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, 2019

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	**98-0091805**
(State or other jurisdiction of incorporation or organization)	(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)

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

Title of each class	**Trading Symbol(s)**	**Name of each exchange on which registered**
Common Shares, par value CHF 24.15 per share	CB	New York Stock Exchange

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	☑	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
		Emerging growth company	☐

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

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

Yes ☐ No ☑

The number of registrant’s Common Shares (CHF 24.15 par value) outstanding as of October 17, 2019 was 453,202,305.

CHUBB LIMITED
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PART I FINANCIAL INFORMATION

ITEM 1. Financial Statements

CONSOLIDATED BALANCE SHEETS (Unaudited)

Chubb Limited and Subsidiaries

(in millions of U.S. dollars, except share and per share data)	September 30 2019	December 31 2018
Assets		
Investments		
Fixed maturities available for sale, at fair value (amortized cost – $82,036 and $79,323) (includes hybrid financial instruments of $5 and $9)	$ 85,044	$ 78,470
Fixed maturities held to maturity, at amortized cost (fair value – $13,096 and $13,259)	12,622	13,435
Equity securities, at fair value and cost	722	770
Short-term investments, at fair value (amortized cost – $2,838 and $3,016)	2,835	3,016
Other investments, at fair value and cost	5,955	5,277
Total investments	107,178	100,968
Cash	1,478	1,247
Restricted cash	111	93
Securities lending collateral	962	1,926
Accrued investment income	857	883
Insurance and reinsurance balances receivable	10,403	10,075
Reinsurance recoverable on losses and loss expenses	15,527	15,993
Reinsurance recoverable on policy benefits	199	202
Deferred policy acquisition costs	5,148	4,922
Value of business acquired	274	295
Goodwill	15,230	15,271
Other intangible assets	6,148	6,143
Prepaid reinsurance premiums	2,691	2,544
Investments in partially-owned insurance companies	1,064	678
Other assets	7,878	6,531
Total assets	$ 175,148	$ 167,771
Liabilities		
Unpaid losses and loss expenses	$ 63,012	$ 62,960
Unearned premiums	16,571	15,532
Future policy benefits	5,738	5,506
Insurance and reinsurance balances payable	6,341	6,437
Securities lending payable	962	1,926
Accounts payable, accrued expenses, and other liabilities	12,167	10,472
Deferred tax liabilities	766	304
Repurchase agreements	1,416	1,418
Short-term debt	10	509
Long-term debt	13,285	12,087
Trust preferred securities	308	308
Total liabilities	120,576	117,459
Commitments and contingencies		
Shareholders' equity		
Common Shares (CHF 24.15 par value; 479,783,864 shares issued; 453,533,642 and 459,203,378 shares outstanding)	11,121	11,121
Common Shares in treasury (26,250,222 and 20,580,486 shares)	(3,504)	(2,618)
Additional paid-in capital	11,465	12,557
Retained earnings	34,969	31,700
Accumulated other comprehensive income (loss) (AOCI)	521	(2,448)
Total shareholders' equity	54,572	50,312
Total liabilities and shareholders' equity	$ 175,148	$ 167,771

See accompanying notes to the consolidated financial statements

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CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE INCOME (Unaudited)

Chubb Limited and Subsidiaries

(in millions of U.S. dollars, except per share data)	Three Months Ended September 30 2019	Three Months Ended September 30 2018	Nine Months Ended September 30 2019	Nine Months Ended September 30 2018
Revenues				
Net premiums written	**$ 8,622**	$ 8,110	**$ 24,278**	$ 23,229
Increase in unearned premiums	**(295)**	(202)	**(923)**	(630)
Net premiums earned	**8,327**	7,908	**23,355**	22,599
Net investment income	**873**	823	**2,568**	2,457
Net realized gains (losses):				
Other-than-temporary impairment (OTTI) losses gross	**(54)**	(14)	**(81)**	(19)
Portion of OTTI losses recognized in other comprehensive income (OCI)	**30**	3	**31**	3
Net OTTI losses recognized in income	**(24)**	(11)	**(50)**	(16)
Net realized gains (losses) excluding OTTI losses	**(131)**	30	**(425)**	51
Total net realized gains (losses) (includes $(11), $(38), $(43) and $(142) reclassified from AOCI)	**(155)**	19	**(475)**	35
Total revenues	**9,045**	8,750	**25,448**	25,091
Expenses				
Losses and loss expenses	**5,052**	4,868	**13,865**	13,457
Policy benefits	**158**	127	**515**	428
Policy acquisition costs	**1,603**	1,504	**4,611**	4,432
Administrative expenses	**752**	719	**2,220**	2,158
Interest expense	**138**	164	**418**	488
Other (income) expense	**(57)**	(145)	**(326)**	(307)
Amortization of purchased intangibles	**76**	83	**229**	253
Chubb integration expenses	**2**	16	**9**	39
Total expenses	**7,724**	7,336	**21,541**	20,948
Income before income tax	**1,321**	1,414	**3,907**	4,143
Income tax expense (benefit) (includes nil, $(4), $(2) and $(19) on reclassified unrealized gains and losses)	**230**	183	**626**	536
Net income	**$ 1,091**	$ 1,231	**$ 3,281**	$ 3,607
Other comprehensive income (loss)				
Unrealized appreciation (depreciation)	**$ 694**	$ (251)	**$ 3,791**	$ (2,063)
Reclassification adjustment for net realized (gains) losses included in net income	**11**	38	**43**	142
	705	(213)	**3,834**	(1,921)
Change in:				
Cumulative foreign currency translation adjustment	**(193)**	(482)	**(143)**	(659)
Postretirement benefit liability adjustment	**(17)**	(21)	**(62)**	(61)
Other comprehensive income (loss), before income tax	**495**	(716)	**3,629**	(2,641)
Income tax (expense) benefit related to OCI items	**(113)**	77	**(660)**	356
Other comprehensive income (loss)	**382**	(639)	**2,969**	(2,285)
Comprehensive income	**$ 1,473**	$ 592	**$ 6,250**	$ 1,322
Earnings per share				
Basic earnings per share	**$ 2.40**	$ 2.66	**$ 7.18**	$ 7.76
Diluted earnings per share	**$ 2.38**	$ 2.64	**$ 7.13**	$ 7.71

See accompanying notes to the consolidated financial statements

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CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY (Unaudited)

Chubb Limited and Subsidiaries

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S. dollars)	**2019**	2018	**2019**	2018
Common Shares				
Balance – beginning and end of period	**$ 11,121**	$ 11,121	**$ 11,121**	$ 11,121
Common Shares in treasury				
Balance – beginning of period	**(3,093)**	(2,040)	**(2,618)**	(1,944)
Common Shares repurchased	**(478)**	(379)	**(1,221)**	(703)
Net shares redeemed under employee share-based compensation plans	**67**	47	**335**	275
Balance – end of period	**(3,504)**	(2,372)	**(3,504)**	(2,372)
Additional paid-in capital				
Balance – beginning of period	**11,757**	13,150	**12,557**	13,978
Net shares redeemed under employee share-based compensation plans	**6**	—	**(184)**	(261)
Exercise of stock options	**(17)**	(23)	**(65)**	(42)
Share-based compensation expense	**60**	63	**177**	186
Funding of dividends declared to Retained earnings	**(341)**	(337)	**(1,020)**	(1,008)
Balance – end of period	**11,465**	12,853	**11,465**	12,853
Retained earnings				
Balance – beginning of period	**33,878**	30,260	**31,700**	27,474
Cumulative effect of adoption of accounting guidance (refer to Note 1)	**—**	—	**(12)**	410
Balance – beginning of period, as adjusted	**33,878**	30,260	**31,688**	27,884
Net income	**1,091**	1,231	**3,281**	3,607
Funding of dividends declared from Additional paid-in capital	**341**	337	**1,020**	1,008
Dividends declared on Common Shares	**(341)**	(337)	**(1,020)**	(1,008)
Balance – end of period	**34,969**	31,491	**34,969**	31,491
Accumulated other comprehensive income (loss)				
Net unrealized appreciation on investments				
Balance – beginning of period	**2,033**	(390)	**(545)**	1,450
Cumulative effect of adoption of accounting guidance	**—**	—	**—**	(417)
Balance – beginning of period, as adjusted	**2,033**	(390)	**(545)**	1,033
Change in period, before reclassification from AOCI, net of income tax benefit (expense) of $(125), $58, $(674) and $358	**569**	(193)	**3,117**	(1,705)
Amounts reclassified from AOCI, net of income tax benefit (expense) of nil, $(4), $(2) and $(19)	**11**	34	**41**	123
Change in period, net of income tax benefit (expense) of $(125), $54, $(676) and $339	**580**	(159)	**3,158**	(1,582)
Balance – end of period	**2,613**	(549)	**2,613**	(549)
Cumulative foreign currency translation adjustment				
Balance – beginning of period	**(1,931)**	(1,379)	**(1,976)**	(1,187)
Change in period, net of income tax benefit of $8, $20, $3 and $5	**(185)**	(462)	**(140)**	(654)
Balance – end of period	**(2,116)**	(1,841)	**(2,116)**	(1,841)
Postretirement benefit liability adjustment				
Balance – beginning of period	**37**	249	**73**	280
Change in period, net of income tax benefit of $4, $3, $13 and $12	**(13)**	(18)	**(49)**	(49)
Balance – end of period	**24**	231	**24**	231
Accumulated other comprehensive income (loss)	**521**	(2,159)	**521**	(2,159)
Total shareholders' equity	**$ 54,572**	$ 50,934	**$ 54,572**	$ 50,934

See accompanying notes to the consolidated financial statements

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CONSOLIDATED STATEMENTS OF CASH FLOWS (Unaudited)
Chubb Limited and Subsidiaries

