

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

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

For the Quarterly Period Ended September 30, 2018

OR

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

For the Transition Period from _____ to _____
Commission File No. 1-11778

CHUBB LIMITED

(Exact name of registrant as specified in its charter)

Switzerland

(State or other jurisdiction of incorporation or organization)

98-0091805

(I.R.S. Employer Identification No.)

Baerengasse 32

Zurich, Switzerland CH-8001

(Address of principal executive offices) (Zip Code)

+41 (0)43 456 76 00

(Registrant's telephone number, including area code)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15 (d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

YES

NO

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

YES

NO

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

Large accelerated filer

Non-accelerated filer

Accelerated filer

Smaller reporting company

Emerging growth company

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

YES

NO

The number of registrant's Common Shares (CHF 24.15 par value) outstanding as of October 18, 2018 was 460,805,372 .

CHUBB LIMITED
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PART I FINANCIAL INFORMATION**ITEM 1. Financial Statements****CONSOLIDATED BALANCE SHEETS (Unaudited)**

Chubb Limited and Subsidiaries

	September 30	December 31
(in millions of U.S. dollars, except share and per share data)	2018	2017
Assets		
Investments		
Fixed maturities available for sale, at fair value (amortized cost – \$78,637 and \$77,835) (includes hybrid financial instruments of \$12 and \$5)	\$ 77,853	\$ 78,939
Fixed maturities held to maturity, at amortized cost (fair value – \$13,284 and \$14,474)	13,563	14,335
Equity securities, at fair value (cost – \$843 and \$737)	843	937
Short-term investments, at fair value and amortized cost	3,479	3,561
Other investments (cost – \$5,425 and \$4,417)	5,425	4,672
Total investments	101,163	102,444
Cash	1,053	728
Restricted cash	104	123
Securities lending collateral	2,143	1,737
Accrued investment income	857	909
Insurance and reinsurance balances receivable	10,193	9,334
Reinsurance recoverable on losses and loss expenses	15,088	15,034
Reinsurance recoverable on policy benefits	206	184
Deferred policy acquisition costs	4,902	4,723
Value of business acquired	298	326
Goodwill	15,332	15,541
Other intangible assets	6,139	6,513
Prepaid reinsurance premiums	2,548	2,529
Investments in partially-owned insurance companies	656	662
Other assets	7,002	6,235
Total assets	\$ 167,684	\$ 167,022
Liabilities		
Unpaid losses and loss expenses	\$ 63,029	\$ 63,179
Unearned premiums	15,725	15,216
Future policy benefits	5,463	5,321
Insurance and reinsurance balances payable	6,313	5,868
Securities lending payable	2,143	1,737
Accounts payable, accrued expenses, and other liabilities	9,343	9,545
Deferred tax liabilities	363	699
Repurchase agreements	1,414	1,408
Short-term debt	500	1,013
Long-term debt	12,149	11,556
Trust preferred securities	308	308
Total liabilities	116,750	115,850
Commitments and contingencies		
Shareholders' equity		
Common Shares (CHF 24.15 par value; 479,783,864 shares issued; 461,100,790 and 463,833,179 shares outstanding)	11,121	11,121
Common Shares in treasury (18,683,074 and 15,950,685 shares)	(2,372)	(1,944)
Additional paid-in capital	12,853	13,978
Retained earnings	31,491	27,474
Accumulated other comprehensive income (loss) (AOCI)	(2,159)	543
Total shareholders' equity	50,934	51,172
Total liabilities and shareholders' equity	\$ 167,684	\$ 167,022

See accompanying notes to the consolidated financial statements

CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE INCOME (Unaudited)

Chubb Limited and Subsidiaries

	Three Months Ended		Nine Months Ended	
	September 30		September 30	
(in millions of U.S. dollars, except per share data)	2018	2017	2018	2017
Revenues				
Net premiums written	\$ 8,110	\$ 7,902	\$ 23,229	\$ 22,193
Increase in unearned premiums	(202)	(95)	(630)	(377)
Net premiums earned	7,908	7,807	22,599	21,816
Net investment income	823	813	2,457	2,328
Net realized gains (losses):				
Other-than-temporary impairment (OTTI) losses gross	(14)	(8)	(19)	(36)
Portion of OTTI losses recognized in other comprehensive income (OCI)	3	—	3	1
Net OTTI losses recognized in income	(11)	(8)	(16)	(35)
Net realized gains (losses) excluding OTTI losses	30	(2)	51	119
Total net realized gains (losses) (includes \$(38), \$10, \$(142) and \$27 reclassified from AOCI)	19	(10)	35	84
Total revenues	8,750	8,610	25,091	24,228
Expenses				
Losses and loss expenses	4,868	6,247	13,457	14,182
Policy benefits	127	169	428	500
Policy acquisition costs	1,504	1,488	4,432	4,334
Administrative expenses	719	714	2,158	2,096
Interest expense	164	150	488	451
Other (income) expense	(145)	(118)	(307)	(333)
Amortization of purchased intangibles	83	65	253	194
Chubb integration expenses	16	50	39	233
Total expenses	7,336	8,765	20,948	21,657
Income (loss) before income tax	1,414	(155)	4,143	2,571
Income tax expense (benefit) (includes \$(4), nil, \$(19) and \$3 on reclassified unrealized gains and losses)	183	(85)	536	243
Net income (loss)	\$ 1,231	\$ (70)	\$ 3,607	\$ 2,328
Other comprehensive income (loss)				
Unrealized appreciation (depreciation)	\$ (251)	\$ 153	\$ (2,063)	\$ 919
Reclassification adjustment for net realized (gains) losses included in net income	38	(10)	142	(27)
	(213)	143	(1,921)	892
Change in:				
Cumulative foreign currency translation adjustment	(482)	665	(659)	901
Postretirement benefit liability adjustment	(21)	(63)	(61)	(118)
Other comprehensive income (loss), before income tax	(716)	745	(2,641)	1,675
Income tax (expense) benefit related to OCI items	77	(46)	356	(292)
Other comprehensive income (loss)	(639)	699	(2,285)	1,383
Comprehensive income	\$ 592	\$ 629	\$ 1,322	\$ 3,711
Earnings (loss) per share				
Basic earnings (loss) per share	\$ 2.66	\$ (0.15)	\$ 7.76	\$ 4.98
Diluted earnings (loss) per share	\$ 2.64	\$ (0.15)	\$ 7.71	\$ 4.94

See accompanying notes to the consolidated financial statements

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY (Unaudited)

Chubb Limited and Subsidiaries

	Nine Months Ended	
	September 30	
(in millions of U.S. dollars)	2018	2017
Common Shares		
Balance – beginning and end of period	\$ 11,121	\$ 11,121
Common Shares in treasury		
Balance – beginning of period	(1,944)	(1,480)
Common Shares repurchased	(703)	(707)
Net shares redeemed under employee share-based compensation plans	275	310
Balance – end of period	(2,372)	(1,877)
Additional paid-in capital		
Balance – beginning of period	13,978	15,335
Net shares redeemed under employee share-based compensation plans	(261)	(311)
Exercise of stock options	(42)	(43)
Share-based compensation expense	186	223
Funding of dividends declared to Retained earnings	(1,008)	(987)
Balance – end of period	12,853	14,217
Retained earnings		
Balance – beginning of period	27,474	23,613
Cumulative effect of adoption of accounting guidance (refer to Note 1)	410	—
Balance – beginning of period, as adjusted	27,884	23,613
Net income	3,607	2,328
Funding of dividends declared from Additional paid-in capital	1,008	987
Dividends declared on Common Shares	(1,008)	(987)
Balance – end of period	31,491	25,941
Accumulated other comprehensive income (loss)		
Net unrealized appreciation on investments		
Balance – beginning of period	1,450	1,058
Cumulative effect of adoption of accounting guidance (refer to Note 1)	(417)	—
Balance – beginning of period, as adjusted	1,033	1,058
Change in period, before reclassification from AOCI, net of income tax benefit (expense) of \$358 and \$(310)	(1,705)	609
Amounts reclassified from AOCI, net of income tax benefit (expense) of \$(19) and \$3	123	(24)
Change in period, net of income tax benefit (expense) of \$339 and \$(307)	(1,582)	585
Balance – end of period	(549)	1,643
Cumulative foreign currency translation adjustment		
Balance – beginning of period	(1,187)	(1,663)
Change in period, net of income tax benefit (expense) of \$5 and \$(14)	(654)	887
Balance – end of period	(1,841)	(776)
Postretirement benefit liability adjustment		
Balance – beginning of period	280	291
Change in period, net of income tax benefit of \$12 and \$29	(49)	(89)
Balance – end of period	231	202
Accumulated other comprehensive income (loss)	(2,159)	1,069
Total shareholders' equity	\$ 50,934	\$ 50,471

See accompanying notes to the consolidated financial statements



CONSOLIDATED STATEMENTS OF CASH FLOWS (Unaudited)

Chubb Limited and Subsidiaries

(in millions of U.S. dollars)	Nine Months Ended September 30	
	2018	2017
Cash flows from operating activities		
Net income	\$ 3,607	\$ 2,328
Adjustments to reconcile net income to net cash flows from operating activities		
Net realized (gains) losses	(35)	(84)
Amortization of premiums/discounts on fixed maturities	454	526
Amortization of purchased intangibles	253	194
Deferred income taxes	46	(151)
Unpaid losses and loss expenses	436	2,789
Unearned premiums	779	340
Future policy benefits	170	186
Insurance and reinsurance balances payable	574	247
Accounts payable, accrued expenses, and other liabilities	(172)	(828)
Income taxes payable	182	(262)
Insurance and reinsurance balances receivable	(1,074)	(339)
Reinsurance recoverable on losses and loss expenses	(195)	(976)
Reinsurance recoverable on policy benefits	(24)	(10)
Deferred policy acquisition costs	(270)	(256)
Prepaid reinsurance premiums	(129)	(14)
Other	(705)	(279)
Net cash flows from operating activities	3,897	3,411
Cash flows from investing activities		
Purchases of fixed maturities available for sale	(16,788)	(18,478)
Purchases of fixed maturities held to maturity	(380)	(262)
Purchases of equity securities	(148)	(125)
Sales of fixed maturities available for sale	9,041	9,215
Sales of equity securities	247	152
Maturities and redemptions of fixed maturities available for sale	5,482	7,699
Maturities and redemptions of fixed maturities held to maturity	1,001	644
Net change in short-term investments	64	44
Net derivative instruments settlements	(46)	(170)
Private equity contributions	(1,112)	(485)
Private equity distributions	743	744
Other	(231)	(319)
Net cash flows used for investing activities	(2,127)	(1,341)
Cash flows from financing activities		
Dividends paid on Common Shares	(1,001)	(978)
Common Shares repurchased	(732)	(707)
Proceeds from issuance of long-term debt	2,171	—
Repayment of long-term debt	(2,001)	(500)
Proceeds from issuance of repurchase agreements	1,572	1,798
Repayment of repurchase agreements	(1,566)	(1,793)
Proceeds from share-based compensation plans	86	109
Policyholder contract deposits	269	312
Policyholder contract withdrawals	(222)	(211)
Net cash flows used for financing activities	(1,424)	(1,970)
Effect of foreign currency rate changes on cash and restricted cash	(40)	5
Net increase in cash and restricted cash	306	105

Cash and restricted cash – beginning of period		851		1,088
Cash and restricted cash – end of period	\$	1,157	\$	1,193
Supplemental cash flow information				
Taxes paid	\$	313	\$	652
Interest paid	\$	403	\$	404
See accompanying notes to the consolidated financial statements				

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

Chubb Limited and Subsidiaries

1 . General**a) Basis of presentation**

Chubb Limited is a holding company incorporated in Zurich, Switzerland. Chubb Limited, through its subsidiaries, provides a broad range of insurance and reinsurance products to insureds worldwide. Chubb operates through the following business segments: North America Commercial P&C Insurance, North America Personal P&C Insurance, North America Agricultural Insurance, Overseas General Insurance, Global Reinsurance, and Life Insurance. Refer to Note 10 for additional information.

The interim unaudited consolidated financial statements, which include the accounts of Chubb Limited and its subsidiaries (collectively, Chubb, we, us, or our), have been prepared in accordance with accounting principles generally accepted in the United States of America (GAAP) and, in the opinion of management, reflect all adjustments (consisting of normally recurring accruals) necessary for a fair statement of the results and financial position for such periods. All significant intercompany accounts and transactions, including internal reinsurance transactions, have been eliminated.

The results of operations and cash flows for any interim period are not necessarily indicative of the results for the full year. These consolidated financial statements should be read in conjunction with the consolidated financial statements and related notes included in our 2017 Form 10-K.

b) Restricted cash

Effective January 1, 2018, we retrospectively adopted guidance on "Restricted Cash" that clarified the presentation of restricted cash on the consolidated statement of cash flows. As a result, we revised the statement of cash flows for the nine months ended September 30, 2017 to include restricted cash in the beginning and ending cash balances. In addition, we reclassified \$123 million of Restricted cash from Other assets to a separate line in the balance sheet as of December 31, 2017 .

Restricted cash in the consolidated balance sheets represents amounts held for the benefit of third parties and is legally or contractually restricted as to withdrawal or usage. Amounts include deposits with U.S. and non-U.S. regulatory authorities, trust funds set up for the benefit of ceding companies, and amounts pledged as collateral to meet financing arrangements.

The following table provides a reconciliation of cash and restricted cash reported within the consolidated balance sheets that total to the amounts shown in the consolidated statements of cash flows:

(in millions of U.S. dollars)	September 30 2018	December 31 2017
Cash	\$ 1,053	\$ 728
Restricted cash	104	123
Total cash and restricted cash shown in the consolidated statements of cash flows	\$ 1,157	\$ 851

c) Goodwill

During the nine months ended September 30, 2018 , Goodwill decreased \$ 209 million , primarily reflecting the impact of foreign exchange.

d) Accounting guidance adopted in 2018**Revenue from Contracts with Customers**

In May 2014, the FASB issued an accounting standard that supersedes most existing revenue recognition guidance. The standard excludes from its scope the accounting for insurance contracts, leases, financial instruments, and certain other agreements that are governed under other GAAP guidance, but could affect the revenue recognition for certain of our claims management and risk control services. The updated guidance requires an entity to recognize revenue as performance obligations are met, in order to reflect the transfer of promised goods or services to customers in an amount that reflects the consideration the entity is entitled to receive for those goods or services. This guidance was effective for us on January 1, 2018. The adoption of this guidance did not have a material impact on our financial condition or results of operations given that the majority of our business is outside the scope of this guidance.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Financial Instruments – Recognition and Measurement of Financial Assets and Financial Liabilities

Effective January 2018, we adopted new accounting guidance on "Recognition and Measurement of Financial Assets and Financial Liabilities" on a modified-retrospective basis. The guidance requires equity investments, other than those accounted for under the equity method of accounting, to be measured at fair value with changes in fair value recognized through net income. The guidance impacts our public equities and cost-method private equities. As a result, we recorded a cumulative-effect adjustment to increase beginning Retained earnings by \$417 million after tax (\$454 million pre-tax), representing the unrealized appreciation on our equity investments with an offsetting adjustment to decrease Accumulated other comprehensive income. All subsequent changes in fair value of our equity investments are recognized within realized gains (losses) on the consolidated statement of operations. Prior period amounts have not been adjusted and continue to be reported in accordance with the previous accounting guidance.

Income Taxes

Effective January 2018, we adopted new accounting guidance on "Intra-Entity Transfers of Assets Other Than Inventory" on a modified-retrospective basis. Under the new guidance, we will no longer defer taxes on intra-company asset transfers and will recognize any related income tax expense (benefit) immediately through the consolidated statement of operations. As a result, we recorded a cumulative-effect adjustment to decrease beginning Retained earnings by \$7 million representing the removal of the deferred tax asset for previous intra-company asset transfer transactions not yet recognized through earnings.

Income Tax Accounting Implications of the Tax Cuts and Jobs Act

The Tax Cuts and Jobs Act (2017 Tax Act) was signed into legislation in December 2017. The Securities and Exchange Commission issued Staff Accounting Bulletin No. 118 (SAB 118), Income Tax Accounting Implications of the Tax Cuts and Jobs Act, which provides guidance for the application of the 2017 Tax Act. The income tax guidance allows for the transition impact of the 2017 Tax Act to be recorded as 1) complete with all accounting implications identified, 2) provisional based on a reasonable estimate, or 3) not recorded as no reasonable estimate was determinable.

In December 2017, we recorded a \$450 million income tax benefit which was our estimate of the tax effects of the 2017 Tax Act. This amount was recorded as provisional under SAB 118. During the third quarter of 2018, we increased our provisional income tax benefit by \$20 million , from \$450 million to \$470 million . This increase, which is also provisional, relates to the recognition of certain foreign tax credits consistent with proposed regulations issued under IRC Section 965. We will continue to analyze the impact of the 2017 Tax Act. The final amount of the tax benefit recognized may increase or decrease as a result of this analysis and as new regulations and interpretive guidance are released in the fourth quarter of 2018.

Changes to the Disclosure Requirements for Fair Value Measurements

In August 2018, the FASB issued amendments to modify the disclosure requirements on fair value measurements as part of the disclosure framework project whose objective and primary focus are to improve the effectiveness of disclosures in the notes to financial statements. The amendments in this update allow for the removal of (1) the amount and reasons for transfer between Level 1 and Level 2 of the fair value hierarchy; (2) the policy for transfers between levels; and (3) the valuation processes for Level 3 fair value measurements. This update also requires the expanded discussion on unobservable inputs that are significant to the fair value measurement. We have early adopted the amendments that allow the removal of certain disclosures and deferred the adoption of the additional disclosure until the effective date in the first quarter of 2020. The guidance changes disclosure only and did not have an impact on our financial condition or results of operations.

e) Accounting guidance not yet adopted

Lease Accounting

In February 2016, the FASB issued accounting guidance requiring leases with lease terms of more than 12 months to recognize a right of use asset and a corresponding lease liability on the balance sheets. This accounting guidance is effective for us in the first quarter of 2019 on a modified retrospective basis with early adoption permitted. In January 2018, the FASB issued a proposed update that provides an alternative transition method of adoption, permitting the recognition of a cumulative-effect adjustment to retained earnings on the date of adoption. The adoption of this guidance is not expected to have a material effect on our results of operations, financial position or liquidity. Based on the number and type of our leases, we expect that the most significant impact will be the recognition of a right of use asset and a corresponding lease liability for our real estate leases of approximately \$800 million .

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Targeted Improvements to the Accounting for Long-Duration Contracts

In August 2018, the FASB issued guidance to improve the existing recognition, measurement, presentation, and disclosure requirements for long-duration contracts issued by an insurance entity. The amendments in this update require more frequent updating of assumptions and a standardized discount rate for the future policy benefit liability, a requirement to use the fair value measurement model for policies with market risk benefits, simplified amortization of deferred acquisition costs, and enhanced disclosures.

This standard will be effective for us in the first quarter of 2021 with early adoption permitted. We are currently assessing the effect of adopting this guidance on our financial condition and results of operations. We will be better able to quantify the effect of adopting this standard as we progress in our implementation process and draw nearer to the date of adoption.

Changes to the Disclosure Requirements for Defined Benefit Plans

In August 2018, the FASB issued amendments to modify the disclosure requirements on defined benefit pension or other postretirement plans as part of the disclosure framework project whose objective and primary focus are to improve the effectiveness of disclosures in the notes to financial statements. The amendments in this update allow for the removal and addition of various disclosures and is effective the first quarter of 2021. Early adoption is permitted. The guidance changes disclosure only and will not have an impact on our financial condition or results of operations.

Refer to the 2017 Form 10-K for information on other accounting guidance not yet adopted.

f) Subsequent event

During October 2018, Hurricane Michael made landfall in Florida in the U.S. At this time, there are uncertainties surrounding the number of claims and scope of damage for this named catastrophe. At the time of this filing, our very early indication of the pre-tax loss estimate, net of reinsurance and reinstatement premiums, related to Hurricane Michael is \$150 million to \$250 million. This estimate may increase or decrease as additional information emerges. The impact of this event will be reflected in our fourth quarter 2018 results.

2. Investments
a) Fixed maturities

September 30, 2018 (in millions of U.S. dollars)	Amortized Cost	Gross Unrealized Appreciation	Gross Unrealized Depreciation	Fair Value	OTTI Recognized in AOCI
<i>Available for sale</i>					
U.S. Treasury and agency	\$ 4,137	\$ 13	\$ (101)	\$ 4,049	\$ —
Foreign	21,280	374	(299)	21,355	—
Corporate securities	24,905	248	(358)	24,795	(6)
Mortgage-backed securities	16,395	26	(523)	15,898	(1)
States, municipalities, and political subdivisions	11,920	42	(206)	11,756	—
	\$ 78,637	\$ 703	\$ (1,487)	\$ 77,853	\$ (7)
<i>Held to maturity</i>					
U.S. Treasury and agency	\$ 1,112	\$ 6	\$ (25)	\$ 1,093	\$ —
Foreign	1,601	10	(25)	1,586	—
Corporate securities	2,658	11	(91)	2,578	—
Mortgage-backed securities	2,574	4	(75)	2,503	—
States, municipalities, and political subdivisions	5,618	10	(104)	5,524	—
	\$ 13,563	\$ 41	\$ (320)	\$ 13,284	\$ —

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

December 31, 2017 (in millions of U.S. dollars)	Amortized Cost	Gross Unrealized Appreciation	Gross Unrealized Depreciation	Fair Value	OTTI Recognized in AOCI
<i>Available for sale</i>					
U.S. Treasury and agency	\$ 3,701	\$ 32	\$ (35)	\$ 3,698	\$ —
Foreign	20,514	622	(106)	21,030	(1)
Corporate securities	23,453	638	(95)	23,996	(4)
Mortgage-backed securities	15,279	111	(100)	15,290	(1)
States, municipalities, and political subdivisions	14,888	125	(88)	14,925	—
	\$ 77,835	\$ 1,528	\$ (424)	\$ 78,939	\$ (6)
<i>Held to maturity</i>					
U.S. Treasury and agency	\$ 908	\$ 12	\$ (5)	\$ 915	\$ —
Foreign	1,738	27	(8)	1,757	—
Corporate securities	3,159	67	(7)	3,219	—
Mortgage-backed securities	2,724	23	(5)	2,742	—
States, municipalities, and political subdivisions	5,806	50	(15)	5,841	—
	\$ 14,335	\$ 179	\$ (40)	\$ 14,474	\$ —

As discussed in Note 2 b), if a credit loss is incurred on an impaired fixed maturity, an OTTI is considered to have occurred and the portion of the impairment not related to credit losses (non-credit OTTI) is recognized in OCI. Included in the “OTTI Recognized in AOCI” columns above are the cumulative amounts of non-credit OTTI recognized in OCI adjusted for subsequent sales, maturities, and redemptions. OTTI recognized in AOCI does not include the impact of subsequent changes in fair value of the related securities. In periods subsequent to a recognition of OTTI in OCI, changes in the fair value of the related fixed maturities are reflected in Net unrealized appreciation on investments in the Consolidated statements of shareholders’ equity. For the three and nine months ended September 30, 2018 , \$2 million and \$ 6 million , respectively, of net unrealized depreciation related to such securities is included in OCI. For the three and nine months ended September 30, 2017 , \$1 million of net unrealized appreciation and \$2 million of net unrealized depreciation, respectively, related to such securities is included in OCI. At September 30, 2018 and December 31, 2017 , AOCI included cumulative net unrealized appreciation of \$1 million and \$7 million , respectively, related to securities remaining in the investment portfolio for which a non-credit OTTI was recognized.

Mortgage-backed securities (MBS) issued by U.S. government agencies are combined with all other to be announced mortgage-backed securities (TBAs) held (refer to Note 6 b) (iv)) and are included in the category, “Mortgage-backed securities”. Approximately 82 percent and 83 percent of the total mortgage-backed securities at September 30, 2018 and December 31, 2017 , respectively, are represented by investments in U.S. government agency bonds. The remainder of the mortgage exposure consists of collateralized mortgage obligations and non-government mortgage-backed securities, the majority of which provide a planned structure for principal and interest payments and carry a rating of AAA by the major credit rating agencies.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

The following table presents fixed maturities by contractual maturity:

(in millions of U.S. dollars)	September 30		December 31	
	2018		2017	
	Amortized Cost	Fair Value	Amortized Cost	Fair Value
<i>Available for sale</i>				
Due in 1 year or less	\$ 3,736	\$ 3,742	\$ 3,164	\$ 3,182
Due after 1 year through 5 years	26,694	26,646	24,749	25,068
Due after 5 years through 10 years	23,638	23,325	25,388	25,704
Due after 10 years	8,174	8,242	9,255	9,695
	62,242	61,955	62,556	63,649
Mortgage-backed securities	16,395	15,898	15,279	15,290
	\$ 78,637	\$ 77,853	\$ 77,835	\$ 78,939
<i>Held to maturity</i>				
Due in 1 year or less	\$ 567	\$ 569	\$ 743	\$ 746
Due after 1 year through 5 years	2,959	2,925	2,669	2,688
Due after 5 years through 10 years	4,507	4,400	4,744	4,756
Due after 10 years	2,956	2,887	3,455	3,542
	10,989	10,781	11,611	11,732
Mortgage-backed securities	2,574	2,503	2,724	2,742
	\$ 13,563	\$ 13,284	\$ 14,335	\$ 14,474

Expected maturities could differ from contractual maturities because borrowers may have the right to call or prepay obligations, with or without call or prepayment penalties.

b) Net realized gains (losses)

In accordance with guidance related to the recognition and presentation of OTTI, when an impairment related to a fixed maturity has occurred, OTTI is required to be recorded in Net income if management has the intent to sell the security or it is more likely than not that we will be required to sell the security before the recovery of its amortized cost. Further, in cases where we do not intend to sell the security and it is more likely than not that we will not be required to sell the security, we must evaluate the security to determine the portion of the impairment, if any, related to credit losses. If a credit loss is incurred, an OTTI is considered to have occurred and any portion of the OTTI related to credit losses must be reflected in Net income while the portion of OTTI related to all other factors is recognized in OCI. For fixed maturities held to maturity, OTTI recognized in OCI is accreted from AOCI to the amortized cost of the fixed maturity prospectively over the remaining term of the securities.

Each quarter, securities in an unrealized loss position (impaired securities), including fixed maturities and securities lending collateral are reviewed to identify impaired securities to be specifically evaluated for a potential OTTI. Refer to the 2017 Form 10-K for information on our evaluation of OTTI for all non-fixed maturities prior to our adoption of new accounting guidance on financial instruments, effective January 1, 2018.

Evaluation of potential credit losses related to fixed maturities

We review each fixed maturity in an unrealized loss position to assess whether the security is a candidate for credit loss. Specifically, we consider credit rating, market price, and issuer-specific financial information, among other factors, to assess the likelihood of collection of all principal and interest as contractually due. Securities for which we determine that credit loss is likely are subjected to further analysis to estimate the credit loss recognized in Net income, if any. In general, credit loss recognized in Net income equals the difference between the security's amortized cost and the net present value of its projected future cash flows discounted at the effective interest rate implicit in the debt security. All significant assumptions used in determining credit losses are subject to change as market conditions evolve.

Corporate securities

Projected cash flows for corporate securities (principally senior unsecured bonds) are driven primarily by assumptions regarding probability of default and also the timing and amount of recoveries associated with defaults. Chubb developed projected cash flows for corporate securities using market observable data, issuer-specific information, and credit ratings. We use historical default data by Moody's Investors Service (Moody's) rating category to calculate a 1-in-100 year probability of default, which

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Chubb Limited and Subsidiaries

results in a default assumption in excess of the historical mean default rate. Consistent with management's approach, Chubb assumed a 32 percent recovery rate (the par value of a defaulted security that will be recovered) across all rating categories rather than using Moody's historical mean recovery rate of 42 percent. We believe that use of a default assumption in excess of the historical mean is conservative.

For the three and nine months ended September 30, 2018, credit losses recognized in Net income for corporate securities were \$8 million and \$9 million, respectively. For the three and nine months ended September 30, 2017, credit losses recognized in Net income for corporate securities were \$3 million and \$5 million, respectively.

Mortgage-backed securities

For mortgage-backed securities, credit impairment is assessed using a cash flow model that estimates the cash flows on the underlying mortgages, using the security-specific collateral and transaction structure. The model estimates cash flows from the underlying mortgage loans and distributes those cash flows to various tranches of securities, considering the transaction structure and any subordination and credit enhancements that exist in that structure. The cash flow model incorporates actual cash flows on the mortgage-backed securities through the current period and then projects the remaining cash flows using a number of assumptions, including default rates, prepayment rates, and loss severity rates (the par value of a defaulted security that will not be recovered) on foreclosed properties.

For the three and nine months ended September 30, 2018 and 2017, there were no credit losses recognized in Net income for mortgage-backed securities.

The following table presents the components of Net realized gains (losses):

(in millions of U.S. dollars)	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Fixed maturities:				
OTTI on fixed maturities, gross	\$ (14)	\$ (5)	\$ (19)	\$ (16)
OTTI on fixed maturities recognized in OCI (pre-tax)	3	—	3	1
OTTI on fixed maturities, net	(11)	(5)	(16)	(15)
Gross realized gains excluding OTTI	64	30	229	109
Gross realized losses excluding OTTI	(91)	(19)	(355)	(77)
Total fixed maturities	(38)	6	(142)	17
Equity securities:				
OTTI on equity securities	—	(1)	—	(9)
Gross realized gains excluding OTTI	48	6	63	21
Gross realized losses excluding OTTI	(13)	(1)	(41)	(2)
Total equity securities	35	4	22	10
OTTI on other investments	—	(2)	—	(11)
Other investments	5	—	23	—
Foreign exchange gains (losses)	39	15	102	10
Investment and embedded derivative instruments	37	(14)	78	(24)
Fair value adjustments on insurance derivative	54	54	133	265
S&P put options and futures	(100)	(57)	(122)	(169)
Other derivative instruments	(8)	(5)	2	(4)
Other	(5)	(11)	(61)	(10)
Net realized gains (losses)	\$ 19	\$ (10)	\$ 35	\$ 84

Other net realized gains (losses) for the nine months ended September 30, 2018, included a \$36 million loss from the extinguishment of debt as discussed in Note 5 and a \$22 million loss related to lease impairments.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

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The following table presents a roll-forward of pre-tax credit losses related to fixed maturities for which a portion of OTTI was recognized in OCI:

(in millions of U.S. dollars)	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Balance of credit losses related to securities still held – beginning of period	\$ 16	\$ 29	\$ 22	\$ 35
Additions where no OTTI was previously recorded	6	2	7	3
Additions where an OTTI was previously recorded	2	1	2	2
Reductions for securities sold during the period	(3)	(7)	(10)	(15)
Balance of credit losses related to securities still held – end of period	\$ 21	\$ 25	\$ 21	\$ 25

c) Equity securities and Other investments

Effective January 1, 2018, we adopted new accounting guidance that requires any changes in fair value of equity securities and other investments that are accounted for under the cost-method to be recognized immediately in realized gains and losses in net income. As a result, beginning on January 1, 2018, realized gains and losses from these investments include both sales of securities and unrealized gains and losses as follows:

(in millions of U.S. dollars)	Three Months Ended			Nine Months Ended		
	September 30, 2018			September 30, 2018		
	Equity Securities	Other Investments	Total	Equity Securities	Other Investments	Total
Net gains (losses) recognized during the period	\$ 35	\$ 5	\$ 40	\$ 22	\$ 23	\$ 45
Less: Net gains (losses) recognized from sales of securities	48	—	48	63	—	63
Unrealized gains (losses) recognized for securities still held at reporting date	\$ (13)	\$ 5	\$ (8)	\$ (41)	\$ 23	\$ (18)

At December 31, 2017, the cost, gross unrealized appreciation, gross unrealized depreciation, and fair value of equity securities was \$737 million, \$212 million, \$12 million, and \$937 million, respectively. At December 31, 2017, the net unrealized appreciation (depreciation) was recorded within accumulated other comprehensive income on the balance sheet.

d) Gross unrealized loss

At September 30, 2018, there were 17,978 fixed maturities out of a total of 31,196 fixed maturities in an unrealized loss position. The largest single unrealized loss in the fixed maturities was \$13 million. Fixed maturities in an unrealized loss position at September 30, 2018, comprised both investment grade and below investment grade securities for which fair value declined primarily due to widening credit spreads since the date of purchase.

The following tables present, for all securities in an unrealized loss position (including securities on loan), the aggregate fair value and gross unrealized loss by length of time the security has continuously been in an unrealized loss position:

September 30, 2018 (in millions of U.S. dollars)	0 – 12 Months		Over 12 Months		Total	
	Fair Value	Gross Unrealized Loss	Fair Value	Gross Unrealized Loss	Fair Value	Gross Unrealized Loss
U.S. Treasury and agency	\$ 2,775	\$ (57)	\$ 1,912	\$ (69)	\$ 4,687	\$ (126)
Foreign	8,760	(194)	3,683	(130)	12,443	(324)
Corporate securities	14,323	(335)	2,272	(114)	16,595	(449)
Mortgage-backed securities	12,575	(371)	4,029	(227)	16,604	(598)
States, municipalities, and political subdivisions	12,328	(223)	2,712	(87)	15,040	(310)
Total fixed maturities	\$ 50,761	\$ (1,180)	\$ 14,608	\$ (627)	\$ 65,369	\$ (1,807)

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December 31, 2017 (in millions of U.S. dollars)	0 – 12 Months			Over 12 Months			Total
	Fair Value	Gross Unrealized Loss	Fair Value	Gross Unrealized Loss	Fair Value	Gross Unrealized Loss	
U.S. Treasury and agency	\$ 2,172	\$ (14)	\$ 1,249	\$ (26)	\$ 3,421	\$ (40)	
Foreign	5,657	(65)	1,693	(49)	7,350	(114)	
Corporate securities	5,210	(56)	1,332	(46)	6,542	(102)	
Mortgage-backed securities	6,194	(31)	3,209	(74)	9,403	(105)	
States, municipalities, and political subdivisions	9,259	(71)	1,402	(32)	10,661	(103)	
Total fixed maturities	28,492	(237)	8,885	(227)	37,377	(464)	
Equity securities	115	(12)	—	—	115	(12)	
Other investments	78	(8)	—	—	78	(8)	
Total	\$ 28,685	\$ (257)	\$ 8,885	\$ (227)	\$ 37,570	\$ (484)	

e) Restricted assets

Chubb is required to maintain assets on deposit with various regulatory authorities to support its insurance and reinsurance operations. These requirements are generally promulgated in the statutory regulations of the individual jurisdictions. The assets on deposit are available to settle insurance and reinsurance liabilities. Chubb is also required to restrict assets pledged under repurchase agreements, which represent Chubb's agreement to sell securities and repurchase them at a future date for a predetermined price. We also use trust funds in certain large reinsurance transactions where the trust funds are set up for the benefit of the ceding companies and generally take the place of letter of credit (LOC) requirements. We also have investments in segregated portfolios primarily to provide collateral or guarantees for LOC and derivative transactions. Included in restricted assets at September 30, 2018 and December 31, 2017 are investments, primarily fixed maturities, totaling \$21.0 billion and \$23.3 billion, respectively, and cash of \$104 million and \$123 million, respectively.

