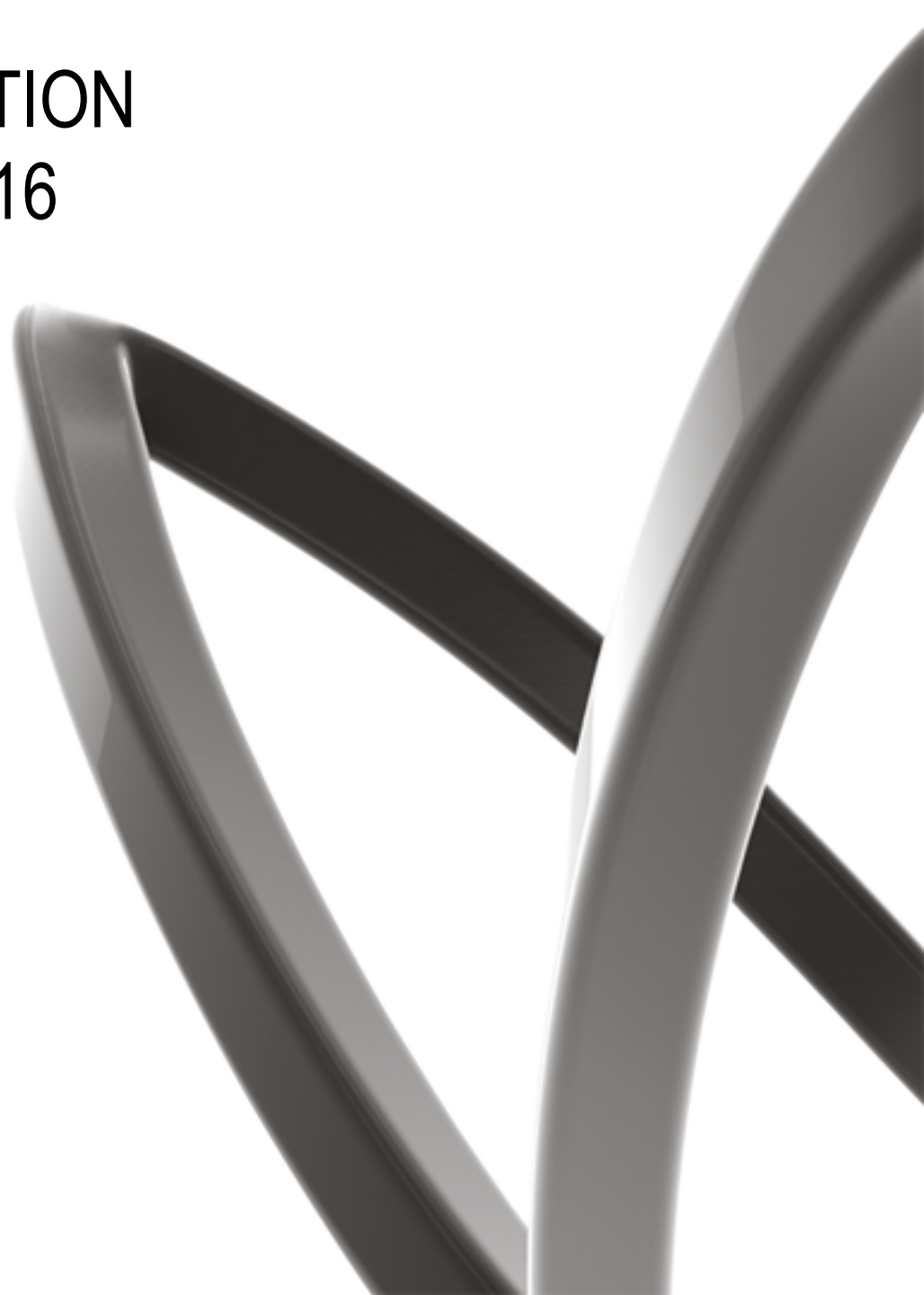


INVESTOR PRESENTATION FOURTH QUARTER 2016



Aspen Insurance Holdings Limited



SAFE HARBOR DISCLOSURE

This slide presentation is for information purposes only. It should be read in conjunction with our financial supplement posted on our website on the Investor Relations page and with other documents filed or to be filed by Aspen Insurance Holdings Limited (the "Company" or "Aspen") with the United States Securities and Exchange Commission (the "SEC").

Non-GAAP Financial Measures: In presenting Aspen's results, management has included and discussed certain "non-GAAP financial measures" as such term is defined in Regulation G. Management believes that these non-GAAP financial measures, which may be defined differently by other companies, better explain Aspen's results of operations in a manner that allows for a more complete understanding of the underlying trends in Aspen's business. However, these measures should not be viewed as a substitute for those determined in accordance with GAAP. The reconciliation of such non-GAAP financial measures to their respective most directly comparable GAAP financial measures is included herein or in the financial supplement, as applicable, which can be obtained from the Investor Relations section of Aspen's website at www.aspen.co.