(in millions of U.S. dollars)	Nine Months Ended September 30 2019	2018
Cash flows from operating activities		
Net income	$ 3,281	$ 3,607
Adjustments to reconcile net income to net cash flows from operating activities		
Net realized (gains) losses	475	(35)
Amortization of premiums/discounts on fixed maturities	294	454
Amortization of purchased intangibles	229	253
Deferred income taxes	(178)	46
Unpaid losses and loss expenses	277	436
Unearned premiums	1,061	779
Future policy benefits	148	170
Insurance and reinsurance balances payable	(114)	574
Accounts payable, accrued expenses, and other liabilities	(6)	(172)
Income taxes payable	83	182
Insurance and reinsurance balances receivable	(371)	(1,074)
Reinsurance recoverable	426	(219)
Deferred policy acquisition costs	(266)	(270)
Other	(426)	(834)
Net cash flows from operating activities	4,913	3,897
Cash flows from investing activities		
Purchases of fixed maturities available for sale	(19,778)	(16,788)
Purchases of fixed maturities held to maturity	(143)	(380)
Purchases of equity securities	(466)	(148)
Sales of fixed maturities available for sale	10,430	9,041
Sales of to be announced mortgage-backed securities	6	—
Sales of equity securities	577	247
Maturities and redemptions of fixed maturities available for sale	6,390	5,482
Maturities and redemptions of fixed maturities held to maturity	814	1,001
Net change in short-term investments	202	64
Net derivative instruments settlements	(647)	(46)
Private equity contributions	(1,093)	(1,112)
Private equity distributions	973	743
Other	(826)	(231)
Net cash flows used for investing activities	(3,561)	(2,127)
Cash flows from financing activities		
Dividends paid on Common Shares	(1,014)	(1,001)
Common Shares repurchased	(1,203)	(732)
Proceeds from issuance of long-term debt	1,286	2,171
Repayment of long-term debt	(501)	(2,001)
Proceeds from issuance of repurchase agreements	2,394	1,572
Repayment of repurchase agreements	(2,396)	(1,566)
Proceeds from share-based compensation plans	155	86
Policyholder contract deposits	376	269
Policyholder contract withdrawals	(221)	(222)
Net cash flows used for financing activities	(1,124)	(1,424)
Effect of foreign currency rate changes on cash and restricted cash	21	(40)
Net increase in cash and restricted cash	249	306
Cash and restricted cash – beginning of period	1,340	851

Cash and restricted cash – end of period	**$**	**1,589**	$	1,157
Supplemental cash flow information				
Taxes paid	**$**	**733**	$	313
Interest paid	**$**	**327**	$	403

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 2018 Form 10-K.

b) Restricted cash
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 2019**		December 31 2018
Cash	**$**	**1,478**	$	1,247
Restricted cash		**111**		93
Total cash and restricted cash shown in the Consolidated statements of cash flows	**$**	**1,589**	$	1,340

c) Goodwill
During the nine months ended September 30, 2019, Goodwill decreased $41 million, primarily reflecting the impact of foreign exchange.

d) Accounting guidance adopted in 2019
Premium Amortization on Purchased Callable Debt Securities
Effective January 1, 2019, we adopted new accounting guidance on "Premium Amortization on Purchased Callable Debt Securities" for bonds held at a premium on a modified retrospective basis. The guidance requires the premium to be amortized to the earliest call date. As a result, we recorded a cumulative effect adjustment to decrease beginning retained earnings by $12 million after-tax ($15 million pre-tax). Securities held at a discount did not require an accounting change.

Lease Accounting
Effective for the quarter ended March 31, 2019, we adopted new lease accounting guidance and elected to utilize a modified retrospective approach which allowed us to initially apply the new lease standard at the adoption date and recognize a cumulative effect adjustment to the opening balance of retained earnings for 2019, with no adjustment to prior periods presented. The cumulative effect adjustment to the opening balance of retained earnings was zero. Our leases consist principally of real estate operating leases that are amortized on a straight-line basis over the term of the lease. The adoption of the updated guidance resulted in recognizing a right-of-use asset, which was recorded within Other assets, and a lease liability, which was recorded within Accounts payable, accrued expenses, and other liabilities on the Consolidated balance sheet as well as de-recognizing the liability for deferred rent that was required under the previous guidance. The adoption of the new guidance did not have a material effect on our results of operations, financial condition or liquidity. Refer to Note 6 h) for additional information on leases.

Refer to the 2018 Form 10-K for information on accounting guidance not yet adopted.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)
Chubb Limited and Subsidiaries

2. Investments

a) Fixed maturities

September 30, 2019 (in millions of U.S. dollars)	Amortized Cost	Gross Unrealized Appreciation	Gross Unrealized Depreciation	Fair Value	OTTI Recognized in AOCI
Available for sale					
U.S. Treasury and agency	$ 3,438	$ 133	$ (1)	$ 3,570	$ —
Foreign	21,974	1,171	(68)	23,077	(27)
Corporate securities	30,344	1,131	(108)	31,367	(5)
Mortgage-backed securities	18,457	570	(13)	19,014	—
States, municipalities, and political subdivisions	7,823	205	(12)	8,016	—
	$ 82,036	$ 3,210	$ (202)	$ 85,044	$ (32)
Held to maturity					
U.S. Treasury and agency	$ 1,234	$ 36	$ —	$ 1,270	$ —
Foreign	1,401	85	(1)	1,485	—
Corporate securities	2,391	127	(4)	2,514	—
Mortgage-backed securities	2,391	83	—	2,474	—
States, municipalities, and political subdivisions	5,205	149	(1)	5,353	—
	$ 12,622	$ 480	$ (6)	$ 13,096	$ —

December 31, 2018 (in millions of U.S. dollars)	Amortized Cost	Gross Unrealized Appreciation	Gross Unrealized Depreciation	Fair Value	OTTI Recognized in AOCI
Available for sale					
U.S. Treasury and agency	$ 4,158	$ 30	$ (43)	$ 4,145	$ —
Foreign	21,370	395	(349)	21,416	—
Corporate securities	27,183	150	(750)	26,583	(6)
Mortgage-backed securities	15,758	66	(284)	15,540	(1)
States, municipalities, and political subdivisions	10,854	49	(117)	10,786	—
	$ 79,323	$ 690	$ (1,543)	$ 78,470	$ (7)
Held to maturity					
U.S. Treasury and agency	$ 1,185	$ 8	$ (11)	$ 1,182	$ —
Foreign	1,549	11	(18)	1,542	—
Corporate securities	2,601	11	(104)	2,508	—
Mortgage-backed securities	2,524	5	(43)	2,486	—
States, municipalities, and political subdivisions	5,576	16	(51)	5,541	—
	$ 13,435	$ 51	$ (227)	$ 13,259	$ —

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, 2019, $21 million and $5 million, respectively, of net unrealized depreciation related to such securities are included in OCI. 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. At September 30, 2019 and December 31, 2018, AOCI included cumulative net unrealized depreciation of $26 million and net unrealized appreciation of $1 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 83 percent and 81 percent of the total mortgage-backed securities at September 30, 2019 and December 31, 2018, 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.

The following table presents fixed maturities by contractual maturity:

		September 30 2019		December 31 2018
(in millions of U.S. dollars)	**Amortized Cost**	**Fair Value**	Amortized Cost	Fair Value
Available for sale				
Due in 1 year or less	**$ 3,869**	**$ 3,889**	$ 3,569	$ 3,568
Due after 1 year through 5 years	**27,168**	**27,728**	27,134	27,005
Due after 5 years through 10 years	**23,368**	**24,309**	24,095	23,543
Due after 10 years	**9,174**	**10,104**	8,767	8,814
	63,579	**66,030**	63,565	62,930
Mortgage-backed securities	**18,457**	**19,014**	15,758	15,540
	$ 82,036	**$ 85,044**	$ 79,323	$ 78,470
Held to maturity				
Due in 1 year or less	**$ 487**	**$ 490**	$ 536	$ 537
Due after 1 year through 5 years	**3,567**	**3,629**	3,122	3,106
Due after 5 years through 10 years	**3,822**	**3,959**	4,468	4,407
Due after 10 years	**2,355**	**2,544**	2,785	2,723
	10,231	**10,622**	10,911	10,773
Mortgage-backed securities	**2,391**	**2,474**	2,524	2,486
	$ 12,622	**$ 13,096**	$ 13,435	$ 13,259

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.

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 and foreign securities

Projected cash flows for corporate and foreign 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 and foreign 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 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, 2019, credit losses recognized in Net income for corporate and foreign securities were $18 million and $32 million, respectively. For the three and nine months ended September 30, 2018, credit losses recognized in Net income for corporate and foreign securities were $8 million and $9 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, 2019 and 2018, there were no credit losses recognized in Net income for mortgage-backed securities.

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

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S. dollars)	**2019**	2018	**2019**	2018
Fixed maturities:				
OTTI on fixed maturities, gross	**$ (54)**	$ (14)	**$ (81)**	$ (19)
OTTI on fixed maturities recognized in OCI (pre-tax)	**30**	3	**31**	3
OTTI on fixed maturities, net	**(24)**	(11)	**(50)**	(16)
Gross realized gains excluding OTTI	**70**	64	**153**	229
Gross realized losses excluding OTTI	**(57)**	(91)	**(146)**	(355)
Total fixed maturities	**(11)**	(38)	**(43)**	(142)
Equity securities	**3**	35	**66**	22
Other investments	**(4)**	5	**(18)**	23
Foreign exchange gains	**84**	39	**86**	102
Investment and embedded derivative instruments	**(97)**	37	**(408)**	78
Fair value adjustments on insurance derivative	**(106)**	54	**(57)**	133
S&P futures	**(6)**	(100)	**(89)**	(122)
Other derivative instruments	**(14)**	(8)	**(8)**	2
Other	**(4)**	(5)	**(4)**	(61)
Net realized gains (losses) (pre-tax)	**$ (155)**	$ 19	**$ (475)**	$ 35

Other net realized gains (losses) for the nine months ended September 30, 2018 included a $36 million loss from the extinguishment of debt related to the redemption of the $1.0 billion 6.375 percent unsecured junior subordinated capital securities and a $22 million loss related to lease impairments.