The following table presents the components of restricted assets:

(in millions of U.S. dollars)	September 30 2018	December 31 2017
Trust funds	\$ 14,324	\$ 17,011
Deposits with U.S. regulatory authorities	2,453	2,345
Deposits with non-U.S. regulatory authorities	2,201	2,250
Assets pledged under repurchase agreements	1,470	1,434
Other pledged assets	628	414
	\$ 21,076	\$ 23,454

3 . Fair value measurements
a) Fair value hierarchy

Fair value of financial assets and financial liabilities is estimated based on the framework established in the fair value accounting guidance. The guidance defines fair value as the price to sell an asset or transfer a liability (an exit price) in an orderly transaction between market participants and establishes a three-level valuation hierarchy based on the reliability of the inputs. The fair value hierarchy gives the highest priority to quoted prices in active markets and the lowest priority to unobservable data.

The three levels of the hierarchy are as follows:

- Level 1 – Unadjusted quoted prices for identical assets or liabilities in active markets;
- Level 2 – Includes, among other items, inputs other than quoted prices that are observable for the asset or liability such as interest rates and yield curves, quoted prices for similar assets and liabilities in active markets, and quoted prices for identical or similar assets and liabilities in markets that are not active; and
- Level 3 – Inputs that are unobservable and reflect management's judgments about assumptions that market participants would use in pricing an asset or liability.

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Chubb Limited and Subsidiaries

We categorize financial instruments within the valuation hierarchy at the balance sheet date based upon the lowest level of inputs that are significant to the fair value measurement.

We use pricing services to obtain fair value measurements for the majority of our investment securities. Based on management's understanding of the methodologies used, these pricing services only produce an estimate of fair value if there is observable market information that would allow them to make a fair value estimate. Based on our understanding of the market inputs used by the pricing services, all applicable investments have been valued in accordance with GAAP. We do not adjust prices obtained from pricing services. The following is a description of the valuation techniques and inputs used to determine fair values for financial instruments carried at fair value, as well as the general classification of such financial instruments pursuant to the valuation hierarchy.

Fixed maturities

We use pricing services to estimate fair value measurements for the majority of our fixed maturities. The pricing services use market quotations for fixed maturities that have quoted prices in active markets; such securities are classified within Level 1. For fixed maturities other than U.S. Treasury securities that generally do not trade on a daily basis, the pricing services prepare estimates of fair value measurements using their pricing applications, which include available relevant market information, benchmark curves, benchmarking of like securities, sector groupings, and matrix pricing. Additional valuation factors that can be taken into account are nominal spreads, dollar basis, and liquidity adjustments. The pricing services evaluate each asset class based on relevant market and credit information, perceived market movements, and sector news. The market inputs used in the pricing evaluation, listed in the approximate order of priority include: benchmark yields, reported trades, broker/dealer quotes, issuer spreads, two-sided markets, benchmark securities, bids, offers, reference data, and industry and economic events. The extent of the use of each input is dependent on the asset class and the market conditions. Given the asset class, the priority of the use of inputs may change, or some market inputs may not be relevant. Additionally, fixed maturities valuation is more subjective when markets are less liquid due to the lack of market based inputs (i.e., stale pricing), which may increase the potential that an investment's estimated fair value is not reflective of the price at which an actual transaction would occur. The overwhelming majority of fixed maturities are classified within Level 2 because the most significant inputs used in the pricing techniques are observable. For a small number of fixed maturities, we obtain a single broker quote (typically from a market maker). Due to the disclaimers on the quotes that indicate that the price is indicative only, we include these fair value estimates in Level 3.

Equity securities

Equity securities with active markets are classified within Level 1 as fair values are based on quoted market prices. For equity securities in markets which are less active, fair values are based on market valuations and are classified within Level 2. Equity securities for which pricing is unobservable are classified within Level 3.

Short-term investments

Short-term investments, which comprise securities due to mature within one year of the date of purchase that are traded in active markets, are classified within Level 1 as fair values are based on quoted market prices. Securities such as commercial paper and discount notes are classified within Level 2 because these securities are typically not actively traded due to their approaching maturity and, as such, their cost approximates fair value. Short-term investments for which pricing is unobservable are classified within Level 3.

Other investments

Fair values for the majority of Other investments including investments in partially-owned investment companies, investment funds, and limited partnerships are based on their respective net asset values or equivalent (NAV) and are excluded from the fair value hierarchy table below. Certain of our long-duration contracts are supported by assets that do not qualify for separate account reporting under GAAP. These assets comprise mutual funds classified within Level 1 in the valuation hierarchy on the same basis as other equity securities traded in active markets. Other investments also include equity securities classified within Level 1, and fixed maturities, classified within Level 2, held in rabbi trusts maintained by Chubb for deferred compensation plans and are classified within the valuation hierarchy on the same basis as other equity securities and fixed maturities. Other investments for which pricing is unobservable are classified within Level 3.

Securities lending collateral

The underlying assets included in Securities lending collateral in the Consolidated balance sheets are fixed maturities which are classified in the valuation hierarchy on the same basis as other fixed maturities. Excluded from the valuation hierarchy is the corresponding liability related to Chubb's obligation to return the collateral plus interest as it is reported at contract value and not fair value in the Consolidated balance sheets.

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Investment derivative instruments

Actively traded investment derivative instruments, including futures, options, and forward contracts are classified within Level 1 as fair values are based on quoted market prices. The fair value of cross-currency swaps and interest rate swaps is based on market valuations and is classified within Level 2. Investment derivative instruments are recorded in either Other assets or Accounts payable, accrued expenses, and other liabilities in the Consolidated balance sheets.

Other derivative instruments

We generally maintain positions in other derivative instruments including exchange-traded equity futures contracts and option contracts designed to limit exposure to a severe equity market decline, which would cause an increase in expected claims and, therefore, an increase in reserves for our guaranteed minimum death benefits (GMDB) and guaranteed living benefits (GLB) reinsurance business. Our position in exchange-traded equity futures contracts is classified within Level 1. The fair value of the majority of the remaining positions in other derivative instruments is based on significant observable inputs including equity security and interest rate indices. Accordingly, these are classified within Level 2. Other derivative instruments based on unobservable inputs are classified within Level 3. Other derivative instruments are recorded in either Other assets or Accounts payable, accrued expenses, and other liabilities in the Consolidated balance sheets.

Separate account assets

Separate account assets represent segregated funds where investment risks are borne by the customers, except to the extent of certain guarantees made by Chubb. Separate account assets comprise mutual funds classified within Level 1 in the valuation hierarchy on the same basis as other equity securities traded in active markets. Separate account assets also include fixed maturities classified within Level 2 because the most significant inputs used in the pricing techniques are observable. Excluded from the valuation hierarchy are the corresponding liabilities as they are reported at contract value and not fair value in the Consolidated balance sheets. Separate account assets are recorded in Other assets in the Consolidated balance sheets.

Guaranteed living benefits

The GLB arises from life reinsurance programs covering living benefit guarantees whereby we assume the risk of guaranteed minimum income benefits (GMIB) associated with variable annuity contracts. We also assume the risk of guaranteed minimum accumulation benefits (GMAB). However, at September 30, 2018, the risks related to our GMAB programs are minimal given that the majority of these policies are no longer in-force. GLB's are recorded in Accounts payable, accrued expenses, and other liabilities and Future policy benefits in the Consolidated balance sheets. For GLB reinsurance, Chubb estimates fair value using an internal valuation model which includes current market information and estimates of policyholder behavior. All of the treaties contain claim limits, which are factored into the valuation model. The fair value depends on a number of factors, including interest rates, equity markets, credit risk, current account value, market volatility, expected annuitization rates and other policyholder behavior, and changes in policyholder mortality.

The most significant policyholder behavior assumptions include lapse rates and the GMIB annuitization rates. Assumptions regarding lapse rates and GMIB annuitization rates differ by treaty, but the underlying methodologies to determine rates applied to each treaty are comparable.

A lapse rate is the percentage of in-force policies surrendered in a given calendar year. All else equal, as lapse rates increase, ultimate claim payments will decrease.

The GMIB annuitization rate is the percentage of policies for which the policyholder will elect to annuitize using the guaranteed benefit provided under the GMIB. All else equal, as GMIB annuitization rates increase, ultimate claim payments will increase, subject to treaty claim limits.

The effect of changes in key market factors on assumed lapse and annuitization rates reflect emerging trends using data available from cedants. For treaties with limited experience, rates are established in line with data received from other ceding companies adjusted, as appropriate, with industry estimates. The model and related assumptions are regularly re-evaluated by management and enhanced, as appropriate, based upon additional experience obtained related to policyholder behavior and availability of updated information such as market conditions, market participant assumptions, and demographics of in-force annuities. Because of the significant use of unobservable inputs including policyholder behavior, GLB reinsurance is classified within Level 3. For the three and nine months ended September 30, 2018, no material technical refinements were made to the model. During the nine months ended September 30, 2017, we updated aspects of our valuation model relating to interest rates. This resulted in a decrease to the fair value of GLB liabilities generating a realized gain of approximately \$ 94 million. During the nine months ended September 30, 2017, there were no other material changes to actuarial or behavioral

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assumptions. For detailed information on our lapse and annuitization rate assumptions, refer to Note 4 to the Consolidated Financial Statements of our 2017 Form 10-K.

Financial instruments measured at fair value on a recurring basis, by valuation hierarchy

September 30, 2018

(in millions of U.S. dollars)

	Level 1	Level 2	Level 3	Total
Assets:				
<i>Fixed maturities available for sale</i>				
U.S. Treasury and agency	\$ 3,272	\$ 777	\$ —	\$ 4,049
Foreign	—	21,032	323	21,355
Corporate securities	—	23,621	1,174	24,795
Mortgage-backed securities	—	15,833	65	15,898
States, municipalities, and political subdivisions	—	11,756	—	11,756
	3,272	73,019	1,562	77,853
Equity securities	790	—	53	843
Short-term investments	1,832	1,641	6	3,479
Other investments ⁽¹⁾	395	338	263	996
Securities lending collateral	—	2,143	—	2,143
Investment derivative instruments	29	26	—	55
Other derivative instruments	5	—	—	5
Separate account assets	2,880	113	—	2,993
Total assets measured at fair value ⁽¹⁾	\$ 9,203	\$ 77,280	\$ 1,884	\$ 88,367
Liabilities:				
Investment derivative instruments	\$ 24	\$ —	\$ —	\$ 24
Other derivative instruments	7	—	2	9
GLB ⁽²⁾	—	—	71	71
Total liabilities measured at fair value	\$ 31	\$ —	\$ 73	\$ 104

(1) Excluded from the table above are partially-owned investments, investment funds, and limited partnerships of \$ 4,368 million and other investments of \$ 61 million at September 30, 2018 measured using NAV as a practical expedient.

(2) Our GLB reinsurance product meets the definition of a derivative instrument for accounting purposes and is accordingly carried at fair value. Excluded from the table above is the portion of the GLB derivative liability classified as Future policy benefits in the Consolidated balance sheets.

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December 31, 2017

(in millions of U.S. dollars)

	Level 1	Level 2	Level 3	Total
Assets:				
<i>Fixed maturities available for sale</i>				
U.S. Treasury and agency	\$ 3,129	\$ 569	\$ —	\$ 3,698
Foreign	—	20,937	93	21,030
Corporate securities	—	22,959	1,037	23,996
Mortgage-backed securities	—	15,212	78	15,290
States, municipalities, and political subdivisions	—	14,925	—	14,925
	3,129	74,602	1,208	78,939
Equity securities	893	—	44	937
Short-term investments	2,309	1,252	—	3,561
Other investments ⁽¹⁾	466	305	263	1,034
Securities lending collateral	—	1,737	—	1,737
Investment derivative instruments	18	—	—	18
Other derivative instruments	1	—	—	1
Separate account assets	2,635	99	—	2,734
Total assets measured at fair value ⁽¹⁾	\$ 9,451	\$ 77,995	\$ 1,515	\$ 88,961
Liabilities:				
Investment derivative instruments	\$ 30	\$ —	\$ —	\$ 30
Other derivative instruments	21	—	2	23
GLB ⁽²⁾	—	—	204	204
Total liabilities measured at fair value	\$ 51	\$ —	\$ 206	\$ 257

(1) Excluded from the table above are partially-owned investments, investment funds, and limited partnerships of \$3,623 million and other investments of \$15 million at December 31, 2017 measured using NAV as a practical expedient.

(2) Our GLB reinsurance product meets the definition of a derivative instrument for accounting purposes and is accordingly carried at fair value. Excluded from the table above is the portion of the GLB derivative liability classified as Future policy benefits in the Consolidated balance sheets.

Fair value of alternative investments

Alternative investments include investment funds, limited partnerships, and partially-owned investment companies measured at fair value using NAV as a practical expedient. The following table presents, by investment category, the expected liquidation period, fair value, and maximum future funding commitments of alternative investments:

(in millions of U.S. dollars)	Expected Liquidation Period of Underlying Assets	September 30 2018		December 31 2017	
		Fair Value	Maximum Future Funding Commitments	Fair Value	Maximum Future Funding Commitments
Financial	5 to 9 Years	\$ 514	\$ 281	\$ 540	\$ 330
Real Assets	3 to 7 Years	692	186	651	114
Distressed	3 to 7 Years	301	116	289	141
Private Credit	3 to 7 Years	164	307	187	327
Traditional	3 to 15 Years	2,350	2,326	1,656	3,149
Vintage	1 to 2 Years	69	—	30	—
Investment funds	Not Applicable	278	—	270	—
		\$ 4,368	\$ 3,216	\$ 3,623	\$ 4,061

Included in all categories in the above table, except for Investment funds, are investments for which Chubb will never have the contractual option to redeem but receives distributions based on the liquidation of the underlying assets. Further, for all

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categories except for Investment funds, Chubb does not have the ability to sell or transfer the investments without the consent from the general partner of individual funds.

Investment Category:	Consists of investments in private equity funds:
Financial	targeting financial services companies such as financial institutions and insurance services worldwide
Real Assets	targeting investments related to hard physical assets such as real estate, infrastructure and natural resources
Distressed	targeting distressed corporate debt/credit and equity opportunities in the U.S.
Private Credit	targeting privately originated corporate debt investments including senior secured loans and subordinated bonds
Traditional	employing traditional private equity investment strategies such as buyout and growth equity globally
Vintage	made before 2002 or where the funds' commitment periods have already expired

Investment funds

Chubb's investment funds employ various investment strategies such as long/short equity and arbitrage/distressed. Included in this category are investments for which Chubb has the option to redeem at agreed upon value as described in each investment fund's subscription agreement. Depending on the terms of the various subscription agreements, investment fund investments may be redeemed monthly, quarterly, semi-annually, or annually. If Chubb wishes to redeem an investment fund investment, it must first determine if the investment fund is still in a lock-up period (a time when Chubb cannot redeem its investment so that the investment fund manager has time to build the portfolio). If the investment fund is no longer in its lock-up period, Chubb must then notify the investment fund manager of its intention to redeem by the notification date prescribed by the subscription agreement. Subsequent to notification, the investment fund can redeem Chubb's investment within several months of the notification. Notice periods for redemption of the investment funds range between 5 and 120 days. Chubb can redeem its investment funds without consent from the investment fund managers.

Level 3 financial instruments

The following table presents the significant unobservable inputs used in the Level 3 liability valuations. Excluded from the table below are inputs used to determine the fair value of Level 3 assets which are based on single broker quotes and contain no quantitative unobservable inputs developed by management. The majority of our fixed maturities classified as Level 3 used external pricing when markets are less liquid due to the lack of market inputs (i.e., stale pricing, broker quotes).

(in millions of U.S. dollars, except for percentages)	Fair Value		Valuation Technique	Significant Unobservable Inputs	Ranges
	September 30, 2018	December 31, 2017			
GLB ⁽¹⁾	\$ 71	\$ 204	Actuarial model	Lapse rate Annuitization rate	3% – 33% 0% – 100%

(1) Discussion of the most significant inputs used in the fair value measurement of GLB and the sensitivity of those assumptions is included within Note 3 a) Guaranteed living benefits.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

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The following tables present a reconciliation of the beginning and ending balances of financial instruments measured at fair value using significant unobservable inputs (Level 3):

Three Months Ended	Assets						Liabilities	
	Available-for-Sale Debt Securities						Other derivative instruments	GLB ⁽²⁾
September 30, 2018 (in millions of U.S. dollars)	Foreign	Corporate securities ⁽¹⁾	MBS	Equity securities	Short-term investments	Other investments		
Balance – beginning of period	\$ 252	\$ 1,181	\$ 82	\$ 59	\$ 12	\$ 264	\$ 2	\$ 125
Transfers into Level 3	5	18	—	—	—	—	—	—
Transfers out of Level 3	(2)	(21)	—	—	—	—	—	—
Change in Net Unrealized Gains (Losses) included in OCI, including foreign exchange	(2)	7	—	(1)	—	(4)	—	—
Net Realized Gains/Losses	(2)	(6)	—	7	—	—	—	(54)
Purchases	98	98	1	6	—	20	—	—
Sales	(22)	(18)	—	(18)	—	—	—	—
Settlements	(4)	(85)	(18)	—	(6)	(17)	—	—
Balance – end of period	\$ 323	\$ 1,174	\$ 65	\$ 53	\$ 6	\$ 263	\$ 2	\$ 71
Net Realized Gains/Losses Attributable to Changes in Fair Value at the Balance Sheet Date	\$ (1)	\$ (6)	\$ —	\$ 1	\$ —	\$ —	\$ —	\$ (54)

(1) Purchases in Level 3 primarily consist of privately-placed fixed income securities.

(2) Our GLB reinsurance product meets the definition of a derivative instrument for accounting purposes and is accordingly carried at fair value. Excluded from the table above is the portion of the GLB derivative liability classified as Future policy benefits in the Consolidated balance sheets. The liability for GLB reinsurance was \$453 million at September 30, 2018, and \$497 million at June 30, 2018, which includes a fair value derivative adjustment of \$71 million and \$125 million, respectively.

Three Months Ended	Assets						Liabilities	
	Available-for-Sale Debt Securities						Other derivative instruments	GLB ⁽¹⁾
September 30, 2017 (in millions of U.S. dollars)	Foreign	Corporate securities	MBS	Equity securities	Short-term investments	Other investments		
Balance – beginning of period	\$ 85	\$ 747	\$ 45	\$ 39	\$ 7	\$ 243	\$ 2	\$ 357
Transfers into Level 3	—	111	—	—	—	—	—	—
Transfers out of Level 3	(3)	(26)	—	—	—	—	—	—
Change in Net Unrealized Gains (Losses) included in OCI, including foreign exchange	1	(1)	—	—	—	—	—	—
Net Realized Gains/Losses	—	—	—	1	—	—	—	(54)
Purchases	24	169	7	17	1	15	—	—
Sales	(14)	(24)	—	(5)	—	—	—	—
Settlements	(3)	(57)	(8)	—	(8)	(6)	—	—
Balance – end of period	\$ 90	\$ 919	\$ 44	\$ 52	\$ —	\$ 252	\$ 2	\$ 303
Net Realized Gains/Losses Attributable to Changes in Fair Value at the Balance Sheet Date	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ (54)

(1) Our GLB reinsurance product meets the definition of a derivative instrument for accounting purposes and is accordingly carried at fair value. Excluded from the table above is the portion of the GLB derivative liability classified as Future policy benefits in the Consolidated balance sheets. The liability for GLB reinsurance was \$635 million at September 30, 2017, and \$684 million at June 30, 2017, which includes a fair value derivative adjustment of \$303 million and \$357 million, respectively.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Nine Months Ended	Assets						Liabilities	
	Available-for-Sale Debt Securities						Other derivative instruments	GLB ⁽²⁾
September 30, 2018 (in millions of U.S. dollars)	Foreign	Corporate securities ⁽¹⁾	MBS	Equity securities	Short-term investments	Other investments		
Balance – beginning of period	\$ 93	\$ 1,037	\$ 78	\$ 44	\$ —	\$ 263	\$ 2	\$ 204
Transfers into Level 3	12	24	1	—	5	—	—	—
Transfers out of Level 3	(2)	(31)	—	—	—	—	—	—
Change in Net Unrealized Gains (Losses) included in OCI, including foreign exchange	—	(5)	—	—	—	(2)	—	—
Net Realized Gains/Losses	(2)	(4)	—	6	—	1	—	(133)
Purchases	280	454	5	26	9	50	—	—
Sales	(52)	(114)	—	(23)	—	—	—	—
Settlements	(6)	(187)	(19)	—	(8)	(49)	—	—
Balance – end of period	\$ 323	\$ 1,174	\$ 65	\$ 53	\$ 6	\$ 263	\$ 2	\$ 71
Net Realized Gains/Losses Attributable to Changes in Fair Value at the Balance Sheet Date	\$ (1)	\$ (6)	\$ —	\$ —	\$ —	\$ 1	\$ —	\$ (133)

(1) Purchases in Level 3 primarily consist of privately-placed fixed income securities.

(2) Our GLB reinsurance product meets the definition of a derivative instrument for accounting purposes and is accordingly carried at fair value. Excluded from the table above is the portion of the GLB derivative liability classified as Future policy benefits in the Consolidated balance sheets. The liability for GLB reinsurance was \$453 million at September 30, 2018, and \$550 million at December 31, 2017, which includes a fair value derivative adjustment of \$71 million and \$204 million, respectively.

Nine Months Ended	Assets						Liabilities	
	Available-for-Sale Debt Securities						Other derivative instruments	GLB ⁽¹⁾
September 30, 2017 (in millions of U.S. dollars)	Foreign	Corporate securities	MBS	Equity securities	Short-term investments	Other investments		
Balance – beginning of period	\$ 74	\$ 681	\$ 45	\$ 41	\$ 25	\$ 225	\$ 13	\$ 559
Transfers into Level 3	—	168	—	—	—	—	—	9
Transfers out of Level 3	(3)	(93)	—	—	—	—	(9)	—
Change in Net Unrealized Gains (Losses) included in OCI, including foreign exchange	3	(9)	—	1	—	3	—	—
Net Realized Gains/Losses	1	(1)	—	1	—	—	(2)	(265)
Purchases	57	390	8	23	15	39	—	—
Sales	(36)	(79)	(1)	(14)	—	—	—	—
Settlements	(6)	(138)	(8)	—	(40)	(15)	—	—
Balance – end of period	\$ 90	\$ 919	\$ 44	\$ 52	\$ —	\$ 252	\$ 2	\$ 303
Net Realized Gains/Losses Attributable to Changes in Fair Value at the Balance Sheet Date	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ (2)	\$ (265)

(1) Our GLB reinsurance product meets the definition of a derivative instrument for accounting purposes and is accordingly carried at fair value. Excluded from the table above is the portion of the GLB derivative liability classified as Future policy benefits in the Consolidated balance sheets. The liability for GLB reinsurance was \$635 million at September 30, 2017, and \$853 million at December 31, 2016, which includes a fair value derivative adjustment of \$303 million and \$559 million, respectively.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

b) Financial instruments disclosed, but not measured, at fair value

Chubb uses various financial instruments in the normal course of its business. Our insurance contracts are excluded from fair value of financial instruments accounting guidance, and therefore, are not included in the amounts discussed below.

The carrying values of cash, other assets, other liabilities, and other financial instruments not included below approximated their fair values.

Refer to the 2017 Form 10-K for information on the fair value methods and assumptions for investments in partially-owned insurance companies, short-term and long-term debt, repurchase agreements, and trust-preferred securities.

The following tables present fair value, by valuation hierarchy, and carrying value of the financial instruments not measured at fair value:

September 30, 2018	Fair Value					Total	Carrying Value
(in millions of U.S. dollars)	Level 1	Level 2	Level 3	Total			
Assets:							
<i>Fixed maturities held to maturity</i>							
U.S. Treasury and agency	\$ 1,039	\$ 54	\$ —	\$ 1,093	\$ 1,112		
Foreign	—	1,586	—	1,586	1,601		
Corporate securities	—	2,547	31	2,578	2,658		
Mortgage-backed securities	—	2,503	—	2,503	2,574		
States, municipalities, and political subdivisions	—	5,524	—	5,524	5,618		
Total assets	\$ 1,039	\$ 12,214	\$ 31	\$ 13,284	\$ 13,563		
Liabilities:							
Repurchase agreements	\$ —	\$ 1,414	\$ —	\$ 1,414	\$ 1,414		
Short-term debt	—	510	—	510	500		
Long-term debt	—	12,224	—	12,224	12,149		
Trust preferred securities	—	432	—	432	308		
Total liabilities	\$ —	\$ 14,580	\$ —	\$ 14,580	\$ 14,371		

December 31, 2017	Fair Value					Total	Carrying Value
(in millions of U.S. dollars)	Level 1	Level 2	Level 3	Total			
Assets:							
<i>Fixed maturities held to maturity</i>							
U.S. Treasury and agency	\$ 857	\$ 58	\$ —	\$ 915	\$ 908		
Foreign	—	1,757	—	1,757	1,738		
Corporate securities	—	3,184	35	3,219	3,159		
Mortgage-backed securities	—	2,742	—	2,742	2,724		
States, municipalities, and political subdivisions	—	5,841	—	5,841	5,806		
Total assets	\$ 857	\$ 13,582	\$ 35	\$ 14,474	\$ 14,335		
Liabilities:							
Repurchase agreements	\$ —	\$ 1,408	\$ —	\$ 1,408	\$ 1,408		
Short-term debt	—	1,013	—	1,013	1,013		
Long-term debt	—	12,332	—	12,332	11,556		
Trust preferred securities	—	468	—	468	308		
Total liabilities	\$ —	\$ 15,221	\$ —	\$ 15,221	\$ 14,285		

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

4 . Unpaid losses and loss expenses

The following table presents a reconciliation of beginning and ending Unpaid losses and loss expenses:

(in millions of U.S. dollars)	Nine Months Ended September 30	
	2018	2017
Gross unpaid losses and loss expenses – beginning of period	\$ 63,179	\$ 60,540
Reinsurance recoverable on unpaid losses - beginning of period ⁽¹⁾	(14,014)	(12,708)
Net unpaid losses and loss expenses – beginning of period	49,165	47,832
Net losses and loss expenses incurred in respect of losses occurring in:		
Current year	14,186	14,963
Prior years ⁽²⁾	(729)	(781)
Total	13,457	14,182
Net losses and loss expenses paid in respect of losses occurring in:		
Current year	4,522	3,937
Prior years	8,596	8,389
Total	13,118	12,326
Foreign currency revaluation and other	(440)	596
Net unpaid losses and loss expenses – end of period	49,064	50,283
Reinsurance recoverable on unpaid losses ⁽¹⁾	13,965	13,870
Gross unpaid losses and loss expenses – end of period	\$ 63,029	\$ 64,153

(1) Net of provision for uncollectible reinsurance.

(2) Relates to prior period loss reserve development only and excludes prior period development related to reinstatement premiums, expense adjustments, and earned premiums totaling \$86 million and \$110 million for the nine months ended September 30, 2018 and 2017, respectively.

The decrease in net unpaid losses and loss expenses from December 31, 2017 was primarily due to favorable prior period development, foreign exchange movement, and payments related to the 2017 catastrophic events, partially offset by crop activity and the impact of the catastrophic events during the year.

Prior Period Development

Prior period development (PPD) arises from changes to loss estimates recognized in the current year that relate to loss events that occurred in previous calendar years and excludes the effect of losses from the development of earned premium from previous accident years. Significant prior period movements by segment, principally driven by reserve reviews completed during each respective period, are discussed in more detail below. The remaining net development for long-tail lines and short-tail business for each segment and Corporate comprises numerous favorable and adverse movements across a number of lines and accident years, none of which is significant individually or in the aggregate.

Long-tail lines include lines such as workers' compensation, general liability, and professional liability; while short-tail lines include lines such as most property lines, energy, personal accident, and agriculture. During the third quarter of 2017, we determined that the loss development classification for certain businesses, previously grouped within the short-tail column in the table below, would be more appropriately grouped within the long-tail column to better align with the classification of these businesses within our loss development triangles in our Form 10-K. We also determined that the loss development for certain other businesses should be reclassified from long-tail to short-tail. We updated the 2017 amounts below to conform to the current period presentation. These changes to the previously disclosed amounts have no impact to our financial condition and results of operations.

Net favorable prior period development for the three months ended September 30, 2018 was \$243 million, which included \$80 million of net adverse development related to homeowners and valuables, where losses trended higher than expected, and \$54 million of adverse development related to environmental liabilities. The remaining favorable development of \$377 million comprised 80 percent long-tail lines, principally for the 2014 and prior accident years, and 20 percent short-tail lines, principally related to the 2017 catastrophe events.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Net favorable prior period development for the nine months ended September 30, 2018 of \$643 million , was evenly split between long-tail lines, principally for the 2014 and prior accident years, and short-tail lines, principally related to the 2017 catastrophe events.

(in millions of U.S. dollars)	Three Months Ended September 30			Nine Months Ended September 30		
	Long-tail	Short-tail	Total	Long-tail	Short-tail	Total
2018						
North America Commercial P&C Insurance	\$ (170)	\$ (46)	\$ (216)	\$ (266)	\$ (206)	\$ (472)
North America Personal P&C Insurance	—	58	58	—	59	59
North America Agricultural Insurance	—	(1)	(1)	—	(77)	(77)
Overseas General Insurance	(49)	(23)	(72)	(51)	(115)	(166)
Global Reinsurance	(39)	15	(24)	(69)	15	(54)
Corporate	12	—	12	67	—	67
Total	\$ (246)	\$ 3	\$ (243)	\$ (319)	\$ (324)	\$ (643)
2017						
North America Commercial P&C Insurance	\$ (230)	\$ (6)	\$ (236)	\$ (407)	\$ (139)	\$ (546)
North America Personal P&C Insurance	—	32	32	—	66	66
North America Agricultural Insurance	—	(4)	(4)	—	(83)	(83)
Overseas General Insurance	(106)	(2)	(108)	(74)	(110)	(184)
Global Reinsurance	(41)	—	(41)	(69)	5	(64)
Corporate	87	—	87	140	—	140
Total	\$ (290)	\$ 20	\$ (270)	\$ (410)	\$ (261)	\$ (671)

North America Commercial P&C Insurance

2018

For the three months ended September 30, 2018 , net favorable PPD was \$216 million , which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable development of \$170 million in long-tail business, primarily from:
 - Favorable development of \$93 million in commercial excess and umbrella portfolios primarily in accident years 2012 and prior driven by lower than expected reported loss activity, and an increase in weighting towards experience-based methods;
 - Favorable development of \$45 million in workers' compensation lines mainly impacting accident years 2014 and prior, driven by lower than expected paid and reported loss activity, and related updates to development patterns used in our loss projection methods for select portfolios; and
 - Net favorable development of \$28 million in our foreign casualty lines, primarily impacting accident years 2014 and prior, driven by reported loss activity that was generally lower than expected.
- Net favorable development of \$46 million in short-tail business, primarily from:
 - Net favorable development of \$41 million in commercial property and marine businesses due to favorable claim development, including \$42 million favorable development on the 2017 natural catastrophes.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

For the nine months ended September 30, 2018, net favorable PPD was \$472 million , which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable development of \$266 million in long-tail business, primarily from:
 - Net favorable development of \$183 million in our workers' compensation lines with favorable development of \$56 million in the 2017 accident year mainly related to our annual assessment of multi-claimant events including industrial accidents. Consistent with prior years, we reviewed these potential exposures after the close of the accident year to allow for late reporting or identification of significant losses. The net remaining favorable development of \$127 million was principally due to lower than expected loss experience, mainly impacting accident years 2014 and prior;
 - Net favorable development of \$123 million in our commercial excess and umbrella portfolios, primarily in accident years 2012 and prior. This was driven by lower than expected reported loss activity, and an increase in weighting towards experience-based methods, partially offset by higher than expected claim activity in the 2014 and 2015 accident years which led to reserve strengthening in those years;
 - Favorable development of \$28 million in our foreign casualty lines due to the same factors as experienced for the three months ended September 30, 2018 as described above;
 - Net favorable development of \$3 million on several lines of business due to favorable claim development on the 2017 natural catastrophes; and
 - Net adverse development of \$71 million , mainly in our automobile liability, commercial-multi peril (CMP) liability, products and general liability lines, driven by adverse paid and reported loss activity relative to prior expectations in accident years 2015 through 2017, partly offset by favorable emergence in older accident years.
- Net favorable development of \$206 million in short-tail business, primarily from:
 - Net favorable development of \$156 million in our commercial property and marine businesses due to favorable claim development, including \$157 million favorable development on the 2017 natural catastrophes; and
 - Net favorable development of \$50 million in other short-tail business, including \$19 million in surety and also including several smaller net favorable movements from lower than expected case activity in other classes, such as accident and commercial automobile physical damage, none of which were significant individually or in the aggregate.

2017

For the three months ended September 30, 2017, net favorable PPD was \$236 million , which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable development of \$230 million in long-tail business, primarily from:
 - Favorable development of \$140 million in commercial excess and umbrella portfolios primarily in accident years 2011 and prior driven by lower paid and reported loss activity relative to prior expectations as well as an increase in weighting towards experience-based methods;
 - Favorable development of \$46 million in workers' compensation business mainly impacting accident years 2013 and prior, driven by lower than expected paid and reported loss activity, and revisions to development patterns used in our loss projection methods for select portfolios; and
 - Net favorable development of \$28 million on several large multi-line prospective deals primarily impacting the 2012 and 2013 accident years, due to lower than expected reported loss activity. These structured deals typically cover large clients for multiple product lines and with varying loss limitations; this development is net of premium adjustments of \$26 million tied to the loss performance of the particular deals.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

- Net favorable development of \$6 million in short-tail business across a number of accident years, none of which were significant individually or in the aggregate.