Application of the Safe Harbor of the Private Securities Litigation Reform Act of 1995: This presentation contains written or oral "forward-looking statements" within the meaning of the U.S. federal securities laws. These statements are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include all statements that do not relate solely to historical or current facts, and can be identified by the use of words such as "expect," "assume," "objective," "intend," "plan," "believe," "do not believe," "aim," "project," "anticipate," "seek," "will," "likely," "estimate," "may," "continue," "guidance," "outlook," "trends," "future," "could," "would," "should," "target," "on track" and similar expressions of a future or forward-looking nature. All forward-looking statements address matters that involve risks and uncertainties. Accordingly, there are or will be important factors that could cause actual results to differ materially from those indicated in these statements. Aspen believes these factors include, but are not limited to: our ability to successfully implement steps to further optimize the business portfolio, ensure capital efficiency and enhance investment returns; the possibility of greater frequency or severity of claims and loss activity, including as a result of natural or man-made (including economic and political risks) catastrophic or material loss events, than our underwriting, reserving, reinsurance purchasing or investment practices have anticipated; the assumptions and uncertainties underlying reserve levels that may be impacted by future payments for settlements of claims and expenses or by other factors causing adverse or favorable development, including our assumptions on inflation costs associated with long-tail casualty business which could differ materially from actual experience; the impact of the vote and resulting negotiations as a result of the vote by the U.K. electorate in favor of a U.K. exit from the European Union in a recent referendum; the reliability of, and changes in assumptions to, natural and man-made catastrophe pricing, accumulation and estimated loss models; decreased demand for our insurance or reinsurance products and cyclical changes in the insurance and reinsurance industry; the models we use to assess our exposure to losses from future natural catastrophes contain inherent uncertainties and our actual losses may differ significantly from expectations; our capital models may provide materially different indications than actual results; increased competition from existing insurers and reinsurers and from alternative capital providers and insurance linked funds and collateralized special purpose insurers on the basis of pricing, capacity, coverage terms, new capital, binding authorities to brokers or other factors and the related demand and supply dynamics as contracts come up for renewal; our ability to execute our business plan to enter new markets, introduce new products and develop new distribution channels, including their integration into our existing operations; our acquisition strategy; changes in market conditions in the agriculture industry, which may vary depending upon demand for agricultural products, weather, commodity prices, natural disasters, and changes in legislation and policies related to agricultural products and producers; termination of, or changes in, the terms of the U.S. Federal Multiple Peril Crop Insurance Program or the U.S. Farm Bill, including modifications to the Standard Reinsurance Agreement put in place by the Risk Management Agency of the U.S. Department of Agriculture; the recent consolidation in the (re)insurance industry; loss of one or more of our senior underwriters or key personnel; changes in our ability to exercise capital management initiatives (including our share repurchase program) or to arrange banking facilities as a result of prevailing market conditions or changes in our financial position; changes in the availability, cost or quality of reinsurance or retrocessional coverage; changes in general economic conditions, including inflation, deflation, foreign currency exchange rates, interest rates and other factors that could affect our financial results; the risk of a material decline in the value or liquidity of all or parts of our investment portfolio; the risks associated with the management of capital on behalf of investors; evolving issues with respect to interpretation of coverage after major loss events; our ability to adequately model and price the effects of climate cycles and climate change; any intervening legislative or governmental action and changing judicial interpretation and judgments on insurers' liability to various risks; the risks related to litigation; the effectiveness of our risk management loss limitation methods, including our reinsurance purchasing; changes in the total industry losses, or our share of total industry losses, resulting from past events and, with respect to such events, our reliance on loss reports received from cedants and loss adjustors, our reliance on industry loss estimates and those generated by modeling techniques, changes in rulings on flood damage or other exclusions as a result of prevailing lawsuits and case law; the impact of one or more large losses from events other than natural catastrophes or by an unexpected accumulation of attritional losses and deterioration with loss estimates; the impact of acts of terrorism, acts of war and related legislation; any changes in our reinsurers' credit quality and the amount and timing of reinsurance recoverables; the continuing and uncertain impact of the current depressed lower growth economic environment in many of the countries in which we operate; our reliance on information and technology and third-party service providers for our operations and systems; the level of inflation in repair costs due to limited availability of labor and materials after catastrophes; a decline in our operating subsidiaries' ratings with Standard & Poor's Financial Services LLC ("S&P"), A.M. Best Company Inc. ("A.M. Best") or Moody's Investors Service, Inc. ("Moody's"); the failure of our reinsurers, policyholders, brokers or other intermediaries to honor their payment obligations; our reliance on the assessment and pricing of individual risks by third parties; our dependence on a few brokers for a large portion of our revenues; the persistence of heightened financial risks, including excess sovereign debt, the banking system and the Eurozone crisis; changes in government regulations or tax laws in jurisdictions where we conduct business; changes in accounting principles or policies or in the application of such accounting principles or policies; increased counterparty risk due to the credit impairment of financial institutions; and Aspen or Aspen Bermuda Limited becoming subject to income taxes in the United States or the United Kingdom. For a more detailed description of these uncertainties and other factors, please see the "Risk Factors" section in Aspen's Annual Report on Form 10-K as filed with the SEC on February 19, 2016. Aspen undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the dates on which they are made.