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:

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S. dollars)	**2019**	2018	**2019**	2018
Balance of credit losses related to securities still held – beginning of period	**$ 30**	$ 16	**$ 34**	$ 22
Additions where no OTTI was previously recorded	**17**	6	**28**	7
Additions where an OTTI was previously recorded	**1**	2	**4**	2
Reductions for securities sold during the period	**(8)**	(3)	**(26)**	(10)
Balance of credit losses related to securities still held – end of period	**$ 40**	$ 21	**$ 40**	$ 21

c) Equity securities and Other investments
The following table presents realized gains and losses from equity securities and other investments, including both sales of securities and unrealized gains and losses from changes in fair value:

	Three Months Ended September 30					
	2019			2018		
(in millions of U.S. dollars)	**Equity Securities**	**Other Investments**	**Total**	Equity Securities	Other Investments	Total
Net gains (losses) recognized during the period	**$ 3**	**$ (4)**	**$ (1)**	$ 35	$ 5	$ 40
Less: Net gains (losses) recognized from sales of securities	**24**	**(2)**	**22**	48	—	48
Unrealized gains (losses) recognized for securities still held at reporting date	**$ (21)**	**$ (2)**	**$ (23)**	$ (13)	$ 5	$ (8)

	Nine Months Ended September 30					
	2019			2018		
(in millions of U.S. dollars)	**Equity Securities**	**Other Investments**	**Total**	Equity Securities	Other Investments	Total
Net gains (losses) recognized during the period	**$ 66**	**$ (18)**	**$ 48**	$ 22	$ 23	$ 45
Less: Net gains (losses) recognized from sales of securities	**57**	**(4)**	**53**	63	—	63
Unrealized gains (losses) recognized for securities still held at reporting date	**$ 9**	**$ (14)**	**$ (5)**	$ (41)	$ 23	$ (18)

d) Gross unrealized loss
At September 30, 2019, there were 4,231 fixed maturities out of a total of 31,075 fixed maturities in an unrealized loss position. The largest single unrealized loss in the fixed maturities was $7 million. Fixed maturities in an unrealized loss position at September 30, 2019, 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, 2019 (in millions of U.S. dollars)	0 – 12 Months Fair Value	0 – 12 Months Gross Unrealized Loss	Over 12 Months Fair Value	Over 12 Months Gross Unrealized Loss	Total Fair Value	Total Gross Unrealized Loss
U.S. Treasury and agency	$ 144	$ —	$ 531	$ (1)	$ 675	$ (1)
Foreign	1,077	(23)	1,014	(46)	2,091	(69)
Corporate securities	2,600	(62)	1,095	(50)	3,695	(112)
Mortgage-backed securities	640	(2)	1,228	(11)	1,868	(13)
States, municipalities, and political subdivisions	650	(1)	371	(12)	1,021	(13)
Total fixed maturities	$ 5,111	$ (88)	$ 4,239	$ (120)	$ 9,350	$ (208)

December 31, 2018 (in millions of U.S. dollars)	0 – 12 Months Fair Value	0 – 12 Months Gross Unrealized Loss	Over 12 Months Fair Value	Over 12 Months Gross Unrealized Loss	Total Fair Value	Total Gross Unrealized Loss
U.S. Treasury and agency	$ 523	$ (4)	$ 2,859	$ (50)	$ 3,382	$ (54)
Foreign	6,764	(208)	5,349	(159)	12,113	(367)
Corporate securities	16,538	(599)	4,873	(255)	21,411	(854)
Mortgage-backed securities	6,103	(98)	6,913	(229)	13,016	(327)
States, municipalities, and political subdivisions	5,024	(44)	7,768	(124)	12,792	(168)
Total fixed maturities	$ 34,952	$ (953)	$ 27,762	$ (817)	$ 62,714	$ (1,770)

e) Investments in partially-owned insurance companies
On May 31, 2019, we completed the purchase of an additional ownership in Huatai Insurance Group Company Limited ("Huatai Group") of approximately 6.2 percent for $329 million. We increased our aggregate ownership interest in Huatai Group to approximately 26.2 percent. We continue to apply the equity method of accounting to our investment in Huatai Group by recording our share of net income or loss in Other (income) expense in the Consolidated statements of operations. With our increased ownership interest, Huatai Group becomes the first domestic Chinese financial services holding company to convert to a Sino-foreign equity joint venture.

f) 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 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 have investments in segregated portfolios primarily to provide collateral or guarantees for LOC and derivative transactions. Included in restricted assets at September 30, 2019 and December 31, 2018 are investments, primarily fixed maturities, totaling $21.3 billion and $21.0 billion, respectively, and cash of $111 million and $93 million, respectively.

The following table presents the components of restricted assets:

(in millions of U.S. dollars)	September 30 2019	December 31 2018
Trust funds	$ 14,325	$ 13,988
Deposits with U.S. regulatory authorities	2,476	2,405
Deposits with non-U.S. regulatory authorities	2,706	2,531
Assets pledged under repurchase agreements	1,474	1,468
Other pledged assets	447	692
Total	$ 21,428	$ 21,084

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.

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 supplemental retirement 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.

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 maintain positions in exchange-traded equity futures 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 positions in exchange-traded equity futures contracts are 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. 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, 2019 and 2018, no material technical refinements were made to the model. For detailed information on our lapse and annuitization rate assumptions, refer to Note 3 to the Consolidated Financial Statements of our 2018 Form 10-K.

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

September 30, 2019 (in millions of U.S. dollars)	Level 1	Level 2	Level 3	Total
Assets:				
Fixed maturities available for sale				
U.S. Treasury and agency	$ 2,893	$ 677	$ —	$ 3,570
Foreign	—	22,684	393	23,077
Corporate securities	—	29,917	1,450	31,367
Mortgage-backed securities	—	18,937	77	19,014
States, municipalities, and political subdivisions	—	8,016	—	8,016
	2,893	80,231	1,920	85,044
Equity securities	662	4	56	722
Short-term investments	1,483	1,346	6	2,835
Other investments (1)	392	353	10	755
Securities lending collateral	—	962	—	962
Investment derivative instruments	22	—	—	22
Other derivative instruments	7	—	—	7
Separate account assets	3,140	147	—	3,287
Total assets measured at fair value (1)	$ 8,599	$ 83,043	$ 1,992	$ 93,634
Liabilities:				
Investment derivative instruments	$ 63	$ —	$ —	$ 63
GLB (2)	—	—	509	509
Total liabilities measured at fair value	$ 63	$ —	$ 509	$ 572

(1) Excluded from the table above are partially-owned investments, investment funds, and limited partnerships of $4,871 million and other investments of $88 million at September 30, 2019 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.

December 31, 2018 (in millions of U.S. dollars)	Level 1	Level 2	Level 3	Total
Assets:				
Fixed maturities available for sale				
U.S. Treasury and agency	$ 3,400	$ 745	$ —	$ 4,145
Foreign	—	21,071	345	21,416
Corporate securities	—	25,284	1,299	26,583
Mortgage-backed securities	—	15,479	61	15,540
States, municipalities, and political subdivisions	—	10,786	—	10,786
	3,400	73,365	1,705	78,470
Equity securities	713	—	57	770
Short-term investments	1,575	1,440	1	3,016
Other investments (1)	381	303	11	695
Securities lending collateral	—	1,926	—	1,926
Investment derivative instruments	28	—	—	28
Other derivative instruments	25	—	—	25
Separate account assets	2,686	137	—	2,823
Total assets measured at fair value (1)	$ 8,808	$ 77,171	$ 1,774	$ 87,753
Liabilities:				
Investment derivative instruments	$ 38	$ 115	$ —	$ 153
GLB (2)	—	—	452	452
Total liabilities measured at fair value	$ 38	$ 115	$ 452	$ 605

(1) Excluded from the table above are partially-owned investments, investment funds, and limited partnerships of $4,244 million and other investments of $95 million at December 31, 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.

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:

		September 30 2019		December 31 2018	
(in millions of U.S. dollars)	**Expected Liquidation Period of Underlying Assets**	**Fair Value**	**Maximum Future Funding Commitments**	Fair Value	Maximum Future Funding Commitments
Financial	**2 to 10 Years**	**$ 568**	**$ 360**	$ 596	$ 193
Real Assets	**2 to 11 Years**	**771**	**497**	704	362
Distressed	**2 to 7 Years**	**264**	**89**	296	105
Private Credit	**3 to 8 Years**	**109**	**271**	147	310
Traditional	**2 to 14 Years**	**2,767**	**2,224**	2,362	2,735
Vintage	**1 to 2 Years**	**134**	**37**	56	—
Investment funds	**Not Applicable**	**258**	**—**	83	—
		$ 4,871	**$ 3,478**	$ 4,244	$ 3,705

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 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	funds where the initial fund term has 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 September 30, 2019	Fair Value December 31, 2018	Valuation Technique	Significant Unobservable Inputs	Ranges
GLB [(1)]	$ 509	$ 452	Actuarial model	Lapse rate	3% – 32%
				Annuitization rate	0% – 42%

(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)
Chubb Limited and Subsidiaries

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 September 30, 2019 (in millions of U.S. dollars)	Assets: Available-for-Sale Debt Securities: Foreign	Corporate securities	MBS	Equity securities	Short-term investments	Other investments	Liabilities: GLB (1)
Balance – beginning of period	**$ 371**	**$ 1,359**	**$ 76**	**$ 56**	**$ 4**	**$ 11**	**$ 403**
Transfers into Level 3	**—**	**1**	**—**	**—**	**—**	**—**	**—**
Transfers out of Level 3	**—**	**—**	**—**	**—**	**—**	**—**	**—**
Change in Net Unrealized Gains (Losses) included in OCI, including foreign exchange	**(8)**	**(4)**	**—**	**(1)**	**—**	**—**	**—**
Net Realized Gains/Losses	**—**	**—**	**—**	**(1)**	**—**	**—**	**106**
Purchases	**68**	**176**	**1**	**5**	**2**	**—**	**—**
Sales	**(35)**	**(18)**	**—**	**(3)**	**—**	**—**	**—**
Settlements	**(3)**	**(64)**	**—**	**—**	**—**	**(1)**	**—**
Balance – end of period	**$ 393**	**$ 1,450**	**$ 77**	**$ 56**	**$ 6**	**$ 10**	**$ 509**
Net Realized Gains/Losses Attributable to Changes in Fair Value at the Balance Sheet Date	**$ —**	**$ —**	**$ —**	**$ (1)**	**$ —**	**$ —**	**$ 106**

(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 $935 million at September 30, 2019, and $815 million at June 30, 2019, which includes a fair value derivative adjustment of $509 million and $403 million, respectively.

Three Months Ended September 30, 2018 (in millions of U.S. dollars)	Assets: Available-for-Sale Debt Securities: Foreign	Corporate securities (1)	MBS	Equity securities	Short-term investments	Other investments	Liabilities: Other derivative instruments	GLB (2)
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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

Nine Months Ended September 30, 2019 (in millions of U.S. dollars)	Available-for-Sale Debt Securities: Foreign	Available-for-Sale Debt Securities: Corporate securities	Available-for-Sale Debt Securities: MBS	Equity securities	Short-term investments	Other investments	Liabilities: GLB [(1)]
	Assets						
Balance – beginning of period	$ 345	$ 1,299	$ 61	$ 57	$ 1	$ 11	$ 452
Transfers into Level 3	3	16	—	—	—	—	—
Transfers out of Level 3	(15)	—	—	—	—	—	—
Change in Net Unrealized Gains (Losses) included in OCI, including foreign exchange	(2)	1	—	1	—	—	—
Net Realized Gains/Losses	(1)	—	—	(4)	—	—	57
Purchases	164	425	19	19	6	—	—
Sales	(54)	(91)	(1)	(17)	—	—	—
Settlements	(47)	(200)	(2)	—	(1)	(1)	—
Balance – end of period	$ 393	$ 1,450	$ 77	$ 56	$ 6	$ 10	$ 509
Net Realized Gains/Losses Attributable to Changes in Fair Value at the Balance Sheet Date	$ —	$ (1)	$ —	$ (3)	$ —	$ —	$ 57

(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 $935 million at September 30, 2019, and $861 million at December 31, 2018, which includes a fair value derivative adjustment of $509 million and $452 million, respectively.

