect of base rate changes, discretionary pricing, inflation or changes in policy level exposure or insured risks.

($ in millions)	Year ended December 31, 2019		
	Core Commercial	Other Commercial	Total Commercial
Net premiums written	$1,580.1	$1,127.1	$2,707.2
Net premiums earned	$1,550.0	$1,104.2	$2,654.2

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End notes continued

(3) Combined ratio, excluding catastrophes, and current accident year combined ratio, excluding catastrophes, are non-GAAP measures. The combined ratio, excluding catastrophes is equal to the combined ratio, excluding catastrophe losses. The current accident year combined ratio, excluding catastrophes, is equal to the combined ratio, excluding catastrophe losses and prior-year reserve development. These measures are used throughout this document. The combined ratio (which includes catastrophe losses and prior-year reserve development) is the most directly comparable GAAP measure. The following is a reconciliation of the GAAP combined ratio to the combined ratio, excluding catastrophes losses, and the current accident year combined ratio, excluding catastrophe losses:

	Quarter ended		Year ended	
	December 31, 2018	December 31, 2019	December 31, 2018	December 31, 2019
Total Combined Ratio	97.4%	96.2%	96.1%	95.6%
Less: Catastrophe loss ratio	4.6%	3.1%	5.2%	3.8%
Combined Ratio, excluding catastrophe losses	92.8%	93.1%	90.9%	91.8%
Less: Prior-year reserve development ratio	-	(0.1%)	-	-
Current accident year combined ratio, excluding catastrophe losses	92.8%	93.2%	90.9%	91.8%

(4) The expense ratio is reduced by installment fees and other revenues for purposes of the ratio calculation.

(5) Current accident year loss and LAE ratio, excluding catastrophe losses, is a non-GAAP measure, which is equal to the loss and LAE ratio ("loss ratio"), excluding prior-year reserve development and catastrophe losses. The loss ratio (which includes losses, LAE, catastrophe losses and prior-year loss reserve development) is the most directly comparable GAAP measure. The following is a reconciliation of the GAAP loss ratio to the current accident year loss and LAE ratio, excluding catastrophe losses:

	Quarter Ended		Year ended	
	December 31, 2018	December 31, 2019	December 31, 2018	December 31, 2019
Total loss and LAE ratio	65.3%	64.8%	64.0%	64.0%
Less:				
Prior-year reserve development ratio	0.0%	-0.1%	0.0%	0.0%
Catastrophe ratio	4.6%	3.1%	5.2%	3.8%
Current accident year combined ratio, excluding catastrophe losses	60.7%	61.8%	58.8%	60.2%

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End notes continued

(6) Operating income (loss) is a non-GAAP measure. Operating income (loss) before taxes, as referenced in the results of the three business segments (for year ended December 31, 2015, which also included Chaucer), is defined as, with respect to such segment, operating income (loss) before taxes and interest expense. The following table provides the reconciliation of operating income (loss) to the most directly comparable GAAP measure, income (loss) from continuing operations, and to net income:

	Year ended		
	December 31, 2009	December 31, 2015	December 31, 2019
OPERATING INCOME (LOSS)			
Commercial Lines	$76.4	$143.3	$300.1
Personal Lines	189.7	149.3	144.9
Chaucer	NA	183.7	NA
Other	4.0	(10.2)	8.6
Total	270.1	466.1	453.6
Interest expense	(35.1)	(60.6)	(37.5)
Operating income before income taxes	235.0	405.5	416.1
Income tax expense on operating income	(77.5)	(125.5)	(84.5)
Operating income after income taxes	157.5	280.0	331.6
Gain on disposal of U.K. motor business, net of tax	NA	40.6	NA
Other non-operating items:			
Net realized gains (losses) from sales and other	1.4	19.5	4.9
Net change in fair value of equity securities	NA	NA	106.5
Net other-than-temporary impairment losses on investments recognized in earnings	NA	NA	(2.0)
Gain (loss) from repayment of debt	34.5	(24.1)	-
Other	-	0.1	(3.4)
Income tax benefit (expense) on non-operating items	(5.6)	14.7	(8.6)
Income from continuing operations, net of taxes	187.8	330.8	429.0
Discontinued Operations (net of taxes):			
Gain (loss) from discontinued FAFLIC business	7.1	NA	NA
(Loss) gain from discontinued accident and health business	(2.6)	NA	NA
Sale of Chaucer business	NA	NA	(1.2)
Income (loss) from Chaucer business	NA	NA	1.6
Income (loss) from discontinued life businesses	4.9	0.7	(4.3)
Net income	$197.2	$331.5	$425.1