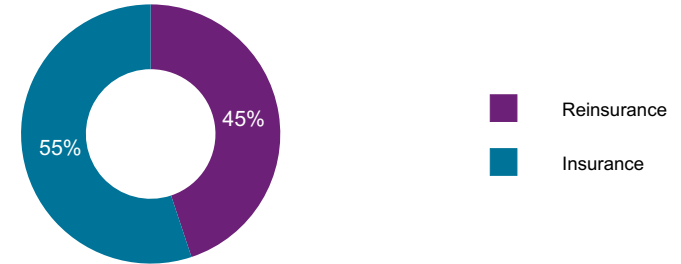
In addition, any estimates relating to loss events involve the exercise of considerable judgment and reflect a combination of ground-up evaluations, information available to date from brokers and cedants, market intelligence, initial tentative loss reports and other sources. The actuarial range of reserves and management's best estimate represents a distribution from our internal capital model for reserving risk based on our then current state of knowledge and explicit and implicit assumptions relating to the incurred pattern of claims, the expected ultimate settlement amount, inflation and dependencies between lines of business. Due to the complexity of factors contributing to the losses and the preliminary nature of the information used to prepare these estimates, there can be no assurance that Aspen's ultimate losses will remain within the stated amount.



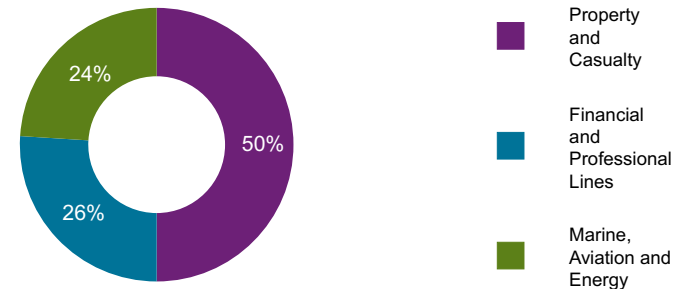
ASPEN OVERVIEW

- Global specialty insurer and reinsurer with long-term track record of shareholder value creation
- \$3.1bn gross written premiums for the year ended December 31, 2016
- Underwriting focused company with industry-leading underwriting expertise and collaborative culture
- Well-run, risk aware business building value in a controlled way
- Strategy to create superior value through well-balanced business portfolio, enhancing investment returns and capital efficiency
- Proven management team, disciplined risk management and balance sheet strength
 - Ratings/Outlook of A / Stable (S&P), A2 / Stable (Moody's) and A Excellent/ Stable (A.M. Best) for Aspen's operating subsidiaries