Nine Months Ended September 30, 2018 (in millions of U.S. dollars)	Available-for-Sale Debt Securities: Foreign	Available-for-Sale Debt Securities: Corporate securities [(1)]	Available-for-Sale Debt Securities: MBS	Equity securities	Short-term investments	Other investments	Liabilities: Other derivative instruments	Liabilities: GLB [(2)]
	Assets							
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.

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 2018 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, 2019				Fair Value	
(in millions of U.S. dollars)	**Level 1**	**Level 2**	**Level 3**	**Total**	**Carrying Value**
Assets:					
Fixed maturities held to maturity					
U.S. Treasury and agency	**$ 1,213**	**$ 57**	**$ —**	**$ 1,270**	**$ 1,234**
Foreign	**—**	**1,485**	**—**	**1,485**	**1,401**
Corporate securities	**—**	**2,482**	**32**	**2,514**	**2,391**
Mortgage-backed securities	**—**	**2,474**	**—**	**2,474**	**2,391**
States, municipalities, and political subdivisions	**—**	**5,353**	**—**	**5,353**	**5,205**
Total assets	**$ 1,213**	**$ 11,851**	**$ 32**	**$ 13,096**	**$ 12,622**
Liabilities:					
Repurchase agreements	**$ —**	**$ 1,416**	**$ —**	**$ 1,416**	**$ 1,416**
Short-term debt	**—**	**10**	**—**	**10**	**10**
Long-term debt	**—**	**14,901**	**—**	**14,901**	**13,285**
Trust preferred securities	**—**	**457**	**—**	**457**	**308**
Total liabilities	**$ —**	**$ 16,784**	**$ —**	**$ 16,784**	**$ 15,019**

December 31, 2018				Fair Value	
(in millions of U.S. dollars)	Level 1	Level 2	Level 3	Total	Carrying Value
Assets:					
Fixed maturities held to maturity					
U.S. Treasury and agency	$ 1,128	$ 54	$ —	$ 1,182	$ 1,185
Foreign	—	1,542	—	1,542	1,549
Corporate securities	—	2,477	31	2,508	2,601
Mortgage-backed securities	—	2,486	—	2,486	2,524
States, municipalities, and political subdivisions	—	5,541	—	5,541	5,576
Total assets	$ 1,128	$ 12,100	$ 31	$ 13,259	$ 13,435
Liabilities:					
Repurchase agreements	$ —	$ 1,418	$ —	$ 1,418	$ 1,418
Short-term debt	—	516	—	516	509
Long-term debt	—	12,181	—	12,181	12,087
Trust preferred securities	—	409	—	409	308
Total liabilities	$ —	$ 14,524	$ —	$ 14,524	$ 14,322

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:

	Nine Months Ended September 30	
(in millions of U.S. dollars)	**2019**	2018
Gross unpaid losses and loss expenses – beginning of period	**$ 62,960**	$ 63,179
Reinsurance recoverable on unpaid losses - beginning of period (1)	**(14,689)**	(14,014)
Net unpaid losses and loss expenses – beginning of period	**48,271**	49,165
Net losses and loss expenses incurred in respect of losses occurring in:		
Current year	**14,484**	14,186
Prior years (2)	**(619)**	(729)
Total	**13,865**	13,457
Net losses and loss expenses paid in respect of losses occurring in:		
Current year	**4,920**	4,522
Prior years	**8,374**	8,596
Total	**13,294**	13,118
Foreign currency revaluation and other	**(162)**	(440)
Net unpaid losses and loss expenses – end of period	**48,680**	49,064
Reinsurance recoverable on unpaid losses (1)	**14,332**	13,965
Gross unpaid losses and loss expenses – end of period	**$ 63,012**	$ 63,029

(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 $60 million and $86 million for the nine months ended September 30, 2019 and 2018, respectively.

Gross and net unpaid losses and loss expenses increased $52 million and $409 million, respectively, for the nine months ended September 30, 2019, reflecting an increase in the underlying reserves, partially offset by favorable prior period development and payments related to catastrophic events.

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. 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)
Chubb Limited and Subsidiaries

The following table summarizes (favorable) and adverse PPD by segment.

	Three Months Ended September 30			Nine Months Ended September 30		
(in millions of U.S. dollars)	**Long-tail**	**Short-tail**	**Total**	**Long-tail**	**Short-tail**	**Total**
2019						
North America Commercial P&C Insurance	**$ (197)**	**$ 88**	**$ (109)**	**$ (468)**	**$ 43**	**$ (425)**
North America Personal P&C Insurance	**—**	**(62)**	**(62)**	**—**	**(88)**	**(88)**
North America Agricultural Insurance	**—**	**18**	**18**	**—**	**(43)**	**(43)**
Overseas General Insurance	**(66)**	**41**	**(25)**	**(66)**	**17**	**(49)**
Global Reinsurance	**(25)**	**—**	**(25)**	**(59)**	**26**	**(33)**
Corporate	**36**	**—**	**36**	**79**	**—**	**79**
Total	**$ (252)**	**$ 85**	**$ (167)**	**$ (514)**	**$ (45)**	**$ (559)**
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)

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.

North America Commercial P&C Insurance
2019
For the three months ended September 30, 2019, net favorable PPD was $109 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 $197 million in long-tail business, primarily from:
  - Net favorable development of $94 million in workers' compensation business mainly impacting accident years 2015 and prior, driven by lower than expected paid and reported loss activity, and related improvements in loss development factors;
  - Net favorable development of $39 million in our foreign casualty business, impacting accident years 2015 and prior, driven by reported loss activity that was generally lower than expected;
  - Net favorable development of $36 million on large multi-line prospective deals in the 2015 and prior 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 returns of $34 million tied to the loss performance of the particular deals; and
  - Net favorable development of $32 million in U.S. commercial excess and umbrella portfolios, mainly in accident years 2013 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, partly offset by modestly adverse development in more recent accident years, mainly in 2018, due to higher than expected large loss activity.

- Net adverse development of $88 million in short-tail business, primarily in our property and marine portfolios from:
    - Net adverse development excluding catastrophes of $116 million, with adverse development of $154 million across our retail, wholesale, and program distribution channels in accident year 2018, primarily due to a higher than expected severity of non-catastrophe claims, partly offset by favorable development of $38 million in 2017 and prior accident years on non-catastrophe claims; and
    - Net favorable catastrophe development of $27 million. There was $41 million of favorable development on the 2017 and 2018 natural catastrophes, mostly in 2017, partly offset by some adverse development on older catastrophe events.

For the nine months ended September 30, 2019, net favorable PPD was $425 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 $468 million in long-tail business, primarily from:
    - Net favorable development of $294 million in our workers' compensation lines. This included favorable development of $61 million related to our annual assessment of multi-claimant events including industrial accidents, in the 2018 accident year. 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. This development in accident year 2018 was partially offset by some higher than expected activity from other claims and from involuntary pools. The remaining overall favorable development was mainly in accident years 2015 and prior, generally driven by lower than expected loss experience and related updates to loss development factors;
    - Net favorable development of $63 million in U.S. commercial excess and umbrella portfolios due to the same factors experienced for the three months ended September 30, 2019, as described above with a similar result of favorable development in older accident years, partly offset by some adverse development in several of the more recent prior accident years which led to reserve strengthening in those years;
    - Net favorable development of $53 million in professional liability (errors & omissions and cyber), mainly in the 2015 and prior accident years where case activity was less than expected, partially offset by adverse development in the 2016 accident year, which was driven by several large adverse claim developments;
    - Net favorable development of $39 million in our foreign casualty business due to the same factors experienced for the three months ended September 30, 2019, as described above;
    - Net favorable development of $36 million on large multi-line prospective deals due to the same factors experienced for the three months ended September 30, 2019, as described above; and
    - Net adverse development of $31 million in automobile liability, driven by adverse paid and reported loss experience mainly in accident years 2014 through 2018.
- Net adverse development of $43 million in short-tail business due to the same factors experienced for the three months ended September 30, 2019, as described above, which was partly offset by favorable development of $49 million in surety business, mainly in the 2017 accident year, driven by lower than expected reported loss activity.

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.

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.

North America Personal P&C Insurance
2019
For the three months ended September 30, 2019, net favorable PPD was $62 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 $36 million in our homeowners lines, including valuables, mainly in accident year 2018. Non-catastrophe loss emergence was generally lower than expected in recent accident years. Losses arising from accident year 2017 natural catastrophes developed adversely; however, this was mostly offset by favorable development on the 2018 catastrophe events; and

- Net favorable development of $26 million in our personal excess lines primarily impacting the 2016 accident year, due to lower than expected loss emergence and an increase in weighting towards experience-based methods, partly offset by adverse emergence in accident year 2015.

For the nine months ended September 30, 2019, net favorable PPD was $88 million, which was the net result of several underlying favorable and adverse movements, and was driven by the following principal changes:

- Net favorable claim development of $132 million on the 2017 and 2018 natural catastrophes for all lines;

- Net favorable development of $26 million in our personal excess lines due to the same factors experienced for the three months ended September 30, 2019, as described above;

- Net favorable development of $16 million, which was the net result of several underlying favorable and adverse movements predominantly in the automobile and recreational marine lines; and

- Net adverse development of $82 million in our homeowners lines, including valuables, arising from non-catastrophe loss emergence, mainly in the 2018 accident year.

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.

North America Agricultural Insurance
2019
For the three months ended September 30, 2019, net adverse PPD was $18 million, mainly impacting accident year 2018, across multiple product lines in our Farm and Commercial Agriculture businesses.

For the nine months ended September 30, 2019, net favorable PPD was $43 million, which is the net of the adverse activity noted above and favorable claim development in our Multiple Peril Crop Insurance (MPCI) business, which was due to better than expected crop yield results in certain states at the prior year-end period (i.e., 2019 results based on crop yield results at year-end 2018).

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).