NA = not applicable

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End notes continued

(7) Total shareholders' equity, excluding net unrealized appreciation (depreciation) on fixed maturity investments, net of tax, is a non-GAAP measure. Total shareholders' equity is the most directly comparable GAAP measure, and is reconciled in the table below and on the following page. For the calculation of Operating ROE, the average of total shareholders' equity, excluding net unrealized appreciation (deprecation) on available-for-sale securities and derivative instruments, net of tax, for 2009; average shareholders' equity, excluding net unrealized appreciation (deprecation) on investments and derivative instruments, net of tax for 2015; and average of total shareholders' equity, excluding net unrealized appreciation (depreciation) on fixed maturity investments, net of tax, for the beginning, ending, and interim quarters are used. For the calculation of Adjusted Operating ROE for year ended December 31, 2019, the average shareholders' equity, excluding both net unrealized appreciation (depreciation) on fixed maturity investments, net of tax, and "undeployed equity" for measurement periods post-close, for the beginning and ending, and interim (if applicable) quarters are used. For the calculation of Operating ROE and Adjusted Operating ROE for the full year 2019 only, the balance at December 31, 2018 was adjusted by the $250 million paid on January 2, 2019 to eliminate the dilutive impact the ASR would have had on unadjusted and adjusted Operating ROE:

($ in millions)	December 31, 2008	March 31, 2009	June 30, 2009	September 30, 2009	December 31, 2009
Total shareholders' equity (GAAP)	$1,887.2	$1,967.6	$2,221.1	$2,407.1	$2,358.6
Less: net unrealized (depreciation) appreciation on available-for-sale securites and derivative instruments, net of tax	(276.1)	(277.3)	(69.8)	89.2	107.7
Total shareholders' equity, excluding net unrealized (depreciation) appreciation on available for sale securites and derivative instruments, net of tax	$2,163.3	$2,244.9	$2,290.9	$2,317.9	$2,250.9
Average shareholders' equity (GAAP)					$2,168.3
Average shareholders' equity, excluding net unrealized (depreciation) appreciation on available-for-sale securites and derivative instruments, net of tax					$2,253.6

($ in millions)	December 31, 2014	March 31, 2015	June 30, 2015	September 30, 2015	December 31, 2015
Total shareholders' equity (GAAP)	$2,844.0	$2,899.9	$2,908.5	$2,877.5	$2,844.4
Less: net unrealized apprecation (depreciation) on investments and derivative instruments, net of tax	300.9	327.7	233.0	197.9	149.9
Total shareholders' equity, excluding net realized apprecation (depreciation) on investments and derivative instruments, net of tax	$2,543.1	$2,572.2	$2,675.5	$2,679.6	$2,694.5
Average shareholders' equity (GAAP)					$2,874.9
Average shareholders' equity, excluding net realized apprecation (depreciation) on investments and derivative instruments, net of tax					$2,633.0

End notes continued

(7) Continued.

($ in millions)	December 31, 2018	March 31, 2019	June 30, 2019	September 30, 2019	December 31, 2019
Total shareholders' equity (GAAP)	$2,954.7	$2,927.0	$2,941.1	$3,086.8	$2,916.2
Less: net unrealized appreciation (depreciation) on fixed maturity investments, net of tax	(27.2)	90.7	192.3	235.3	216.0
Total shareholders' equity, excluding net unrealized appreciation (depreciation) on fixed maturity	2,981.9	2,836.3	2,748.8	2,851.5	2,700.2
Less: Payment made on January 2, 2019 for the ASR agreement entered into on December 30, 2018	250.0	-	-	-	-
Total shareholders' equity, excluding net unrealized appreciation (depreciation) on fixed maturity investments, net of tax, and including the ASR payment	2,731.9	2,836.3	2,748.8	2,851.5	2,700.2
Less: post-close, un-deployed equity	406.6	406.6	256.6	256.6	-
Adjusted shareholders' equity, excluding both net unrealized appreciation (depreciation) on fixed maturity investments, net of tax, and un-deployed equity	$2,325.3	$2,429.7	$2,492.2	$2,594.9	$2,700.2
Average shareholders' equity (GAAP)					$2,965.2
Average shareholders' equity, excluding net realized apprecation (depreciation) on investments and derivative instruments, net of tax, and including the ASR payment					$2,773.7
Average adjusted shareholders' equity, excluding both net unrealized appreciation (depreciation) on fixed maturity investments, net of tax, and un-deployed equity; and including the ASR payment					$2,508.5