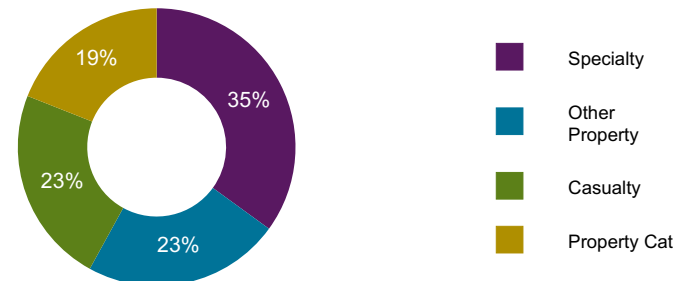
TOTAL 2016 COMPANY BUSINESS MIX



TOTAL 2016 INSURANCE BUSINESS LINES

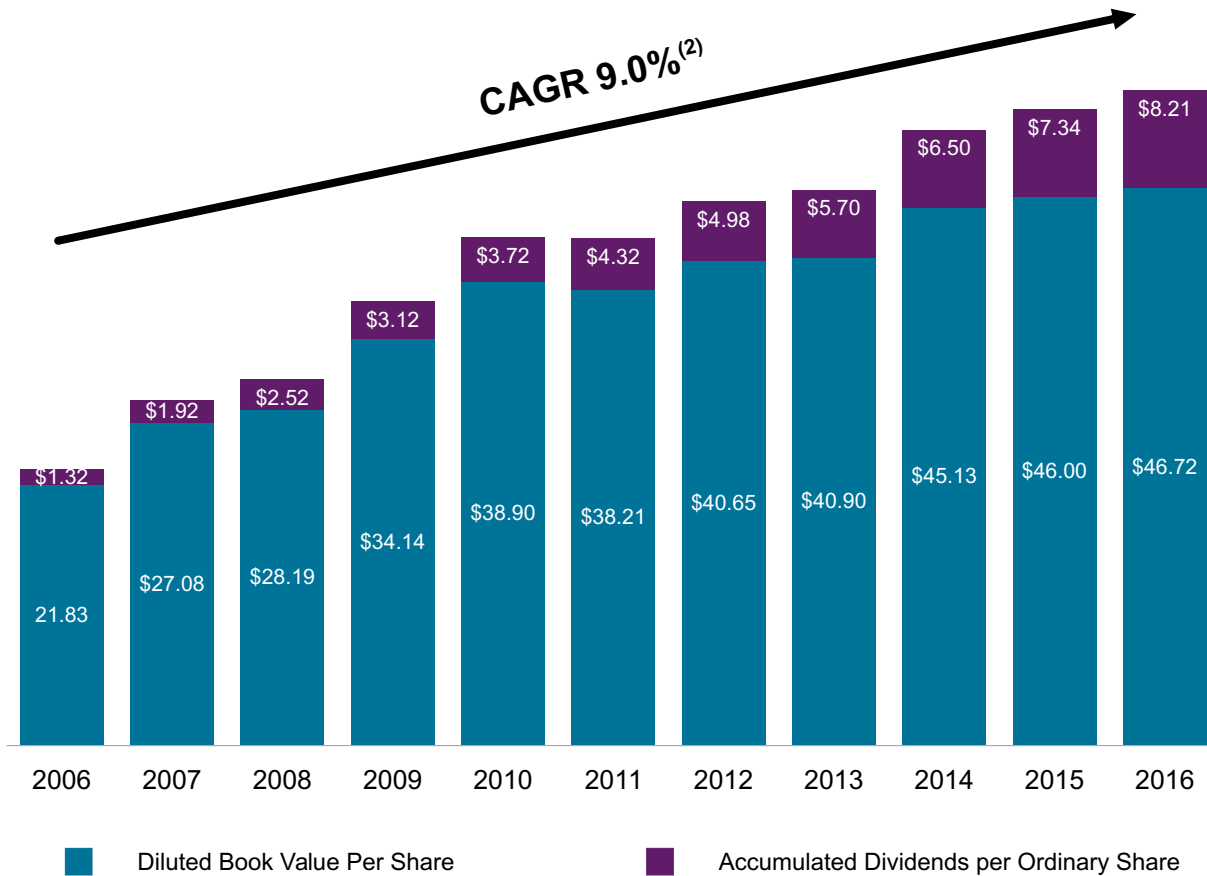


TOTAL 2016 REINSURANCE BUSINESS LINES





STRONG TRACK RECORD OF CAPITAL RETURNED TO SHAREHOLDERS



- Built a diversified specialty insurer and reinsurer with strong track record
- Average 10 year operating ROE of 10.7%⁽¹⁾
- Growing the business profitably is key priority
- Will return capital to shareholders when that is financially more attractive than deploying elsewhere
- Returned over \$2bn to shareholders through ordinary dividends and share repurchases from inception through December 31, 2016

(1) Average of annualized quarterly Operating ROE from 12/31/2006 through 12/31/2016.

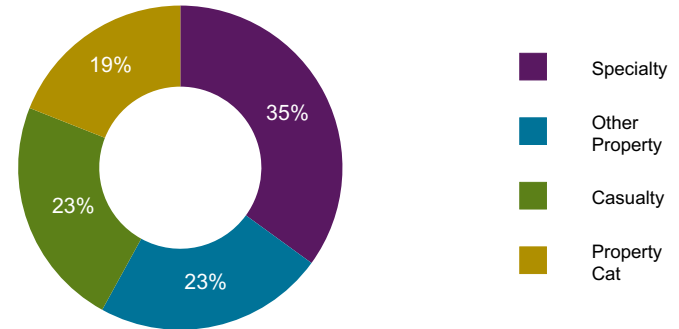
(2) Compound Annual Growth Rate calculated to reflect total equity and accumulated dividends per ordinary share from 12/31/2006 through 12/31/2016.



ASPEN RE – AN ESTABLISHED INDUSTRY LEADER

- Deep and enduring relationships with well-chosen clients, significant industry expertise and excellent track record of performance
- Innovative and thoughtful solutions; utilizing multi-line capabilities and Aspen Capital Markets to leverage third-party capital
- Increasingly diversified portfolio across four sub-segments
- Regional structure to meet increasing demand for local market solutions
- Significant long-term growth prospects in emerging markets, which accounted for 20% of total Aspen Re premiums in 2016^{(1) (2)}
- Continued focus on research and development of new products, bringing innovation, deep expertise and fresh thinking to our markets and operations
- Successful January 1 renewals and new business opportunities reaffirm Aspen Re's relevance, strategy and broad reach in a difficult market

Total 2016 GWP of \$1.41 billion
BY BUSINESS LINE



SPECIALTY	OTHER PROPERTY
<ul style="list-style-type: none"> • Credit & Surety • Agriculture • Other Specialty including Aviation, Energy and Marine 	<ul style="list-style-type: none"> • Treaty Risk Excess • Treaty Pro Rata • Global Property Facultative
CASUALTY	PROPERTY CATASTROPHE
<ul style="list-style-type: none"> • U.S. Casualty Treaty • International Casualty Treaty • Global Casualty Facultative 	<ul style="list-style-type: none"> • Treaty Catastrophe

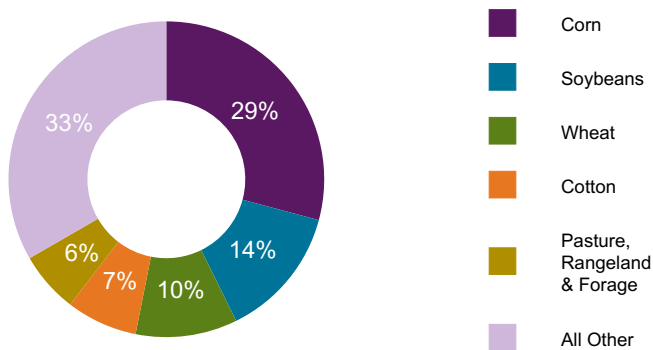
Aspen Re is a powerful contributor to operating ROE and has strong future prospects ⁽²⁾