For the nine months ended September 30, 2017, net favorable PPD was \$546 million, which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable development of \$407 million in long-tail business, primarily from:
 - Net favorable development of \$214 million in our commercial excess and umbrella portfolios, primarily in accident years 2011 and prior, driven by lower than expected reported loss activity, and an increase in weighting towards experience-based methods;
 - Net favorable development of \$125 million in our workers' compensation businesses with favorable development of \$57 million in the 2016 accident year related to our annual assessment of multi-claimant events including industrial accidents. Consistent with prior years, we reviewed these potential exposures after the close of the accident year to allow for late reporting or identification of significant losses. Net favorable development of \$68 million was principally due to lower than expected loss experience and revisions to development patterns used in our loss projection methods, mainly impacting accident years 2013 and prior, and partly offset by smaller adverse development in the more recent prior accident years;
 - Favorable development of \$28 million in large multi-line accounts due primarily to the same factors experienced for the three months ended September 30, 2017; and
 - Net favorable development of \$27 million in our professional Errors and Omissions (E&O) portfolios, primarily in the 2012 and 2013 accident years, arising from lower than expected reported loss activity, partially offset by claim-specific adverse development.
- Net favorable development of \$139 million in short-tail business, primarily from:
 - Favorable development of \$65 million in property lines, primarily in our commercial property portfolios, driven by lower than expected loss emergence in the 2014 and 2016 accident years;
 - Net favorable development of \$45 million in our surety business, primarily due to lower than expected claims severity in the 2015 accident year; and
 - Net favorable development of \$19 million in our accident & health (A&H) business, primarily due to lower than expected loss emergence in the 2015 and 2016 accident years.

**North America Personal P&C Insurance
2018**

For the three months ended September 30, 2018, net adverse PPD was \$58 million, which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net adverse development of 80 million in our homeowners and valuables lines, primarily impacting the 2017 accident year. Overall, non-catastrophe losses were \$137 million higher than expected, partially offset by favorable claim development of \$57 million on the 2017 natural catastrophes. The higher than expected non-catastrophe homeowners losses were primarily severity driven and included water related claims, large fire losses, and non-catastrophe weather claims; and
- Net favorable development of \$24 million in our personal excess lines primarily impacting the 2015 accident year, due to lower than expected loss emergence and an increase in weighting towards experience-based methods.

For the nine months ended September 30, 2018, net adverse PPD was \$59 million, primarily due to the same factors as experienced for the three months ended September 30, 2018 as described above, including \$68 million of favorable claim development on the 2017 natural catastrophes.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

2017

For the three months ended September 30, 2017, net adverse PPD was \$32 million , which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net adverse development of \$98 million in our homeowners lines, primarily impacting the 2016 accident year, due to higher than expected loss severity; and
- Net favorable development of \$58 million in our personal excess lines primarily impacting the 2014 accident year, due to lower than expected loss experience and an increase weighting towards experience-based methods.

For the nine months ended September 30, 2017, net adverse PPD was \$66 million , including adverse development of \$105 million in our homeowners lines and favorable development of \$58 million in our personal excess lines as described above.

North America Agricultural Insurance

2018

For the three months ended September 30, 2018, net favorable PPD was \$1 million , primarily due to favorable claim development on the 2017 natural catastrophes.

For the nine months ended September 30, 2018, net favorable PPD was \$77 million , including \$1 million favorable claim development on the 2017 natural catastrophes. Actual claim development relates to our Multiple Peril Crop Insurance (MPCI) business and is favorable due to better than expected crop yield results in certain states at the prior year-end period (i.e., 2018 results based on crop yield results at year-end 2017).

2017

For the three months ended September 30, 2017, net favorable PPD was \$4 million across a number of accident years, none of which were significant individually or in the aggregate.

For the nine months ended September 30, 2017, net favorable PPD was \$83 million . The majority of the claim development relates to our MPCI business and is favorable due to better than expected crop yield results in certain states at the prior year-end period (i.e., 2017 results based on crop yield results at year-end 2016).

Overseas General Insurance

2018

For the three months ended September 30, 2018 , net favorable PPD was \$72 million , which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable development of \$49 million in long-tail business, primarily from:
 - Net favorable development of \$54 million in casualty lines, with favorable development of \$92 million in accident years 2014 and prior, resulting from lower than expected loss emergence across primary and excess lines in the U.K., Continental Europe and Asia Pacific, partially offset by adverse development of \$38 million in accident years 2015 through 2017, primarily due to large loss experience in U.K. excess lines and wholesale business, and adverse development in certain Latin America excess lines;
 - Favorable development of \$33 million , primarily including \$12 million in political risks, \$10 million in aviation and \$10 million in environmental; and
 - Net adverse development of \$38 million in financial lines, with favorable development of \$93 million in accident years 2014 and prior, resulting from lower than expected loss emergence including favorable development due to specific large claim reductions in Asia financial institutions including wholesale bankers Directors and Officers (D&O) and bankers professional indemnity, and adverse development of \$131 million in accident years 2015 through 2017, primarily due to adverse large loss experience in specific D&O and financial institutions portfolios in Australia, Continental Europe and the U.K.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

- Net favorable development of \$23 million in short-tail business, primarily from:
 - Favorable development of \$21 million in marine, primarily across accident years 2012 through 2015 driven mainly by favorable loss emergence in Latin America including favorable salvage/subrogation recoveries; and
 - Adverse development of \$4 million from claim development on the 2017 natural catastrophes.

For the nine months ended September 30, 2018, net favorable PPD was \$166 million, which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable development of \$51 million in long-tail business, driven by the same factors as experienced for the three months ended September 30, 2018 as described above.
- Net favorable development of \$115 million in short-tail business, primarily from:
 - Net favorable development of \$50 million in property and marine (excluding technical lines), primarily in accident years 2014 through 2016, driven mainly by favorable loss emergence across all regions, including favorable claim-specific loss settlements and salvage/subrogation recoveries;
 - Favorable development of \$8 million from claim development on the 2017 natural catastrophes; and
 - Net favorable development of \$57 million, primarily including \$17 million in personal business, \$17 million in surety, \$16 million in A&H business, and \$13 million in energy lines.

2017

For the three months ended September 30, 2017, net favorable PPD was \$108 million, which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable development of \$106 million in long-tail business, primarily from:
 - Net favorable development of \$40 million in casualty lines, with favorable development of \$69 million in accident years 2013 and prior, resulting from lower than expected loss emergence, partially offset by adverse development of \$29 million in accident years 2014 through 2016, primarily due to large loss experience in U.K. excess lines and wholesale business; and
 - Net favorable development of \$34 million in financial lines, with favorable development of \$124 million in accident years 2013 and prior, resulting from lower than expected loss emergence including favorable development on specific, litigated claims, and adverse development of \$90 million in accident years 2014 through 2016, primarily due to large loss experience in specific Directors and Officers (D&O) portfolios in the U.K., Continental Europe, and Australia and Financial Institutions lines in the U.K. and Continental Europe.

For the nine months ended September 30, 2017, net favorable PPD was \$184 million, which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable development of \$74 million in long-tail business, primarily from:
 - Favorable development of \$34 million in financial lines, driven by the same factors as experienced for the three months ended September 30, 2017 as described above; and
 - Net favorable development of \$9 million in casualty lines, driven by the same factors as experienced for the three months ended September 30, 2017, as described above, partially offset by adverse development of \$32 million driven by a change in the discount rate in the U.K. (Ogden rate) impacting the 2016 and prior accident years.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

- Net favorable development of \$110 million in short-tail business, primarily from:
 - Favorable development of \$43 million in technical and energy lines, primarily from favorable loss emergence in accident years 2014 through 2016 primarily in offshore and power generation where experience has been better than expected;
 - Favorable development of \$37 million in property and marine (excluding technical lines), primarily in accident years 2013 through 2015, driven mainly by favorable U.K. and Continental Europe loss emergence, including favorable claim-specific loss settlements; and
 - Favorable development of \$20 million in A&H lines, primarily from favorable loss emergence in Asia Pacific and Continental Europe in accident years 2014 through 2016.

**Global Reinsurance
2018**

For the three months ended September 30, 2018, net favorable PPD was \$24 million, which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable development of \$39 million in long-tail business, in our professional liability, medical malpractice, and workers' compensation lines primarily from treaty years 2013 and prior principally resulting from lower than expected loss emergence; and
- Net adverse development of \$15 million in short-tail business, due to claim development on the 2017 natural catastrophes.

For the nine months ended September 30, 2018, net favorable PPD was \$54 million, which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable development of \$69 million in long-tail business, primarily in our casualty, professional liability, medical malpractice, and workers' compensation lines primarily from treaty years 2013 and prior principally resulting from lower than expected loss emergence; and
- Net adverse development of \$15 million in short-tail business, which included \$14 million of net adverse claim development on the 2017 natural catastrophes.

2017

For the three months ended September 30, 2017, net favorable PPD was \$41 million, which was the net result of several underlying favorable and adverse movements, and was driven by net favorable development of \$29 million in our professional liability and medical malpractice lines primarily from treaty years 2013 and prior, principally resulting from lower than expected loss emergence in the U.S. portfolio.

For the nine months ended September 30, 2017, net favorable PPD was \$64 million, which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable development of \$69 million in long-tail business, primarily from:
 - Favorable development of \$66 million in our casualty, professional liability and medical malpractice lines, primarily driven by the same factors as experienced for the three months ended September 30, 2017 as described above; and
 - Net adverse development of \$10 million in our motor and excess liability lines, primarily due to adverse development of \$9 million driven by a change in the discount rate in the U.K. (Ogden rate) primarily impacting the 2015 and prior treaty years.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Corporate 2018

For the three months ended September 30, 2018, net adverse development was \$12 million, driven principally by adverse development in environmental liabilities of 54 million due to case specific settlements and higher than expected remediation expense and defense costs, generally impacting larger modeled accounts. This adverse development was partially offset by a favorable adjustment in our estimate of reinsurance recoverables.

For the nine months ended September 30, 2018, net adverse development was \$67 million, driven principally by adverse development on non A&E run-off casualty exposures and by the adverse development in environmental liabilities as described above.

2017

For the three months ended September 30, 2017, adverse development was \$87 million, driven principally by development of \$77 million in environmental liabilities and \$9 million for unallocated loss adjustment expenses due to run-off operating expenses paid and incurred in the respective periods, impacting the 1995 and prior accident years. The development in environmental liabilities was due to case specific settlements and both higher than expected remediation expense and defense costs. These higher costs impacted both large modeled accounts as well as smaller accounts.

For the nine months ended September 30, 2017, adverse development was \$140 million, driven principally by development of environmental liabilities as described above, \$35 million of development on non-A&E run-off casualty exposures due to higher than expected loss activity, and \$28 million of unallocated loss adjustment expenses due to run-off operating expenses paid and incurred in the respective period.

5 . Debt

In March 2018, Chubb INA Holdings Inc. (Chubb INA) issued € 900 million (\$1.1 billion based on the foreign exchange rate at the date of issuance) of 1.55 percent Euro denominated senior notes due March 2028 and € 900 million (\$1.1 billion based on the foreign exchange rate at the date of issuance) of 2.5 percent Euro denominated senior notes due March 2038. These senior notes are redeemable at any time at Chubb INA's option subject to a "make-whole" premium (the present value of the remaining principal and interest discounted at the applicable comparable government bond rate plus 0.15 percent for the senior notes due 2028 and 0.25 percent for the senior notes due 2038). The notes are also redeemable at par plus accrued and unpaid interest in the event of certain changes in tax law. These notes do not have the benefit of any sinking fund. These senior unsecured notes are guaranteed on a senior basis by Chubb and they rank equally with all of Chubb's other senior obligations. They also contain customary limitations on lien provisions as well as customary events of default provisions which, if breached, could result in the accelerated maturity of such senior debt.

Chubb INA's \$300 million of 5.8 percent senior notes due March 2018, \$600 million of 5.75 percent senior notes due May 2018 and \$100 million of 6.6 percent senior notes due August 2018 were paid upon maturity. During April 2018, we redeemed \$1.0 billion of 6.375 percent unsecured junior subordinated capital securities due to mature in April 2037 and recorded a loss of \$36 million from the extinguishment of debt, which is included in Net realized gains (losses) in the Consolidated statement of operations.

In June 2018, we reclassified \$499 million of the 5.9 percent senior notes (\$500 million par value due to mature in June 2019) from long-term to short-term debt in the Consolidated balance sheets.

6 . Commitments, contingencies, and guarantees

a) Derivative instruments

Foreign currency management

As a global company, Chubb entities transact business in multiple currencies. Our policy is to generally match assets, liabilities, and required capital for each individual jurisdiction in local currency, which would include the use of derivatives discussed below. We do not hedge our net asset non-U.S. dollar capital positions; however, we do consider economic hedging for planned cross border transactions.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Derivative instruments employed

Chubb maintains positions in derivative instruments such as futures, options, swaps, and foreign currency forward contracts for which the primary purposes are to manage duration and foreign currency exposure, yield enhancement, or to obtain an exposure to a particular financial market. Chubb also maintains positions in convertible securities that contain embedded derivatives. Investment derivative instruments are recorded in either Other assets (OA) or Accounts payable, accrued expenses, and other liabilities (AP), convertible bonds are recorded in Fixed maturities available for sale (FM AFS), and convertible equity securities are recorded in Equity securities (ES) in the Consolidated balance sheets. These are the most numerous and frequent derivative transactions. In addition, Chubb from time to time purchases to be announced mortgage-backed securities (TBAs) as part of its investing activities.

Under reinsurance programs covering GLBs, Chubb assumes the risk of GLBs (principally GMIB) associated with variable annuity contracts. The GMIB risk is triggered if, at the time the contract holder elects to convert the accumulated account value to a periodic payment stream (annuitize), the accumulated account value is not sufficient to provide a guaranteed minimum level of monthly income. The GLB reinsurance product meets the definition of a derivative instrument. Benefit reserves in respect of GLBs are classified as Future policy benefits (FPB) while the fair value derivative adjustment is classified within AP. Chubb also generally maintains positions in exchange-traded equity futures contracts on equity market indices to limit equity exposure in the GMDB and GLB blocks of business.

All derivative instruments are carried at fair value with changes in fair value recorded in Net realized gains (losses) in the Consolidated statements of operations. None of the derivative instruments are designated as hedges for accounting purposes.

The following table presents the balance sheet locations, fair values of derivative instruments in an asset or (liability) position, and notional values/payment provisions of our derivative instruments:

(in millions of U.S. dollars)	Consolidated Balance Sheet Location	September 30, 2018			December 31, 2017		
		Fair Value		Notional Value/ Payment Provision	Fair Value		Notional Value/ Payment Provision
		Derivative Asset	Derivative (Liability)		Derivative Asset	Derivative (Liability)	
<i>Investment and embedded derivative instruments:</i>							
Foreign currency forward contracts	OA / (AP)	\$ 19	\$ (17)	\$ 2,189	\$ 14	\$ (27)	\$ 2,064
Cross-currency swaps	OA / (AP)	—	—	45	—	—	45
Interest rate swaps	OA / (AP)	26	—	5,000	—	—	—
Options/Futures contracts on notes and bonds	OA / (AP)	10	(7)	1,181	4	(3)	1,007
Convertible securities ⁽¹⁾	FM AFS / ES	12	—	13	5	—	6
		\$ 67	\$ (24)	\$ 8,428	\$ 23	\$ (30)	\$ 3,122
<i>Other derivative instruments:</i>							
Futures contracts on equities ⁽²⁾	OA / (AP)	\$ —	\$ (7)	\$ 1,095	\$ —	\$ (21)	\$ 1,553
Other	OA / (AP)	5	(2)	389	1	(2)	75
		\$ 5	\$ (9)	\$ 1,484	\$ 1	\$ (23)	\$ 1,628
GLB ⁽³⁾	(AP) / (FPB)	\$ —	\$ (453)	\$ 1,104	\$ —	\$ (550)	\$ 1,083

(1) Includes fair value of embedded derivatives.

(2) Related to GMDB and GLB blocks of business.

(3) Includes both future policy benefits reserves and fair value derivative adjustment. Note that the payment provision related to GLB is the net amount at risk. The concept of a notional value does not apply to the GLB reinsurance contracts.

At September 30, 2018 and December 31, 2017, derivative assets of \$35 million and derivative liabilities of \$24 million, respectively, included in the table above were subject to a master netting agreement. The remaining derivatives included in the table above were not subject to a master netting agreement.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

The following table presents net realized gains (losses) related to derivative instrument activity in the Consolidated statements of operations:

(in millions of U.S. dollars)	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Investment and embedded derivative instruments:				
Foreign currency forward contracts	\$ (2)	\$ (7)	\$ 5	\$ —
Interest rate swaps	26	—	26	—
All other futures contracts and options	13	(8)	47	(25)
Convertible securities ⁽¹⁾	—	1	—	1
Total investment and embedded derivative instruments	\$ 37	\$ (14)	\$ 78	\$ (24)
GLB and other derivative instruments:				
GLB ⁽¹⁾	\$ 54	\$ 54	\$ 133	\$ 265
Futures contracts on equities ⁽²⁾	(100)	(57)	(122)	(169)
Other	(8)	(5)	2	(4)
Total GLB and other derivative instruments	\$ (54)	\$ (8)	\$ 13	\$ 92
	\$ (17)	\$ (22)	\$ 91	\$ 68

(1) Excludes foreign exchange gains (losses) related to GLB.

(2) Related to GMD and GLB blocks of business.

b) Derivative instrument objectives
(i) Foreign currency exposure management

A foreign currency forward contract (forward) is an agreement between participants to exchange specific foreign currencies at a future date. Chubb uses forwards to minimize the effect of fluctuating foreign currencies as discussed above.

(ii) Duration management and market exposure
Futures

Futures contracts give the holder the right and obligation to participate in market movements, determined by the index or underlying security on which the futures contract is based. Settlement is made daily in cash by an amount equal to the change in value of the futures contract times a multiplier that scales the size of the contract. Exchange-traded futures contracts on money market instruments, notes, and bonds are used in fixed maturity portfolios to more efficiently manage duration, as substitutes for ownership of the money market instruments, bonds, and notes without significantly increasing the risk in the portfolio. Investments in futures contracts may be made only to the extent that there are assets under management not otherwise committed.

Exchange-traded equity futures contracts are used to limit exposure to a severe equity market decline, which would cause an increase in expected claims and therefore, an increase in reserves for GMD and GLB reinsurance business.

Options

An option contract conveys to the holder the right, but not the obligation, to purchase or sell a specified amount or value of an underlying security at a fixed price. Option contracts are used in our investment portfolio as protection against unexpected shifts in interest rates, which would affect the duration of the fixed maturity portfolio. By using options in the portfolio, the overall interest rate sensitivity of the portfolio can be reduced. Option contracts may also be used as an alternative to futures contracts in the synthetic strategy as described above.

The price of an option is influenced by the underlying security, expected volatility, time to expiration, and supply and demand.

The credit risk associated with the above derivative financial instruments relates to the potential for non-performance by counterparties. Although non-performance is not anticipated, in order to minimize the risk of loss, management monitors the creditworthiness of its counterparties and obtains collateral. The performance of exchange-traded instruments is guaranteed by the exchange on which they trade. For non-exchange-traded instruments, the counterparties are principally banks which must meet certain criteria according to our investment guidelines.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Interest rate swaps

An interest rate swap is a contract between two counterparties in which interest payments are made based on a notional principal amount, which itself is never paid or received. Under the terms of an interest rate swap, one counterparty makes interest payments based on a fixed interest rate and the other counterparty's payments are based on a floating rate. Interest rate swap contracts are used occasionally in our investment portfolio as protection against unexpected shifts in interest rates, which would affect the fair value of the fixed maturity portfolio. By using interest rate swaps in the portfolio, the overall duration or interest rate sensitivity of the portfolio can be impacted.

Cross-currency swaps

Cross-currency swaps are agreements under which two counterparties exchange interest payments and principal denominated in different currencies at a future date. We use cross-currency swaps to reduce the foreign currency and interest rate risk by converting cash flows back into local currency. We invest in foreign currency denominated investments to improve credit diversification and also to obtain better duration matching to our liabilities that is limited in the local currency market.

Other

Included within Other are derivatives intended to reduce potential losses which may arise from certain exposures in our insurance business. The economic benefit provided by these derivatives is similar to purchased reinsurance. For example, Chubb may enter into crop derivative contracts to protect underwriting results in the event of a significant decline in commodity prices.

(iii) Convertible security investments

A convertible security is a debt instrument or preferred stock that can be converted into a predetermined amount of the issuer's equity. The convertible option is an embedded derivative within the host instruments which are classified in the investment portfolio as either available for sale or as an equity security. Chubb purchases convertible securities for their total return and not specifically for the conversion feature.

(iv) TBA

By acquiring TBAs, we make a commitment to purchase a future issuance of mortgage-backed securities. For the period between purchase of the TBAs and issuance of the underlying security, we account for our position as a derivative in the consolidated financial statements. Chubb purchases TBAs both for their total return and for the flexibility they provide related to our mortgage-backed security strategy.

(v) GLB

Under the GLB program, as the assuming entity, Chubb is obligated to provide coverage until the expiration or maturity of the underlying deferred annuity contracts or the expiry of the reinsurance treaty. Premiums received under the reinsurance treaties are classified as premium. Expected losses allocated to premiums received are classified as Future policy benefits and valued similar to GMDB reinsurance. Other changes in fair value arise principally from changes in expected losses allocated to expected future premiums. Fair value represents management's estimate of an exit price and thus, includes a risk margin. We may recognize a realized loss for other changes in fair value due to adverse changes in the capital markets (e.g., declining interest rates and/or declining U.S. and/or international equity markets) and changes in actual or estimated future policyholder behavior (e.g., increased annuitization or decreased lapse rates) although we expect the business to be profitable.

To mitigate adverse changes in the capital markets, we maintain positions in exchange-traded equity futures contracts, as noted under section "(ii) Futures" above. These futures increase in fair value when the S&P 500 index decreases (and decrease in fair value when the S&P 500 index increases). The net impact of gains or losses related to changes in fair value of the GLB liability and the exchange-traded equity futures are included in Net realized gains (losses). For example, for the nine months ended September 30, 2018, we recognized net realized gains of \$11 million related to the GLBs, comprising \$133 million of realized gains reflecting a net decrease in the fair value of the GLB liabilities primarily due to rising interest rates and higher equity markets partially offset by \$122 million of realized losses related to exchange-traded equity futures.

c) Securities lending and secured borrowings

Chubb participates in a securities lending program operated by a third-party banking institution whereby certain assets are loaned to qualified borrowers and from which we earn an incremental return. The securities lending collateral can only be drawn down by Chubb in the event that the institution borrowing the securities is in default under the lending agreement. An indemnification agreement with the lending agent protects us in the event a borrower becomes insolvent or fails to return any of the securities on loan. The collateral is recorded in Securities lending collateral and the liability is recorded in Securities lending payable in the Consolidated balance sheets.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Potential risks exist in our secured borrowing transactions due to market conditions and counterparty exposure. With collateral that we pledge, there is a risk that the collateral may not be returned at the expiration of the agreement. If the counterparty fails to return the collateral, Chubb will have free use of the borrowed funds until our collateral is returned. In addition, we may encounter the risk that Chubb may not be able to renew outstanding borrowings with a new term or with an existing counterparty due to market conditions including a decrease in demand as well as more restrictive terms from banks due to increased regulatory and capital constraints. Should this condition occur, Chubb may seek alternative borrowing sources or reduce borrowings. Additionally, increased margins and collateral requirements due to market conditions would increase our restricted assets as we are required to provide additional collateral to support the transaction.

The following table presents the carrying value of collateral held under securities lending agreements by investment category and remaining contractual maturity of the underlying agreements:

	Remaining contractual maturity	
	September 30	December 31
	2018	2017
(in millions of U.S. dollars)	Overnight and Continuous	
<i>Collateral held under securities lending agreements:</i>		
Cash	\$ 863	\$ 828
U.S. Treasury and agency	98	36
Foreign	759	712
Corporate securities	14	—
Mortgage-backed securities	57	74
Equity securities	352	87
	\$ 2,143	\$ 1,737
Gross amount of recognized liability for securities lending payable	\$ 2,143	\$ 1,737

At September 30, 2018 and December 31, 2017, our repurchase agreement obligations of \$1,414 million and \$1,408 million, respectively, were fully collateralized. In contrast to securities lending programs, the use of cash received is not restricted for the repurchase obligations. The fair value of the underlying securities sold remains in Fixed maturities available for sale and the repurchase agreement obligation is recorded in Repurchase agreements in the Consolidated balance sheets.

The following table presents the carrying value of collateral pledged under repurchase agreements by investment category and remaining contractual maturity of the underlying agreements:

	Remaining contractual maturity					
	September 30, 2018			December 31, 2017		
	Up to 30 Days	Greater than 90 Days	Total	Up to 30 Days	Greater than 90 Days	Total
(in millions of U.S. dollars)						
<i>Collateral pledged under repurchase agreements:</i>						
U.S. Treasury and agency	\$ 4	\$ 245	\$ 249	\$ 9	\$ 230	\$ 239
Mortgage-backed securities	408	813	1,221	369	826	1,195
	\$ 412	\$ 1,058	\$ 1,470	\$ 378	\$ 1,056	\$ 1,434
Gross amount of recognized liabilities for repurchase agreements	\$ 1,414			\$ 1,408		
Difference ⁽¹⁾	\$ 56			\$ 26		

(1) Per the repurchase agreements, the amount of collateral posted is required to exceed the amount of gross liability.

d) Fixed maturities

At September 30, 2018, we have commitments to purchase fixed income securities of \$867 million over the next several years.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

e) Other investments

At September 30, 2018, included in Other investments in the Consolidated balance sheets are investments in limited partnerships and partially-owned investment companies with a carrying value of \$4.1 billion. In connection with these investments, we have commitments that may require funding of up to \$3.2 billion over the next several years.

f) Taxation

At September 30, 2018, \$14 million of unrecognized tax benefits remain outstanding. It is reasonably possible that over the next twelve months, the amount of unrecognized tax benefits may change resulting from the re-evaluation of unrecognized tax benefits arising from examinations by taxing authorities and the closing of tax statutes of limitations. With few exceptions, Chubb is no longer subject to income tax examinations for years before 2010.

g) Legal proceedings

Our insurance subsidiaries are subject to claims litigation involving disputed interpretations of policy coverages and, in some jurisdictions, direct actions by allegedly-injured persons seeking damages from policyholders. These lawsuits, involving claims on policies issued by our subsidiaries which are typical to the insurance industry in general and in the normal course of business, are considered in our loss and loss expense reserves. In addition to claims litigation, we are subject to lawsuits and regulatory actions in the normal course of business that do not arise from or directly relate to claims on insurance policies. This category of business litigation typically involves, among other things, allegations of underwriting errors or misconduct, employment claims, regulatory activity, or disputes arising from our business ventures. In the opinion of management, our ultimate liability for these matters could be, but we believe is not likely to be, material to our consolidated financial condition and results of operations.

7. Shareholders' equity

All of Chubb's Common Shares are authorized under Swiss corporate law. Though the par value of Common Shares is stated in Swiss francs, Chubb continues to use U.S. dollars as its reporting currency for preparing consolidated financial statements. Under Swiss corporate law, dividends, including distributions through a reduction in par value (par value reduction) or from legal reserves, must be stated in Swiss francs though dividend payments are made by Chubb in U.S. dollars. At September 30, 2018, our Common Shares had a par value of CHF 24.15 per share.

At our May 2017 and 2016 annual general meetings, our shareholders approved an annual dividend for the following year of up to \$2.84 per share and \$ 2.76 per share, respectively, which were paid in four quarterly installments of \$0.71 per share and \$ 0.69 per share, respectively, at dates determined by the Board of Directors (Board) after the annual general meetings by way of a distribution from capital contribution reserves, transferred to free reserves for payment.

At our May 2018 annual general meeting, our shareholders approved an annual dividend for the following year of up to \$2.92 per share, expected to be paid in four quarterly installments of \$0.73 per share after the general meeting by way of distribution from capital contribution reserves, transferred to free reserves for payment. The Board will determine the record and payment dates at which the annual dividend may be paid until the date of the 2019 annual general meeting, and is authorized to abstain from distributing a dividend at its discretion.

The following table presents dividend distributions per Common Share in Swiss francs (CHF) and U.S. dollars (USD):

	Three Months Ended				Nine Months Ended			
	September 30				September 30			
	2018		2017		2018		2017	
	CHF	USD	CHF	USD	CHF	USD	CHF	USD
Total dividend distributions per common share	0.72	\$ 0.73	0.68	\$ 0.71	2.11	\$ 2.17	2.06	\$ 2.11

Common Shares in treasury are used principally for issuance upon the exercise of employee stock options, grants of restricted stock, and purchases under the Employee Stock Purchase Plan (ESPP). At September 30, 2018, 18,683,074 Common Shares remain in treasury after net shares redeemed under employee share-based compensation plans.

Chubb Limited securities repurchase authorization

In November 2016, the Board authorized a share repurchase program of \$1.0 billion of Chubb's Common Shares through December 31, 2017. In December 2017, the Board authorized a share repurchase program of \$1.0 billion of Chubb's Common Shares from January 1, 2018 through December 31, 2018.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

The following table presents repurchases of Chubb's Common Shares conducted in a series of open market transactions under the Board authorizations:

(in millions of U.S. dollars, except share data)	Three Months Ended September 30		Nine Months Ended September 30		October 1, 2018 through October 29, 2018
	2018	2017	2018	2017	2018
Number of shares repurchased	2,781,307	1,615,383	5,225,162	5,033,013	750,000
Cost of shares repurchased	\$ 379	\$ 232	\$ 703	\$ 707	\$ 94
Repurchase authorization remaining at end of period	\$ 297	\$ 293	\$ 297	\$ 293	\$ 203

8 . Share-based compensation

The Chubb Limited 2016 Long-Term Incentive Plan (the 2016 LTIP) permits grants of both incentive and non-qualified stock options principally at an option price per share equal to the grant date fair value of Chubb's Common Shares. Stock options are generally granted with a 3-year vesting period and a 10-year term. Stock options typically vest in equal annual installments over the vesting period, which is also the requisite service period. On February 22, 2018, Chubb granted 1,841,329 stock options with a weighted-average grant date fair value of \$29.71 each. The fair value of the options issued is estimated on the grant date using the Black-Scholes option pricing model.

The 2016 LTIP also permits grants of service-based restricted stock and restricted stock units as well as performance-based restricted stock awards. Chubb generally grants service-based restricted stock and restricted stock units with a 4-year vesting period, based on a graded vesting schedule. Beginning in 2017, the performance-based stock awards granted comprise target awards which have 3-year cliff vesting provisions based on tangible book value (shareholders' equity less goodwill and intangible assets, net of tax) per share growth and P&C combined ratio compared to a defined group of peer companies. Premium performance-based stock awards are earned only if tangible book value per share growth and the P&C combined ratio over the cumulative 3-year period after the grant of the associated target awards exceed a higher threshold compared to our peer group, with an additional vesting provision based on total shareholder return compared to our peer group. The restricted stock is granted at market close price on the grant date. On February 22, 2018, Chubb granted 973,624 service-based restricted stock awards, 301,024 service-based restricted stock units, and 180,065 performance-based stock awards to employees and officers with a grant date fair value of \$143.07 each. Each restricted stock unit represents our obligation to deliver to the holder one Common Share upon vesting.

9 . Postretirement benefits

The components of net pension and other postretirement benefit costs (benefits) reflected in Net income in the Consolidated statements of operations were as follows:

Three Months Ended September 30 (in millions of U.S. dollars)	Pension Benefits				Other Postretirement Benefits	
	2018		2017		2018	2017
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans		
Service cost	\$ 14	\$ 3	\$ 15	\$ 6	\$ 1	\$ —
Interest cost	26	6	27	6	1	2
Expected return on plan assets	(53)	(12)	(47)	(11)	(2)	(2)
Amortization of net actuarial loss	—	1	—	1	—	—
Amortization of prior service cost	—	—	—	—	(21)	(22)
Curtailements	—	—	—	—	(1)	(32)
Settlements	—	—	—	—	—	—
Net periodic (benefit) cost	\$ (13)	\$ (2)	\$ (5)	\$ 2	\$ (22)	\$ (54)

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Nine Months Ended September 30 (in millions of U.S. dollars)	2018				Pension Benefits		Other Postretirement Benefits	
	U.S. Plans		Non-U.S. Plans		2017		2018	2017
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans		
Service cost	\$ 43	\$ 9	\$ 47	\$ 14	\$ 1	\$ 2		
Interest cost	79	20	79	20	3	3		
Expected return on plan assets	(159)	(38)	(142)	(31)	(4)	(4)		
Amortization of net actuarial loss	—	1	—	2	—	—		
Amortization of prior service cost	—	—	—	—	(64)	(68)		
Curtailments	—	—	—	(8)	(2)	(32)		
Settlements	1	—	—	—	—	—		
Net periodic (benefit) cost	\$ (36)	\$ (8)	\$ (16)	\$ (3)	\$ (66)	\$ (99)		

The non-service cost components of net periodic (benefit) cost are included in Losses and loss expenses and Administrative expenses in the Consolidated statements of operations.

10 . Segment information

Chubb operates through six business segments: North America Commercial P&C Insurance, North America Personal P&C Insurance, North America Agricultural Insurance, Overseas General Insurance, Global Reinsurance, and Life Insurance.

Corporate results primarily include income and expenses not attributable to reportable segments and loss and loss expenses of asbestos and environmental (A&E) liabilities.

For segment reporting purposes, certain items are presented in a different manner below than in the consolidated financial statements. Management uses underwriting income (loss) as the main measures of segment performance. Chubb calculates underwriting income (loss) by subtracting Losses and loss expenses, Policy benefits, Policy acquisition costs, and Administrative expenses from Net premiums earned. To calculate Segment income (loss), include Net investment income, Other (income) expense, and Amortization of purchased intangibles. For the North America Agricultural Insurance segment, management includes gains and losses on crop derivatives as a component of underwriting income (loss). For example, for the three months ended September 30, 2018, underwriting income in our North America Agricultural Insurance segment was \$79 million . This amount includes \$8 million of realized losses related to crop derivatives which are reported in Net realized gains (losses) below.