Overseas General Insurance
2019
For the three months ended September 30, 2019, net favorable PPD was $25 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 $66 million in long-tail business, primarily from:
    - Net favorable development of $101 million in casualty lines, including favorable development of $123 million in accident years 2015 and prior, due to lower than expected loss emergence mainly across primary lines in Continental Europe, U.K., and Asia Pacific, partially offset by adverse development of $22 million in accident years 2016 through 2018, primarily due to adverse attritional and large loss experience in Continental Europe; and
    - Net adverse development of $50 million in financial lines, with favorable development of $75 million in accident years 2015 and prior, due to lower than expected loss emergence across most regions in Directors and Officers (D&O) and Professional Indemnity, which was more than offset by adverse development of $125 million in accident years 2016 through 2018, primarily due to adverse large loss experience in D&O in the U.K. and Asia Pacific.
- Net adverse development of $41 million in short-tail business, primarily due to net adverse development of $27 million in Surety, driven by adverse large loss experience across Continental Europe and Latin America in accident years 2017 and 2018.

For the nine months ended September 30, 2019, net favorable PPD was $49 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 $66 million in long-tail lines due to the same factors experienced for the three months ended September 30, 2019 described above; and
- Net adverse development of $17 million in short-tail lines.

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.
- 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.

Global Reinsurance
2019
For the three months ended September 30, 2019, net favorable PPD was $25 million, in long-tail business, primarily from professional liability, medical malpractice, and workers' compensation lines primarily from treaty years 2013 and prior principally due to lower than expected loss emergence.

For the nine months ended September 30, 2019, net favorable PPD was $33 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 $59 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 due to lower than expected loss emergence; and

- Net adverse development of $26 million in short-tail business, which included $37 million of adverse development primarily on 2017 and 2018 natural catastrophe events.

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.

Corporate
2019
For the three months ended September 30, 2019, net adverse development was $36 million, driven principally by adverse development in environmental liabilities of $27 million due to case specific settlements and higher than expected remediation expense and defense costs, generally impacting larger modeled accounts. The net adverse development also included charges relating to unallocated loss adjustment expenses due to run-off operating expenses of $9 million.

For the nine months ended September 30, 2019, net adverse development was $79 million, driven principally by adverse development on non A&E run-off casualty exposures, including workers' compensation, and by the adverse development in environmental liabilities as described above. The net adverse development also included charges relating to unallocated loss adjustment expenses due to run-off operating expenses of $28 million.

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.

5. Debt

On June 18, 2019, Chubb INA Holdings Inc. (Chubb INA) issued €575 million ($650 million based on the foreign exchange rate at the date of issuance) of 0.875 percent Euro denominated senior notes due June 2027 and €575 million ($650 million based on the foreign exchange rate at the date of issuance) of 1.4 percent Euro denominated senior notes due June 2031. 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 0.20 percent for the senior notes due 2027 and 0.25 percent for the senior notes due 2031). 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 $500 million of 5.9 percent senior notes due June 2019 were paid upon maturity.

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.

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 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 books 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:

		September 30, 2019			**December 31, 2018**		
		Fair Value			Fair Value		
(in millions of U.S. dollars)	**Consolidated Balance Sheet Location**	**Derivative Asset**	**Derivative (Liability)**	**Notional Value/ Payment Provision**	Derivative Asset	Derivative (Liability)	Notional Value/ Payment Provision
Investment and embedded derivative instruments:							
Foreign currency forward contracts	**OA / (AP)**	**$ 10**	**$ (59)**	**$ 2,888**	$ 15	$ (19)	$ 2,185
Cross-currency swaps	**OA / (AP)**	**—**	**—**	**—**	—	—	45
Interest rate swaps	**OA / (AP)**	**—**	**—**	**—**	—	(115)	5,250
Options/Futures contracts on notes, bonds, and equities	**OA / (AP)**	**12**	**(4)**	**853**	13	(19)	1,046
Convertible securities [(1)]	**FM AFS / ES**	**5**	**—**	**8**	9	—	11
TBAs	**FM AFS**	**—**	**—**	**—**	6	—	6
		$ 27	**$ (63)**	**$ 3,749**	$ 43	$ (153)	$ 8,543
Other derivative instruments:							
Futures contracts on equities [(2)]	**OA / (AP)**	**$ 6**	**$ —**	**$ 582**	$ 23	$ —	$ 507
Other	**OA / (AP)**	**1**	**—**	**207**	2	—	74
		$ 7	**$ —**	**$ 789**	$ 25	$ —	$ 581
GLB [(3)]	**(AP) / (FPB)**	**$ —**	**$ (935)**	**$ 1,729**	$ —	$ (861)	$ 1,750

(1) Includes fair value of embedded derivatives.
(2) Related to GMDB and GLB blocks of business.
(3) Includes both future policy benefits reserves of $426 million and $409 million and fair value derivative adjustment of $509 million and $452 million at September 30, 2019 and December 31, 2018, respectively. 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, 2019 and December 31, 2018, derivative liabilities of $30 million and $95 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.

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

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S. dollars)	**2019**	2018	**2019**	2018
Investment and embedded derivative instruments:				
Foreign currency forward contracts	**$ (20)**	$ (2)	**$ (57)**	$ 5
Interest rate swaps	**(55)**	26	**(270)**	26
All other futures contracts, options, and equities	**(22)**	13	**(83)**	47
Convertible securities [(1)]	**—**	—	**2**	—
Total investment and embedded derivative instruments	**$ (97)**	$ 37	**$ (408)**	$ 78
GLB and other derivative instruments:				
GLB [(2)]	**$ (106)**	$ 54	**$ (57)**	$ 133
Futures contracts on equities [(3)]	**(6)**	(100)	**(89)**	(122)
Other	**(14)**	(8)	**(8)**	2
Total GLB and other derivative instruments	**$ (126)**	$ (54)	**$ (154)**	$ 13
	$ (223)	$ (17)	**$ (562)**	$ 91

(1) Includes embedded derivatives.
(2) Excludes foreign exchange gains (losses) related to GLB.
(3) Related to GMDB and GLB books 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 GMDB 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.

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).

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.

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 2019	December 31 2018
(in millions of U.S. dollars)	Overnight and Continuous	
Collateral held under securities lending agreements:		
Cash	**$ 562**	$ 756
U.S. Treasury and agency	**70**	64
Foreign	**249**	795
Corporate securities	**17**	15
Mortgage-backed securities	**18**	45
Equity securities	**46**	251
	$ 962	$ 1,926
Gross amount of recognized liability for securities lending payable	**$ 962**	$ 1,926

At September 30, 2019 and December 31, 2018, our repurchase agreement obligations of $1,416 million and $1,418 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, 2019			December 31, 2018		
(in millions of U.S. dollars)	**30-90 Days**	**Greater than 90 Days**	**Total**	30-90 Days	Greater than 90 Days	Total
Collateral pledged under repurchase agreements:						
U.S. Treasury and agency	**$ —**	**$ 107**	**$ 107**	$ —	$ 259	$ 259
Mortgage-backed securities	**488**	**879**	**1,367**	496	713	1,209
	$ 488	**$ 986**	**$ 1,474**	$ 496	$ 972	$ 1,468
Gross amount of recognized liabilities for repurchase agreements			**$ 1,416**			$ 1,418
Difference [(1)]			**$ 58**			$ 50

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

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.

d) Fixed maturities
At September 30, 2019, we have commitments to purchase fixed income securities of $799 million over the next several years.

e) Other investments
At September 30, 2019, included in Other investments in the Consolidated balance sheets are investments in limited partnerships and partially-owned investment companies with a carrying value of $4.6 billion. In connection with these investments, we have commitments that may require funding of up to $3.5 billion over the next several years.

f) Income Taxes
At September 30, 2019, $13 million of unrecognized tax benefits remain outstanding. It is reasonably possible that over the next twelve months, that 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 lapses of 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.

h) Leases
At September 30, 2019, the right-of-use asset was $577 million recorded within Other assets, and the lease liability was $617 million, which was recorded within Accounts payable, accrued expenses, and other liabilities on the Consolidated balance sheet. These leases consist principally of real estate operating leases that are amortized on a straight-line basis over the term of the lease.

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, 2019, our Common Shares had a par value of CHF 24.15 per share.

At our May 2018 and 2017 annual general meetings, our shareholders approved an annual dividend for the following year of up to $2.92 per share and $2.84 per share, respectively, which were paid in four quarterly installments of $0.73 per share and $0.71 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 2019 annual general meeting, our shareholders approved an annual dividend for the following year of up to $3.00 per share, expected to be paid in four quarterly installments of $0.75 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 2020 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 September 30				Nine Months Ended September 30			
	2019		2018		**2019**		2018	
	CHF	USD	CHF	USD	CHF	USD	CHF	USD
Total dividend distributions per common share	**0.73**	**$ 0.75**	0.72	$ 0.73	**2.20**	**$ 2.23**	2.11	$ 2.17

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, 2019, 26,250,222 Common Shares remain in treasury after net shares redeemed under employee share-based compensation plans.

Chubb Limited securities repurchase authorization
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. In December 2018, the Board authorized the repurchase of up to $1.5 billion of Chubb's Common Shares from December 1, 2018 through December 31, 2019.

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

	Three Months Ended September 30		Nine Months Ended September 30		October 1, 2019 through October 30, 2019
(in millions of U.S. dollars, except share data)	**2019**	2018	**2019**	2018	
Number of shares repurchased	**3,079,618**	2,781,307	**8,417,838**	5,225,162	**700,900**
Cost of shares repurchased	**$ 478**	$ 379	**$ 1,221**	$ 703	**$ 108**
Repurchase authorization remaining at end of period	**$ 258**	$ 297	**$ 258**	$ 297	**$ 150**

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 respective vesting period, which is also the requisite service period. On February 28, 2019, Chubb granted 2,073,712 stock options with a weighted-average grant date fair value of $18.79 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 restricted stock awards granted comprise target awards and premium awards that cliff vest at the end of a 3-year performance period based on both 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 awards are subject to 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 28, 2019, Chubb granted 1,078,247 service-based restricted stock awards, 357,463 service-based restricted stock units, and 212,059 performance-based stock awards to employees and officers with a grant date fair value of $133.90 each. Each restricted stock unit represents our obligation to deliver to the holder one Common Share upon vesting.