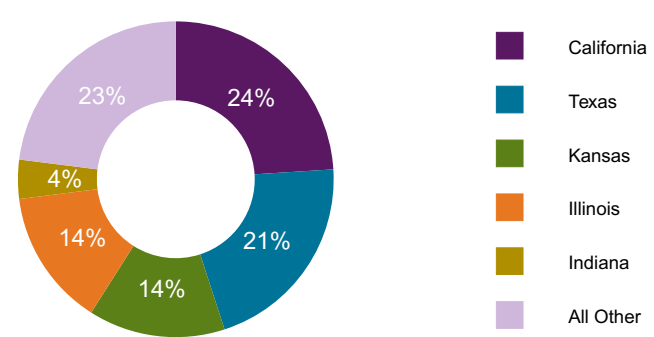
ASPEN RE GROWTH & DIVERSIFICATION - AGRILAGIC ACQUISITION

- Aspen acquired AgriLogic, a U.S. crop business and agricultural consultancy, in January 2016
- High quality, diversifying business for Aspen, excellent long-term growth opportunity⁽¹⁾
- Significant intellectual capital, strong analytical tools and capabilities
 - Innovative technology to model and understand behavior of different perils and crops, geographically precise underwriting approach and targeted risk selection
 - Growing consulting business with expertise in policy development, strategic planning, finance and IT services for private and public sector entities
- Enhanced marketing, combined with larger Aspen balance sheet, offers excellent growth opportunity⁽¹⁾

Total 2016 GWP \$179 million
BY CROP



Total 2016 GWP \$179 million
BY STATE

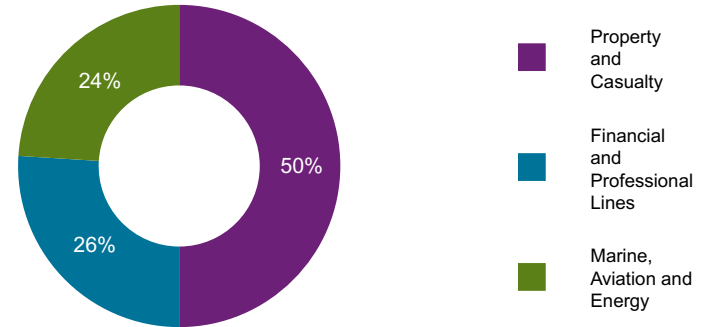




ASPEN INSURANCE – LEADING SPECIALTY INSURER

- A growing force in global specialty insurance offering creative, customized solutions to complex risks, deep local knowledge and expertise, integrated claims and underwriting teams and select distribution.
- Built on two main specialty insurance platforms:
 - U.S. - Growing specialty insurance business; diversified portfolio with broadening range of product offerings; expanding network of U.S. offices
 - International - Highly respected lead expertise in niche lines; impressive variety of specialty products with business predominantly originating in Lloyd's and the London market; hubs in Bermuda, Dublin, Singapore and Zurich

Total 2016 GWP of \$1.73 billion
BY BUSINESS LINE



PROPERTY & CASUALTY	FINANCIAL & PROFESSIONAL LINES	MARINE, AVIATION AND ENERGY
<ul style="list-style-type: none"> • U.K. Property & Construction • U.S. Property • U.K. Regional Property & Liability • Global Excess Casualty • U.K. Casualty • U.S. Casualty • Environmental Liability • U.S. Programs • Railroad 	<ul style="list-style-type: none"> • Accident & Health • Crisis Management • Credit and Political Risk • Professional Liability (Indemnity) • Management Liability / Directors & Officers • Technology Liability & Data Protection Indemnity • U.S. Surety • Financial Institutions 	<ul style="list-style-type: none"> • Aviation • Energy • Marine & Energy Liability • Marine Hull • Specie & Fine Art • U.S. Marine Energy & Construction

Aspen Insurance continues to diversify and expand its global product offering⁽¹⁾



ASPEN INSURANCE: ENHANCING A LEADING GLOBAL SPECIALTY INSURANCE FRANCHISE

- Track record of investing for profitable organic growth, e.g. U.S. Insurance platform
- Aspen Insurance infrastructure was built to be leveraged for greater scale
- Strategies to accelerate the growth and profitability of Aspen Insurance:
 - Aligned business structure more closely with clients and product distribution
 - For globally traded risks, business organized into 12 product lines
 - For regionally traded risks (e.g. UK and U.S.), local management and responsibilities
 - Enriched targeted areas of underwriting expertise:
 - Aspen Insurance CEO, Steve Postlewhite and Aspen Insurance CUO, David Cohen led the effort to complete a comprehensive review of the Insurance operations to optimize the portfolio and identify best opportunities for long-term profitable growth
 - Promoted internally and hired seasoned global underwriting leaders to manage global lines; hired select underwriting experts and upgraded underwriting talent in key lines
- Expected strategy outcomes:
 - Short term: Decrease volatility in Insurance business through optimization of portfolio, revised reinsurance arrangements, and change in business mix under new global leadership; expanded margins and attractive rate of profitable growth in 2017⁽¹⁾
 - Medium and long term: Lower loss ratio driven by superior risk selection; lower total expense ratio as a result of positive impact from increased use of pro-rata reinsurance arrangements⁽¹⁾