For the Life Insurance segment, management includes Net investment income and (Gains) losses from fair value changes in separate account assets that do not qualify for separate account reporting under GAAP as components of Life Insurance underwriting income. For example, for the three months ended September 30, 2018, Life Insurance underwriting income of \$84 million includes Net investment income of \$85 million and losses from fair value changes in separate account assets of \$14 million . The gains (losses) from fair value changes in separate account assets are reported in Other (income) expense in the table below.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

The following tables present the Statement of Operations by segment:

For the Three Months Ended

September 30, 2018 (in millions of U.S. dollars)	North America Commercial P&C Insurance	North America Personal P&C Insurance	North America Agricultural Insurance	Overseas General Insurance	Global Reinsurance	Life Insurance	Corporate	Chubb Consolidated
Net premiums written	\$ 3,199	\$ 1,218	\$ 884	\$ 2,081	\$ 164	\$ 564	\$ —	\$ 8,110
Net premiums earned	3,019	1,167	857	2,157	157	551	—	7,908
Losses and loss expenses	1,881	860	719	1,114	86	195	13	4,868
Policy benefits	—	—	—	—	—	127	—	127
Policy acquisition costs	458	236	49	582	40	139	—	1,504
Administrative expenses	251	69	2	252	10	77	58	719
Underwriting income (loss)	429	2	87	209	21	13	(71)	690
Net investment income (loss)	503	59	7	155	63	85	(49)	823
Other (income) expense	(1)	—	—	(7)	(13)	20	(144)	(145)
Amortization expense of purchased intangibles	—	4	7	8	—	—	64	83
Segment income (loss)	\$ 933	\$ 57	\$ 87	\$ 363	\$ 97	\$ 78	\$ (40)	\$ 1,575
Net realized gains (losses) including OTTI							19	19
Interest expense							164	164
Chubb integration expenses							16	16
Income tax expense							183	183
Net income (loss)							\$ (384)	\$ 1,231

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

For the Three Months Ended	North America	North America	North America	Overseas	Global	Life	Corporate	Chubb
September 30, 2017	Commercial	Personal P&C	Agricultural	General	Reinsurance	Insurance		Consolidated
(in millions of U.S. dollars)	P&C Insurance	Insurance	Insurance	Insurance (1)				
	(1)							
Net premiums written	\$ 3,086	\$ 1,194	\$ 926	\$ 1,966	\$ 191	\$ 539	\$ —	\$ 7,902
Net premiums earned	3,016	1,117	898	2,064	185	527	—	7,807
Losses and loss expenses	2,580	1,062	759	1,281	295	181	89	6,247
Policy benefits	—	—	—	—	—	169	—	169
Policy acquisition costs	469	226	49	569	43	132	—	1,488
Administrative expenses	256	61	(1)	246	11	77	64	714
Underwriting income (loss)	(289)	(232)	91	(32)	(164)	(32)	(153)	(811)
Net investment income (loss)	497	57	6	164	80	78	(69)	813
Other (income) expense	(4)	1	—	(10)	(3)	(19)	(83)	(118)
Amortization expense of purchased intangibles	—	4	8	11	—	1	41	65
Segment income (loss)	\$ 212	\$ (180)	\$ 89	\$ 131	\$ (81)	\$ 64	\$ (180)	\$ 55
Net realized gains (losses) including OTTI							(10)	(10)
Interest expense							150	150
Chubb integration expenses							50	50
Income tax benefit							(85)	(85)
Net loss							\$ (305)	\$ (70)

(1) The 2017 net premiums written amount was revised to reflect the transfer of certain multinational accounts (\$3 million) from the North America Commercial P&C Insurance segment to the Overseas General Insurance segment to better align the reporting with the management of these businesses in 2018. There is no impact on a consolidated basis.

For the Nine Months Ended	North America	North America	North America	Overseas	Global	Life	Corporate	Chubb
September 30, 2018	Commercial	Personal P&C	Agricultural	General	Reinsurance	Insurance		Consolidated
(in millions of U.S. dollars)	P&C Insurance	Insurance	Insurance	Insurance				
Net premiums written	\$ 9,342	\$ 3,601	\$ 1,380	\$ 6,664	\$ 554	\$ 1,688	\$ —	\$ 23,229
Net premiums earned	9,325	3,463	1,251	6,425	492	1,643	—	22,599
Losses and loss expenses	5,873	2,474	955	3,263	236	584	72	13,457
Policy benefits	—	—	—	—	—	428	—	428
Policy acquisition costs	1,378	701	74	1,754	120	405	—	4,432
Administrative expenses	735	202	—	757	29	235	200	2,158
Underwriting income (loss)	1,339	86	222	651	107	(9)	(272)	2,124
Net investment income (loss)	1,516	177	20	461	192	253	(162)	2,457
Other (income) expense	(20)	1	1	(12)	(26)	24	(275)	(307)
Amortization expense of purchased intangibles	—	10	21	29	—	1	192	253
Segment income (loss)	\$ 2,875	\$ 252	\$ 220	\$ 1,095	\$ 325	\$ 219	\$ (351)	\$ 4,635
Net realized gains (losses) including OTTI							35	35
Interest expense							488	488
Chubb integration expenses							39	39
Income tax expense							536	536
Net income (loss)							\$ (1,379)	\$ 3,607

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

For the Nine Months Ended September 30, 2017 (in millions of U.S. dollars)	North America Commercial P&C Insurance (1)	North America Personal P&C Insurance	North America Agricultural Insurance	Overseas General Insurance (1)	Global Reinsurance	Life Insurance	Corporate	Chubb Consolidated
Net premiums written	\$ 9,019	\$ 3,433	\$ 1,390	\$ 6,185	\$ 580	\$ 1,586	\$ —	\$ 22,193
Net premiums earned	9,156	3,296	1,256	6,018	542	1,548	—	21,816
Losses and loss expenses	6,376	2,378	976	3,316	435	556	145	14,182
Policy benefits	—	—	—	—	—	500	—	500
Policy acquisition costs	1,420	673	75	1,653	137	376	—	4,334
Administrative expenses	728	192	(4)	734	33	226	187	2,096
Underwriting income (loss)	632	53	209	315	(63)	(110)	(332)	704
Net investment income (loss)	1,465	168	18	460	207	230	(220)	2,328
Other (income) expense	(4)	3	1	(14)	(2)	(60)	(257)	(333)
Amortization expense of purchased intangibles	—	12	22	33	—	2	125	194
Segment income (loss)	\$ 2,101	\$ 206	\$ 204	\$ 756	\$ 146	\$ 178	\$ (420)	\$ 3,171
Net realized gains (losses) including OTTI							84	84
Interest expense							451	451
Chubb integration expenses							233	233
Income tax expense							243	243
Net income (loss)							\$ (1,263)	\$ 2,328

(1) The 2017 net premiums written amount was revised to reflect the transfer of certain multinational accounts (\$16 million) from the North America Commercial P&C Insurance segment to the Overseas General Insurance segment to better align the reporting with the management of these businesses in 2018. There is no impact on a consolidated basis.

Underwriting assets are reviewed in total by management for purposes of decision-making. Other than Unpaid losses and loss expenses, Reinsurance recoverables, Goodwill and Other intangible assets, Chubb does not allocate assets to its segments.

11 . Earnings per share

(in millions of U.S. dollars, except share and per share data)	Three Months Ended September 30		Nine Months Ended September 30	
	2018	2017	2018	2017
Numerator:				
Net income (loss)	\$ 1,231	\$ (70)	\$ 3,607	\$ 2,328
Denominator:				
Denominator for basic earnings per share:				
Weighted-average shares outstanding	462,981,973	466,370,784	464,644,013	467,658,334
Denominator for diluted earnings per share:				
Share-based compensation plans	3,034,525	—	3,360,511	3,961,572
Weighted-average shares outstanding and assumed conversions	466,016,498	466,370,784	468,004,524	471,619,906
Basic earnings (loss) per share	\$ 2.66	\$ (0.15)	\$ 7.76	\$ 4.98
Diluted earnings (loss) per share	\$ 2.64	\$ (0.15)	\$ 7.71	\$ 4.94
Potential anti-dilutive share conversions	3,763,844	2,045,829	3,467,000	1,673,777

Excluded from weighted-average shares outstanding and assumed conversions is the impact of securities that would have been anti-dilutive during the respective periods. For the three months ended September 30, 2017 , weighted-average shares outstanding used in calculating diluted loss per share excludes the effect of dilutive securities of 3,820,673 shares. In periods where a net loss is recognized, inclusion of incremental dilution is antidilutive.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

12 . Information provided in connection with outstanding debt of subsidiaries

The following tables present condensed consolidating financial information at September 30, 2018 and December 31, 2017 , and for the three and nine months ended September 30, 2018 and 2017 for Chubb Limited (Parent Guarantor) and Chubb INA Holdings Inc. (Subsidiary Issuer). The Subsidiary Issuer is an indirect 100 percent-owned subsidiary of the Parent Guarantor. The Parent Guarantor fully and unconditionally guarantees certain of the debt of the Subsidiary Issuer. Condensed consolidating financial information of the Parent Guarantor and Subsidiary Issuer are presented on the equity method of accounting. The revenues and expenses and cash flows of the subsidiaries of the Subsidiary Issuer are presented in the Other Chubb Limited Subsidiaries column on a combined basis.

Condensed Consolidating Balance Sheet at September 30, 2018

(in millions of U.S. dollars)	Chubb Limited (Parent Guarantor)	Chubb INA Holdings Inc. (Subsidiary Issuer)	Other Chubb Limited Subsidiaries	Consolidating Adjustments and Eliminations	Chubb Limited Consolidated
Assets					
Investments	\$ —	\$ 183	\$ 100,980	\$ —	\$ 101,163
Cash ⁽¹⁾	—	1	1,298	(246)	1,053
Restricted cash	—	—	104	—	104
Insurance and reinsurance balances receivable	—	—	10,486	(293)	10,193
Reinsurance recoverable on losses and loss expenses	—	—	26,408	(11,320)	15,088
Reinsurance recoverable on policy benefits	—	—	1,109	(903)	206
Value of business acquired	—	—	298	—	298
Goodwill and other intangible assets	—	—	21,471	—	21,471
Investments in subsidiaries	43,528	50,132	—	(93,660)	—
Due from subsidiaries and affiliates, net	7,917	—	111	(8,028)	—
Other assets	3	678	18,985	(1,558)	18,108
Total assets	\$ 51,448	\$ 50,994	\$ 181,250	\$ (116,008)	\$ 167,684
Liabilities					
Unpaid losses and loss expenses	\$ —	\$ —	\$ 73,422	\$ (10,393)	\$ 63,029
Unearned premiums	—	—	16,793	(1,068)	15,725
Future policy benefits	—	—	6,366	(903)	5,463
Due to subsidiaries and affiliates, net	—	8,028	—	(8,028)	—
Affiliated notional cash pooling programs ⁽¹⁾	165	81	—	(246)	—
Repurchase agreements	—	—	1,414	—	1,414
Short-term debt	—	500	—	—	500
Long-term debt	—	12,138	11	—	12,149
Trust preferred securities	—	308	—	—	308
Other liabilities	349	2,418	17,105	(1,710)	18,162
Total liabilities	514	23,473	115,111	(22,348)	116,750
Total shareholders' equity	50,934	27,521	66,139	(93,660)	50,934
Total liabilities and shareholders' equity	\$ 51,448	\$ 50,994	\$ 181,250	\$ (116,008)	\$ 167,684

⁽¹⁾ Chubb maintains two notional multicurrency cash pools (Pools) with a third-party bank. Various Chubb entities participate in one or the other of the Pools, pursuant to which credit and debit balances in individual Chubb accounts are translated daily into a single currency and pooled on a notional basis. Individual Chubb entities are permitted to overdraw on their individual accounts provided the overall Pool balances do not fall below zero. At September 30, 2018 , the cash balance of one or more entities was negative; however, the overall Pool balances were positive.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Condensed Consolidating Balance Sheet at December 31, 2017

(in millions of U.S. dollars)	Chubb Limited (Parent Guarantor)	Chubb INA Holdings Inc. (Subsidiary Issuer)	Other Chubb Limited Subsidiaries	Consolidating Adjustments and Eliminations	Chubb Limited Consolidated
Assets					
Investments	\$ —	\$ 168	\$ 102,276	\$ —	\$ 102,444
Cash ⁽¹⁾	3	1	839	(115)	728
Restricted cash	—	—	123	—	123
Insurance and reinsurance balances receivable	—	—	10,820	(1,486)	9,334
Reinsurance recoverable on losses and loss expenses	—	—	27,514	(12,480)	15,034
Reinsurance recoverable on policy benefits	—	—	1,194	(1,010)	184
Value of business acquired	—	—	326	—	326
Goodwill and other intangible assets	—	—	22,054	—	22,054
Investments in subsidiaries	41,909	51,165	—	(93,074)	—
Due from subsidiaries and affiliates, net	9,639	—	—	(9,639)	—
Other assets	3	287	20,578	(4,073)	16,795
Total assets	\$ 51,554	\$ 51,621	\$ 185,724	\$ (121,877)	\$ 167,022
Liabilities					
Unpaid losses and loss expenses	\$ —	\$ —	\$ 74,767	\$ (11,588)	\$ 63,179
Unearned premiums	—	—	18,875	(3,659)	15,216
Future policy benefits	—	—	6,331	(1,010)	5,321
Due to subsidiaries and affiliates, net	—	9,432	207	(9,639)	—
Affiliated notional cash pooling programs ⁽¹⁾	—	115	—	(115)	—
Repurchase agreements	—	—	1,408	—	1,408
Short-term debt	—	1,013	—	—	1,013
Long-term debt	—	11,546	10	—	11,556
Trust preferred securities	—	308	—	—	308
Other liabilities	382	1,411	18,848	(2,792)	17,849
Total liabilities	382	23,825	120,446	(28,803)	115,850
Total shareholders' equity	51,172	27,796	65,278	(93,074)	51,172
Total liabilities and shareholders' equity	\$ 51,554	\$ 51,621	\$ 185,724	\$ (121,877)	\$ 167,022

⁽¹⁾ Chubb maintains two notional multicurrency cash pools (Pools) with a third-party bank. Various Chubb entities participate in one or the other of the Pools, pursuant to which credit and debit balances in individual Chubb accounts are translated daily into a single currency and pooled on a notional basis. Individual Chubb entities are permitted to overdraw on their individual accounts provided the overall Pool balances do not fall below zero. At December 31, 2017, the cash balance of one or more entities was negative; however, the overall Pool balances were positive.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Condensed Consolidating Statements of Operations and Comprehensive Income

For the Three Months Ended September 30, 2018	Chubb Limited (Parent Guarantor)	Chubb INA Holdings Inc. (Subsidiary Issuer)	Other Chubb Limited Subsidiaries	Consolidating Adjustments and Eliminations	Chubb Limited Consolidated
(in millions of U.S. dollars)					
Net premiums written	\$ —	\$ —	\$ 8,110	\$ —	\$ 8,110
Net premiums earned	—	—	7,908	—	7,908
Net investment income	2	3	818	—	823
Equity in earnings of subsidiaries	1,177	709	—	(1,886)	—
Net realized gains (losses) including OTTI	(1)	18	2	—	19
Losses and loss expenses	—	—	4,868	—	4,868
Policy benefits	—	—	127	—	127
Policy acquisition costs and administrative expenses	23	(90)	2,290	—	2,223
Interest (income) expense	(75)	203	36	—	164
Other (income) expense	(9)	12	(148)	—	(145)
Amortization of purchased intangibles	—	—	83	—	83
Chubb integration expenses	3	1	12	—	16
Income tax expense (benefit)	5	(24)	202	—	183
Net income	\$ 1,231	\$ 628	\$ 1,258	\$ (1,886)	\$ 1,231
Comprehensive income	\$ 592	\$ 47	\$ 640	\$ (687)	\$ 592

Condensed Consolidating Statements of Operations and Comprehensive Income

For the Three Months Ended September 30, 2017	Chubb Limited (Parent Guarantor)	Chubb INA Holdings Inc. (Subsidiary Issuer)	Other Chubb Limited Subsidiaries	Consolidating Adjustments and Eliminations	Chubb Limited Consolidated
(in millions of U.S. dollars)					
Net premiums written	\$ —	\$ —	\$ 7,902	\$ —	\$ 7,902
Net premiums earned	—	—	7,807	—	7,807
Net investment income	1	3	809	—	813
Equity in earnings of subsidiaries	(127)	212	—	(85)	—
Net realized gains (losses) including OTTI	—	(8)	(2)	—	(10)
Losses and loss expenses	—	—	6,247	—	6,247
Policy benefits	—	—	169	—	169
Policy acquisition costs and administrative expenses	20	16	2,166	—	2,202
Interest (income) expense	(84)	208	26	—	150
Other (income) expense	(5)	9	(122)	—	(118)
Amortization of purchased intangibles	—	—	65	—	65
Chubb integration expenses	7	1	42	—	50
Income tax expense (benefit)	6	(89)	(2)	—	(85)
Net income (loss)	\$ (70)	\$ 62	\$ 23	\$ (85)	\$ (70)
Comprehensive income	\$ 629	\$ 748	\$ 724	\$ (1,472)	\$ 629

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Condensed Consolidating Statements of Operations and Comprehensive Income

For the Nine Months Ended September 30, 2018								
(in millions of U.S. dollars)	Chubb Limited (Parent Guarantor)	Chubb INA Holdings Inc. (Subsidiary Issuer)	Other Chubb Limited Subsidiaries	Consolidating Adjustments and Eliminations	Chubb Limited Consolidated			
Net premiums written	\$ —	\$ —	\$ 23,229	\$ —	\$ 23,229			
Net premiums earned	—	—	22,599	—	22,599			
Net investment income	5	12	2,440	—	2,457			
Equity in earnings of subsidiaries	3,440	2,048	—	(5,488)	—			
Net realized gains (losses) including OTTI	(1)	67	(31)	—	35			
Losses and loss expenses	—	—	13,457	—	13,457			
Policy benefits	—	—	428	—	428			
Policy acquisition costs and administrative expenses	64	(49)	6,575	—	6,590			
Interest (income) expense	(231)	616	103	—	488			
Other (income) expense	(18)	28	(317)	—	(307)			
Amortization of purchased intangibles	—	—	253	—	253			
Chubb integration expenses	7	2	30	—	39			
Income tax expense (benefit)	15	(119)	640	—	536			
Net income	\$ 3,607	\$ 1,649	\$ 3,839	\$ (5,488)	\$ 3,607			
Comprehensive income (loss)	\$ 1,322	\$ (199)	\$ 1,606	\$ (1,407)	\$ 1,322			

Condensed Consolidating Statements of Operations and Comprehensive Income

For the Nine Months Ended September 30, 2017								
(in millions of U.S. dollars)	Chubb Limited (Parent Guarantor)	Chubb INA Holdings Inc. (Subsidiary Issuer)	Other Chubb Limited Subsidiaries	Consolidating Adjustments and Eliminations	Chubb Limited Consolidated			
Net premiums written	\$ —	\$ —	\$ 22,193	\$ —	\$ 22,193			
Net premiums earned	—	—	21,816	—	21,816			
Net investment income	3	10	2,315	—	2,328			
Equity in earnings of subsidiaries	2,153	1,578	—	(3,731)	—			
Net realized gains (losses) including OTTI	(2)	(22)	108	—	84			
Losses and loss expenses	—	—	14,182	—	14,182			
Policy benefits	—	—	500	—	500			
Policy acquisition costs and administrative expenses	56	28	6,346	—	6,430			
Interest (income) expense	(252)	641	62	—	451			
Other (income) expense	(7)	34	(360)	—	(333)			
Amortization of purchased intangibles	—	—	194	—	194			
Chubb integration expenses	13	54	166	—	233			
Income tax expense (benefit)	16	(288)	515	—	243			
Net income	\$ 2,328	\$ 1,097	\$ 2,634	\$ (3,731)	\$ 2,328			
Comprehensive income	\$ 3,711	\$ 2,459	\$ 4,018	\$ (6,477)	\$ 3,711			

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Condensed Consolidating Statement of Cash Flows

For the Nine Months Ended September 30, 2018

(in millions of U.S. dollars)	Chubb Limited (Parent Guarantor)	Chubb INA Holdings Inc. (Subsidiary Issuer)	Other Chubb Limited Subsidiaries	Consolidating Adjustments and Eliminations	Chubb Limited Consolidated
Net cash flows from operating activities	\$ 237	\$ 4,701	\$ 3,797	\$ (4,838)	\$ 3,897
Cash flows from investing activities					
Purchases of fixed maturities available for sale	—	(30)	(16,758)	—	(16,788)
Purchases of fixed maturities held to maturity	—	—	(380)	—	(380)
Purchases of equity securities	—	—	(148)	—	(148)
Sales of fixed maturities available for sale	—	6	9,035	—	9,041
Sales of equity securities	—	—	247	—	247
Maturities and redemptions of fixed maturities available for sale	—	15	5,467	—	5,482
Maturities and redemptions of fixed maturities held to maturity	—	—	1,001	—	1,001
Net change in short-term investments	—	6	58	—	64
Net derivative instruments settlements	—	(7)	(39)	—	(46)
Private equity contributions	—	—	(1,112)	—	(1,112)
Private equity distributions	—	—	743	—	743
Capital contribution	(1,125)	(3,500)	—	4,625	—
Other	—	(18)	(213)	—	(231)
Net cash flows used for investing activities	(1,125)	(3,528)	(2,099)	4,625	(2,127)
Cash flows from financing activities					
Dividends paid on Common Shares	(1,001)	—	—	—	(1,001)
Common Shares repurchased	—	—	(732)	—	(732)
Proceeds from issuance of long-term debt	—	2,171	—	—	2,171
Repayment of long-term debt	—	(2,000)	(1)	—	(2,001)
Proceeds from issuance of repurchase agreements	—	—	1,572	—	1,572
Repayment of repurchase agreements	—	—	(1,566)	—	(1,566)
Proceeds from share-based compensation plans	—	—	86	—	86
Dividend to parent company	—	—	(4,838)	4,838	—
Advances (to) from affiliates	1,722	(1,310)	(412)	—	—
Capital contribution	—	—	4,625	(4,625)	—
Net proceeds from (payments to) affiliated notional cash pooling programs ⁽¹⁾	165	(34)	—	(131)	—
Policyholder contract deposits	—	—	269	—	269
Policyholder contract withdrawals	—	—	(222)	—	(222)
Net cash flows from (used for) financing activities	886	(1,173)	(1,219)	82	(1,424)
Effect of foreign currency rate changes on cash and restricted cash	(1)	—	(39)	—	(40)
Net increase (decrease) in cash and restricted cash	(3)	—	440	(131)	306
Cash and restricted cash – beginning of period ⁽¹⁾	3	1	962	(115)	851
Cash and restricted cash – end of period ⁽¹⁾	\$ —	\$ 1	\$ 1,402	\$ (246)	\$ 1,157

⁽¹⁾ Chubb maintains two notional multicurrency cash pools (Pools) with a third-party bank. Various Chubb entities participate in one or the other of the Pools, pursuant to which credit and debit balances in individual Chubb accounts are translated daily into a single currency and pooled on a notional basis. Individual Chubb entities are permitted to overdraw on their individual accounts provided the overall Pool balances do not fall below zero. At September 30, 2018 and December 31, 2017, the cash balance of one or more entities was negative; however, the overall Pool balances were positive.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Condensed Consolidating Statement of Cash Flows

For the Nine Months Ended September 30, 2017

(in millions of U.S. dollars)	Chubb Limited (Parent Guarantor)	Chubb INA Holdings Inc. (Subsidiary Issuer)	Other Chubb Limited Subsidiaries	Consolidating Adjustments and Eliminations	Chubb Limited Consolidated
Net cash flows from operating activities	\$ 639	\$ 1,472	\$ 3,341	\$ (2,041)	\$ 3,411
Cash flows from investing activities					
Purchases of fixed maturities available for sale	—	(9)	(18,469)	—	(18,478)
Purchases of fixed maturities held to maturity	—	—	(262)	—	(262)
Purchases of equity securities	—	—	(125)	—	(125)
Sales of fixed maturities available for sale	—	99	9,116	—	9,215
Sales of equity securities	—	—	152	—	152
Maturities and redemptions of fixed maturities available for sale	—	22	7,677	—	7,699
Maturities and redemptions of fixed maturities held to maturity	—	—	644	—	644
Net change in short-term investments	—	197	(153)	—	44
Net derivative instruments settlements	—	(13)	(157)	—	(170)
Private equity contributions	—	—	(485)	—	(485)
Private equity distributions	—	—	744	—	744
Other	—	6	(325)	—	(319)
Net cash flows from (used for) investing activities	—	302	(1,643)	—	(1,341)
Cash flows from financing activities					
Dividends paid on Common Shares	(978)	—	—	—	(978)
Common Shares repurchased	—	—	(707)	—	(707)
Repayment of long-term debt	—	(500)	—	—	(500)
Proceeds from issuance of repurchase agreements	—	—	1,798	—	1,798
Repayment of repurchase agreements	—	—	(1,793)	—	(1,793)
Proceeds from share-based compensation plans	—	—	109	—	109
Dividend to parent company	—	—	(2,041)	2,041	—
Advances (to) from affiliates	617	(658)	41	—	—
Net proceeds from affiliated notional cash pooling programs ⁽¹⁾	(278)	(617)	—	895	—
Policyholder contract deposits	—	—	312	—	312
Policyholder contract withdrawals	—	—	(211)	—	(211)
Net cash flows used for financing activities	(639)	(1,775)	(2,492)	2,936	(1,970)
Effect of foreign currency rate changes on cash and restricted cash					
	—	—	5	—	5
Net increase (decrease) in cash and restricted cash	—	(1)	(789)	895	105
Cash and restricted cash – beginning of period ⁽¹⁾	1	1	2,068	(982)	1,088
Cash and restricted cash – end of period ⁽¹⁾	\$ 1	\$ —	\$ 1,279	\$ (87)	\$ 1,193

⁽¹⁾ Chubb maintains two notional multicurrency cash pools (Pools) with a third-party bank. Various Chubb entities participate in one or the other of the Pools, pursuant to which credit and debit balances in individual Chubb accounts are translated daily into a single currency and pooled on a notional basis. Individual Chubb entities are permitted to overdraw on their individual accounts provided the overall Pool balances do not fall below zero. At September 30, 2017 and December 31, 2016, the cash balance of one or more entities was negative; however, the overall Pool balances were positive.

ITEM 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following is a discussion of our results of operations, financial condition, and liquidity and capital resources as of and for the three and nine months ended September 30, 2018 .

All comparisons in this discussion are to the corresponding prior year period unless otherwise indicated. All dollar amounts are rounded. However, percent changes and ratios are calculated using whole dollars. Accordingly, calculations using rounded dollars may differ.

Our results of operations and cash flows for any interim period are not necessarily indicative of our results for the full year. This discussion should be read in conjunction with our consolidated financial statements and related notes and our Management's Discussion and Analysis of Financial Condition and Results of Operations included in our Annual Report on Form 10-K for the year ended December 31, 2017 (2017 Form 10-K).

Other Information

We routinely post important information for investors on our website (investors.chubb.com). We use this website as a means of disclosing material, non-public information and for complying with our disclosure obligations under Securities and Exchange Commission (SEC) Regulation FD (Fair Disclosure). Accordingly, investors should monitor the Investor Information portion of our website, in addition to following our press releases, SEC filings, public conference calls, and webcasts. The information contained on, or that may be accessed through, our website is not incorporated by reference into, and is not a part of, this report.

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Forward-Looking Statements

The Private Securities Litigation Reform Act of 1995 provides a “safe harbor” for forward-looking statements. Any written or oral statements made by us or on our behalf may include forward-looking statements that reflect our current views with respect to future events and financial performance. These forward-looking statements are subject to certain risks, uncertainties, and other factors that could, should potential events occur, cause actual results to differ materially from such statements. These risks, uncertainties, and other factors, which are described in more detail elsewhere herein and in other documents we file with the U.S. Securities and Exchange Commission (SEC), include but are not limited to:

- losses arising out of natural or man-made catastrophes such as hurricanes, typhoons, earthquakes, floods, climate change (including effects on weather patterns; greenhouse gases; sea, land and air temperatures; sea levels; and rain and snow), nuclear accidents, or terrorism which could be affected by:
 - the number of insureds and ceding companies affected;
 - the amount and timing of losses actually incurred and reported by insureds;
 - the impact of these losses on our reinsurers and the amount and timing of reinsurance recoverable actually received;
 - the cost of building materials and labor to reconstruct properties or to perform environmental remediation following a catastrophic event; and
 - complex coverage and regulatory issues such as whether losses occurred from storm surge or flooding and related lawsuits;
- actions that rating agencies may take from time to time, such as financial strength or credit ratings downgrades or placing these ratings on credit watch negative or the equivalent;
- the ability to collect reinsurance recoverable, credit developments of reinsurers, and any delays with respect thereto and changes in the cost, quality, or availability of reinsurance;
- actual loss experience from insured or reinsured events and the timing of claim payments;
- the uncertainties of the loss-reserving and claims-settlement processes, including the difficulties associated with assessing environmental damage and asbestos-related latent injuries, the impact of aggregate-policy-coverage limits, the impact of bankruptcy protection sought by various asbestos producers and other related businesses, and the timing of loss payments;
- changes to our assessment as to whether it is more likely than not that we will be required to sell, or have the intent to sell, available for sale fixed maturity investments before their anticipated recovery;
- infection rates and severity of pandemics and their effects on our business operations and claims activity;
- developments in global financial markets, including changes in interest rates, stock markets, and other financial markets, increased government involvement or intervention in the financial services industry, the cost and availability of financing, and foreign currency exchange rate fluctuations (which we refer to in this report as foreign exchange and foreign currency exchange), which could affect our statement of operations, investment portfolio, financial condition, and financing plans;
- general economic and business conditions resulting from volatility in the stock and credit markets and the depth and duration of potential recession;
- global political conditions, the occurrence of any terrorist attacks, including any nuclear, radiological, biological, or chemical events, or the outbreak and effects of war, and possible business disruption or economic contraction that may result from such events;
- the potential impact of the United Kingdom’s vote to withdraw from the European Union, including political, regulatory, social, and economic uncertainty and market and exchange rate volatility;
- judicial decisions and rulings, new theories of liability, legal tactics, and settlement terms;
- the effects of public company bankruptcies and/or accounting restatements, as well as disclosures by and investigations of public companies relating to possible accounting irregularities, and other corporate governance issues, including the effects of such events on:
 - the capital markets;
 - the markets for directors and officers (D&O) and errors and omissions (E&O) insurance; and
 - claims and litigation arising out of such disclosures or practices by other companies;

- uncertainties relating to governmental, legislative and regulatory policies, developments, actions, investigations, and treaties, which, among other things, could subject us to insurance regulation or taxation in additional jurisdictions or affect our current operations;
- the actual amount of new and renewal business, market acceptance of our products, and risks associated with the introduction of new products and services and entering new markets, including regulatory constraints on exit strategies;
- the competitive environment in which we operate, including trends in pricing or in policy terms and conditions, which may differ from our projections and changes in market conditions that could render our business strategies ineffective or obsolete;
- acquisitions made by us performing differently than expected, our failure to realize anticipated expense-related efficiencies or growth from acquisitions, the impact of acquisitions on our pre-existing organization, or announced acquisitions not closing;
- risks associated with being a Swiss corporation, including reduced flexibility with respect to certain aspects of capital management and the potential for additional regulatory burdens;
- the potential impact from government-mandated insurance coverage for acts of terrorism;
- the availability of borrowings and letters of credit under our credit facilities;
- the adequacy of collateral supporting funded high deductible programs;
- changes in the distribution or placement of risks due to increased consolidation of insurance and reinsurance brokers;
- material differences between actual and expected assessments for guaranty funds and mandatory pooling arrangements;
- the effects of investigations into market practices in the property and casualty (P&C) industry;
- changing rates of inflation and other economic conditions, for example, recession;
- the amount of dividends received from subsidiaries;
- loss of the services of any of our executive officers without suitable replacements being recruited in a reasonable time frame;
- the ability of our technology resources, including information systems and security, to perform as anticipated such as with respect to preventing material information technology failures or third-party infiltrations or hacking resulting in consequences adverse to Chubb or its customers or partners;
- the ability of our company to increase use of data analytics and technology as part of our business strategy and adapt to new technologies; and
- management's response to these factors and actual events (including, but not limited to, those described above).

The words "believe," "anticipate," "estimate," "project," "should," "plan," "expect," "intend," "hope," "feel," "foresee," "will likely result," or "will continue," and variations thereof and similar expressions, identify forward-looking statements. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of their dates. We undertake no obligation to publicly update or review any forward-looking statements, whether as a result of new information, future events, or otherwise.

Overview

Chubb Limited is the Swiss-incorporated holding company of the Chubb Group of Companies. Chubb Limited, which is headquartered in Zurich, Switzerland, and its direct and indirect subsidiaries (collectively, the Chubb Group of Companies, Chubb, we, us, or our) are a global insurance and reinsurance organization, serving the needs of a diverse group of clients worldwide. At September 30, 2018, we had total assets of \$168 billion and shareholders' equity of \$51 billion. Chubb was incorporated in 1985 at which time it opened its first business office in Bermuda and continues to maintain operations in Bermuda. We operate through six business segments: North America Commercial P&C Insurance, North America Personal P&C Insurance, North America Agricultural Insurance, Overseas General Insurance, Global Reinsurance, and Life Insurance. For more information on our segments refer to "Segment Information" under Item 1 in our 2017 Form 10-K.

Financial Highlights for the Three Months Ended September 30, 2018

- Net income was \$1,231 million compared with a net loss of \$(70) million in the prior year period.
- Total company and P&C net premiums written were \$8.1 billion and \$7.5 billion, respectively, up 2.6 percent and 2.5 percent.
- Total pre-tax and after-tax catastrophe losses were \$450 million (6.1 percentage points of the combined ratio) and \$372 million, respectively, compared with \$1,893 million (26.0 percentage points of the combined ratio) and \$1,525 million, respectively, last year. Refer to page 56 for detail of catastrophe losses by event.
- Combined ratio was 90.8 percent. P&C combined ratio, which includes the loss on crop derivatives, was 90.9 percent compared with 110.8 percent prior year. P&C current accident year combined ratio excluding catastrophe losses was 88.2 percent compared with 88.5 percent prior year.
- Total pre-tax and after-tax favorable prior period development were \$243 million (3.4 percentage points of the combined ratio) and \$180 million, respectively, compared with \$270 million (3.7 percentage points of the combined ratio) and \$206 million, respectively, last year.
- Net investment income was \$823 million compared with \$813 million in the prior year period. Excluding the amortization of the fair value adjustment on acquired invested assets of The Chubb Corporation (Chubb Corp), net investment income was \$883 million, compared with \$893 million last year.
- Share repurchases totaled \$379 million, or approximately 2.8 million shares, during the quarter, and \$703 million, or approximately 5.2 million shares, through September 30, 2018.