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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:

	Pension Benefit Plans				Other Postretirement Benefit Plans	
	2019		2018		**2019**	2018
Three Months Ended September 30 (in millions of U.S. dollars)	**U.S. Plans**	**Non-U.S. Plans**	U.S. Plans	Non-U.S. Plans		
Service cost	**$ 12**	**$ 3**	$ 14	$ 3	**$ —**	$ 1
Non-service cost:						
Interest cost	**30**	**6**	26	6	**1**	1
Expected return on plan assets	**(47)**	**(11)**	(53)	(12)	**(1)**	(2)
Amortization of net actuarial loss	**—**	**1**	—	1	**—**	—
Amortization of prior service cost	**—**	**—**	—	—	**(20)**	(21)
Curtailments	**—**	**—**	—	—	**—**	(1)
Settlements	**1**	**—**	—	—	**—**	—
Total non-service (benefit) cost	**(16)**	**(4)**	(27)	(5)	**(20)**	(23)
Net periodic (benefit) cost	**$ (4)**	**$ (1)**	$ (13)	$ (2)	**$ (20)**	$ (22)

	Pension Benefit Plans				Other Postretirement Benefit Plans	
	2019		2018		**2019**	2018
Nine Months Ended September 30 (in millions of U.S. dollars)	**U.S. Plans**	**Non-U.S. Plans**	U.S. Plans	Non-U.S. Plans		
Service cost	**$ 37**	**$ 8**	$ 43	$ 9	**$ —**	$ 1
Non-service cost:						
Interest cost	**89**	**20**	79	20	**3**	3
Expected return on plan assets	**(142)**	**(33)**	(159)	(38)	**(3)**	(4)
Amortization of net actuarial loss	**—**	**2**	—	1	**—**	—
Amortization of prior service cost	**—**	**—**	—	—	**(60)**	(64)
Curtailments	**—**	**—**	—	—	**—**	(2)
Settlements	**1**	**—**	1	—	**—**	—
Total non-service (benefit) cost	**(52)**	**(11)**	(79)	(17)	**(60)**	(67)
Net periodic (benefit) cost	**$ (15)**	**$ (3)**	$ (36)	$ (8)	**$ (60)**	$ (66)

The service and non-service cost components of net periodic (benefit) cost reflected in the Consolidated statements of operations were as follows:

Three Months Ended September 30 (in millions of U.S. dollars)	Pension Benefit Plans 2019	Pension Benefit Plans 2018	Other Postretirement Benefit Plans 2019	Other Postretirement Benefit Plans 2018
Service Cost:				
Losses and loss expenses	$ 2	$ 2	$ —	$ —
Administrative expenses	13	15	—	1
Total service cost	15	17	—	1
Non-service Cost:				
Losses and loss expenses	(1)	(3)	(2)	(3)
Administrative expenses	(19)	(29)	(18)	(20)
Total non-service (benefit) cost	(20)	(32)	(20)	(23)
Net periodic (benefit) cost	$ (5)	$ (15)	$ (20)	$ (22)

Nine Months Ended September 30 (in millions of U.S. dollars)	Pension Benefit Plans 2019	Pension Benefit Plans 2018	Other Postretirement Benefit Plans 2019	Other Postretirement Benefit Plans 2018
Service Cost:				
Losses and loss expenses	$ 5	$ 5	$ —	$ —
Administrative expenses	40	47	—	1
Total service cost	45	52	—	1
Non-service Cost:				
Losses and loss expenses	(5)	(8)	(6)	(7)
Administrative expenses	(58)	(88)	(54)	(60)
Total non-service (benefit) cost	(63)	(96)	(60)	(67)
Net periodic (benefit) cost	$ (18)	$ (44)	$ (60)	$ (66)

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 and certain other non-A&E run-off exposures.

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 (loss), 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, 2019, underwriting income in our North America Agricultural Insurance segment was $1 million. This amount includes $14 million of realized losses related to crop derivatives which are reported in Net realized gains (losses) in the Corporate column 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, 2019, Life Insurance underwriting income of $79 million includes Net investment income of $92 million and losses from fair value changes in separate account assets of $7 million. The losses from fair value changes in separate account assets are reported in Other (income) expense in the table below.

The following tables present the Statement of Operations by segment:

For the Three Months Ended September 30, 2019 (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	$ 3,452	$ 1,251	$ 938	$ 2,228	$ 141	$ 612	$ —	$ 8,622
Net premiums earned	3,185	1,187	941	2,256	160	598	—	8,327
Losses and loss expenses	2,051	674	866	1,154	79	190	38	5,052
Policy benefits	—	—	—	—	—	158	—	158
Policy acquisition costs	459	240	56	630	42	176	—	1,603
Administrative expenses	256	72	4	257	9	80	74	752
Underwriting income (loss)	419	201	15	215	30	(6)	(112)	762
Net investment income (loss)	532	66	8	148	55	92	(28)	873
Other (income) expense	(1)	1	—	3	(16)	(10)	(34)	(57)
Amortization expense of purchased intangibles	—	3	7	11	—	1	54	76
Segment income (loss)	$ 952	$ 263	$ 16	$ 349	$ 101	$ 95	$ (160)	$ 1,616
Net realized gains (losses) including OTTI							(155)	(155)
Interest expense							138	138
Chubb integration expenses							2	2
Income tax expense							230	230
Net income (loss)							$ (685)	$ 1,091

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)

Chubb Limited and Subsidiaries

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

For the Nine Months Ended September 30, 2019 (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	**$ 9,937**	**$ 3,616**	**$ 1,534**	**$ 6,881**	**$ 540**	**$ 1,770**	**$ —**	**$ 24,278**
Net premiums earned	**9,660**	**3,509**	**1,374**	**6,595**	**487**	**1,730**	**—**	**23,355**
Losses and loss expenses	**6,238**	**2,178**	**1,155**	**3,385**	**245**	**581**	**83**	**13,865**
Policy benefits	**—**	**—**	**—**	**—**	**—**	**515**	**—**	**515**
Policy acquisition costs	**1,377**	**708**	**90**	**1,855**	**127**	**454**	**—**	**4,611**
Administrative expenses	**755**	**211**	**9**	**771**	**26**	**237**	**211**	**2,220**
Underwriting income (loss)	**1,290**	**412**	**120**	**584**	**89**	**(57)**	**(294)**	**2,144**
Net investment income (loss)	**1,563**	**194**	**22**	**443**	**166**	**278**	**(98)**	**2,568**
Other (income) expense	**(4)**	**2**	**1**	**10**	**(40)**	**(57)**	**(238)**	**(326)**
Amortization expense of purchased intangibles	**—**	**9**	**21**	**34**	**—**	**2**	**163**	**229**
Segment income (loss)	**$ 2,857**	**$ 595**	**$ 120**	**$ 983**	**$ 295**	**$ 276**	**$ (317)**	**$ 4,809**
Net realized gains (losses) including OTTI							**(475)**	**(475)**
Interest expense							**418**	**418**
Chubb integration expenses							**9**	**9**
Income tax expense							**626**	**626**
Net income (loss)							**$ (1,845)**	**$ 3,281**

For the Nine 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	$ 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

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

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S. dollars, except share and per share data)	**2019**	2018	**2019**	2018
Numerator:				
Net income	**$ 1,091**	$ 1,231	**$ 3,281**	$ 3,607
Denominator:				
Denominator for basic earnings per share:				
Weighted-average shares outstanding	**454,975,143**	462,981,973	**456,987,560**	464,644,013
Denominator for diluted earnings per share:				
Share-based compensation plans	**3,175,226**	3,034,525	**2,937,026**	3,360,511
Weighted-average shares outstanding and assumed conversions	**458,150,369**	466,016,498	**459,924,586**	468,004,524
Basic earnings per share	**$ 2.40**	$ 2.66	**$ 7.18**	$ 7.76
Diluted earnings per share	**$ 2.38**	$ 2.64	**$ 7.13**	$ 7.71
Potential anti-dilutive share conversions	**575,039**	3,763,844	**3,874,310**	3,467,000

Excluded from weighted-average shares outstanding and assumed conversions is the impact of securities that would have been anti-dilutive during the respective periods.

12. Information provided in connection with outstanding debt of subsidiaries

The following tables present condensed consolidating financial information at September 30, 2019 and December 31, 2018, and for the three and nine months ended September 30, 2019 and 2018 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, 2019

(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	$ —	$ 227	$ 106,951	$ —	$ 107,178
Cash [(1)]	2	—	2,706	(1,230)	1,478
Restricted cash	—	—	111	—	111
Insurance and reinsurance balances receivable	—	—	12,519	(2,116)	10,403
Reinsurance recoverable on losses and loss expenses	—	—	25,284	(9,757)	15,527
Reinsurance recoverable on policy benefits	—	—	293	(94)	199
Value of business acquired	—	—	274	—	274
Goodwill and other intangible assets	—	—	21,378	—	21,378
Investments in subsidiaries	49,471	53,381	—	(102,852)	—
Due from subsidiaries and affiliates, net	6,068	—	—	(6,068)	—
Other assets	7	486	20,011	(1,904)	18,600
Total assets	$ 55,548	$ 54,094	$ 189,527	$ (124,021)	$ 175,148
Liabilities					
Unpaid losses and loss expenses	$ —	$ —	$ 72,389	$ (9,377)	$ 63,012
Unearned premiums	—	—	17,767	(1,196)	16,571
Future policy benefits	—	—	5,832	(94)	5,738
Due to subsidiaries and affiliates, net	—	5,953	115	(6,068)	—
Affiliated notional cash pooling programs [(1)]	628	602	—	(1,230)	—
Repurchase agreements	—	—	1,416	—	1,416
Short-term debt	—	—	10	—	10
Long-term debt	—	13,285	—	—	13,285
Trust preferred securities	—	308	—	—	308
Other liabilities	348	1,814	21,278	(3,204)	20,236
Total liabilities	976	21,962	118,807	(21,169)	120,576
Total shareholders' equity	54,572	32,132	70,720	(102,852)	54,572
Total liabilities and shareholders' equity	$ 55,548	$ 54,094	$ 189,527	$ (124,021)	$ 175,148