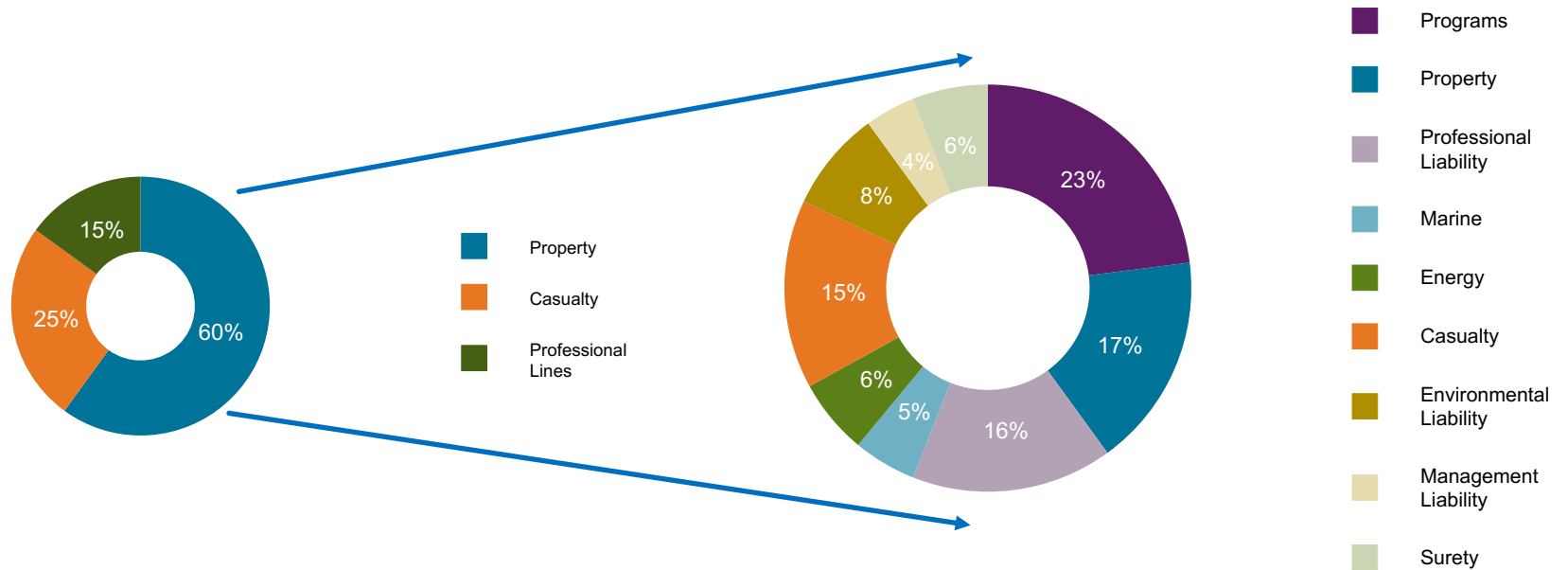
Anticipate larger, more profitable business, more stable outcomes and better loss ratios⁽¹⁾



BUILT A DIVERSIFIED U.S. SPECIALTY INSURANCE PORTFOLIO

Total 2010 U.S. INSURANCE TEAMS GWP: \$167m

Total 2016 U.S. INSURANCE TEAMS GWP: \$861m



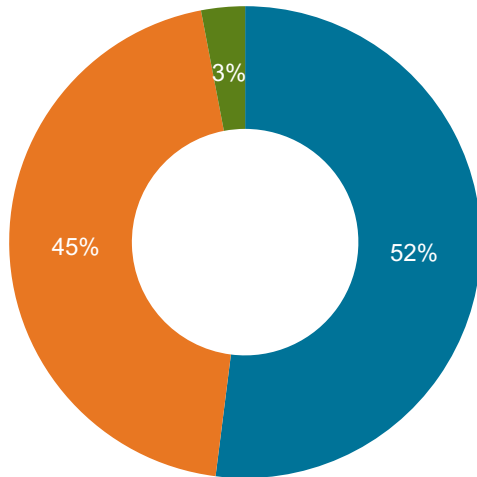
- Diversified portfolio with broadening range of product offerings focused on delivering strong premium growth and solid underwriting margins
- Over \$300m of net operating losses carried forward that can be applied against future U.S. Insurance profits⁽¹⁾