Outlook

To improve the efficiency of our global cash management, we maintain two notional cash pooling programs. Our local legal entities around the world deposit excess cash into these pools or borrow cash from these pools to minimize our global cash balances and to avoid disturbing local investment portfolios.

The cost of borrowing is included in interest expense and the interest earned on deposits is included in investment income. During the fourth quarter of 2018, we expect the use of these programs will be reduced based on current needs. As a result, interest expense is expected to decrease by \$10 million to \$15 million, and correspondingly, investment income is expected to also decrease by the same amounts.

We also have investment activity related to our private equity investments where we own more than 3 percent and account for using the equity method. These investment activities are recorded in Other (income) expense on the statement of operations. In the third quarter of 2018, Other income included \$21 million related to these investments. Going forward, we expect income of \$10 million per quarter. However, these returns have variability quarter-to-quarter.

Also included within Other (income) expense are miscellaneous expenses which could fluctuate from quarter-to-quarter. Because of the variability in both the investment returns from equity method investments and fluctuations in miscellaneous expenses, we expect Other (income) expense for the fourth quarter of 2018 to be flat or a net \$5 million expense.

Consolidated Operating Results – Three and Nine Months Ended September 30, 2018 and 2017

(in millions of U.S. dollars, except for percentages)	Three Months Ended			Nine Months Ended		
	September 30		% Change	September 30		% Change
	2018	2017	Q-18 vs. Q-17	2018	2017	YTD-18 vs. YTD-17
Net premiums written ⁽¹⁾	\$ 8,110	\$ 7,902	2.6 %	\$ 23,229	\$ 22,193	4.7 %
Net premiums earned ⁽¹⁾	7,908	7,807	1.3 %	22,599	21,816	3.6 %
Net investment income	823	813	1.3 %	2,457	2,328	5.5 %
Net realized gains (losses)	19	(10)	NM	35	84	(58.3)%
Total revenues	8,750	8,610	1.6 %	25,091	24,228	3.6 %
Losses and loss expenses	4,868	6,247	(22.1)%	13,457	14,182	(5.1)%
Policy benefits	127	169	(24.9)%	428	500	(14.4)%
Policy acquisition costs	1,504	1,488	1.1 %	4,432	4,334	2.3 %
Administrative expenses	719	714	0.7 %	2,158	2,096	3.0 %
Interest expense	164	150	9.3 %	488	451	8.2 %
Other (income) expense	(145)	(118)	22.9 %	(307)	(333)	(7.8)%
Amortization of purchased intangibles	83	65	27.7 %	253	194	30.4 %
Chubb integration expenses	16	50	(68.0)%	39	233	(83.3)%
Total expenses	7,336	8,765	(16.3)%	20,948	21,657	(3.3)%
Income (loss) before income tax	1,414	(155)	NM	4,143	2,571	61.1 %
Income tax expense (benefit)	183	(85)	NM	536	243	120.6 %
Net income (loss)	\$ 1,231	\$ (70)	NM	\$ 3,607	\$ 2,328	55.0 %

NM – not meaningful

(1) On a constant-dollar basis for the three and nine months ended September 30, 2018, net premiums written increased \$236 million, or 3.0 percent, and \$802 million, or 3.6 percent, respectively, and net premiums earned increased \$127 million, or 1.6 percent and increased \$562 million, or 2.5 percent, respectively. Amounts are calculated by translating prior period results using the same local currency exchange rates as the comparable current period.

Net Premiums Written

Net premiums written reflect the premiums we retain after purchasing reinsurance protection. Consolidated net premiums written increased \$208 million and \$1,036 million for the three and nine months ended September 30, 2018, respectively. On a constant-dollar basis net premiums written increased \$236 million, or 3.0 percent, and \$802 million, or 3.6 percent, for the three and nine months ended September 30, 2018, respectively, reflecting growth across most segments.

- Net premiums written in our North America Commercial P&C Insurance segment increased \$113 million, or 3.6 percent, for the three months ended September 30, 2018 reflecting positive rate increases, new business written, and strong renewals across a number of lines, primarily in casualty, A&H and middle market property. This growth was partially offset by the unfavorable year-over-year impact of retrospective and audit premiums adjustments of \$31 million as well as merger-related underwriting actions in our program business of \$31 million. Net premiums written increased \$323 million, or 3.6 percent, for the nine months ended September 30, 2018 due to the factors described above as well as from the year-over-year increase in large structured transactions (\$155 million).
- Net premiums written in our North America Personal P&C Insurance segment increased \$24 million, or 2.0 percent, and \$168 million, or 4.9 percent, for the three and nine months ended September 30, 2018, respectively, primarily due to strong retention and new business growth in homeowners and complementary products such as automobiles and valuables. In addition, for the nine months ended September 30, 2018, the non-renewal of a quota share treaty in the second quarter of 2017 covering the acquired Fireman's Fund homeowners and automobile businesses (\$47 million) added to the increase.
- Net premiums written in our North America Agricultural Insurance segment decreased \$42 million, or 4.5 percent, and \$10 million, or 0.7 percent, for the three and nine months ended September 30, 2018, respectively, primarily due to lower volatility factors, which are a component of the policy pricing that measures the likelihood the commodity price will fluctuate over the crop year, partially offset by policy count growth in our MPC business and our Chubb Agribusiness unit driven by strong retention. For the nine months ended September 30, 2018, the decrease was offset by an increase in

MPCI premium which was driven in part by higher new business and the year-over-year impact of the premium sharing formulas under the U.S. government. Under the MPCI profit and loss calculation, we cede additional premiums to the government during profitable years. In the prior year, the program was more profitable which resulted in higher cessions compared to 2018 .

- Net premiums written in our Overseas General Insurance segment increased \$115 million and \$479 million for the three and nine months ended September 30, 2018 , respectively. On a constant-dollar basis, net premiums written increased \$144 million and \$284 million , or 7.5 percent and 4.5 percent, for the three and nine months ended September 30, 2018 , respectively, reflecting growth across most regions and lines of business. P&C lines growth was across all regions, principally in small commercial property and general casualty lines reflecting new business, and in middle market driven by new business and rate increases. Personal lines growth was principally in our automobile line in Mexico driven by new business, as well as in our specialty lines in Asia. Accident and health (A&H) lines growth was principally in Asia driven by new business.
- Net premiums written in our Global Reinsurance segment decreased \$27 million and \$26 million for the three and nine months ended September 30, 2018 , respectively. On a constant-dollar basis, net premiums written decreased \$28 million and \$35 million , or 14.7 percent and 5.9 percent, for the three and nine months ended September 30, 2018 , respectively, primarily due to higher reinstatement premiums collected in the prior year principally relating to the 2017 natural catastrophes (\$33 million year-over-year decrease for both three and nine months ended September 30, 2018) and lower renewals, which is reflective of competitive market conditions, partially offset by new business written in casualty and property lines.
- Net premiums written in our Life Insurance segment increased \$25 million and \$102 million for the three and nine months ended September 30, 2018 , respectively. On a constant-dollar basis, net premiums written increased \$27 million and \$88 million , or 5.1 percent and 5.5 percent, for the three and nine months ended September 30, 2018 , respectively, primarily due to growth in our North American Combined Insurance supplemental A&H program business and Asian international life operations, partially offset by our life reinsurance business, which continues to decline as no new life reinsurance business is currently being written.

Line of Business

The following table presents a breakdown of consolidated net premiums written by line of business for the period indicated:

(in millions of U.S. dollars, except for percentages)	Three Months Ended					Nine Months Ended				
	September 30					September 30				
	2018	2017	% Change Q-18 vs. Q-17	C\$ ⁽¹⁾ 2017	C\$ ⁽¹⁾ % Change Q-18 vs. Q-17	2018	2017	% Change YTD-18 vs. YTD-17	C\$ ⁽¹⁾ 2017	C\$ ⁽¹⁾ % Change YTD-18 vs. YTD-17
Commercial casualty	\$ 1,356	\$ 1,238	9.5 %	\$ 1,243	9.2 %	\$ 3,863	\$ 3,508	10.2 %	\$ 3,552	8.8 %
Workers' compensation	491	470	4.3 %	470	4.3 %	1,571	1,536	2.2 %	1,537	2.2 %
Professional liability	921	894	3.0 %	907	1.6 %	2,583	2,557	1.1 %	2,632	(1.8)%
Surety	159	158	0.1 %	154	2.7 %	481	461	4.2 %	461	4.2 %
Commercial multiple peril ⁽²⁾	236	233	1.1 %	233	1.1 %	680	661	3.0 %	661	2.9 %
Property and other short-tail lines	911	891	2.3 %	872	4.5 %	3,061	2,990	2.3 %	2,995	2.2 %
Total Commercial P&C	4,074	3,884	4.9 %	3,879	5.0 %	12,239	11,713	4.5 %	11,838	3.4 %
Agriculture	884	926	(4.5)%	926	(4.5)%	1,380	1,390	(0.7)%	1,390	(0.7)%
Personal automobile - North America	213	204	4.4 %	204	4.4 %	626	578	8.0 %	580	8.0 %
Personal automobile - International	206	195	5.4 %	186	10.5 %	647	569	13.2 %	575	12.2 %
Personal homeowners	895	877	1.9 %	878	1.9 %	2,615	2,499	4.6 %	2,506	4.3 %
Personal other	362	355	2.2 %	352	3.0 %	1,138	1,080	5.6 %	1,106	3.0 %
Total Personal lines	1,676	1,631	2.7 %	1,620	3.4 %	5,026	4,726	6.3 %	4,767	5.4 %
Total Property and Casualty lines	6,634	6,441	3.0 %	6,425	3.3 %	18,645	17,829	4.6 %	17,995	3.6 %
Global A&H lines ⁽³⁾	1,048	1,014	3.4 %	1,003	4.5 %	3,236	3,033	6.7 %	3,083	4.9 %
Reinsurance lines	164	191	(14.3)%	192	(14.7)%	554	580	(4.5)%	589	(5.9)%
Life	264	256	3.6 %	254	4.0 %	794	751	6.1 %	760	4.6 %
Total consolidated	\$ 8,110	\$ 7,902	2.6 %	\$ 7,874	3.0 %	\$ 23,229	\$ 22,193	4.7 %	\$ 22,427	3.6 %

(1) On a constant-dollar basis. Amounts are calculated by translating prior period results using the same local currency exchange rates as the comparable current period.

(2) Commercial multiple peril represents retail package business (property and general liability).

(3) For purposes of this schedule only, A&H results from our Combined North America and International businesses, normally included in the Life Insurance and Overseas General Insurance segments, respectively, as well as the A&H results of our North America Commercial P&C segment, are included in Global A&H lines above.

Note: Net premiums written for the nine months ended September 30, 2018 includes a reclassification of \$84 million from Commercial casualty to Property and other short-tail lines (\$78 million) and Workers' compensation (\$6 million) to better align the reporting with prior year. There is no impact on a consolidated basis.

The increase in net premiums written for the three and nine months ended September 30, 2018, reflects growth across most lines of business from positive rate increases, new business and strong renewals, partially offset by planned merger-related underwriting actions related to the Chubb Corp acquisition of \$32 million and \$128 million, respectively. The year-over-year increase in large structured transactions written contributed \$155 million to the increase in commercial casualty business for the nine months ended September 30, 2018. The increase in commercial casualty and professional liability business was partially offset by planned merger-related underwriting actions and other planned portfolio management. Workers' compensation was adversely impacted by planned merger-related underwriting actions and by the year-over-year impact of retrospective and audit premiums adjustments. On a constant-dollar basis, growth in Surety lines was due to new business in North America and Latin America. Property and other short-tail lines grew internationally due to new business and strong renewals. Our personal

lines net premiums written increased due to new business in our automobile line in Mexico, new business growth in homeowners and complementary products, and the non-renewal of a quota share treaty in the second quarter of 2017. For additional information on net premiums written, refer to the segment results discussions.

Net Premiums Earned

Net premiums earned for short-duration contracts, typically P&C contracts, generally reflect the portion of net premiums written that were recorded as revenues for the period as the exposure periods expire. Net premiums earned for long-duration contracts, typically traditional life contracts, generally are recognized as earned when due from policyholders. Net premiums earned increased \$101 million and \$783 million for the three and nine months ended September 30, 2018, respectively. On a constant-dollar basis net premiums earned increased \$127 million, or 1.6 percent, and \$562 million, or 2.5 percent for the three and nine months ended September 30, 2018, respectively, due to the growth in net premiums written as described above. Net premiums earned were unfavorably impacted by the retrospective and audit premiums adjustments that were fully earned during the quarter (\$31 million year-over-year decrease in 2018). The large structured transactions, which were written in the first and second quarter, were earned immediately when written (\$155 million year-over-year increase in 2018). Therefore, these previously written structured transactions did not contribute to net premiums earned in the third quarter. The retrospective and audit premiums adjustments as well as the large structured transactions will not impact net premiums earned in the fourth quarter, as these were earned fully in the periods written.

P&C Combined Ratio

In evaluating our segments excluding Life Insurance, we use the P&C combined ratio, the loss and loss expense ratio, the policy acquisition cost ratio, and the administrative expense ratio. We calculate these ratios by dividing the respective expense amounts by net premiums earned. We do not calculate these ratios for the Life Insurance segment as we do not use these measures to monitor or manage that segment. The P&C combined ratio is determined by adding the loss and loss expense ratio, the policy acquisition cost ratio, and the administrative expense ratio. A P&C combined ratio under 100 percent indicates underwriting income, and a combined ratio exceeding 100 percent indicates underwriting loss.

The following table presents the components of the P&C combined ratio:

	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Loss and loss expense ratio	63.6%	83.4%	61.4%	67.3%
Policy acquisition cost ratio	18.6%	18.6%	19.2%	19.5%
Administrative expense ratio	8.7%	8.8%	9.2%	9.2%
P&C combined ratio	90.9%	110.8%	89.8%	96.0%

The loss and loss expense ratio decreased 19.8 percentage points for the three months ended September 30, 2018, due to the following:

- Lower catastrophe losses partially offset by lower favorable PPD (19.6 percentage points);
- Integration-related claims handling expenses savings (\$16 million or 0.2 percentage points);
- Partially offset by higher non-catastrophe large losses (0.4 percentage points);

The loss and loss expense ratio decreased 5.9 percentage points for the nine months ended September 30, 2018, respectively, due to the following:

- Lower catastrophe losses partially offset by lower favorable PPD (6.2 percentage points);
- Integration-related claims handling expenses savings (\$50 million or 0.2 percentage points);
- Partially offset by the year-over-year increase in large structured transactions (0.4 percentage points) and favorable claims handling expense adjustments in the second quarter of 2017, which benefited the prior year loss ratio (0.2 percentage points).

Policy acquisition costs consist of commissions, premium taxes, and certain underwriting costs directly related to the successful acquisition of new or renewal insurance contracts. Our policy acquisition cost ratio remained flat for the three months ended September 30, 2018. Our policy acquisition ratio decreased 0.3 percentage points for the nine months ended September 30, 2018, principally due to the favorable impact of large structured transactions written that generated minimal acquisition costs

and increased cessions under certain reinsurance agreements that resulted in a higher ceded acquisition costs benefit than in the prior year.

Our administrative expense ratios remained relatively flat for the three and nine months ended September 30, 2018, as the impact of large structured transactions written in the current year that generated minimal administrative costs and integration-related expense savings realized (\$15 million and \$61 million, respectively) were offset by merit-based salary and inflationary increases, and increased spending to support growth.

Catastrophe Losses and Prior Period Development

The following table presents pre-tax catastrophe losses and pre-tax prior period development, net of related adjustments:

(in millions of U.S dollars)	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Catastrophe losses, pre-tax	\$ 454	\$ 1,915	\$ 1,045	\$ 2,321
Favorable prior period development net of related adjustments, pre-tax	\$ 243	\$ 270	\$ 643	\$ 671

We generally define catastrophe loss events consistent with the definition of the Property Claims Service (PCS) for events in the U.S. and Canada. PCS defines a catastrophe as an event that causes damage of \$25 million or more in insured property losses and affects a significant number of insureds. For events outside of the U.S. and Canada, we generally use a similar definition.

The following table presents a breakdown of catastrophe losses as well as reinstatement premiums (RIPs) collected for the three months ended September 30, 2018:

Three Months Ended September 30, 2018 (in millions of U.S. dollars)	Catastrophe Loss Charge by Event							
	North America Commercial P&C Insurance	North America Personal P&C Insurance	North America Agricultural Insurance	Overseas General Insurance	Global Reinsurance	Total excluding RIPs	RIPs collected	Total including RIPs
Gross losses								
Hurricane Florence	\$ 152	\$ 31	\$ 3	\$ 10	\$ 13	\$ 209		
U.S. flooding, hail, tornadoes, and wind events (1)	205	44	1	—	—	250		
Colorado rain and hail storm	14	59	—	1	—	74		
Typhoon Jebi	1	—	—	46	14	61		
Typhoon Mangkhut	—	—	—	17	—	17		
Japan flooding	2	—	—	8	7	17		
California wildfires	4	4	—	—	—	8		
Other	23	3	4	6	13	49		
Total	\$ 401	\$ 141	\$ 8	\$ 88	\$ 47	\$ 685		
Net losses								
Hurricane Florence	\$ 108	\$ 31	\$ 3	\$ 10	\$ 9	\$ 161	\$ 1	\$ 160
U.S. flooding, hail, tornadoes, and wind events (1)	54	40	1	—	—	95	—	95
Colorado rain and hail storm	12	58	—	1	—	71	—	71
Typhoon Jebi	1	—	—	39	12	52	2	50
Typhoon Mangkhut	—	—	—	16	—	16	—	16
Japan flooding	1	—	—	8	4	13	—	13
California wildfires	4	4	—	—	—	8	—	8
Other	16	3	4	6	9	38	1	37
Total	\$ 196	\$ 136	\$ 8	\$ 80	\$ 34	\$ 454		
RIPs collected	—	—	—	—	4		4	
Total before income tax	\$ 196	\$ 136	\$ 8	\$ 80	\$ 30			\$ 450
Income tax benefit								78
Total after income tax								\$ 372

(1) This grouping comprised of 10 separate events, principally impacting the southern and northeastern regions of the U.S.

The above table represents catastrophe loss estimates for events that occurred in the current calendar year only (i.e., loss events occurring during the third quarter of 2018 and changes to catastrophe loss estimates that occurred in the first and second quarters of 2018). Changes in catastrophe loss estimates in the current calendar year that relate to loss events that occurred in previous calendar years are considered prior period development and are excluded from the table above.

Catastrophe losses through September 30, 2017 were primarily due to Hurricane Harvey, Hurricane Irma, Hurricane Maria, Mexico Earthquakes, Cyclone Debbie in Australia, flooding in Latin America, and severe weather-related events in the U.S.

During October 2018, Hurricane Michael made landfall in Florida in the U.S. At this time, there are uncertainties surrounding the number of claims and scope of damage for this named catastrophe. At the time of this filing, our very early indication of the pre-tax loss estimate, net of reinsurance and reinstatement premiums, related to Hurricane Michael is \$150 million to \$250 million. This estimate may increase or decrease as additional information emerges.

Prior period development (PPD) arises from changes to loss estimates recognized in the current year that relate to loss events that occurred in previous calendar years and excludes the effect of losses from the development of earned premium from previous accident years. Refer to the Prior Period Development section in Note 4 to the Consolidated Financial Statements for additional information.

Current Accident Year (CAY) Loss Ratio excluding CATs and CAY P&C Combined Ratio excluding CATs

For these measures, the numerator includes losses and loss expenses adjusted to exclude CATs and PPD. In addition, the denominator is adjusted to exclude net premiums earned adjustments on PPD and reinstatement premiums on CATs and PPD. Reinstatement premiums are additional premiums paid on certain reinsurance agreements in order to reinstate coverage that had been exhausted by loss occurrences. The reinstatement premium amount is typically a pro rata portion of the original ceded premium paid based on how much of the reinsurance limit had been exhausted.

The following table presents the CAY loss and loss expense ratio, excluding CATs and related adjustments (CAY loss ratio excluding CATs):

	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Loss and loss expense ratio	63.6 %	83.4 %	61.4 %	67.3 %
Catastrophe losses and related adjustments	(6.1)%	(26.1)%	(5.0)%	(11.4)%
Prior period development net of related adjustments	3.6 %	4.0 %	3.3 %	3.5 %
CAY loss ratio excluding catastrophe losses	61.1 %	61.3 %	59.7 %	59.4 %

The CAY loss ratio excluding CATs decreased 0.2 percentage points for the three months ended September 30, 2018, due to the factors driving the change in the loss and loss expense ratio described above. The CAY loss ratio excluding CATs increased 0.3 percentage points for the nine months ended September 30, 2018 due to the year-over-year increase in large structured transactions, favorable claims handling expense adjustments in the second quarter of 2017, which benefited the prior year loss ratio, and increasing frequency and severity of homeowners losses.

The following table presents the components of the CAY P&C combined ratio excluding CATs:

	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
CAY Loss and loss expense ratio ex CATs	61.1%	61.3%	59.7%	59.4%
CAY Policy acquisition cost ratio ex CATs	18.4%	18.6%	19.1%	19.4%
CAY Administrative expense ratio ex CATs	8.7%	8.6%	9.2%	9.2%
CAY P&C combined ratio ex CATs	88.2%	88.5%	88.0%	88.0%

P&C Combined Ratio with an Expected Level of CATs and CAY P&C Combined Ratio with an Expected Level of CATs

These measures include the level of CATs that we view as typical for that period. Refer to the Non-GAAP Reconciliation section for the definition and determination of “expected level of CATs.” We believe that these measures are meaningful and provide a better indication of our underwriting performance as the portion of CATs intended to be covered by the premiums over time is retained in the calculation. These measures more appropriately align the numerator with an expected level of CATs to the denominator which includes the net premiums earned on policies with exposures to that business.

The CAY P&C combined ratio with an expected level of CATs measure is further adjusted to exclude the impact of prior period development. We believe it is useful to exclude PPD as these unexpected loss developments on historical reserves are not indicative of our underlying performance.

	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
P&C Combined Ratio	90.9 %	110.8 %	89.8 %	96.0 %
Less: CATs above an expected level	1.5 %	21.5 %	1.4 %	7.6 %
P&C combined ratio with an expected level of CATs	89.4 %	89.3 %	88.4 %	88.4 %
Less: Prior period development net of related adjustments	(3.4)%	(3.7)%	(3.2)%	(3.3)%
CAY P&C Combined ratio with an expected level of CATs	92.8 %	93.0 %	91.6 %	91.7 %

Policy benefits

Policy benefits represent losses on contracts classified as long-duration and generally include accident and supplemental health products, term and whole life products, endowment products, and annuities. Refer to the Life segment operating results section for further discussion.

For the three months ended September 30, 2018 , Policy benefits were \$127 million , which is net of \$14 million separate account liabilities gains, compared to \$169 million in the prior year, which included losses of \$24 million related to separate account liabilities.

For the nine months ended September 30, 2018 , Policy benefits were \$428 million , which is net of \$18 million separate account liabilities gains, compared to \$500 million in the prior year, which included losses of \$70 million related to separate account liabilities.

Refer to the respective sections for a discussion of Net investment income, Interest expense, Other (income) expense, Net realized gains and losses, Amortization of purchased intangibles, and Income tax expense.

Segment Operating Results – Three and Nine Months Ended September 30, 2018 and 2017

We operate through six business segments: North America Commercial P&C Insurance, North America Personal P&C Insurance, North America Agricultural Insurance, Overseas General Insurance, Global Reinsurance, and Life Insurance. For more information on our segments refer to “Segment Information” under Item 1 in our 2017 Form 10-K.

Corporate results primarily include income and expenses not attributable to reportable segments and loss and loss expenses of asbestos and environmental (A&E) liabilities and certain other run-off exposures.

North America Commercial P&C Insurance

The North America Commercial P&C Insurance segment comprises operations that provide property and casualty (P&C) insurance and services to large, middle market, and small commercial businesses in the U.S., Canada, and Bermuda. This segment includes our North America Major Accounts and Specialty Insurance division (principally large corporate accounts and wholesale business), and the North America Commercial Insurance division (principally middle market and small commercial accounts).

(in millions of U.S. dollars, except for percentages)	Three Months Ended			Nine Months Ended		
	September 30		% Change	September 30		% Change
	2018	2017	Q-18 vs. Q-17	2018	2017	YTD-18 vs. YTD-17
Net premiums written ⁽¹⁾	\$ 3,199	\$ 3,086	3.6%	\$ 9,342	\$ 9,019	3.6%
Net premiums earned	3,019	3,016	0.1%	9,325	9,156	1.8%
Losses and loss expenses	1,881	2,580	(27.1)%	5,873	6,376	(7.9)%
Policy acquisition costs	458	469	(2.3)%	1,378	1,420	(3.0)%
Administrative expenses	251	256	(2.0)%	735	728	1.0%
Underwriting income (loss)	429	(289)	NM	1,339	632	111.9%
Net investment income	503	497	1.2%	1,516	1,465	3.5%
Other (income) expense	(1)	(4)	(75.0)%	(20)	(4)	400.0%
Segment income	\$ 933	\$ 212	340.1%	\$ 2,875	\$ 2,101	36.8%
Loss and loss expense ratio	62.3%	85.5%	(23.2) pts	63.0%	69.6%	(6.6) pts
Policy acquisition cost ratio	15.2%	15.5%	(0.3) pts	14.7%	15.5%	(0.8) pts
Administrative expense ratio	8.3%	8.6%	(0.3) pts	7.9%	8.0%	(0.1) pts
Combined ratio	85.8%	109.6%	(23.8) pts	85.6%	93.1%	(7.5) pts

NM – not meaningful

(1) The 2017 net premiums written amount was revised to reflect the transfer of certain multinational accounts (\$3 million and \$16 million, for the three and nine months ended, respectively) to the Overseas General Insurance segment to better align the reporting with the management of these businesses in 2018. There is no impact on a consolidated basis.

Premiums

Net premiums written increased \$113 million, or 3.6 percent, for the three months ended September 30, 2018 reflecting positive rate increases, new business written, and strong renewals across a number of lines, primarily in casualty, A&H and middle market property. This growth was partially offset by the unfavorable year-over-year impact of retrospective and audit premiums adjustments of \$31 million as well as merger-related underwriting actions in our program business of \$31 million.

Net premiums written increased \$323 million, or 3.6 percent, for the nine months ended September 30, 2018 due to the factors described above as well as from the year-over-year increase in large structured transactions (\$155 million), partially offset by a catch-up in premium registration that increased premiums written in the prior year (\$30 million for the nine months ended September 30, 2017).

Net premiums earned increased \$3 million, or 0.1 percent, the three months ended September 30, 2018 due to the net premiums written growth described above, offset by the year-over-year \$31 million unfavorable impact of fully earned retrospective and audit premiums adjustments, as well as merger-related actions and lower premiums written in the prior year period. Net premiums earned increased \$169 million, or 1.8 percent, for the nine months ended September 30, 2018 due to the factors described above, including the year-over-year increase in large structured transactions which were earned immediately when written.

Combined Ratio

The loss and loss expense ratio decreased 23.2 percentage points and 6.6 percentage points for the three and nine months ended September 30, 2018 , respectively, primarily due to lower catastrophe and non-catastrophe losses and integration-related claims handling expense savings realized, partially offset by lower favorable prior period development. Additionally, the decreases for the nine months ended were further offset by the year-over-year increase in large structured transactions which adversely impacted the current year loss ratio and favorable claims handling expense adjustments which benefited the prior year loss ratio.

The policy acquisition cost ratio decreased 0.3 percentage points and 0.8 percentage points for the three and nine months ended September 30, 2018 , respectively, due to increased cessions under certain reinsurance agreements that resulted in higher ceded acquisition costs benefits than in the prior year. Additionally, for the nine months ended the decrease was due to the favorable impact of large structured transactions written that generated minimal acquisition costs.

The administrative expense ratio decreased 0.3 percentage points for the three months ended September 30, 2018 , due to lower year-over-year policyholder dividends, partially offset by merit-based salary increases and a prior year favorable retiree medical benefit plan adjustment that reduced administrative expenses. The administrative expense ratio remained relatively flat for the nine months ended September 30, 2018.

The following table presents pre-tax catastrophe losses and pre-tax prior period development net of related adjustments:

(in millions of U.S. dollars)	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Catastrophe losses, pre-tax	\$ 196	\$ 868	\$ 347	\$ 1,053
Favorable prior period development net of related adjustments, pre-tax	\$ 216	\$ 236	\$ 472	\$ 546

Catastrophe losses through September 30, 2018 and 2017 were primarily from the following events:

- 2018 : Hurricane Florence and severe weather-related events in the U.S.
- 2017 : Hurricane Irma, Hurricane Harvey, and severe weather-related events in the U.S.

The following table presents the current accident year loss and loss expense ratio, excluding catastrophe losses and related adjustments (CAY loss ratio excluding catastrophe losses):

	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Loss and loss expense ratio	62.3 %	85.5 %	63.0 %	69.6 %
Catastrophe losses and related adjustments	(6.5)%	(28.8)%	(3.7)%	(11.5)%
Prior period development net of related adjustments	7.7 %	8.5 %	5.2 %	6.2 %
CAY loss ratio excluding catastrophe losses	63.5 %	65.2 %	64.5 %	64.3 %

The CAY loss ratio excluding catastrophe losses decreased 1.7 percentage points and increased 0.2 percentage points for the three and nine months ended September 30, 2018 , respectively, due to lower year-over-year large loss activity.

North America Personal P&C Insurance

The North America Personal P&C Insurance segment comprises operations that provide high net worth personal lines products, including homeowners and complementary products such as valuable articles, excess liability, automobile, and recreational marine insurance and services in the U.S. and Canada.

	Three Months Ended			Nine Months Ended		
	September 30		% Change	September 30		% Change
(in millions of U.S. dollars, except for percentages)	2018	2017	Q-18 vs. Q-17	2018	2017	YTD-18 vs. YTD-17
Net premiums written	\$ 1,218	\$ 1,194	2.0%	\$ 3,601	\$ 3,433	4.9%
Net premiums earned	1,167	1,117	4.5%	3,463	3,296	5.1%
Losses and loss expenses	860	1,062	(19.0)%	2,474	2,378	4.0%
Policy acquisition costs	236	226	4.4%	701	673	4.2%
Administrative expenses	69	61	13.1%	202	192	5.2%
Underwriting income (loss)	2	(232)	NM	86	53	62.3%
Net investment income	59	57	3.5%	177	168	5.4%
Other (income) expense	—	1	NM	1	3	(66.7)%
Amortization of purchased intangibles	4	4	—	10	12	(16.7)%
Segment income (loss)	\$ 57	\$ (180)	NM	\$ 252	\$ 206	22.3%
Loss and loss expense ratio	73.7%	95.1%	(21.4) pts	71.5%	72.2%	(0.7) pts
Policy acquisition cost ratio	20.2%	20.2%	— pts	20.2%	20.4%	(0.2) pts
Administrative expense ratio	5.9%	5.5%	0.4 pts	5.8%	5.8%	— pts
Combined ratio	99.8%	120.8%	(21.0) pts	97.5%	98.4%	(0.9) pts

NM – not meaningful

Premiums

Net premiums written increased \$24 million , or 2.0 percent, and \$168 million , or 4.9 percent, for the three and nine months ended September 30, 2018 , respectively, primarily due to strong retention and new business growth in homeowners and complementary products such as automobiles and valuables, partially offset by an adverse impact of \$4 million related to the harmonization of our legacy registration systems along with a benefit of \$4 million in the prior year principally due to the timing of premium registrations. In addition, for the nine months ended September 30, 2018 , the non-renewal of a quota share treaty in the second quarter of 2017 covering the acquired Fireman's Fund homeowners and automobile businesses (\$47 million) added to the increase along with a current period benefit relating to the harmonization of our legacy registration systems (\$49 million) offset by a similar adjustment in the prior year (\$22 million).

Net premiums earned increased \$50 million , or 4.5 percent, and \$167 million , or 5.1 percent, for the three and nine months ended September 30, 2018 , respectively, primarily due to the factors described above and the impact of the non-renewal of the Fireman's Fund quota share treaty in 2017.

Combined Ratio

The loss and loss expense ratio decreased 21.4 percentage points and 0.7 percentage points for the three and nine months ended September 30, 2018 , respectively, primarily due to lower catastrophe losses (28.7 percentage points and 2.9 percentage points for the three and nine months ended, respectively) and integration-related claims handling expense savings realized. These decreases were offset by increasing frequency and severity of homeowners losses primarily non-catastrophe water related events and large fire losses which are trending above our expectations. In addition, for the three months ended September 30, 2018 , the loss and loss expense ratio was negatively impacted by higher unfavorable prior period development.

The policy acquisition cost ratio remained flat for the three months ended September 30, 2018 as a favorable supplemental commission adjustment in the current year was offset by lower ceded acquisition expense benefits resulting from the impact of the non-renewal of a quota share treaty as described above. The policy acquisition ratio decreased 0.2 percentage points for the

nine months ended September 30, 2018 primarily due to a favorable supplemental commission adjustment in the current year, partially offset by the non-renewal of the Fireman's Fund quota share treaty which had a higher ceding commission.

The administrative expense ratio increased 0.4 percentage points for the three months ended September 30, 2018 . The prior year included a favorable retiree medical benefit plan adjustment which reduced administrative expenses. In addition, the current year reflected merit-based salary and inflationary increases. The administrative expense ratio remained flat for the nine months ended September 30, 2018 .

The following table presents pre-tax catastrophe losses and pre-tax prior period development net of related adjustments:

(in millions of U.S. dollars)	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Catastrophe losses, pre-tax	\$ 136	\$ 448	\$ 521	\$ 593
Favorable (unfavorable) prior period development net of related adjustments, pre-tax	\$ (58)	\$ (32)	\$ (59)	\$ (66)

Catastrophe losses through September 30, 2018 and 2017 were primarily from the following events:

- 2018 : Colorado rain and hailstorms, Hurricane Florence, California mudslides, Northeast winter storms, and other severe weather-related events in the U.S.
- 2017 : Hurricane Harvey, Hurricane Irma, and other severe weather-related events in the U.S.