(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, 2019, 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, 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	$ —	$ 214	$ 100,754	$ —	$ 100,968
Cash (1)	1	2	1,896	(652)	1,247
Restricted cash	—	—	93	—	93
Insurance and reinsurance balances receivable	—	—	11,861	(1,786)	10,075
Reinsurance recoverable on losses and loss expenses	—	—	26,422	(10,429)	15,993
Reinsurance recoverable on policy benefits	—	—	306	(104)	202
Value of business acquired	—	—	295	—	295
Goodwill and other intangible assets	—	—	21,414	—	21,414
Investments in subsidiaries	43,531	50,209	—	(93,740)	—
Due from subsidiaries and affiliates, net	7,074	—	598	(7,672)	—
Other assets	3	1,007	18,102	(1,628)	17,484
Total assets	$ 50,609	$ 51,432	$ 181,741	$ (116,011)	$ 167,771
Liabilities					
Unpaid losses and loss expenses	$ —	$ —	$ 72,857	$ (9,897)	$ 62,960
Unearned premiums	—	—	16,611	(1,079)	15,532
Future policy benefits	—	—	5,610	(104)	5,506
Due to subsidiaries and affiliates, net	—	7,672	—	(7,672)	—
Affiliated notional cash pooling programs (1)	35	617	—	(652)	—
Repurchase agreements	—	—	1,418	—	1,418
Short-term debt	—	500	9	—	509
Long-term debt	—	12,086	1	—	12,087
Trust preferred securities	—	308	—	—	308
Other liabilities	262	2,545	19,199	(2,867)	19,139
Total liabilities	297	23,728	115,705	(22,271)	117,459
Total shareholders' equity	50,312	27,704	66,036	(93,740)	50,312
Total liabilities and shareholders' equity	$ 50,609	$ 51,432	$ 181,741	$ (116,011)	$ 167,771

(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, 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 Statements of Operations and Comprehensive Income

For the Three Months Ended September 30, 2019 (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	$ —	$ —	$ 8,622	$ —	$ 8,622
Net premiums earned	—	—	8,327	—	8,327
Net investment income	1	(3)	875	—	873
Equity in earnings of subsidiaries	1,053	824	—	(1,877)	—
Net realized gains (losses) including OTTI	(4)	68	(219)	—	(155)
Losses and loss expenses	—	—	5,052	—	5,052
Policy benefits	—	—	158	—	158
Policy acquisition costs and administrative expenses	22	(5)	2,338	—	2,355
Interest (income) expense	(59)	171	26	—	138
Other (income) expense	(7)	(3)	(47)	—	(57)
Amortization of purchased intangibles	—	—	76	—	76
Chubb integration expenses	—	—	2	—	2
Income tax expense (benefit)	3	(33)	260	—	230
Net income	$ 1,091	$ 759	$ 1,118	$ (1,877)	$ 1,091
Comprehensive income	$ 1,473	$ 1,138	$ 1,517	$ (2,655)	$ 1,473

Condensed Consolidating Statements of Operations and Comprehensive Income

For the Three 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	$ —	$ —	$ 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 Nine Months Ended September 30, 2019 (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	**$ —**	**$ —**	**$ 24,278**	**$ —**	**$ 24,278**
Net premiums earned	**—**	**—**	**23,355**	**—**	**23,355**
Net investment income	**3**	**(13)**	**2,578**	**—**	**2,568**
Equity in earnings of subsidiaries	**3,147**	**2,345**	**—**	**(5,492)**	**—**
Net realized gains (losses) including OTTI	**1**	**34**	**(510)**	**—**	**(475)**
Losses and loss expenses	**—**	**—**	**13,865**	**—**	**13,865**
Policy benefits	**—**	**—**	**515**	**—**	**515**
Policy acquisition costs and administrative expenses	**64**	**(25)**	**6,792**	**—**	**6,831**
Interest (income) expense	**(187)**	**536**	**69**	**—**	**418**
Other (income) expense	**(19)**	**1**	**(308)**	**—**	**(326)**
Amortization of purchased intangibles	**—**	**—**	**229**	**—**	**229**
Chubb integration expenses	**—**	**2**	**7**	**—**	**9**
Income tax expense (benefit)	**12**	**(120)**	**734**	**—**	**626**
Net income	**$ 3,281**	**$ 1,972**	**$ 3,520**	**$ (5,492)**	**$ 3,281**
Comprehensive income	**$ 6,250**	**$ 4,476**	**$ 6,486**	**$ (10,962)**	**$ 6,250**

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 Statement of Cash Flows

Nine Months Ended September 30, 2019 (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	$ 421	$ 1,118	$ 5,234	$ (1,860)	$ 4,913
Cash flows from investing activities					
Purchases of fixed maturities available for sale	—	(16)	(19,762)	—	(19,778)
Purchases of fixed maturities held to maturity	—	—	(143)	—	(143)
Purchases of equity securities	—	—	(466)	—	(466)
Sales of fixed maturities available for sale	—	1	10,435	—	10,436
Sales of equity securities	—	—	577	—	577
Maturities and redemptions of fixed maturities available for sale	—	18	6,372	—	6,390
Maturities and redemptions of fixed maturities held to maturity	—	—	814	—	814
Net change in short-term investments	—	(5)	207	—	202
Net derivative instruments settlements	—	(55)	(592)	—	(647)
Private equity contributions	—	—	(1,093)	—	(1,093)
Private equity distributions	—	—	973	—	973
Capital contribution	(1,000)	(110)	—	1,110	—
Other	—	(10)	(816)	—	(826)
Net cash flows used for investing activities	(1,000)	(177)	(3,494)	1,110	(3,561)
Cash flows from financing activities					
Dividends paid on Common Shares	(1,014)	—	—	—	(1,014)
Common Shares repurchased	—	—	(1,203)	—	(1,203)
Proceeds from issuance of long-term debt	—	1,286	—	—	1,286
Repayment of long-term debt	—	(500)	(1)	—	(501)
Proceeds from issuance of repurchase agreements	—	—	2,394	—	2,394
Repayment of repurchase agreements	—	—	(2,396)	—	(2,396)
Proceeds from share-based compensation plans	—	—	155	—	155
Dividend to parent company	—	—	(1,860)	1,860	—
Advances (to) from affiliates	996	(1,715)	719	—	—
Capital contribution	—	—	1,110	(1,110)	—
Net proceeds from (payments to) affiliated notional cash pooling programs [(1)]	593	(15)	—	(578)	—
Policyholder contract deposits	—	—	376	—	376
Policyholder contract withdrawals	—	—	(221)	—	(221)
Net cash flows from (used for) financing activities	575	(944)	(927)	172	(1,124)
Effect of foreign currency rate changes on cash and restricted cash	5	1	15	—	21
Net increase (decrease) in cash and restricted cash	1	(2)	828	(578)	249
Cash and restricted cash – beginning of period [(1)]	1	2	1,989	(652)	1,340
Cash and restricted cash – end of period [(1)]	$ 2	$ —	$ 2,817	$ (1,230)	$ 1,589

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – continued (Unaudited)
Chubb Limited and Subsidiaries

Condensed Consolidating Statement of Cash Flows

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 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

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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, 2019.

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, 2018 (2018 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.

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 effects of data privacy or cyber laws or regulation on our current or future business;
- 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, 2019, we had total assets of $175 billion and shareholders' equity of $55 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 2018 Form 10-K.

Financial Highlights for the Three Months Ended September 30, 2019

- Net income was $1,091 million compared with $1,231 million in the prior year period.
- Consolidated and P&C net premiums written were $8.6 billion and $8.0 billion, respectively, up 6.3 percent and 6.2 percent, respectively, or 7.3 percent and 7.2 percent, respectively, on a constant-dollar basis.
- Combined ratio was 90.0 percent compared with 90.8 percent in the prior year period. P&C combined ratio was 90.2 percent compared with 90.9 percent in the prior year period. P&C current accident year combined ratio excluding catastrophe losses was 89.5 percent compared with 88.2 percent in the prior year period.
- Total pre-tax and after-tax catastrophe losses were $232 million (3.0 percentage points of the combined ratio) and $191 million, respectively, compared with $450 million (6.1 percentage points of the combined ratio) and $372 million, respectively, in the prior year period. In addition, North America Agricultural Insurance underwriting income of $1 million compared with $79 million in the prior year period was adversely impacted by weather conditions in our crop insurance business.
- Total pre-tax and after-tax favorable prior period development were $167 million (2.3 percentage points of the combined ratio) and $112 million, respectively, compared with $243 million (3.4 percentage points of the combined ratio) and $180 million, respectively, in the prior year period.
- Operating cash flow was $2,205 million compared with $1,700 million in the prior year period. Refer to the Liquidity section for additional information on our cash flows.
- Net investment income was $873 million compared with $823 million in the prior year period.
- Share repurchases totaled $478 million, or approximately 3.1 million shares, during the quarter, and $1.2 billion, or approximately 8.4 million shares, through September 30, 2019.

Consolidated Operating Results – Three and Nine Months Ended September 30, 2019 and 2018

	Three Months Ended September 30		% Change	Nine Months Ended September 30		% Change
(in millions of U.S. dollars, except for percentages)	**2019**	2018	Q-19 vs. Q-18	**2019**	2018	YTD-19 vs. YTD-18
Net premiums written [(1)]	**$ 8,622**	$ 8,110	6.3 %	**$ 24,278**	$ 23,229	4.5 %
Net premiums earned [(1)]	**8,327**	7,908	5.3 %	**23,355**	22,599	3.3 %
Net investment income	**873**	823	6.0 %	**2,568**	2,457	4.5 %
Net realized gains (losses)	**(155)**	19	NM	**(475)**	35	NM
Total revenues	**9,045**	8,750	3.4 %	**25,448**	25,091	1.4 %
Losses and loss expenses	**5,052**	4,868	3.8 %	**13,865**	13,457	3.0 %
Policy benefits	**158**	127	23.7 %	**515**	428	20.2 %
Policy acquisition costs	**1,603**	1,504	6.7 %	**4,611**	4,432	4.1 %
Administrative expenses	**752**	719	4.7 %	**2,220**	2,158	2.9 %
Interest expense	**138**	164	(16.1)%	**418**	488	(14.5)%
Other (income) expense	**(57)**	(145)	(61.0)%	**(326)**	(307)	6.0 %
Amortization of purchased intangibles	**76**	83	(9.3)%	**229**	253	(9.7)%
Chubb integration expenses	**2**	16	(89.9)%	**9**	39	(76.9)%
Total expenses	**7,724**	7,336	5.3 %	**21,541**	20,948	2.8 %
Income before income tax	**1,321**	1,414	(6.6)%	**3,907**	4,143	(5.7)%
Income tax expense	**230**	183	25.8 %	**626**	536	16.8 %
Net income	**$ 1,091**	$ 1,231	(11.4)%	**$ 3,281**	$ 3,607	(9.1)%

NM – not meaningful

(1) On a constant-dollar basis for the three and nine months ended September 30, 2019, net premiums written increased $589 million, or 7.3 percent, and $1,409 million, or 6.2 percent, respectively, and net premiums earned increased $495 million, or 6.3 percent, and $1,115 million, or 5.0 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. For the three and nine months ended September 30, 2019 consolidated net premiums written increased $512 million and $1,049 million, or $589 million and $1,409 million on a constant-dollar basis, respectively, reflecting growth across most segments.