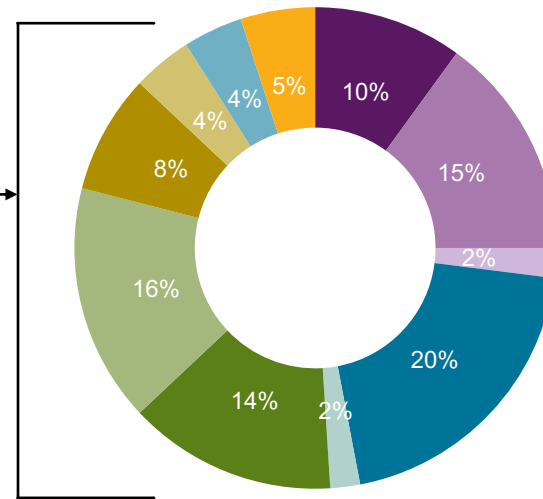
BUILT A DIVERSIFIED INTERNATIONAL INSURANCE PORTFOLIO

Total 2016 LTM INTERNATIONAL INSURANCE TEAM
GWP: \$872m

Total 2016 LLOYD'S
GWP: \$466m



■ Lloyd's
■ UK
■ Bermuda



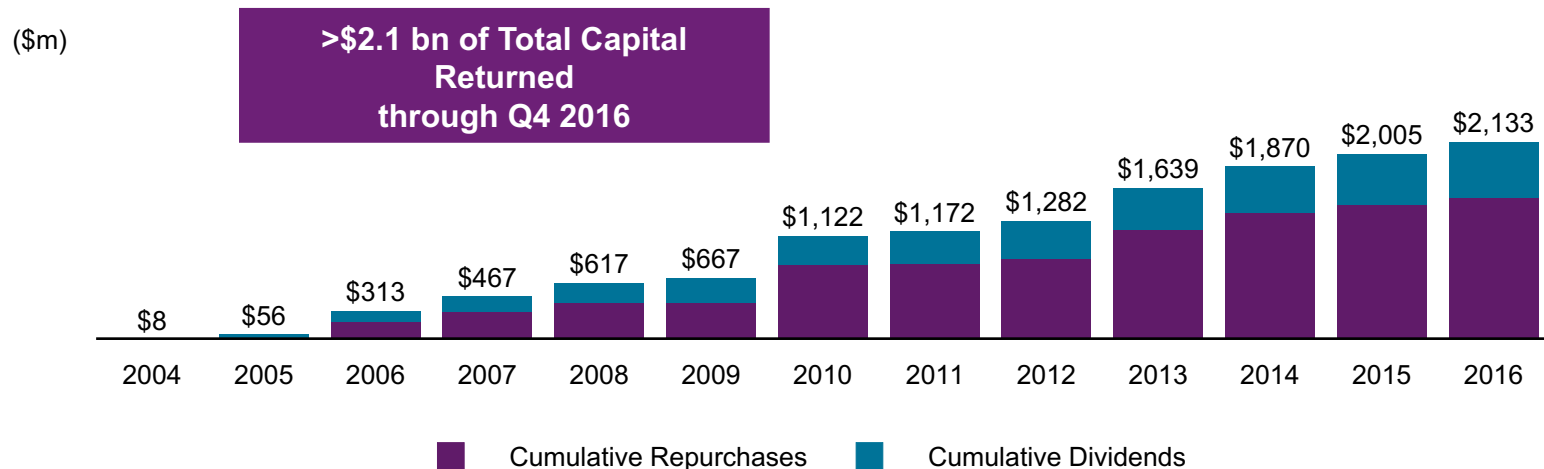
- Energy Physical Damage
- Aviation
- Credit and Political Risks
- Marine and Energy Liability
- Global Excess Casualty
- Financial and Corporate Risks
- Professional and Management Liability
- Marine Hull
- Specie & Fine Art
- Crisis Management
- Accident and Health

- International Insurance teams diversified by platform and line
- More volatile rate environment than the U.S.
 - Teams remain disciplined and focused on better rated opportunities
 - Some international lines downsized in response to changing market conditions



CAPITAL EFFICIENCY: SUSTAINED RECORD OF PROACTIVE MANAGEMENT OF CAPITAL

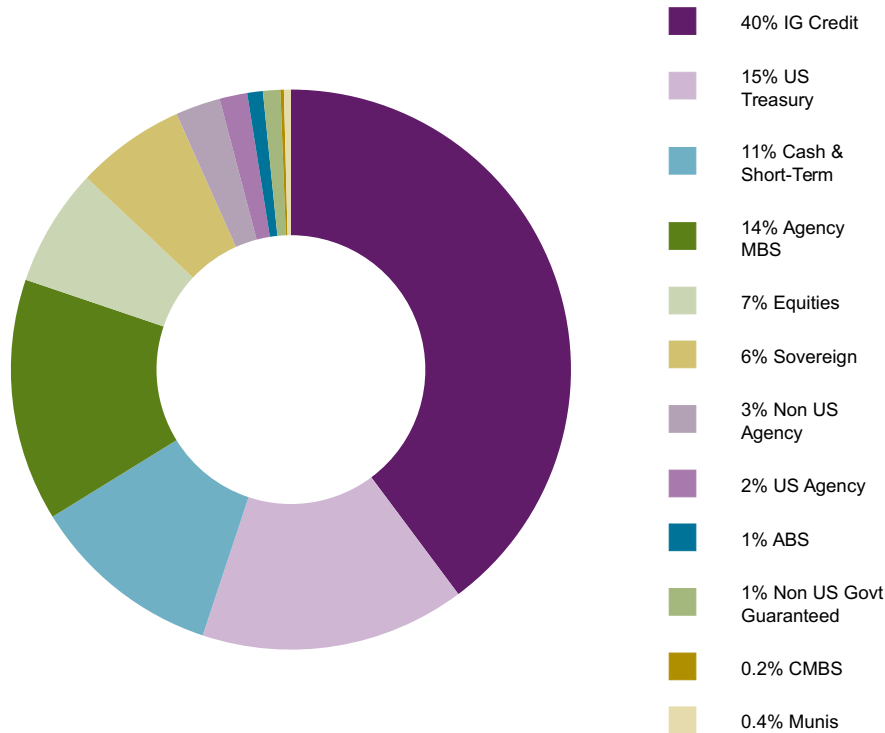
- Continued focus on responsible capital stewardship: hold more than regulatory and risk capital models suggest; return capital to shareholders when it is financially more attractive to do so than deploying elsewhere
- New \$250m share repurchase authorization program is effective through February 2019
- Aspen has generated approximately \$4.5bn of capital since inception
- 9% dividend increase over the last five years
- Returned a cumulative 71% of operating income to shareholders since inception through Q4 2016





CAREFUL INVESTMENT MANAGEMENT AND CONSISTENT INVESTMENT RETURNS

PORTFOLIO ALLOCATIONS As at December 31, 2016



- Stable investment income and total return through all market cycles
- Dynamically manage the risk asset portfolio
 - Sold approximately \$200 million of equities in the fourth quarter of 2016
- 10.8% of the portfolio invested in risk assets (including 6.8% in equities, and 3.8% in BBB emerging market debt)
- Fixed income portfolio duration: 3.89 years