The following table presents the current accident year loss and loss expense ratio, excluding catastrophe losses and related adjustments (CAY loss ratio excluding catastrophe losses):

	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Loss and loss expense ratio	73.7 %	95.1 %	71.5 %	72.2 %
Catastrophe losses and related adjustments	(11.6)%	(40.3)%	(15.1)%	(18.0)%
Prior period development net of related adjustments	(5.0)%	(2.9)%	(1.7)%	(2.1)%
CAY loss ratio excluding catastrophe losses	57.1 %	51.9 %	54.7 %	52.1 %

The CAY loss ratio excluding catastrophe losses increased 5.2 percentage points and 2.6 percentage points for the three and nine months ended September 30, 2018 , respectively, due to increasing frequency and severity of homeowners losses primarily non-catastrophe water related events and large fire losses which are trending above our expectations.

North America Agricultural Insurance

The North America Agricultural Insurance segment comprises our North American based businesses that provide a variety of coverages in the U.S. and Canada including crop insurance, primarily Multiple Peril Crop Insurance (MPCI) and crop-hail through Rain and Hail Insurance Service, Inc. (Rain and Hail) as well as farm and ranch and specialty P&C commercial insurance products and services through our Chubb Agribusiness unit.

(in millions of U.S. dollars, except for percentages)	Three Months Ended			Nine Months Ended		
	September 30		% Change	September 30		% Change
	2018	2017	Q-18 vs. Q-17	2018	2017	YTD-18 vs. YTD-17
Net premiums written	\$ 884	\$ 926	(4.5)%	\$ 1,380	\$ 1,390	(0.7)%
Net premiums earned	857	898	(4.6)%	1,251	1,256	(0.3)%
Losses and loss expenses ⁽¹⁾	727	764	(4.8)%	953	983	(3.1)%
Policy acquisition costs	49	49	—	74	75	(1.3)%
Administrative expenses	2	(1)	NM	—	(4)	NM
Underwriting income	79	86	(8.1)%	224	202	10.9%
Net investment income	7	6	16.7%	20	18	11.1%
Other (income) expense	—	—	NM	1	1	—
Amortization of purchased intangibles	7	8	(12.5)%	21	22	(4.5)%
Segment income	\$ 79	\$ 84	(6.0)%	\$ 222	\$ 197	12.7%
Loss and loss expense ratio	84.9%	85.1 %	(0.2) pts	76.2%	78.3 %	(2.1) pts
Policy acquisition cost ratio	5.7%	5.4 %	0.3 pts	5.9%	6.0 %	(0.1) pts
Administrative expense ratio	0.1%	(0.1)%	0.2 pts	—	(0.4)%	0.4 pts
Combined ratio	90.7%	90.4 %	0.3 pts	82.1%	83.9 %	(1.8) pts

NM – not meaningful

⁽¹⁾ Gains (losses) on crop derivatives were \$(8) million and \$2 million for the three and nine months ended September 30, 2018, respectively. Gains (losses) on crop derivatives were \$(5) million and \$(7) million for the three and nine months ended September 30, 2017. These gains (losses) are included in Net realized gains (losses) in our Consolidated statements of operations but are reclassified to Losses and loss expenses for purposes of presenting North America Agricultural Insurance underwriting income.

Premiums

Net premiums written decreased \$42 million, or 4.5 percent, and \$10 million, or 0.7 percent, for the three and nine months ended September 30, 2018, respectively, primarily due to lower volatility factors, which are a component of the policy pricing that measures the likelihood the commodity price will fluctuate over the crop year, partially offset by policy count growth in our MPCI business and our Chubb Agribusiness unit driven by strong retention. For the nine months ended September 30, 2018, the decrease was offset by an increase in MPCI premium which was driven in part by higher new business and the year-over-year impact of the premium sharing formulas under the U.S. government. Under the MPCI profit and loss calculation, we cede additional premiums to the government during profitable years. In the prior year, the program was more profitable which resulted in higher cessions compared to 2018.

Net premiums earned decreased \$41 million, or 4.6 percent, and \$5 million, 0.3 percent, for the three and nine months ended September 30, 2018, respectively, due to the factors described above.

Combined Ratio

The loss and loss expense ratio decreased 0.2 percentage points and 2.1 percentage points for the three and nine months ended September 30, 2018, respectively, due to improved underlying losses in the current year. In addition, the loss ratio for the nine months ended September 30, 2018, decreased due to lower catastrophe losses which were partially offset by lower favorable prior period development.

The policy acquisition cost ratio increased 0.3 percentage points for the three months ended September 30, 2018, primarily due to lower net premiums earned as described above. The policy acquisition cost ratio remained relatively flat for the nine months ended September 30, 2018.

The administrative expense ratio increased 0.2 percentage points and 0.4 percentage points for the three and nine months ended September 30, 2018, respectively, primarily due to merit-based salary and inflationary increases along with the year-over-year impact of the Administrative and Operating (A&O) reimbursements on the MPCl business we recorded under the government program relative to our participation in underserved states. The current year reimbursement was less than the prior year reimbursement.

The following table presents pre-tax catastrophe losses and pre-tax prior period development net of related adjustments:

(in millions of U.S. dollars)	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Catastrophe losses, pre-tax	\$ 8	\$ 5	\$ 11	\$ 18
Favorable prior period development net of related adjustments, pre-tax	\$ 1	\$ 4	\$ 77	\$ 83

Catastrophe losses through September 30, 2018 and 2017 were primarily from our farm, ranch, and specialty P&C businesses.

For the three and nine months ended September 30, 2018, net favorable prior period development was \$1 million and \$77 million, respectively. For the nine months ended September 30, 2018, the prior period development amount included \$113 million of favorable incurred losses and \$4 million of lower acquisition costs due to lower than expected MPCl losses for the 2017 crop year, partially offset by a \$40 million decrease in net premiums earned related to the MPCl profit and loss calculation formula. For the three and nine months ended September 30, 2017, net favorable prior period development was \$4 million and \$83 million, respectively. For the nine months ended September 30, 2017, the prior period development amount included \$140 million of favorable incurred losses and \$4 million of lower acquisition costs due to lower than expected MPCl losses for the 2016 crop year, partially offset by a \$61 million decrease in net premiums earned related to the MPCl profit and loss calculation formula.

The following table presents the current accident year loss and loss expense ratio, excluding catastrophe losses and related adjustments (CAY loss ratio excluding catastrophe losses):

	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Loss and loss expense ratio	84.9 %	85.1 %	76.2 %	78.3 %
Catastrophe losses and related adjustments	(0.9)%	(0.5)%	(0.9)%	(1.4)%
Prior period development net of related adjustments	0.1 %	0.3 %	6.5 %	7.0 %
CAY loss ratio excluding catastrophe losses	84.1 %	84.9 %	81.8 %	83.9 %

The CAY loss ratio excluding catastrophe losses decreased 0.8 percentage points and 2.1 percentage points for the three and nine months ended September 30, 2018, respectively, primarily due to the factors described above.

Overseas General Insurance

Overseas General Insurance segment comprises Chubb International and Chubb Global Markets (CGM). Chubb International comprises our commercial P&C traditional and specialty lines serving large corporations, middle market and small customers; A&H and traditional and specialty personal lines business serving local territories outside the U.S., Bermuda, and Canada. CGM, our London-based international commercial P&C excess and surplus lines business, includes Lloyd's of London (Lloyd's) Syndicate 2488. Chubb provides funds at Lloyd's to support underwriting by Syndicate 2488 which is managed by Chubb Underwriting Agencies Limited.

(in millions of U.S. dollars, except for percentages)	Three Months Ended			Nine Months Ended		
	September 30		% Change	September 30		% Change
	2018	2017	Q-18 vs. Q-17	2018	2017	YTD-18 vs. YTD-17
Net premiums written ⁽¹⁾	\$ 2,081	\$ 1,966	5.9%	\$ 6,664	\$ 6,185	7.7%
Net premiums earned	2,157	2,064	4.5%	6,425	6,018	6.8%
Losses and loss expenses	1,114	1,281	(13.0)%	3,263	3,316	(1.6)%
Policy acquisition costs	582	569	2.3%	1,754	1,653	6.1%
Administrative expenses	252	246	2.4%	757	734	3.1%
Underwriting income (loss) ⁽²⁾	209	(32)	NM	651	315	106.7%
Net investment income	155	164	(5.5)%	461	460	0.2%
Other (income) expense	(7)	(10)	(30.0)%	(12)	(14)	(14.3)%
Amortization of purchased intangibles	8	11	(27.3)%	29	33	(12.1)%
Segment income	\$ 363	\$ 131	177.1%	\$ 1,095	\$ 756	44.8%
Loss and loss expense ratio	51.7%	62.1%	(10.4) pts	50.8%	55.1%	(4.3) pts
Policy acquisition cost ratio	26.9%	27.6%	(0.7) pts	27.3%	27.5%	(0.2) pts
Administrative expense ratio	11.7%	11.9%	(0.2) pts	11.8%	12.2%	(0.4) pts
Combined ratio	90.3%	101.6%	(11.3) pts	89.9%	94.8%	(4.9) pts

NM - not meaningful

(1) On a constant-dollar basis, for the three and nine months ended September 30, 2018, net premiums written increased \$144 million and \$284 million, or 7.5 percent and 4.5 percent, respectively. Amounts are calculated by translating prior period results using the same local currency rates as the comparable current period. The 2017 net premiums written amount was revised to reflect the transfer of certain multinational accounts (\$3 million and \$16 million, for the three and nine months ended, respectively) from the North America Commercial P&C Insurance segment to better align the reporting with the management of these businesses in 2018. There is no impact on a consolidated basis.

(2) On a constant-dollar basis, for the three and nine months ended September 30, 2018, underwriting income increased \$247 million and \$310 million, respectively. Amounts are calculated by translating prior period results using the same local currency rates as the comparable current period.

Premiums

Net premiums written increased \$115 million and \$479 million for the three and nine months ended September 30, 2018, respectively. On a constant-dollar basis, net premiums written increased \$144 million and \$284 million, or 7.5 percent and 4.5 percent, for the three and nine months ended September 30, 2018, respectively, reflecting growth across most regions and lines of business. P&C lines growth was across all regions, principally in small commercial property and general casualty lines reflecting new business, and in middle market driven by new business and rate increases. Personal lines growth was principally in our automobile line in Mexico driven by new business, as well as in our specialty lines in Asia. Accident and health (A&H) lines growth was principally in Asia driven by new business.

Net premiums earned increased \$93 million and \$407 million for the three and nine months ended September 30, 2018, respectively. On a constant-dollar basis, net premiums earned increased \$120 million and \$225 million, or 5.9 percent and 3.6 percent, for the three and nine months ended September 30, 2018, respectively, due to the factors described above.

Overseas General Insurance conducts business internationally and in most major foreign currencies. The following tables present a regional breakdown of Overseas General Insurance net premiums written:

(in millions of U.S. dollars, except for percentages)	Three Months Ended September 30						% Change	
	2018	2018 % of Total	2017	2017 % of Total	C\$ (1) 2017	Q-18 vs. Q-17	C\$ (1) Q-18 vs. Q-17	
Region								
Europe	\$ 727	35%	\$ 691	35%	\$ 703	5.2%	3.4%	
Latin America	519	25%	514	26%	473	1.0%	9.7%	
Asia	755	36%	681	35%	683	10.9%	10.5%	
Other (2)	80	4%	80	4%	78	—	2.6%	
Net premiums written	\$ 2,081	100%	\$ 1,966	100%	\$ 1,937	5.9%	7.5%	

(1) On a constant-dollar basis. Amounts are calculated by translating prior period results using the same local currency exchange rates as the comparable current period.

(2) Combined International, Eurasia and Africa region, and other international. The 2017 net premiums written as reported and constant-dollar amounts were revised to reflect the transfer of certain multinational accounts (\$3 million for the three months ended) from the North America Commercial P&C Insurance segment to better align the reporting with the management of these businesses in 2018. There is no impact on a consolidated basis.

(in millions of U.S. dollars, except for percentages)	Nine Months Ended September 30						% Change	
	2018	2018 % of Total	2017	2017 % of Total	C\$ (1) 2017	YTD-18 vs. YTD-17	C\$ (1) YTD-18 vs. YTD-17	
Region								
Europe	\$ 2,641	40%	\$ 2,447	40%	\$ 2,624	7.9 %	0.6 %	
Latin America	1,597	24%	1,519	25%	1,474	5.1 %	8.3 %	
Asia	2,176	33%	1,931	31%	1,988	12.7 %	9.5 %	
Other (2)	250	3%	288	4%	294	(13.2)%	(15.0)%	
Net premiums written	\$ 6,664	100%	\$ 6,185	100%	\$ 6,380	7.7 %	4.5 %	

(1) On a constant-dollar basis. Amounts are calculated by translating prior period results using the same local currency exchange rates as the comparable current period.

(2) Combined International, Eurasia and Africa region, and other international. The 2017 net premiums written as reported and constant-dollar amounts were revised to reflect the transfer of certain multinational accounts (\$16 million for the nine months ended) from the North America Commercial P&C Insurance segment to better align the reporting with the management of these businesses in 2018. There is no impact on a consolidated basis.

Net premiums written increased for the three and nine months ended September 30, 2018, across most regions due to the same factors as described above.

Combined Ratio

The loss and loss expense ratio decreased 10.4 percentage points and 4.3 percentage points for the three and nine months ended September 30, 2018, respectively, reflecting lower catastrophe losses partially offset by lower favorable prior period development in the current year. In addition, for the nine months ended September 30, 2018, the decrease in the loss and loss expense ratio reflected a change in the mix of business towards consumer and property and casualty lines in countries that have a lower loss ratio and a higher acquisition cost ratio (0.4 percentage points).

The policy acquisition cost ratio decreased 0.7 percentage points and 0.2 percentage points for the three and nine months ended September 30, 2018, respectively, primarily due to a change in the mix of business in D&O, A&H, and personal lines towards products and regions which have a lower acquisition cost ratio and higher cede commissions in the current year. For the nine months ended September 30, 2018, the decrease was offset by a change in mix of business in A&H in Latin American and Asia which had a higher acquisition ratio.

The administrative expense ratio decreased 0.2 percentage points and 0.4 percentage points for the three and nine months ended September 30, 2018, respectively, primarily driven by integration-expense savings realized (0.2 percentage points and 0.4 percentage points, respectively).

The following table presents pre-tax catastrophe losses and pre-tax prior period development net of related adjustments:

(in millions of U.S. dollars)	Three Months Ended September 30		Nine Months Ended September 30	
	2018	2017	2018	2017
Catastrophe losses, pre-tax	\$ 80	\$ 326	\$ 121	\$ 386
Favorable prior period development net of related adjustments, pre-tax	\$ 72	\$ 108	\$ 166	\$ 184

Catastrophe losses through September 30, 2018 and 2017 were primarily from the following events:

- 2018 : Typhoons Jebi and Mangkhut and Hurricane Florence
- 2017 : Hurricane Maria, Hurricane Harvey, Hurricane Irma, Earthquakes in Mexico, Cyclone Debbie in Australia, and flooding in Latin America

The following table presents the current accident year loss and loss expense ratio, excluding catastrophe losses and related adjustments (CAY loss ratio excluding catastrophe losses):

	Three Months Ended September 30		Nine Months Ended September 30	
	2018	2017	2018	2017
Loss and loss expense ratio	51.7 %	62.1 %	50.8 %	55.1 %
Catastrophe losses and related adjustments	(3.8)%	(16.0)%	(1.9)%	(6.5)%
Prior period development net of related adjustments	3.4 %	5.2 %	2.6 %	3.1 %
CAY loss ratio excluding catastrophe losses	51.3 %	51.3 %	51.5 %	51.7 %

The CAY loss ratio excluding catastrophe losses remained flat for the three months ended September 30, 2018 . For the nine months ended September 30, 2018 , the CAY loss ratio excluding catastrophe losses decreased 0.2 percentage points due to the factors driving the decrease in the loss and loss expense ratio described above.

Global Reinsurance

The Global Reinsurance segment represents our reinsurance operations comprising Chubb Tempest Re Bermuda, Chubb Tempest Re USA, Chubb Tempest Re International, and Chubb Tempest Re Canada. Global Reinsurance markets its reinsurance products worldwide under the Chubb Tempest Re brand name and provides a broad range of traditional reinsurance coverage to a diverse array of primary P&C companies.

(in millions of U.S. dollars, except for percentages)	Three Months Ended			Nine Months Ended		
	September 30		% Change	September 30		% Change
	2018	2017	Q-18 vs. Q-17	2018	2017	YTD-18 vs. YTD-17
Net premiums written	\$ 164	\$ 191	(14.3)%	\$ 554	\$ 580	(4.5)%
Net premiums earned	157	185	(15.7)%	492	542	(9.4)%
Losses and loss expenses	86	295	(70.8)%	236	435	(45.7)%
Policy acquisition costs	40	43	(7.0)%	120	137	(12.4)%
Administrative expenses	10	11	(9.1)%	29	33	(12.1)%
Underwriting income (loss)	21	(164)	NM	107	(63)	NM
Net investment income	63	80	(21.3)%	192	207	(7.2)%
Other (income) expense	(13)	(3)	333.3%	(26)	(2)	NM
Segment income (loss)	\$ 97	\$ (81)	NM	\$ 325	\$ 146	122.6%
Loss and loss expense ratio	55.0%	158.2%	(103.2) pts	48.0%	80.1%	(32.1) pts
Policy acquisition cost ratio	25.2%	23.4%	1.8 pts	24.3%	25.3%	(1.0) pt
Administrative expense ratio	6.5%	5.8%	0.7 pts	6.0%	6.1%	(0.1) pts
Combined ratio	86.7%	187.4%	(100.7) pts	78.3%	111.5%	(33.2) pts

NM - not meaningful

Premiums

Net premiums written decreased \$27 million and \$26 million for the three and nine months ended September 30, 2018, respectively. On a constant-dollar basis, net premiums written decreased \$28 million and \$35 million, or 14.7 percent and 5.9 percent, for the three and nine months ended September 30, 2018, respectively, primarily due to higher reinstatement premiums collected in the prior year principally relating to the 2017 natural catastrophes (\$33 million year-over-year decrease for both three and nine months ended September 30, 2018) and lower renewals, which is reflective of competitive market conditions, partially offset by new business written in casualty and property lines.

Net premiums earned decreased \$28 million and \$50 million for the three and nine months ended September 30, 2018, respectively. On a constant-dollar basis, net premiums earned decreased \$30 million and \$60 million, or 16.0 percent and 10.8 percent, for the three and nine months ended September 30, 2018, respectively, reflecting the decrease in net premiums written. For the nine months ended September 30, 2018, the decrease was also due to \$14 million of short-term treaties earned in the prior year that were written in 2016 and 2017.

Combined Ratio

The loss and loss expense ratio decreased 103.2 percentage points and 32.1 percentage points for the three and nine months ended September 30, 2018, respectively, principally due to lower catastrophe losses partially offset by lower favorable prior period development and a shift in the mix of business from property catastrophe business towards casualty business, which generally has a higher loss ratio.

The policy acquisition cost ratio increased 1.8 percentage points for the three months ended September 30, 2018, primarily due to a higher weighting towards low acquisition cost ratio property catastrophe business in 2017 driven by reinstatement premiums on the 2017 natural catastrophes. The policy acquisition cost ratio decreased 1.0 percentage point for the nine months ended September 30, 2018, primarily due to a reduction in our acquisition expenses on U.S. property treaties with adjustable commission features and on average, lower acquisition expenses on proportional business.

The administrative expense ratio increased 0.7 percentage points for the three months ended September 30, 2018 primarily due to lower net premiums earned, partially offset by lower employee benefit-related expenses. The administrative expense ratio remained relatively flat for the nine months ended September 30, 2018 .

The following table presents pre-tax catastrophe losses and pre-tax prior period development net of related adjustments:

(in millions of U.S dollars)	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Catastrophe losses, pre-tax ⁽¹⁾	\$ 34	\$ 268	\$ 45	\$ 271
Favorable prior period development net of related adjustments, pre-tax ⁽²⁾⁽³⁾	\$ 24	\$ 41	\$ 54	\$ 64
(1) Excludes catastrophe reinstatement premiums collected - pre-tax	\$ 4	\$ 37	\$ 4	\$ 37
(2) Favorable (unfavorable) reinstatement premiums receivable on prior period development - pre-tax	\$ (4)	\$ (3)	\$ (7)	\$ 4
(3) Favorable acquisition expense adjustment payable on prior period development - pre-tax	\$ —	\$ —	\$ 1	\$ —

Catastrophe losses through September 30, 2018 and 2017 were primarily from the following events:

- 2018 : Hurricane Florence, Typhoon Jebi, Windstorm Friederike, and other various U.S., Canada, and Japanese severe weather related events
- 2017 : Hurricane Irma, Hurricane Maria, Hurricane Harvey, and severe weather related events in the U.S.

The following table presents the current accident year loss and loss expense ratio, excluding catastrophe losses and related adjustments (CAY loss ratio excluding catastrophe losses):

	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Loss and loss expense ratio	55.0 %	158.2 %	48.0 %	80.1 %
Catastrophe losses and related adjustments	(20.6)%	(139.9)%	(8.7)%	(47.6)%
Prior period development net of related adjustments	16.8 %	28.2 %	11.3 %	12.1 %
CAY loss ratio excluding catastrophe losses	51.2 %	46.5 %	50.6 %	44.6 %

The CAY loss ratio excluding catastrophe losses increased 4.7 percentage points and 6.0 percentage points for the three and nine months ended September 30, 2018 , respectively, primarily due to a shift in the mix of business from property catastrophe business towards casualty business which generally has a higher loss ratio and higher losses in our U.S. property lines.

Life Insurance

The Life Insurance segment comprises Chubb's international life operations, Chubb Tempest Life Re (Chubb Life Re), and the North American supplemental A&H and life business of Combined Insurance. We assess the performance of our life business based on Life Insurance underwriting income, which includes Net investment income and (Gains) losses from fair value changes in separate account assets that do not qualify for separate account reporting under GAAP.

(in millions of U.S. dollars, except for percentages)	Three Months Ended			Nine Months Ended		
	September 30		% Change	September 30		% Change
	2018	2017	Q-18 vs. Q-17	2018	2017	YTD-18 vs. YTD-17
Net premiums written	\$ 564	\$ 539	4.8 %	\$ 1,688	\$ 1,586	6.5 %
Net premiums earned	551	527	4.6 %	1,643	1,548	6.2 %
Losses and loss expenses	195	181	7.7 %	584	556	5.0 %
Policy benefits ⁽¹⁾	127	169	(24.9)%	428	500	(14.4)%
(Gains) losses from fair value changes in separate account assets ⁽¹⁾	14	(24)	NM	18	(70)	NM
Policy acquisition costs	139	132	5.3 %	405	376	7.7 %
Administrative expenses	77	77	—	235	226	4.0 %
Net investment income	85	78	9.0 %	253	230	10.0 %
Life Insurance underwriting income	84	70	20.0 %	226	190	18.9 %
Other (income) expense ⁽¹⁾	6	5	20.0 %	6	10	(40.0)%
Amortization of purchased intangibles	—	1	NM	1	2	(50.0)%
Segment income	\$ 78	\$ 64	21.9 %	\$ 219	\$ 178	23.0 %

NM – not meaningful

(1) (Gains) losses from fair value changes in separate account assets that do not qualify for separate account reporting under GAAP have been reclassified from Other income (expense) for purposes of presenting Life Insurance underwriting income. The offsetting movement in the separate account liabilities is included in Policy benefits.

Premiums

Net premiums written increased \$25 million and \$102 million for the three and nine months ended September 30, 2018, respectively. On a constant-dollar basis, net premiums written increased \$27 million and \$88 million, or 5.1 percent and 5.5 percent, for the three and nine months ended September 30, 2018, respectively, primarily due to growth in our North American Combined Insurance supplemental A&H program business and Asian international life operations, partially offset by our life reinsurance business, which continues to decline as no new life reinsurance business is currently being written.

Deposits

The following table presents deposits collected on universal life and investment contracts:

(in millions of U.S. dollars, except for percentages)	Three Months Ended					Nine Months Ended				
	September 30			% Change		September 30			% Change	
	2018	2017	C\$ ⁽¹⁾ 2017	Q-18 vs. Q-17	C\$ ⁽¹⁾ Q-18 vs. Q-17	2018	2017	C\$ ⁽¹⁾ 2017	Y-18 vs. Y-17	C\$ ⁽¹⁾ Y-18 vs. Y-17
Deposits collected on Universal life and investment contracts	\$ 392	\$ 422	\$ 422	(7.1)%	(7.1)%	\$ 1,163	\$ 1,048	\$ 1,070	10.9%	8.7%

(1) On a constant-dollar basis. Amounts are calculated by translating prior period results using the same local currency exchange rates as the comparable current period.

Deposits collected on universal life and investment contracts (life deposits) are not reflected as revenues in our Consolidated statements of operations in accordance with GAAP. New life deposits are an important component of production, and although they do not significantly affect current period income from operations, they are key to our efforts to grow our business. Life deposits collected decreased for the three months ended September 30, 2018, primarily due to a change in product mix in Taiwan. Excluding Taiwan, life deposits increased \$18 million, principally due to growth in Korea, Hong Kong, and Vietnam. For the nine months ended September 30, 2018, life deposits increased due to growth in Taiwan, Korea, and Vietnam.

Life Insurance underwriting income

Life Insurance underwriting income increased \$14 million and \$36 million for the three and nine months ended September 30, 2018 , respectively, principally reflecting growth as described above, a favorable reserve development of \$8 million, and an increase in net investment income.

Corporate

Corporate results primarily include income and expenses not attributable to reportable segments and loss and loss expenses of asbestos and environmental (A&E) liabilities.

(in millions of U.S. dollars, except for percentages)	Three Months Ended			Nine Months Ended		
	September 30		% Change	September 30		% Change
	2018	2017	Q-18 vs. Q-17	2018	2017	YTD-18 vs. YTD-17
Losses and loss expenses	\$ 13	\$ 89	(85.4)%	\$ 72	\$ 145	(50.3)%
Administrative expenses	58	64	(9.4)%	200	187	7.0 %
Underwriting loss	71	153	(53.6)%	272	332	(18.1)%
Net investment income (loss)	(49)	(69)	(29.0)%	(162)	(220)	(26.4)%
Interest expense	164	150	9.3 %	488	451	8.2 %
Net realized gains (losses)	27	(5)	NM	33	91	(63.7)%
Other (income) expense	(144)	(83)	73.5 %	(275)	(257)	7.0 %
Amortization expense of purchased intangibles	64	41	56.1 %	192	125	53.6 %
Chubb integration expenses	16	50	(68.0)%	39	233	(83.3)%
Income tax expense (benefit)	183	(85)	NM	536	243	120.6 %
Net loss	\$ (376)	\$ (300)	25.3 %	\$ (1,381)	\$ (1,256)	10.0 %

NM - not meaningful

Losses and loss expenses decreased \$76 million and \$73 million for the three and nine months ended September 30, 2018 , respectively, primarily due to lower adverse development relating to our Brandywine environmental exposures as well as a favorable adjustment in our estimate of reinsurance recoverables. Refer to the Prior Period Development section for further information.

Administrative expenses decreased \$6 million for the three months ended September 30, 2018 , primarily due to lower benefit-related expenses that more than offset increased spending to support growth and higher global advertising expenses. For the nine months ended September 30, 2018 , administrative expenses increased \$13 million , primarily due to higher global advertising expenses and increased spending to support growth.

Chubb integration expenses are one-time in nature and are not related to the on-going business activities of the segments. The Chief Executive Officer does not manage segment results or allocate resources to segments when considering these costs and they are therefore excluded from our definition of segment income. For the three and nine months ended September 30, 2018 , Chubb integration expenses principally consisted of personnel-related expenses (\$5 million and \$15 million, respectively), and rebranding (\$3 million and \$7 million, respectively). For the three and nine months ended September 30, 2017, Chubb integration expenses principally consisted of personnel-related expenses (\$25 million and \$140 million, respectively).

Refer to the respective sections for a discussion of Net investment income, Interest expense, Other (income) expense, Net realized gains and losses, Amortization of purchased intangibles, and Income tax expense.

Effective Income Tax Rate

Our effective income tax rate reflects a mix of income or losses in jurisdictions with a wide range of tax rates, permanent differences between GAAP and local tax laws, and the timing of recording discrete items. A change in the geographic mix of earnings could impact our effective tax rate.

For the three and nine months ended September 30, 2018, our effective tax rate was 12.9 percent for both periods, compared to 54.7 percent and 9.4 percent, respectively, in the prior year periods. The current year effective tax rate has been favorably impacted by the reduced U.S. corporate income tax rate resulting from the passage of the Tax Cuts and Jobs Act.

The prior year effective tax rates principally reflected a tax benefit from the catastrophe events in the third quarter of 2017 which resulted in an operating loss for the quarter, as well as realized gains generated in lower taxing jurisdictions. In addition, the effective tax rate for the nine months ended September 30, 2017 benefited from a reduction of income tax expense due to the adoption of stock based compensation guidance related to excess tax benefits (\$44 million) and an accounting election made related to the treatment of certain investments which reduced income tax expense (\$25 million).

Non-GAAP Reconciliation

P&C performance metrics are non-GAAP financial measures and comprise consolidated operating results (including Corporate) and exclude the operating results of the Life Insurance segment. We believe that these measures are useful and meaningful to investors as they are used by management to assess the company's P&C operations which are the most economically similar. We exclude the Life Insurance segment because the results of this business do not always correlate with the results of our P&C operations.

P&C combined ratio is a non-GAAP financial measure and includes the impact of realized gains and losses on crop derivatives. These derivatives were purchased to provide economic benefit, in a manner similar to reinsurance protection, in the event that a significant decline in commodity pricing will impact underwriting results. We view gains and losses on these derivatives as part of the results of our underwriting operations. The combined ratio numerator includes losses and loss expenses, adjusted to include the realized gains and losses on crop derivatives, policy acquisition costs, and administrative expenses. The denominator includes net premiums earned.

CAY P&C combined ratio excluding the impact of catastrophe losses (CATs) and prior period development (PPD) is a non-GAAP financial measure. We exclude CATs as they are not predictable as to timing and amount and PPD as these unexpected loss developments on historical reserves are not indicative of our current underwriting performance. The combined ratio numerator is adjusted to exclude net premiums earned adjustments on PPD, prior period expense adjustments and reinstatement premiums on PPD, and the denominator is adjusted to exclude net premiums earned adjustments on PPD and reinstatement premiums on CATs and PPD. In periods where there are adjustments on loss sensitive policies, these adjustments are excluded from PPD and net premiums earned when calculating the ratios. We believe this measure provides a better evaluation of our underwriting performance and enhances the understanding of the trends in our property & casualty business that may be obscured by these items. This measure is commonly reported among our peer companies and allows for a better comparison.

Reinstatement premiums are additional premiums paid on certain reinsurance agreements in order to reinstate coverage that had been exhausted by loss occurrences. The reinstatement premium amount is typically a pro rata portion of the original ceded premium paid based on how much of the reinsurance limit had been exhausted.

Net premiums earned adjustments within prior period development are adjustments to the initial premium earned on retrospectively rated policies based on actual claim experience that develops after the policy period ends. The premium adjustments correlate to the prior period loss development on these same policies and are fully earned in the period the adjustments are recorded.

Prior period expense adjustments typically relate to either profit commission reserves or policyholder dividend reserves based on actual claim experience that develops after the policy period ends. The expense adjustments correlate to the prior period loss development on these same policies.

P&C combined ratio with expected level of CATs and CAY P&C combined ratio with expected level of CATs are non-GAAP financial measures which excludes CATs above or below managements' view of typical CATs for that period. An expected level of CATs is determined based on various factors, including historical experience, seasonal patterns, and consideration of both modeled CATs (e.g., windstorm and earthquake) as well as non-modeled CATs (e.g., wildfires, floods and freeze). For the three and nine months ended September 30, 2018, based on these and other factors, the expected level of CATs was \$342 million and \$772 million, respectively, resulting in CATs above expected level of \$108 million and \$269 million, respectively. For the three and nine months ended September 30, 2017, based on these and other factors, the expected level of CATs was \$330 million and \$743 million, respectively, resulting in CATs above expected level of \$1,563 million and \$1,556 million, respectively. We believe that these measures are meaningful and provide a better indication of our underwriting performance as the portion of CATs intended to be covered by the premiums over time is retained in the calculation. These measures more appropriately align the numerator with an expected level of CATs to the denominator which includes the net premiums earned on policies with exposures to that business. The CAY P&C combined ratio with an expected level of CATs excludes PPD as these unexpected loss developments on historical reserves are not indicative of our current underwriting performance.

Add: impact of gains and losses on crop derivatives

0.1%

P&C Combined ratio

90.9%

Note: The ratios above are calculated using whole U.S. dollars. Accordingly, calculations using rounded amounts may differ. Letters A, B, C, D, E, and F included in the table are references for calculating the ratios above.

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Three Months Ended September 30, 2017 (in millions of U.S. dollars except for ratios)	North America Commercial P&C Insurance	North America Personal P&C Insurance	North America Agricultural Insurance	Overseas General Insurance	Global Reinsurance	Corporate	Total P&C
Numerator							
Losses and loss expenses							
Losses and loss expenses	\$ 2,580	\$ 1,062	\$ 759	\$ 1,281	\$ 295	\$ 89	\$ 6,066
Realized (gains) losses on crop derivatives	—	—	5	—	—	—	5
Adjusted losses and loss expenses	A \$ 2,580	\$ 1,062	\$ 764	\$ 1,281	\$ 295	\$ 89	\$ 6,071
Catastrophe losses	(868)	(448)	(5)	(326)	(268)	—	(1,915)
PPD and related adjustments							
PPD, net of related adjustments - favorable (unfavorable)	236	(32)	4	108	41	(87)	270
Net premiums earned adjustments on PPD - unfavorable (favorable)	39	—	—	—	3	—	42
Expense adjustments - unfavorable (favorable)	6	—	—	—	—	—	6
PPD - gross of related adjustments - favorable (unfavorable)	281	(32)	4	108	44	(87)	318
CAY loss and loss expense ex CATs	B \$ 1,993	\$ 582	\$ 763	\$ 1,063	\$ 71	\$ 2	\$ 4,474
Policy acquisition costs and administrative expenses							
Policy acquisition costs and administrative expenses	C \$ 725	\$ 287	\$ 48	\$ 815	\$ 54	\$ 64	\$ 1,993
Expense adjustments - favorable (unfavorable)	(6)	—	—	—	—	—	(6)
Policy acquisition costs and administrative expenses, adjusted	D \$ 719	\$ 287	\$ 48	\$ 815	\$ 54	\$ 64	\$ 1,987
Denominator							
Net premiums earned	E \$ 3,016	\$ 1,117	\$ 898	\$ 2,064	\$ 185		\$ 7,280
Reinstatement premiums (collected) expensed on catastrophe losses	3	3	—	9	(37)		(22)
Net premiums earned adjustments on PPD - unfavorable (favorable)	39	—	—	—	3		42
Net premiums earned excluding adjustments	F \$ 3,058	\$ 1,120	\$ 898	\$ 2,073	\$ 151		\$ 7,300
P&C Combined ratio							
Losses and loss expense ratio	A/E	85.5%	95.1%	85.1%	62.1%	158.2%	83.4%
Policy acquisition costs and administrative expense ratio	C/E	24.1%	25.7%	5.3%	39.5%	29.2%	27.4%
P&C Combined ratio		109.6%	120.8%	90.4%	101.6%	187.4%	110.8%
CAY P&C Combined ratio ex CATs							
Loss and loss expense ratio, adjusted	B/F	65.2%	51.9%	84.9%	51.3%	46.5%	61.3%
Policy acquisition costs and administrative expense ratio, adjusted	D/F	23.5%	25.6%	5.4%	39.3%	35.7%	27.2%
CAY P&C Combined ratio ex CATs		88.7%	77.5%	90.3%	90.6%	82.2%	88.5%
Combined ratio							
Combined ratio							110.7%
Add: impact of gains and losses on crop derivatives							0.1%
P&C Combined ratio							110.8%

Note: The ratios above are calculated using whole U.S. dollars. Accordingly, calculations using rounded amounts may differ. Letters A, B, C, D, E, and F included in the table are references for calculating the ratios above.

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Nine Months Ended September 30, 2018 (in millions of U.S. dollars except for ratios)	North America Commercial P&C Insurance	North America Personal P&C Insurance	North America Agricultural Insurance	Overseas General Insurance	Global Reinsurance	Corporate	Total P&C
Numerator							
Losses and loss expenses							
Losses and loss expenses	\$ 5,873	\$ 2,474	\$ 955	\$ 3,263	\$ 236	\$ 72	\$ 12,873
Realized (gains) losses on crop derivatives	—	—	(2)	—	—	—	(2)
Adjusted losses and loss expenses	A \$ 5,873	\$ 2,474	\$ 953	\$ 3,263	\$ 236	\$ 72	\$ 12,871
Catastrophe losses	(347)	(521)	(11)	(121)	(45)	—	(1,045)
PPD and related adjustments							
PPD, net of related adjustments - favorable (unfavorable)	472	(59)	77	166	54	(67)	643
Net premiums earned adjustments on PPD - unfavorable (favorable)	29	—	40	—	7	—	76
Expense adjustments - unfavorable (favorable)	7	—	(4)	—	(1)	—	2
PPD reinstatement premiums - unfavorable (favorable)	5	1	—	2	—	—	8
PPD - gross of related adjustments - favorable (unfavorable)	513	(58)	113	168	60	(67)	729
CAY loss and loss expense ex CATs	B \$ 6,039	\$ 1,895	\$ 1,055	\$ 3,310	\$ 251	\$ 5	\$ 12,555
Policy acquisition costs and administrative expenses							
Policy acquisition costs and administrative expenses	C \$ 2,113	\$ 903	\$ 74	\$ 2,511	\$ 149	\$ 200	\$ 5,950
Expense adjustments - favorable (unfavorable)	(7)	—	4	—	1	—	(2)
Policy acquisition costs and administrative expenses, adjusted	D \$ 2,106	\$ 903	\$ 78	\$ 2,511	\$ 150	\$ 200	\$ 5,948
Denominator							
Net premiums earned	E \$ 9,325	\$ 3,463	\$ 1,251	\$ 6,425	\$ 492		\$ 20,956
Reinstatement premiums (collected) expensed on catastrophe losses	—	—	—	—	(4)		(4)
Net premiums earned adjustments on PPD - unfavorable (favorable)	29	—	40	—	7		76
PPD reinstatement premiums -unfavorable (favorable)	5	1	—	2	—		8
Net premiums earned excluding adjustments	F \$ 9,359	\$ 3,464	\$ 1,291	\$ 6,427	\$ 495		\$ 21,036
P&C Combined ratio							
Losses and loss expense ratio	A/E 63.0%	71.5%	76.2%	50.8%	48.0%		61.4%
Policy acquisition costs and administrative expense ratio	C/E 22.6%	26.0%	5.9%	39.1%	30.3%		28.4%
P&C Combined ratio	85.6%	97.5%	82.1%	89.9%	78.3%		89.8%
CAY P&C Combined ratio ex CATs							
Loss and loss expense ratio, adjusted	B/F 64.5%	54.7%	81.8%	51.5%	50.6%		59.7%
Policy acquisition costs and administrative expense ratio, adjusted	D/F 22.5%	26.1%	6.0%	39.1%	30.5%		28.3%
CAY P&C Combined ratio ex CATs	87.0%	80.8%	87.8%	90.6%	81.1%		88.0%
Combined ratio							
Combined ratio							89.8%
Add: impact of gains and losses on crop derivatives							—

Note: The ratios above are calculated using whole U.S. dollars. Accordingly, calculations using rounded amounts may differ. Letters A, B, C, D, E, and F included in the table are references for calculating the ratios above.

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Nine Months Ended September 30, 2017 (in millions of U.S. dollars except for ratios)	North America Commercial P&C Insurance	North America Personal P&C Insurance	North America Agricultural Insurance	Overseas General Insurance	Global Reinsurance	Corporate	Total P&C
Numerator							
Losses and loss expenses							
Losses and loss expenses	\$ 6,376	\$ 2,378	\$ 976	\$ 3,316	\$ 435	\$ 145	\$ 13,626
Realized (gains) losses on crop derivatives	—	—	7	—	—	—	7
Adjusted losses and loss expenses	A \$ 6,376	\$ 2,378	\$ 983	\$ 3,316	\$ 435	\$ 145	\$ 13,633
Catastrophe losses	(1,053)	(593)	(18)	(386)	(271)	—	(2,321)
PPD and related adjustments							
PPD, net of related adjustments - favorable (unfavorable)	546	(66)	83	184	64	(140)	671
Net premiums earned adjustments on PPD - unfavorable (favorable)	42	—	61	—	(4)	—	99
Expense adjustments - unfavorable (favorable)	6	—	(4)	—	—	—	2
PPD reinstatement premiums - unfavorable (favorable)	9	—	—	—	—	—	9
PPD - gross of related adjustments - favorable (unfavorable)	603	(66)	140	184	60	(140)	781
CAY loss and loss expense ex CATs	B \$ 5,926	\$ 1,719	\$ 1,105	\$ 3,114	\$ 224	\$ 5	\$ 12,093
Policy acquisition costs and administrative expenses							
Policy acquisition costs and administrative expenses	C \$ 2,148	\$ 865	\$ 71	\$ 2,387	\$ 170	\$ 187	\$ 5,828
Expense adjustments - favorable (unfavorable)	(6)	—	4	—	—	—	(2)
Policy acquisition costs and administrative expenses, adjusted	D \$ 2,142	\$ 865	\$ 75	\$ 2,387	\$ 170	\$ 187	\$ 5,826
Denominator							
Net premiums earned	E \$ 9,156	\$ 3,296	\$ 1,256	\$ 6,018	\$ 542		\$ 20,268
Reinstatement premiums (collected) expensed on catastrophe losses	3	3	—	9	(37)		(22)
Net premiums earned adjustments on PPD - unfavorable (favorable)	42	—	61	—	(4)		99
PPD reinstatement premiums - unfavorable (favorable)	9	—	—	—	—		9
Net premiums earned excluding adjustments	F \$ 9,210	\$ 3,299	\$ 1,317	\$ 6,027	\$ 501		\$ 20,354
P&C Combined ratio							
Losses and loss expense ratio	A/E	69.6%	72.2%	78.3%	55.1%	80.1%	67.3%
Policy acquisition costs and administrative expense ratio	C/E	23.5%	26.2%	5.6%	39.7%	31.4%	28.7%
P&C Combined ratio		93.1%	98.4%	83.9%	94.8%	111.5%	96.0%
CAY P&C Combined ratio ex CATs							
Loss and loss expense ratio, adjusted	B/F	64.3%	52.1%	83.9%	51.7%	44.6%	59.4%
Policy acquisition costs and administrative expense ratio, adjusted	D/F	23.3%	26.2%	5.7%	39.6%	34.0%	28.6%
CAY P&C Combined ratio ex CATs		87.6%	78.3%	89.6%	91.3%	78.6%	88.0%
Combined ratio							
Combined ratio							96.0%
Add: impact of gains and losses on crop derivatives							—

Note: The ratios above are calculated using whole U.S. dollars. Accordingly, calculations using rounded amounts may differ. Letters A, B, C, D, E, and F included in the table are references for calculating the ratios above.

Other Income and Expense Items

(in millions of U.S. dollars)	Three Months Ended September 30		Nine Months Ended September 30	
	2018	2017	2018	2017
Equity in net (income) loss of partially-owned entities	\$ (178)	\$ (103)	\$ (354)	\$ (302)
(Gains) losses from fair value changes in separate account assets ⁽¹⁾	14	(24)	18	(70)
Federal excise and capital taxes	7	6	14	24
Other	12	3	15	15
Other (income) expense	\$ (145)	\$ (118)	\$ (307)	\$ (333)

(1) Related to (gains) losses from fair value changes in separate account assets that do not qualify for separate account reporting under GAAP.

Other (income) expense includes equity in net (income) loss of partially-owned entities, which includes our share of net (income) loss related to partially-owned investment companies (private equity) and partially-owned insurance companies. Also included in Other (income) expense are (Gains) losses from fair value changes in separate account assets that do not qualify for separate account reporting under GAAP. The offsetting movement in the separate account liabilities is included in Policy benefits in the Consolidated statements of operations. Certain federal excise and capital taxes incurred as a result of capital management initiatives are included in Other (income) expense as these are considered capital transactions and are excluded from underwriting results.

Amortization of purchased intangibles and Other amortization

Amortization expense related to purchased intangibles was \$83 million and \$253 million for the three and nine months ended September 30, 2018 , respectively, compared with \$65 million and \$194 million , respectively, in the prior year periods. The increase in amortization expense of purchased intangibles reflects higher intangible amortization expense related to agency distribution relationships and renewal rights and lower amortization benefit from the fair value adjustment on Unpaid losses and loss expenses.

Amortization expense for the fourth quarter of 2018 is expected to be \$83 million.

The following table presents, as of September 30, 2018 , the estimated pre-tax amortization expense (benefit) of purchased intangibles, at current foreign currency exchange rates, for the fourth quarter of 2018 and the next five years:

For the Years Ending December 31 (in millions of U.S. dollars)	Associated with the Chubb Corp Acquisition					Total (1)	Other intangible assets (2)	Total Amortization of purchased intangibles
	Agency distribution relationships and renewal rights	Internally developed technology	Fair value adjustment on Unpaid losses and loss expenses					
Fourth quarter of 2018	\$ 81	\$ 8	\$ (25)	\$ 64	\$ 19	\$ 83		
2019	281	—	(62)	219	75	294		
2020	239	—	(36)	203	69	272		
2021	216	—	(20)	196	61	257		
2022	196	—	(14)	182	56	238		
2023	178	—	(7)	171	50	221		
Total	\$ 1,191	\$ 8	\$ (164)	\$ 1,035	\$ 330	\$ 1,365		

(1) Recorded in Corporate.

(2) Recorded in applicable segment(s) that acquired the intangible assets.

Reduction of deferred tax liability associated with intangible assets related to Other intangible assets (excluding the fair value adjustment on Unpaid losses and loss expense)

At September 30, 2018, the deferred tax liability associated with Other intangible assets (excluding the fair value adjustment on Unpaid losses and loss expense) was \$1,350 million.

The following table presents, as of September 30, 2018, the expected reduction of the deferred tax liability associated with Other intangible assets (which reduces as agency distribution relationships and renewal rights, internally developed technology, and other intangible assets amortize), at current foreign currency exchange rates, for the fourth quarter of 2018 and for the next five years:

For the Years Ending December 31 (in millions of U.S. dollars)	Reduction to deferred tax liability associated with intangible assets	
Fourth quarter of 2018	\$	24
2019		78
2020		68
2021		61
2022		55
2023		50
Total	\$	336

Amortization of the fair value adjustment on acquired invested assets and assumed long-term debt

The following table presents at September 30, 2018, the expected amortization expense of the fair value adjustment on acquired invested assets, at current foreign currency exchange rates, and the expected amortization benefit from the amortization of the fair value adjustment on assumed long-term debt for the fourth quarter of 2018 and for the next five years:

For the Years Ending December 31 (in millions of U.S. dollars)	Amortization (expense) benefit of the fair value adjustment on	
	Acquired invested assets ⁽¹⁾	Assumed long-term debt ⁽²⁾
Fourth quarter of 2018	\$ (58)	\$ 5
2019	(220)	21
2020	(200)	21
2021	(138)	21
2022	—	21
2023	—	21
Total	\$ (616)	\$ 110

(1) Recorded as a reduction to Net investment income in the Consolidated statements of operations.

(2) Recorded as a reduction to Interest expense in the Consolidated statements of operations.

The estimate of amortization expense of the fair value adjustment on acquired invested assets could vary materially based on current market conditions, bond calls, overall duration of the acquired investment portfolio, and foreign exchange.

Interest Expense

The following table presents prior quarter interest expense as well as estimated interest expense for the fourth quarter of 2018 based on our existing debt obligations as well as fees based on our expected usage of certain facilities including letters of credit, notional cash pools, collateral fees, and repurchase agreements. For more information on our notional cash pooling programs, refer to Note 1 f) Cash of our 2017 Form 10-K.

Our estimated fixed interest expense, at current foreign currency exchange rates, is based on outstanding debt obligations during the period. For the following obligations, no interest expense was included after the date of redemption:

- We redeemed the \$1.0 billion unsecured junior subordinated capital securities on April 6, 2018.
- We redeemed the \$600 million 5.75 percent senior notes on May 15, 2018.
- We redeemed the \$100 million 6.6 percent senior notes on August 15, 2018.

Our estimated variable interest expense is based on expected usage and interest rates and may fluctuate. These interest expenses include: notional cash pools interest expense, and fees on collateral, repurchase agreements, and credit facilities. We expect to reduce the use of our notional cash pooling programs in the fourth quarter of 2018, based on current needs, which will result in lower variable interest expense in the fourth quarter.

(in millions of U.S. dollars)	Estimated Interest Expense				
	First Quarter 2018	Second Quarter 2018	Third Quarter 2018	Fourth Quarter 2018	Full Year 2018
Fixed interest expense based on outstanding debt	\$ 140	\$ 131	\$ 125	\$ 124	\$ 520
Variable interest expense based on expected usage	29	46	45	35	155
Adjusted interest expense	\$ 169	\$ 177	\$ 170	\$ 159	\$ 675
Amortization of the fair value of debt related to the Chubb Corp acquisition	(12)	(10)	(6)	(5)	(33)
Total interest expense, including amortization of the fair value of debt	\$ 157	\$ 167	\$ 164	\$ 154	\$ 642

Adjusted interest expense decreased \$7 million compared to the second quarter of 2018 primarily as a result of the redemption of debt obligations during the second and third quarter of 2018 as described above.

(in millions of U.S. dollars)	Actual Interest Expense				
	First Quarter 2017	Second Quarter 2017	Third Quarter 2017	Fourth Quarter 2017	Full Year 2017
Fixed interest expense based on outstanding debt	\$ 147	\$ 139	\$ 137	\$ 137	\$ 560
Variable interest expense	19	21	25	31	96
Adjusted interest expense	\$ 166	\$ 160	\$ 162	\$ 168	\$ 656
Amortization of the fair value of debt related to the Chubb Corp acquisition	(12)	(13)	(12)	(12)	(49)
Total interest expense, including amortization of the fair value of debt	\$ 154	\$ 147	\$ 150	\$ 156	\$ 607

Net Investment Income

(in millions of U.S. dollars)	Three Months Ended		Nine Months Ended	
	September 30		September 30	
	2018	2017	2018	2017
Fixed maturities	\$ 779	\$ 748	\$ 2,329	\$ 2,219
Short-term investments	26	14	66	40
Other interest income	32	20	98	51
Equity securities	7	8	26	30
Other investments	21	63	64	106
Gross investment income ⁽¹⁾	865	853	2,583	2,446
Investment expenses	(42)	(40)	(126)	(118)
Net investment income ⁽¹⁾	\$ 823	\$ 813	\$ 2,457	\$ 2,328
⁽¹⁾ Includes amortization expense related to fair value adjustment of acquired invested assets related to the Chubb Corp acquisition	\$ (60)	\$ (80)	\$ (193)	\$ (256)

Other interest income includes interest earned from operating cash held outside the investment portfolio and also cash held in our global multi-currency notional cash pooling programs. Other interest income fluctuates based on changing interest rates and cash balances.

Net investment income is influenced by a number of factors including the amounts and timing of inward and outward cash flows, the level of interest rates, and changes in overall asset allocation. Net investment income increased 1.3 percent and 5.5 percent for the three and nine months ended September 30, 2018, respectively, principally reflecting higher earnings on both short-term investments and other interest income.

Our average yield on invested assets, calculated excluding amortization expense related to fair value adjustment, was 3.5 percent for both the three and nine months ended September 30, 2018, compared to 3.5 percent and 3.4 percent for the prior year periods, respectively, principally reflecting the yield on our fixed maturities. This compares to the average market yield, which represents the weighted average yield to maturity of our fixed income portfolio based on market prices of the holdings throughout the period, of 3.5 percent and 2.7 percent at September 30, 2018 and 2017, respectively.

Net Realized and Unrealized Gains (Losses)

We take a long-term view with our investment strategy, and our investment managers manage our investment portfolio to maximize total return within certain specific guidelines designed to minimize risk. The majority of our investment portfolio is available for sale and reported at fair value. Our held to maturity investment portfolio is reported at amortized cost.

The effect of market movements on our fixed maturities portfolio impacts Net income (through Net realized gains (losses)) when securities are sold or when we record an Other-than-temporary impairment (OTTI) charge in Net income. For a further discussion related to how we assess OTTI for our fixed maturities, including credit-related OTTI, and the related impact on Net income, refer to Note 2 b) to the Consolidated Financial Statements. Effective January 1, 2018, we adopted new accounting guidance that requires the effect of changes in fair value of equity securities and cost-method private equity securities to be recognized immediately in Net income (through realized gains (losses)). Additionally, Net income is impacted through the reporting of changes in the fair value of derivatives, including financial futures, options, swaps, and GLB reinsurance. Changes in unrealized appreciation and depreciation on available for sale securities, resulting from the revaluation of securities held, changes in cumulative foreign currency translation adjustment, and unrealized postretirement benefit liability adjustment, are reported as separate components of Accumulated other comprehensive income in Shareholders' equity in the Consolidated balance sheets.

The following table presents our net realized and unrealized gains (losses):

(in millions of U.S. dollars)	Three Months Ended September 30, 2018			Three Months Ended September 30, 2017		
	Net Realized Gains (Losses)	Net Unrealized Gains (Losses)	Net Impact	Net Realized Gains (Losses)	Net Unrealized Gains (Losses)	Net Impact
Fixed maturities	\$ (38)	\$ (213)	\$ (251)	\$ 6	\$ 134	\$ 140
Fixed income derivatives	37	—	37	(14)	—	(14)
Public equity	48	—	48	4	36	40
Private equity	—	—	—	(3)	(27)	(30)
Mark-to-market on public and private equity	(8)	—	(8)	—	—	—
Total investment portfolio ⁽¹⁾	39	(213)	(174)	(7)	143	136
Variable annuity reinsurance derivative transactions, net of applicable hedges	(46)	—	(46)	(3)	—	(3)
Other derivatives	(8)	—	(8)	(5)	—	(5)
Foreign exchange	39	(482)	(443)	15	665	680
Other	(5)	(21)	(26)	(10)	(63)	(73)
Net gains (losses) before tax	\$ 19	\$ (716)	\$ (697)	\$ (10)	\$ 745	\$ 735

(1) For the three months ended September 30, 2018, other-than-temporary impairments in Net realized gains (losses) included \$11 million for fixed maturities. For the three months ended September 30, 2017, other-than-temporary impairments in Net realized gains (losses) included \$5 million for fixed maturities, \$1 million for public equity, and \$2 million for private equity.

(in millions of U.S. dollars)	Nine Months Ended September 30, 2018			Nine Months Ended September 30, 2017		
	Net Realized Gains (Losses)	Net Unrealized Gains (Losses)	Net Impact	Net Realized Gains (Losses)	Net Unrealized Gains (Losses)	Net Impact
Fixed maturities	\$ (142)	\$ (1,921)	\$ (2,063)	\$ 17	\$ 813	\$ 830
Fixed income derivatives	78	—	78	(24)	—	(24)
Public equity	63	—	63	10	79	89
Private equity	—	—	—	(11)	—	(11)
Mark-to-market on public and private equity	(18)	—	(18)	—	—	—
Total investment portfolio ⁽¹⁾	(19)	(1,921)	(1,940)	(8)	892	884
Variable annuity reinsurance derivative transactions, net of applicable hedges	11	—	11	96	—	96
Other derivatives	2	—	2	(4)	—	(4)
Foreign exchange	102	(659)	(557)	10	901	911
Other	(61)	(61)	(122)	(10)	(118)	(128)
Net gains (losses) before tax	\$ 35	\$ (2,641)	\$ (2,606)	\$ 84	\$ 1,675	\$ 1,759

(1) For the nine months ended September 30, 2018, other-than-temporary impairments in Net realized gains (losses) included \$16 million for fixed maturities. For the nine months ended September 30, 2017, other-than-temporary impairments in Net realized gains (losses) included \$15 million for fixed maturities, \$9 million for public equity, and \$11 million for private equity.

The unrealized loss in fixed maturities of \$1.9 billion, pre-tax, is principally driven by rising interest rates. Fixed income derivatives gains of \$78 million, pre-tax, included \$26 million gains related to interest rate swaps, with a notional value of \$5 billion, entered into during the third quarter of 2018 as protection against a rise in interest rates. Refer to Note 6 to the Consolidated Financial Statements for additional information on these interest rate swaps.

Other net realized gains (losses) for the nine months ended September 30, 2018, included a \$36 million loss from the extinguishment of debt as discussed in Note 5 to the Consolidated Financial Statements and a \$22 million loss related to lease impairments.

The variable annuity reinsurance derivative transactions resulted in realized gains (losses) of \$(46) million and \$11 million for the three and nine months ended September 30, 2018 , respectively, reflecting a net decrease in the fair value of GLB liabilities of \$54 million and \$133 million, respectively. The decrease in the fair value of GLB liabilities was primarily due to rising interest rates and higher equity market levels. In addition, we maintain positions in derivative instruments that decrease in fair value when the S&P 500 index increases. There were realized losses of \$100 million and \$122 million for the three and nine months ended September 30, 2018 , respectively, related to these derivative instruments.

The variable annuity reinsurance derivative transactions resulted in realized gains (losses) of \$(3) million and \$96 million for the three and nine months ended September 30, 2017 , respectively, reflecting a net decrease in the fair value of GLB liabilities of \$54 million and \$265 million, respectively. The decrease in the fair value of GLB liabilities was primarily due to the impact of updating aspects of our valuation model relating to interest rates and higher global equity market levels. In addition, we maintain positions in derivative instruments that decrease in fair value when the S&P 500 index increases. There were realized losses of \$57 million and \$169 million for the three and nine months ended September 30, 2017 , respectively, related to these derivative instruments.

Investments

Our investment portfolio is invested primarily in publicly traded, investment grade, fixed income securities with an average credit quality of A/Aa as rated by the independent investment rating services Standard and Poor's (S&P)/Moody's Investors Service (Moody's). The portfolio is externally managed by independent, professional investment managers and is broadly diversified across geographies, sectors, and issuers. Other investments principally comprise direct investments, investment funds, and limited partnerships. We hold no collateralized debt obligations in our investment portfolio, and we provide no credit default protection. We have long-standing global credit limits for our entire portfolio across the organization. Exposures are aggregated, monitored, and actively managed by our Global Credit Committee, comprising senior executives, including our Chief Financial Officer, our Chief Risk Officer, our Chief Investment Officer, and our Treasurer. We also have well-established, strict contractual investment rules requiring managers to maintain highly diversified exposures to individual issuers and closely monitor investment manager compliance with portfolio guidelines.

The average duration of our fixed income securities, including the effect of options and swaps, was 3.9 years and 4.2 years at September 30, 2018 and December 31, 2017 , respectively. We estimate that a 100 basis point (bps) increase in interest rates would reduce the valuation of our fixed income portfolio by approximately \$3.7 billion at September 30, 2018 .

The following table shows the fair value and cost/amortized cost of our invested assets:

(in millions of U.S. dollars)	September 30, 2018		December 31, 2017	
	Fair Value	Cost/Amortized Cost	Fair Value	Cost/Amortized Cost
Fixed maturities available for sale	\$ 77,853	\$ 78,637	\$ 78,939	\$ 77,835
Fixed maturities held to maturity	13,284	13,563	14,474	14,335
Short-term investments	3,479	3,479	3,561	3,561
	94,616	95,679	96,974	95,731
Equity securities ⁽¹⁾	843	843	937	737
Other investments ⁽¹⁾	5,425	5,425	4,672	4,417
Total investments	\$ 100,884	\$ 101,947	\$ 102,583	\$ 100,885

⁽¹⁾ Effective Q1 2018 , we adopted new accounting guidance that requires any changes in fair value of equity securities and other investments that are accounted for under the cost-method to be recognized immediately in net income. Therefore, the amortized cost of these investments is equal to their fair value at September 30, 2018 .

The fair value of our total investments decreased \$1.7 billion during the nine months ended September 30, 2018 , primarily due to unrealized depreciation driven by rising interest rates, the payment of dividends on our Common Shares, share repurchases, and unfavorable foreign currency movement. This decrease was partially offset by the investing of operating cash flows and the investing of net proceeds from the debt issuance, net of debt repayment.

The following tables present the market value of our fixed maturities and short-term investments at September 30, 2018 and December 31, 2017 . The first table lists investments according to type and second according to S&P credit rating:

(in millions of U.S. dollars, except for percentages)	September 30, 2018		December 31, 2017	
	Market Value	% of Total	Market Value	% of Total
Treasury	\$ 4,572	5%	\$ 4,049	4%
Agency	570	1%	564	1%
Corporate and asset-backed securities	27,373	29%	27,215	28%
Mortgage-backed securities	18,401	19%	18,032	19%
Municipal	17,280	18%	20,766	21%
Non-U.S.	22,941	24%	22,787	23%
Short-term investments	3,479	4%	3,561	4%
Total	\$ 94,616	100%	\$ 96,974	100%
AAA	\$ 15,131	16%	\$ 15,512	16%
AA	36,705	39%	37,407	39%
A	17,350	18%	18,369	19%
BBB	12,050	13%	12,377	13%
BB	7,737	8%	7,941	8%
B	5,421	6%	5,135	5%
Other	222	—	233	—
Total	\$ 94,616	100%	\$ 96,974	100%

Corporate and asset-backed securities

The following table presents our 10 largest global exposures to corporate bonds by market value at September 30, 2018 :

(in millions of U.S. dollars)	Market Value
Wells Fargo & Co	\$ 533
JP Morgan Chase & Co	429
AT&T Inc	419
Bank of America Corp	406
Goldman Sachs Group Inc	358
Anheuser-Busch InBev NV	357
Verizon Communications Inc	333
HSBC Holdings Plc	308
Morgan Stanley	302
Citigroup Inc	291

Mortgage-backed securities

September 30, 2018 (in millions of U.S. dollars)	S&P Credit Rating					Market Value	Amortized Cost
	AAA	AA	A	BBB	BB and below	Total	Total
Agency residential mortgage-backed (RMBS)	\$ —	\$ 15,065	\$ —	\$ —	\$ —	\$ 15,065	\$ 15,556
Non-agency RMBS	26	47	73	26	22	194	194
Commercial mortgage-backed	2,804	240	98	—	—	3,142	3,219
Total mortgage-backed securities	\$ 2,830	\$ 15,352	\$ 171	\$ 26	\$ 22	\$ 18,401	\$ 18,969

Municipal

As part of our overall investment strategy, we may invest in states, municipalities, and other political subdivisions fixed maturity securities (Municipal). We apply the same investment selection process described previously to our Municipal investments. The portfolio is highly diversified primarily in state general obligation bonds and essential service revenue bonds including education and utilities (water, power, and sewers).

Non-U.S.

Our exposure to the Euro results primarily from Chubb European Group Limited which is headquartered in London and offers a broad range of coverages throughout the European Union, Central, and Eastern Europe. Chubb primarily invests in Euro denominated investments to support its local currency insurance obligations and required capital levels. Chubb's local currency investment portfolios have strict contractual investment guidelines requiring managers to maintain a high quality and diversified portfolio to both sector and individual issuers. Investment portfolios are monitored daily to ensure investment manager compliance with portfolio guidelines.

Our non-U.S. investment grade fixed income portfolios are currency-matched with the insurance liabilities of our non-U.S. operations. The average credit quality of our non-U.S. fixed income securities is A and 52 percent of our holdings are rated AAA or guaranteed by governments or quasi-government agencies. Within the context of these investment portfolios, our government and corporate bond holdings are highly diversified across industries and geographies. Issuer limits are based on credit rating (AA— two percent, A— one percent, BBB— 0.5 percent of the total portfolio) and are monitored daily via an internal compliance system. Because of this investment approach, we do not have a direct exposure to troubled sovereign borrowers in Europe. We manage our indirect exposure using the same credit rating based investment approach. Accordingly, we do not believe our indirect exposure is material.

The following table summarizes the market value and amortized cost of our non-U.S. fixed income portfolio by country/sovereign for non-U.S. government securities at September 30, 2018 :

(in millions of U.S. dollars)	Market Value	Amortized Cost
United Kingdom	\$ 1,166	\$ 1,162
Republic of Korea	1,069	988
Canada	960	982
Federative Republic of Brazil	656	657
Province of Ontario	617	630
United Mexican States	546	555
Province of Quebec	504	514
Federal Republic of Germany	462	456
Kingdom of Thailand	432	417
French Republic	303	288
Other Non-U.S. Government Securities (1)	4,176	4,166
Total	\$ 10,891	\$ 10,815

(1) There are no investments in Portugal, Ireland, Italy, Greece or Spain.

The following table summarizes the market value and amortized cost of our non-U.S. fixed income portfolio by country/sovereign for non-U.S. corporate securities at September 30, 2018 :

(in millions of U.S. dollars)	Market Value	Amortized Cost
United Kingdom	\$ 2,055	\$ 2,044
Canada	1,480	1,497
United States (1)	1,046	1,045
France	941	940
Australia	821	817
Netherlands	625	624
Germany	569	563
Switzerland	466	468
Japan	441	446
China	327	330
Other Non-U.S. Corporate Securities	3,279	3,292
Total	\$ 12,050	\$ 12,066

(1) The countries that are listed in the non-U.S. corporate fixed income portfolio above represent the ultimate parent company's country of risk. Non-U.S. corporate securities could be issued by foreign subsidiaries of U.S. corporations.

Below-investment grade corporate fixed income portfolio

Below-investment grade securities have different characteristics than investment grade corporate debt securities. Risk of loss from default by the borrower is greater with below-investment grade securities. Below-investment grade securities are generally unsecured and are often subordinated to other creditors of the issuer. Also, issuers of below-investment grade securities usually have higher levels of debt and are more sensitive to adverse economic conditions, such as recession or increasing interest rates, than investment grade issuers. At September 30, 2018, our corporate fixed income investment portfolio included below-investment grade and non-rated securities which, in total, comprised approximately 12 percent of our fixed income portfolio. Our below-investment grade and non-rated portfolio includes over 1,200 issuers, with the greatest single exposure being \$131 million.

We manage high-yield bonds as a distinct and separate asset class from investment grade bonds. The allocation to high-yield bonds is explicitly set by internal management and is targeted to securities in the upper tier of credit quality (BB/B). Our minimum rating for initial purchase is BB/B. Ten external investment managers are responsible for high-yield security selection and portfolio construction. Our high-yield managers have a conservative approach to credit selection and very low historical default experience. Holdings are highly diversified across industries and generally subject to a 1.5 percent issuer limit as a percentage of high-yield allocation. We monitor position limits daily through an internal compliance system. Derivative and structured securities (e.g., credit default swaps and collateralized loan obligations) are not permitted in the high-yield portfolio.

Critical Accounting Estimates

As of September 30, 2018, there were no material changes to our critical accounting estimates. For a full discussion of our critical accounting estimates, refer to Item 7 in our 2017 Form 10-K.

Reinsurance recoverable on ceded reinsurance

(in millions of U.S. dollars)	September 30 2018	December 31 2017
Reinsurance recoverable on unpaid losses and loss expenses ⁽¹⁾	\$ 13,965	\$ 14,014
Reinsurance recoverable on paid losses and loss expenses ⁽¹⁾	1,123	1,020
Reinsurance recoverable on losses and loss expenses ⁽¹⁾	\$ 15,088	\$ 15,034
Reinsurance recoverable on policy benefits ⁽²⁾	\$ 206	\$ 184

(1) Net of provision for uncollectible reinsurance on P&C reserves of \$316 million and \$321 million at September 30, 2018 and December 31, 2017, respectively.

(2) Net of provision for uncollectible reinsurance on policy benefits of \$4 million at both September 30, 2018 and December 31, 2017.

We evaluate the financial condition of our reinsurers and potential reinsurers on a regular basis and also monitor concentrations of credit risk with reinsurers. The provision for uncollectible reinsurance is required principally due to the potential failure of reinsurers to indemnify us, primarily because of disputes under reinsurance contracts and insolvencies. The provision for uncollectible reinsurance is based on a default analysis applied to gross reinsurance recoverables, net of approximately \$ 3.7 billion of collateral at both September 30, 2018 and December 31, 2017 .

The increase in reinsurance recoverable on losses and loss expenses was primarily due to additional reinsurance recoverable related to catastrophe losses in 2018, partially offset by collections on catastrophe losses related to the 2017 catastrophic events.

Unpaid losses and loss expenses

As an insurance and reinsurance company, we are required by applicable laws and regulations and GAAP to establish loss and loss expense reserves for the estimated unpaid portion of the ultimate liability for losses and loss expenses under the terms of our policies and agreements with our insured and reinsured customers. With the exception of certain structured settlements, for which the timing and amount of future claim payments are reliably determinable, and certain reserves for unsettled claims that are discounted in statutory filings, our loss reserves are not discounted for the time value of money.