\$8.6 billion⁽¹⁾ of Cash and Investments



CONCLUSION: FOCUSED ON SHAREHOLDER VALUE

- Deep underwriting expertise and understanding of client needs and risks
- Pursuing selective, profitable growth in exposures we understand, subject to market conditions⁽¹⁾
- Diversified platform allows us to focus on better rated opportunities as they arise, including:
 - Reinsurance
 - Cyber, Engineering, Mortgage, Terrorism, Marine
 - Insurance
 - Enhance our global product offering in areas such as Accident and Health, Environmental, Professional Lines, Credit and Political Risk, Surety, and Crisis Management
 - Continued strength in regional business such as UK Property and Casualty

Aim to deliver growth in operating ROE and Diluted Book Value Per Share over time⁽¹⁾

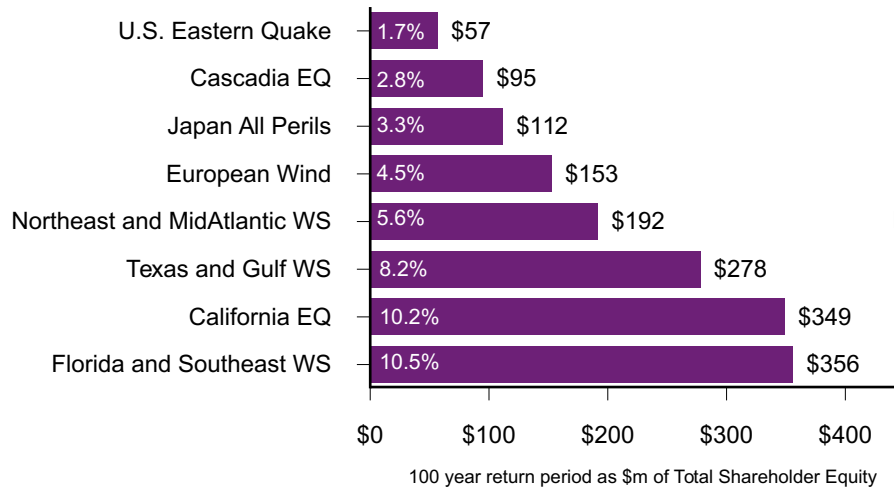


APPENDIX



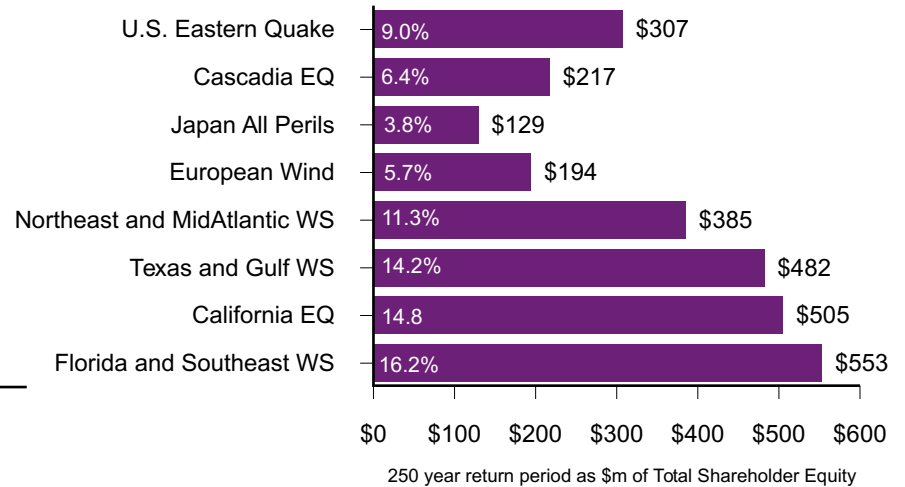
UNDERWRITING EXPERTISE: ASPEN'S NATURAL CATASTROPHE EXPOSURES IN MAJOR PERIL ZONES AS AT JANUARY 1, 2017

100 YEAR RETURN PERIOD AS % OF TOTAL SHAREHOLDERS' EQUITY AND IN \$ MILLIONS⁽¹⁾



1 in 100 year tolerance:
17.5% of total shareholders' equity

250 YEAR RETURN PERIOD AS % OF TOTAL SHAREHOLDERS' EQUITY AND IN \$ MILLIONS⁽¹⁾



1 in 250 year tolerance:
25.0% of total shareholders' equity

- Probable Maximum Losses (“PMLs”) are net of reinsurance and Aspen Capital Markets' third-party capital

(1) Based on Shareholders' equity of \$3,405.7 million (excluding non-controlling interest and net proceeds of \$241.3 million from the issuance of the 5.625% Perpetual Non-Cumulative Preference Shares) as at December 31, 2016. The estimates reflect Aspen's view of the modelled maximum losses at the return periods shown which include input from various third party vendor models, Aspen's proprietary adjustments to these models, and planned reinsurance purchases. The U.S. regional WS PMLs reflect the outward reinsurance structures in place. Catastrophe loss experience may materially differ from the modelled PMLs due to limitations in one or more of the models or uncertainties in the application of policy terms and limits.

INVESTOR PRESENTATION FOURTH QUARTER 2016