The following table presents a roll-forward of our unpaid losses and loss expenses:

(in millions of U.S. dollars)	Gross Losses	Reinsurance Recoverable ⁽¹⁾	Net Losses
Balance at December 31, 2017	\$ 63,179	\$ 14,014	\$ 49,165
Losses and loss expenses incurred	16,958	3,501	13,457
Losses and loss expenses paid	(16,523)	(3,405)	(13,118)
Foreign currency revaluation and other	(585)	(145)	(440)
Balance at September 30, 2018	\$ 63,029	\$ 13,965	\$ 49,064

(1) Net of provision for uncollectible reinsurance of \$238 million and \$247 million on unpaid losses at September 30, 2018 and December 31, 2017 , respectively.

The estimate of the liabilities includes provisions for claims that have been reported but are unpaid at the balance sheet date (case reserves) and for obligations on claims that have been incurred but not reported (IBNR) at the balance sheet date. IBNR may also include provisions to account for the possibility that reported claims may settle for amounts that differ from the established case reserves. Loss reserves also include an estimate of expenses associated with processing and settling unpaid claims (loss expenses).

Refer to Note 4 to the Consolidated Financial Statements for a discussion on the changes in the loss reserves.

Asbestos and Environmental (A&E)

During the three months ended September 30, 2018 , we increased environmental net loss reserves for Brandywine managed operations by \$54 million. A&E reserves are included in Corporate. Refer to our 2017 Form 10-K for further information on our A&E exposures.

Fair value measurements

Accounting guidance defines fair value as the price to sell an asset or transfer a liability (an exit price) in an orderly transaction between market participants and establishes a three-level valuation hierarchy based on the reliability of the inputs. The fair value hierarchy gives the highest priority to quoted prices in active markets (Level 1 inputs) and the lowest priority to unobservable data (Level 3 inputs). Level 2 includes inputs, other than quoted prices within Level 1, that are observable for assets or liabilities either directly or indirectly. Refer to Note 3 to the Consolidated Financial Statements for information on our fair value measurements.

Catastrophe management

We actively monitor and manage our catastrophe risk accumulation around the world. The table below presents our modeled pre-tax estimates of natural catastrophe probable maximum loss (PML), net of reinsurance, for Worldwide, U.S. hurricane and California earthquake events as of September 30, 2018. For example, according to the model, for the 1-in-100 return period scenario, there is a one percent chance that our losses incurred in any year from U.S. hurricane events could be in excess of \$2,795 million (or 5.5 percent of our total shareholders' equity at September 30, 2018).

(in millions of U.S. dollars, except for percentages)	Modeled Net PML					
	Worldwide ⁽¹⁾		U.S. Hurricane		California Earthquake	
	Annual Aggregate		Annual Aggregate		Single Occurrence	
	Chubb	% of Total Shareholders' Equity	Chubb	% of Total Shareholders' Equity	Chubb	% of Total Shareholders' Equity
1-in-10	\$ 1,906	3.7%	\$ 1,105	2.2%	\$ 134	0.3%
1-in-100	\$ 3,969	7.8%	\$ 2,795	5.5%	\$ 1,369	2.7%
1-in-250	\$ 6,328	12.4%	\$ 4,971	9.8%	\$ 1,503	3.0%

(1) Worldwide losses are comprised of losses arising only from hurricanes, typhoons, convective storms and earthquakes and do not include "non-modeled" perils such as wildfire and flood.

The above modeled loss information at September 30, 2018 reflects our in-force portfolio at July 1, 2018. The September 30, 2018 modeled loss information reflects the April 1, 2018 reinsurance program (see Natural Catastrophe Property Reinsurance Program section) as well as inuring reinsurance protection coverages. Included in the loss estimates for hurricane and earthquake are estimates for losses arising from storm-surge and fire-following perils, respectively.

The above estimates of Chubb's loss profile are inherently uncertain owing to key assumptions. First, while the use of third-party catastrophe modeling packages to simulate potential hurricane and earthquake losses is prevalent within the insurance industry, the models are reliant upon significant meteorology, seismology, and engineering assumptions to estimate catastrophe losses. In particular, modeled catastrophe events are not always a representation of actual events and ensuing additional loss potential. Second, there is no universal standard in the preparation of insured data for use in the models, the running of the modeling software and interpretation of loss output. These loss estimates do not represent our potential maximum exposures and it is highly likely that our actual incurred losses would vary materially from the modeled estimates.

Natural Catastrophe Property Reinsurance Program

Chubb's core property catastrophe reinsurance program provides protection against natural catastrophes impacting its primary property operations (i.e., excluding our Global Reinsurance and Life Insurance segments).

We regularly review our reinsurance protection and corresponding property catastrophe exposures. This may or may not lead to the purchase of additional reinsurance prior to a program's renewal date. In addition, prior to each renewal date, we consider how much, if any, coverage we intend to buy and we may make material changes to the current structure in light of various factors, including modeled PML assessment at various return periods, reinsurance pricing, our risk tolerance and exposures, and various other structuring considerations.

Chubb renewed its Global Property Catastrophe Reinsurance Program for our North American and International operations effective April 1, 2018 through March 31, 2019, with no significant change in coverage from the expiring program. The program consists of three layers in excess of losses retained by Chubb. In addition, Chubb also renewed its terrorism coverage (excluding nuclear, biological, chemical and radiation coverage, with an inclusion of coverage for biological and chemical coverage for personal lines) for the United States from April 1, 2018 through March 31, 2019 with the same limits and retention and percentage placed except that the majority of terrorism coverage is on an aggregate basis above our retentions without a reinstatement.

Loss Location	Layer of Loss	Comments	Notes
United States (excluding Alaska and Hawaii)	\$0 million – \$1.0 billion	Losses retained by Chubb	(a)
United States (excluding Alaska and Hawaii)	\$1.0 billion – \$1.25 billion	All natural perils and terrorism	(b)
United States (excluding Alaska and Hawaii)	\$1.25 billion – \$2.0 billion	All natural perils and terrorism	(c)
United States (excluding Alaska and Hawaii)	\$2.0 billion – \$3.5 billion	All natural perils and terrorism	(d)
International (including Alaska and Hawaii)	\$0 million – \$175 million	Losses retained by Chubb	(a)
International (including Alaska and Hawaii)	\$175 million – \$925 million	All natural perils and terrorism	(c)
Alaska, Hawaii, and Canada	\$925 million – \$2.425 billion	All natural perils and terrorism	(d)

- (a) Ultimate retention will depend upon the nature of the loss and the interplay between the underlying per risk programs and certain other catastrophe programs purchased by individual business units. These other catastrophe programs have the potential to reduce our effective retention below the stated levels.
- (b) These coverages are 20 percent placed with Reinsurers.
- (c) These coverages are both part of the same Second layer within the Global Catastrophe Program and are 100 percent placed with Reinsurers. As such, it may be exhausted in one region and not available in the other.
- (d) These coverages are both part of the same Third layer within the Global Catastrophe Program and are 100 percent placed with Reinsurers. As such, it may be exhausted in one region and not available in the other.

Chubb also has a property catastrophe bond in place (assumed as part of the Chubb Corp acquisition) that offers additional natural catastrophe protection for certain parts of the portfolio. The geographic scope of this coverage is from Virginia through Maine. The East Lane VI 2015 bond currently provides \$250 million of coverage as part of a \$430 million layer in excess of \$2,014 million retention through March 13, 2020.

Crop Insurance

We are, and have been since the 1980s, one of the leading writers of crop insurance in the U.S. and have conducted that business through a managing general agent subsidiary of Rain and Hail. We provide protection throughout the U.S. on a variety of crops and are therefore geographically diversified, which reduces the risk of exposure to a single event or a heavy accumulation of losses in any one region. Our crop insurance business comprises two components – Multiple Peril Crop Insurance (MPCI) and crop-hail insurance.

The MPCI program is offered in conjunction with the U.S. Department of Agriculture (USDA). The policies cover revenue shortfalls or production losses due to natural causes such as drought, excessive moisture, hail, wind, frost, insects, and disease. Generally, policies have deductibles ranging from 10 percent to 50 percent of the insured's risk. The USDA's Risk Management Agency (RMA) sets the policy terms and conditions, rates and forms, and is also responsible for setting compliance standards. As a participating company, we report all details of policies underwritten to the RMA and are party to a Standard Reinsurance Agreement (SRA). The SRA sets out the relationship between private insurance companies and the Federal Crop Insurance Corporation (FCIC) concerning the terms and conditions regarding the risks each will bear including the pro-rata and state stop-loss provisions which allows companies to limit the exposure of any one state or group of states on their underwriting results. In addition to the pro-rata and excess of loss reinsurance protections inherent in the SRA, we also purchase third-party proportional and stop-loss reinsurance for our MPCI business to reduce our exposure. We may also enter into crop derivative contracts to further manage our risk exposure.

Each year the RMA issues a final SRA for the subsequent reinsurance year. In June 2018, the RMA released the 2019 SRA which establishes the terms and conditions for the 2019 reinsurance year (i.e., July 1, 2018 through June 30, 2019) that replaced the 2018 SRA. There were no significant changes in the terms and conditions, and therefore the new SRA does not impact Chubb's outlook on the crop program relative to 2019.

On the MPCI business, we recognize net premiums written as soon as estimable, which is generally when we receive acreage reports from the policyholders on the various crops throughout the U.S. This allows us to best determine the premium

associated with the liability that is being planted. The MPCl program has specific timeframes as to when producers must report acreage to us and in certain cases, the reporting occurs after the close of the respective reinsurance year. Once the net premium written has been recorded, the premium is then earned over the growing season for the crops. A majority of the crops that are covered in the program are typically subject to the SRA in effect at the beginning of the year. Given the major crops covered in the program, we typically see a substantial written and earned premium impact in the second and third quarters.

The pricing of MPCl premium is determined using a number of factors including commodity prices and related volatility. For instance, in most states the pricing for the MPCl Revenue Product for corn includes a factor that is based on the average price in February of the Chicago Board of Trade December corn futures. To the extent that the corn commodity prices are higher in February than they were in the previous February, and all other factors are the same, the increase in corn prices will increase the corn premium year over year.

Our crop-hail program is a private offering. Premium is earned on the crop-hail program over the coverage period of the policy. Given the very short nature of the growing season, most crop-hail business is typically written in the second and third quarters with the earned premium also more heavily occurring during this time frame. We use industry data to develop our own rates and forms for the coverage offered. The policy primarily protects farmers against yield reduction caused by hail and/or fire, and related costs such as transit to storage. We offer various deductibles to allow the grower to partially self-insure for a reduced premium cost. We limit our crop-hail exposures through the use of township liability limits and third-party proportional and stop-loss reinsurance on our net retained hail business.

Liquidity

We anticipate that positive cash flows from operations (underwriting activities and investment income) should be sufficient to cover cash outflows under most loss scenarios for the near term. In addition to cash from operations, routine sales of investments, and financing arrangements, we have agreements with a third-party bank provider which implemented two international multi-currency notional cash pooling programs to enhance cash management efficiency during periods of short-term timing mismatches between expected inflows and outflows of cash by currency. The programs allow us to optimize investment income by avoiding portfolio disruption. Should the need arise, we generally have access to capital markets and an available \$1.0 billion letter of credit/revolver facility. At September 30, 2018, our LOC usage was \$377 million. Our access to funds under an existing credit facility is dependent on the ability of the banks that are a party to the facility to meet their funding commitments. Our existing credit facility has a remaining term expiring in October 2022 and requires that we maintain certain financial covenants, all of which we met at September 30, 2018. Should our existing credit provider experience financial difficulty, we may be required to replace credit sources, possibly in a difficult market. If we cannot obtain adequate capital or sources of credit on favorable terms, on a timely basis, or at all, our business, operating results, and financial condition could be adversely affected. To date, we have not experienced difficulty accessing our credit facility. Refer to "Credit Facilities" in our 2017 10-K for additional information.

The payment of dividends or other statutorily permissible distributions from our operating companies are subject to the laws and regulations applicable to each jurisdiction, as well as the need to maintain capital levels adequate to support the insurance and reinsurance operations, including financial strength ratings issued by independent rating agencies. During the nine months ended September 30, 2018, we were able to meet all of our obligations, including the payments of dividends on our Common Shares, with our net cash flows.

We assess which subsidiaries to draw dividends from based on a number of factors. Considerations such as regulatory and legal restrictions as well as the subsidiary's financial condition are paramount to the dividend decision. Chubb Limited received dividends of \$75 million and \$450 million from its Bermuda subsidiaries during the nine months ended September 30, 2018 and 2017, respectively.

The payment of any dividends from CGM or its subsidiaries is subject to applicable U.K. insurance laws and regulations. In addition, the release of funds by Syndicate 2488 to subsidiaries of CGM is subject to regulations promulgated by the Society of Lloyd's. The U.S. insurance subsidiaries of Chubb INA Holdings Inc. (Chubb INA) may pay dividends, without prior regulatory approval, subject to restrictions set out in state law of the subsidiary's domicile (or, if applicable, commercial domicile). Chubb INA's international subsidiaries are also subject to insurance laws and regulations particular to the countries in which the subsidiaries operate. These laws and regulations sometimes include restrictions that limit the amount of dividends payable without prior approval of regulatory insurance authorities. Chubb Limited received no dividends from CGM or Chubb INA during the nine months ended September 30, 2018 and 2017. Debt issued by Chubb INA is serviced by statutorily permissible distributions by Chubb INA's insurance subsidiaries to Chubb INA as well as other group resources. Chubb INA received

dividends of \$4.8 billion and \$1.6 billion from its subsidiaries during the nine months ended September 30, 2018 and 2017 , respectively.

Cash Flows

Our sources of liquidity include cash from operations, routine sales of investments, and financing arrangements. The following is a discussion of our cash flows for the nine months ended September 30, 2018 and 2017 .

Operating cash flows were \$3.9 billion in the nine months ended September 30, 2018 , compared to \$3.4 billion in the prior year period. The increase was primarily due to higher premiums collected, net of higher catastrophe loss payments related to the 2017 catastrophe events, and lower taxes paid, principally due to timing of tax payments in the prior year.

Cash used for investing was \$2.1 billion in the nine months ended September 30, 2018 , compared to \$1.3 billion in the prior year period. The current year included higher private equity contributions, net of distributions received, of \$628 million. Cash used for financing was \$1.4 billion in the nine months ended September 30, 2018 , compared to \$2.0 billion in the prior year period. The current year included net proceeds from the issuance of long-term debt (net of repayments) of \$170 million compared to the prior year which had repayments of \$500 million.

Both internal and external forces influence our financial condition, results of operations, and cash flows. Claim settlements, premium levels, and investment returns may be impacted by changing rates of inflation and other economic conditions. In many cases, significant periods of time, ranging up to several years or more, may lapse between the occurrence of an insured loss, the reporting of the loss to us, and the settlement of the liability for that loss.

We use repurchase agreements as a funding alternative. At September 30, 2018 , there were \$ 1.4 billion in repurchase agreements outstanding with various maturities over the next 7 months.

Capital Resources

Capital resources consist of funds deployed or available to be deployed to support our business operations.

(in millions of U.S. dollars, except for ratios)	September 30 2018	December 31 2017
Short-term debt	\$ 500	\$ 1,013
Long-term debt	12,149	11,556
Total financial debt	12,649	12,569
Trust preferred securities	308	308
Total shareholders' equity	50,934	51,172
Total capitalization	\$ 63,891	\$ 64,049
Ratio of financial debt to total capitalization	19.8%	19.6%
Ratio of financial debt plus trust preferred securities to total capitalization	20.3%	20.1%

Repurchase agreements are excluded from the table above and are disclosed separately from short-term debt in the Consolidated balance sheets. The repurchase agreements are collateralized borrowings where we maintain the right and ability to redeem the collateral on short notice, unlike short-term debt which comprises the current maturities of our long-term debt instruments.

In March 2018, Chubb INA Holdings Inc. (Chubb INA) issued €900 million of 1.55 percent Euro denominated senior notes due March 2028 and €900 million of 2.5 percent Euro denominated senior notes due March 2038 (totaling \$2.2 billion based on the foreign exchange rate at the date of issuance).

Chubb INA's \$300 million of 5.8 percent senior notes due March 2018, \$600 million of 5.75 percent senior notes due May 2018 and \$100 million of 6.6 percent senior notes due August 2018 were paid upon maturity. In addition, during April 2018, Chubb INA redeemed \$1.0 billion of 6.375 percent unsecured junior subordinated capital securities due to mature in April 2037 and recorded a loss of \$36 million from the extinguishment of debt, which is included in Net realized gains (losses) in the Consolidated statement of operations.

In June 2018, we reclassified \$499 million of the 5.9 percent senior notes (\$500 million par value due to mature in June 2019) from long-term debt to short-term debt in the Consolidated balance sheets. Refer to Note 5 to the Consolidated Financial Statements for additional details about the debt issued and debt redeemed.

For the nine months ended September 30, 2018, we repurchased \$703 million of Common Shares in a series of open market transactions under the Board of Directors (Board) share repurchase authorization. At September 30, 2018, there were 18,683,074 Common Shares in treasury with a weighted average cost of \$126.97 per share. For the period October 1 through October 29, 2018, we repurchased 750,000 Common Shares for a total of \$94 million in a series of open market transactions. At October 29, 2018, \$203 million in share repurchase authorization remained through December 31, 2018.

We generally maintain the ability to issue certain classes of debt and equity securities via an unlimited Securities and Exchange Commission (SEC) shelf registration which is renewed every three years. This allows us capital market access for refinancing as well as for unforeseen or opportunistic capital needs. On October 9, 2018, we filed a new unlimited shelf registration statement which allows us to issue certain classes of debt and equity from time to time, replacing the shelf registration statement that was filed in October 2015. This shelf registration expires in October 2021.

Dividends

We have paid dividends each quarter since we became a public company in 1993. Under Swiss law, dividends must be stated in Swiss francs though dividend payments are made by Chubb in U.S. dollars. Refer to Note 7 to the Consolidated Financial Statements for a discussion of our dividend methodology.

At our May 2018 annual general meeting, our shareholders approved an annual dividend for the following year of up to \$2.92 per share, or CHF 2.92 per share, calculated using the USD/CHF exchange rate as published in the Wall Street Journal on May 17, 2018, expected to be paid in four quarterly installments of \$0.73 per share after the general meeting by way of a distribution from capital contribution reserves, transferred to free reserves for payment. The Board will determine the record and payment dates at which the annual dividend may be paid until the date of the 2019 annual general meeting, and is authorized to abstain from distributing a dividend at its discretion. The annual dividend approved in May 2018 represented an \$0.08 per share increase (\$0.02 per quarter) over the prior year dividend.

The following table represents dividends paid per Common Share to shareholders of record on each of the following dates:

Shareholders of record as of:	Dividends paid as of:	
December 29, 2017	January 19, 2018	\$0.71 (CHF 0.70)
March 29, 2018	April 20, 2018	\$0.71 (CHF 0.66)
June 22, 2018	July 13, 2018	\$0.73 (CHF 0.73)
September 21, 2018	October 12, 2018	\$0.73 (CHF 0.72)

ITEM 3. Quantitative and Qualitative Disclosures about Market Risk

Refer to Item 7A included in our 2017 Form 10-K.

Foreign currency management

As a global company, Chubb entities transact business in multiple currencies. Our policy is to generally match assets, liabilities and required capital for each individual jurisdiction in local currency, which would include the use of derivatives. We do not hedge our net asset non-U.S. dollar capital positions. We occasionally engage in hedging activity for planned cross border transactions. For an estimated impact of foreign currency movement on our net assets denominated in non-U.S. currencies, refer to Item 7A in our 2017 Form 10-K. This information will be updated and disclosed in interim filings if our net assets in non-U.S. currencies change materially from the December 31, 2017 balances disclosed in the 2017 Form 10-K.

Effective July 1, 2018, Argentina was designated as a highly inflationary economy and therefore we changed the functional currency for our Argentine operations from the Argentine Peso to the U.S. dollar. Our net assets denominated in the Argentine Peso represent less than 0.1% of consolidated shareholders' equity. Therefore, this change in the functional currency of our Argentine operations did not have a material impact on our financial condition or results of operations.

Reinsurance of GMDB and GLB guarantees

Chubb views its variable annuity reinsurance business as having a similar risk profile to that of catastrophe reinsurance with the probability of long-term economic loss relatively small, at the time of pricing. Adverse changes in market factors and policyholder behavior will have an impact on both Life insurance underwriting income and net income. When evaluating these risks, we expect to be compensated for taking both the risk of a cumulative long-term economic net loss, as well as the short-term accounting variations caused by these market movements. Therefore, we evaluate this business in terms of its long-term economic risk and reward.

Net income is directly impacted by changes in benefit reserves calculated in connection with reinsurance of variable annuity guarantees, primarily GMDB and GLB. In addition, net income is directly impacted by changes in the fair value of the GLB liability (FVL), which is classified as a derivative for accounting purposes. The FVL established for a GLB reinsurance contract represents the difference between the fair value of the contract and the benefit reserves. Benefit reserves and FVL calculations are directly affected by market factors, including equity levels, interest rate levels, credit risk, and implied volatilities, as well as policyholder behaviors, such as annuitization and lapse rates, and policyholder mortality.

The tables below are estimates of the sensitivities to instantaneous changes in economic inputs (e.g., equity shock, interest rate shock etc.) or actuarial assumptions at September 30, 2018 of the FVL and of the fair value of specific derivative instruments held (hedge value) to partially offset the risk in the variable annuity guarantee reinsurance portfolio. The following assumptions should be considered when using the below tables:

- No changes to the benefit ratio used to establish benefit reserves at September 30, 2018 .
- Equity shocks impact all global equity markets equally
 - Our liabilities are sensitive to global equity markets in the following proportions: 75 percent— 85 percent U.S. equity, and 15 percent— 25 percent international equity.
 - Our current hedge portfolio is sensitive to global equity markets in the following proportions: 100 percent U.S. equity.
 - We would suggest using the S&P 500 index as a proxy for U.S. equity, and the MSCI EAFE index as a proxy for international equity.
- Interest rate shocks assume a parallel shift in the U.S. yield curve
 - Our liabilities are also sensitive to global interest rates at various points on the yield curve, mainly the U.S. Treasury curve in the following proportions: up to 10 percent short-term rates (maturing in less than 5 years), 35 percent— 45 percent medium-term rates (maturing between 5 years and 10 years, inclusive), and 55 percent— 65 percent long-term rates (maturing beyond 10 years).
 - A change in AA-rated credit spreads (AA-rated credit spreads are a proxy for both our own credit spreads and the credit spreads of the ceding insurers) impacts the rate used to discount cash flows in the fair value model.
- The hedge sensitivity is from September 30, 2018 market levels and includes the impact of adjustments to the hedge portfolio made subsequent to that date.
- The sensitivities are not directly additive because changes in one factor will affect the sensitivity to changes in other factors. The sensitivities do not scale linearly and may be proportionally greater for larger movements in the market factors. The sensitivities may also vary due to foreign exchange rate fluctuations. The calculation of the FVL is based on internal models that include assumptions regarding future policyholder behavior, including lapse, annuitization, and asset allocation. These assumptions impact both the absolute level of the FVL as well as the sensitivities to changes in market factors shown below. Actual sensitivity of our net income may differ from those disclosed in the tables below due to differences between short-term market movements and management judgment regarding the long-term assumptions implicit in our benefit ratios.
- In addition, the tables below do not reflect the expected quarterly run rate of net income generated by the variable annuity guarantee reinsurance portfolio if markets remain unchanged during the period. All else equal, if markets remain unchanged during the period, the Gross FVL will increase, resulting in a realized loss. The Gross FVL increases primarily because future premiums are lower by the amount collected in the quarter, and also because future claims are discounted for a shorter period. We refer to this increase in Gross FVL as “timing effect”. The unfavorable impact of timing effect on our Gross FVL in a quarter is not reflected in the sensitivity tables below. For this reason, when using the tables below to estimate the

sensitivity of Gross FVL in the fourth quarter to various changes, it is necessary to assume an additional \$5 million to \$45 million increase in Gross FVL and realized losses. The impact to Net income is partially mitigated because this realized loss is partially offset by the positive quarterly run rate of Life insurance underwriting income generated by the variable annuity guarantee reinsurance portfolio if markets remain unchanged during the period. Note that both the timing effect and the quarterly run rate of Life insurance underwriting income change over time as the book ages.

Interest Rate Shock

(in millions of U.S. dollars)		Worldwide Equity Shock					
		+10%	Flat	-10%	-20%	-30%	-40%
+100 bps	(Increase)/decrease in Gross FVL	\$ 171	\$ 102	\$ 10	\$ (148)	\$ (339)	\$ (564)
	Increase/(decrease) in hedge value	(89)	—	89	178	267	357
	Increase/(decrease) in net income	\$ 82	\$ 102	\$ 99	\$ 30	\$ (72)	\$ (207)
Flat	(Increase)/decrease in Gross FVL	\$ 84	\$ —	\$ (151)	\$ (334)	\$ (553)	\$ (807)
	Increase/(decrease) in hedge value	(89)	—	89	178	267	357
	Increase/(decrease) in net income	\$ (5)	\$ —	\$ (62)	\$ (156)	\$ (286)	\$ (450)
-100 bps	(Increase)/decrease in Gross FVL	\$ (39)	\$ (187)	\$ (364)	\$ (574)	\$ (820)	\$ (1,096)
	Increase/(decrease) in hedge value	(89)	—	89	178	267	357
	Increase/(decrease) in net income	\$ (128)	\$ (187)	\$ (275)	\$ (396)	\$ (553)	\$ (739)

Sensitivities to Other Economic Variables

(in millions of U.S. dollars)	AA-rated Credit Spreads		Interest Rate Volatility		Equity Volatility	
	+100 bps	-100 bps	+2%	-2%	+2%	-2%
(Increase)/decrease in Gross FVL	\$ 38	\$ (49)	\$ —	\$ —	\$ (7)	\$ 7
Increase/(decrease) in hedge value	—	—	—	—	—	—
Increase/(decrease) in net income	\$ 38	\$ (49)	\$ —	\$ —	\$ (7)	\$ 7

Sensitivities to Actuarial Assumptions

(in millions of U.S. dollars)	Mortality			
	+20%	+10%	-10%	-20%
(Increase)/decrease in Gross FVL	\$ 15	\$ 8	\$ (8)	\$ (16)
Increase/(decrease) in hedge value	—	—	—	—
Increase/(decrease) in net income	\$ 15	\$ 8	\$ (8)	\$ (16)

(in millions of U.S. dollars)	Lapses			
	+50%	+25%	-25%	-50%
(Increase)/decrease in Gross FVL	\$ 49	\$ 27	\$ (33)	\$ (74)
Increase/(decrease) in hedge value	—	—	—	—
Increase/(decrease) in net income	\$ 49	\$ 27	\$ (33)	\$ (74)

(in millions of U.S. dollars)	Annuitization			
	+50%	+25%	-25%	-50%
(Increase)/decrease in Gross FVL	\$ (341)	\$ (179)	\$ 132	\$ 283
Increase/(decrease) in hedge value	—	—	—	—
Increase/(decrease) in net income	\$ (341)	\$ (179)	\$ 132	\$ 283

ITEM 4. Controls and Procedures

Chubb's management, with the participation of Chubb's Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of Chubb's disclosure controls and procedures as defined in Rule 13a-15(e) and Rule 15d-15(e) under the Securities Exchange Act of 1934 as of September 30, 2018. Based upon that evaluation, Chubb's Chief Executive Officer and Chief Financial Officer concluded that Chubb's disclosure controls and procedures are effective in allowing information required to be disclosed in reports filed under the Securities and Exchange Act of 1934 to be recorded, processed, summarized, and reported within time periods specified in the rules and forms of the SEC, and that such information is accumulated and communicated to Chubb's management, including its Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

In 2016, Chubb completed the acquisition of The Chubb Corporation. During the three months ended September 30, 2018, we continued to integrate the information technology environments of the two companies.

There were no other changes to Chubb's internal controls over financial reporting during the three months ended September 30, 2018 that have materially affected, or are reasonably likely to materially affect, Chubb's internal controls over financial reporting.

PART II OTHER INFORMATION**ITEM 1. Legal Proceedings**

The information required with respect to this item is included in Note 6 g) to the Consolidated Financial Statements which is hereby incorporated by reference.

ITEM 1A. Risk Factors

Refer to "Risk Factors" under Item 1A of Part I of our 2017 Form 10-K. There have been no material changes to the risk factors disclosed in Item 1A of Part I of our 2017 Form 10-K.

ITEM 2. Unregistered Sales of Equity Securities and Use of Proceeds and Issuer Repurchases of Equity Securities**Issuer's Repurchases of Equity Securities**

The following table provides information with respect to purchases by Chubb of its Common Shares during the three months ended September 30, 2018:

Period	Total Number of Shares Purchased ⁽¹⁾	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plan ⁽²⁾	Approximate Dollar Value of Shares that May Yet be Purchased Under the Plan ⁽³⁾
July 1 through July 31	748,172	\$ 135.06	740,869	\$ 576 million
August 1 through August 31	1,227,280	\$ 135.69	1,225,000	\$ 409 million
September 1 through September 30	823,353	\$ 137.65	815,438	\$ 297 million
Total	2,798,805	\$ 136.10	2,781,307	

(1) This column represents open market share repurchases and the surrender to Chubb of Common Shares to satisfy tax withholding obligations in connection with the vesting of restricted stock issued to employees and the exercising of options by employees.

(2) The aggregate value of shares repurchased in the three months ended September 30, 2018 as part of the publicly announced plan was \$379 million.

(3) Refer to Note 7 to the Consolidated Financial Statements for more information on the Chubb Limited securities repurchase authorization. In December 2017, our Board authorized the repurchase of up to \$1.0 billion of Chubb's Common Shares from January 1, 2018 through December 31, 2018. For the period October 1, 2018 through October 29, 2018, we repurchased 750,000 Common Shares for a total of \$94 million in a series of open market transactions. At October 29, 2018, \$203 million in share repurchase authorization remained through December 31, 2018.

ITEM 5. Other Information

Disclosure of Certain Activities Under Section 13(r) of the Securities Exchange Act of 1934

Section 13(r) of the Securities Exchange Act of 1934, as amended, requires an issuer to disclose in its annual or quarterly reports whether it or an affiliate knowingly engaged in certain activities described in that section, including certain activities related to Iran during the period covered by the report.

Chubb, through certain of its non-U.S. subsidiaries, provides insurance and reinsurance coverage relating to marine risks for policyholders with global operations. As a result of the modification of U.S. and European sanctions on Iran in 2016, several marine policyholders have informed us that they are shipping cargo to and from Iran, including transporting crude oil, petrochemicals and refined petroleum products. As the activities of our insureds and reinsureds are permitted under applicable laws and regulations, including U. S. Department of Treasury General License H, Chubb intends for its non-U.S. subsidiaries to continue providing such coverage to its insureds and reinsureds to the extent permitted by applicable law. Since these policies insure multiple voyages and fleets containing multiple ships, we are unable to attribute gross revenues and net profits from such marine policies to these activities involving Iran.

ITEM 6. Exhibits

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed Herewith
		Form	Original Number	Date Filed	
3.1	Articles of Association of the Company, as amended	8-K	3.1	May 18, 2018	
3.2	Organizational Regulations of the Company, as amended	8-K	3.1	November 21, 2016	
4.1	Articles of Association of the Company, as amended	8-K	4.1	May 18, 2018	
4.2	Organizational Regulations of the Company, as amended	8-K	3.1	November 21, 2016	
31.1	Certification Pursuant to Section 302 of The Sarbanes-Oxley Act of 2002				X
31.2	Certification Pursuant to Section 302 of The Sarbanes-Oxley Act of 2002				X
32.1	Certification Pursuant to 18 U.S.C. Section 1350, As Adopted Pursuant to Section 906 of The Sarbanes-Oxley Act of 2002				X
32.2	Certification Pursuant to 18 U.S.C. Section 1350, As Adopted Pursuant to Section 906 of The Sarbanes-Oxley Act of 2002				X
101.1	The following financial information from Chubb Limited's Quarterly Report on Form 10-Q for the quarter ended September 30, 2018 formatted in XBRL: (i) Consolidated Balance Sheets at September 30, 2018, and December 31, 2017; (ii) Consolidated Statements of Operations and Comprehensive Income for the three and nine months ended September 30, 2018 and 2017; (iii) Consolidated Statements of Shareholders' Equity for the nine months ended September 30, 2018 and 2017; (iv) Consolidated Statements of Cash Flows for the nine months ended September 30, 2018 and 2017; and (v) Notes to Consolidated Financial Statements				X

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

**CHUBB LIMITED
(Registrant)**

October 30, 2018

/s/ Evan G. Greenberg

**Evan G. Greenberg
Chairman, President and Chief Executive Officer**

October 30, 2018

/s/ Philip V. Bancroft

**Philip V. Bancroft
Executive Vice President and Chief Financial Officer**

CERTIFICATION PURSUANT TO
SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002

I, Evan G. Greenberg, certify that:

- 1) I have reviewed this quarterly report on Form 10-Q of Chubb Limited;
- 2) Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
- 3) Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
- 4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
- 5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's Board of Directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: October 30, 2018

/s/ Evan G. Greenberg

Evan G. Greenberg

Chairman, President and Chief Executive Officer

CERTIFICATION PURSUANT TO
SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002

I, Philip V. Bancroft, certify that:

- 1) I have reviewed this quarterly report on Form 10-Q of Chubb Limited;
- 2) Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
- 3) Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
- 4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
- 5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's Board of Directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: October 30, 2018

/s/ Philip V. Bancroft

Philip V. Bancroft

Executive Vice President and Chief Financial Officer

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

The undersigned officer of Chubb Limited (the Corporation) hereby certifies that the Corporation's Quarterly Report on Form 10-Q for the quarter ended September 30, 2018, fully complies with the applicable reporting requirements of Section 13(a) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a)) and that the information contained in the Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of the Corporation.

Dated: October 30, 2018

/s/ Evan G. Greenberg

Evan G. Greenberg

Chairman, President and Chief Executive Officer

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

The undersigned officer of Chubb Limited (the Corporation) hereby certifies that the Corporation's Quarterly Report on Form 10-Q for the quarter ended September 30, 2018, fully complies with the applicable reporting requirements of Section 13(a) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a)) and that the information contained in the Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of the Corporation.

Dated: October 30, 2018

/s/ Philip V. Bancroft

Philip V. Bancroft

Executive Vice President and Chief Financial Officer