- Net premiums written in our North America Commercial P&C Insurance segment increased $253 million and $595 million for the three and nine months ended September 30, 2019, respectively, reflecting positive rate increases and new business written across most retail lines, including property, financial lines, excess casualty, global casualty, package and A&H, as well as in our wholesale and high excess Bermuda lines, and in our small commercial businesses.

- Net premiums written in our North America Personal P&C Insurance segment increased $33 million and $15 million for the three and nine months ended September 30, 2019, respectively, due to strong retention and rate increases, across most lines, partially offset by higher cessions in the current year related to the homeowners quota share reinsurance treaty effective October 1, 2018. In addition, the nine months ended September 30, 2018 benefited from a change we made to harmonize premium registration cut-off between our legacy registration systems.

- Net premiums written in our North America Agricultural Insurance segment increased $54 million and $154 million for the three and nine months ended September 30, 2019, respectively, primarily due to an increase in MPCI premium reflecting higher retention, the non-renewal of a quota-share treaty effective with the current crop year, and an increase in current year production.

- Net premiums written in our Overseas General Insurance segment increased $147 million and $217 million, or $215 million and $528 million on a constant-dollar basis, for the three and nine months ended September 30, 2019, respectively, reflecting growth across all regions and most lines of business. P&C lines growth was across all regions and was principally due to positive rate increases and new business in property, casualty, and financial lines. Personal lines growth was driven by new business principally in Latin America and Europe. Accident and health (A&H) lines growth was principally in Asia and Latin America driven by new business.

- Net premiums written in our Global Reinsurance segment decreased $23 million, or $21 million on a constant-dollar basis, for the three months ended September 30, 2019, primarily due to the timing of a large treaty, renewed in the first quarter of 2019, which was previously written mainly in the third quarter of 2018, partially offset by an increase in new business writings. For the nine months ended September 30, 2019, net premiums written decreased $14 million, or $6 million on a constant-dollar basis, due to an increase in ceded retrocessions as well as reductions in the International motor line, offset by an increase in new business written in property and marine lines.

- Net premiums written in our Life Insurance segment increased $48 million and $82 million, or $51 million and $103 million on a constant-dollar basis, for the three and nine months ended September 30, 2019, respectively, primarily reflecting growth in our Asian and Latin American international life operations and North American Combined Insurance supplemental A&H program, partially offset by our life reinsurance business, which continues to decline as no new life reinsurance business is currently being written.

Net Premiums Written By Line of Business

	Three Months Ended September 30					Nine Months Ended September 30				
(in millions of U.S. dollars, except for percentages)	**2019**	2018	% Change Q-19 vs. Q-18	C$ [1] 2018	C$ [1] % Change Q-19 vs. Q-18	**2019**	2018	% Change YTD-19 vs. YTD-18	C$ [1] 2018	C$ [1] % Change YTD-19 vs. YTD-18
Commercial casualty	**$ 1,508**	$ 1,408	7.1 %	$ 1,397	7.9 %	**$ 4,180**	$ 3,911	6.9 %	$ 3,870	8.0 %
Workers' compensation	**462**	439	5.3 %	439	5.3 %	**1,537**	1,515	1.5 %	1,515	1.5 %
Professional liability	**981**	921	6.5 %	910	7.8 %	**2,676**	2,583	3.6 %	2,544	5.2 %
Surety	**168**	159	5.9 %	157	7.2 %	**476**	481	(0.9)%	470	1.4 %
Commercial multiple peril [2]	**252**	236	7.0 %	236	7.0 %	**725**	679	6.7 %	679	6.7 %
Property and other short-tail lines	**1,067**	911	17.1 %	893	19.4 %	**3,410**	3,070	11.1 %	2,997	13.8 %
Total Commercial P&C [3]	**4,438**	4,074	9.0 %	4,032	10.1 %	**13,004**	12,239	6.3 %	12,075	7.7 %
Agriculture	**938**	884	6.2 %	884	6.2 %	**1,534**	1,380	11.2 %	1,380	11.2 %
Personal automobile	**444**	419	5.9 %	418	5.9 %	**1,338**	1,273	5.2 %	1,259	6.2 %
Personal homeowners	**935**	895	4.5 %	895	4.5 %	**2,646**	2,615	1.2 %	2,607	1.5 %
Personal other	**372**	362	2.5 %	351	5.9 %	**1,123**	1,138	(1.3)%	1,095	2.6 %
Total Personal lines	**1,751**	1,676	4.4 %	1,664	5.2 %	**5,107**	5,026	1.6 %	4,961	2.9 %
Total Property and Casualty lines	**7,127**	6,634	7.4 %	6,580	8.3 %	**19,645**	18,645	5.4 %	18,416	6.7 %
Global A&H lines [4]	**1,052**	1,048	0.4 %	1,029	2.3 %	**3,255**	3,236	0.6 %	3,128	4.1 %
Reinsurance lines	**141**	164	(14.0)%	162	(12.8)%	**540**	554	(2.5)%	546	(1.1)%
Life	**302**	264	14.4 %	262	15.5 %	**838**	794	5.4 %	779	7.6 %
Total consolidated	**$ 8,622**	$ 8,110	6.3 %	$ 8,033	7.3 %	**$ 24,278**	$ 23,229	4.5 %	$ 22,869	6.2 %

(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) The three months ended September 30, 2018 included a reclassification of $52 million from Workers' compensation to Commercial casualty to better align the reporting with current year. The nine months ended September 30, 2018 included a reclassification of $56 million from Workers' compensation and $1 million from Commercial multiple peril to Commercial casualty ($48 million) and Property and other short-tail lines ($9 million) to better align the reporting with current year. There is no impact to total Commercial P&C.
(4) 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.

The increase in net premiums written for the three and nine months ended September 30, 2019, reflects growth across most lines of business from positive rate increases and new business. The growth in commercial casualty was due to new business in North America. In addition, commercial casualty grew internationally due to positive rate increases and new business. Growth in workers' compensation was due to new business in North America. The increase in professional liability was due to growth in North America and new business and positive rate increases in Australia. Surety and Commercial multiple peril increased due to new business in North America. Property and other short-tail lines increased due to growth in North America. In addition, property and other short-tail lines increased in Australia and Europe, primarily due to new business. Our personal lines increased due to strong retention and rate increases in North America and new business principally in Latin America and Europe. The increase in personal lines was partially offset by higher cessions in the current year related to the homeowners quota share reinsurance treaty effective October 1, 2018. Global A&H lines increased due to growth in our North American Combined Insurance supplemental A&H program, along with new business in Asia and Latin America. The increase in Life was primarily driven by growth in our Asian and Latin American international life operations. 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 was 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. For the three and nine months ended September 30, 2019, net premiums earned increased $419 million and $756 million, or $495 million and $1,115 million on a constant-dollar basis, respectively, reflecting the growth in net premiums written described above, including the impact of premiums that were fully earned when written (e.g., large structured transactions and audit and retrospective premium adjustments).

P&C Combined Ratio

In evaluating our segments excluding Life Insurance financial performance, 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.

	Three Months Ended September 30		Nine Months Ended September 30	
	2019	2018	**2019**	2018
Loss and loss expense ratio	**63.1%**	63.6%	**61.5%**	61.4%
Policy acquisition cost ratio	**18.4%**	18.6%	**19.2%**	19.2%
Administrative expense ratio	**8.7%**	8.7%	**9.2%**	9.2%
P&C Combined ratio	**90.2%**	90.9%	**89.9%**	89.8%

The loss and loss expense ratio decreased 0.5 percentage points for the three months ended September 30, 2019 principally due to lower catastrophe losses, partially offset by lower favorable prior period development. In addition, the prior year loss ratio was elevated principally due to increased frequency and severity, primarily from non-catastrophe water and fire losses in our homeowners business. Offsetting these items was the adverse impact of the downward revision in the 2019 crop year margin estimate, higher than expected commercial property losses, and earned price changes modestly below loss trends primarily in long-tail lines.

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 decreased 0.2 percentage points for the three months ended September 30, 2019 principally due to increased ceding commissions received from higher cessions under certain reinsurance agreements.

Catastrophe Losses and Prior Period Development

Catastrophe losses exclude reinstatement premiums which 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. Prior period development is net of related adjustments which 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. Refer to the Non-GAAP Reconciliation section for further information on reinstatement premiums on catastrophe losses and adjustments to prior period development.

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S dollars)	**2019**	2018	**2019**	2018
Catastrophe losses (1)	**$ 234**	$ 454	**$ 759**	$ 1,045
Favorable prior period development	**$ 167**	$ 243	**$ 559**	$ 643

(1) Excludes catastrophe reinstatement premiums

Catastrophe losses through September 30, 2019 and 2018 were primarily from the following events:

- 2019: Hurricane Dorian and severe weather-related events in the U.S., including winter-related storms, and storms in Australia.
- 2018: Hurricane Florence and severe weather-related events in the U.S., including California mudslides and Northeast winter storms.

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.

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.

Pre-tax net favorable PPD for the three months ended September 30, 2019 was $167 million, including $27 million adverse development related to legacy environmental exposures. The remaining favorable development of $194 million comprises $279 million favorable development from long-tail lines, principally from accident years 2015 and prior, and adverse development of $85 million in short-tail lines principally from non-catastrophe large losses in commercial property lines.

Pre-tax net favorable PPD for the nine months ended September 30, 2019 was $559 million, including $51 million adverse development related to our run-off non-A&E casualty exposures and environmental liabilities. The remaining favorable development of $610 million comprises $565 million favorable development from long-tail lines, principally from accident years 2015 and prior, and favorable development of $45 million in short-tail lines. For detailed information on PPD for each segment by product line and accident year, refer to the Prior Period Development section in Note 4 to the Consolidated Financial Statements.

Pre-tax net favorable PPD 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.

Pre-tax net favorable PPD 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.

Current Accident Year (CAY) Loss Ratio excluding CATs and CAY P&C Combined Ratio excluding CATs
The following table presents the impact of catastrophe losses and prior period development on our loss and loss expense ratio. Refer to the Non-GAAP Reconciliation section for additional information.

	Three Months Ended September 30		Nine Months Ended September 30	
	2019	2018	**2019**	2018
Loss and loss expense ratio	**63.1 %**	63.6 %	**61.5 %**	61.4 %
Catastrophe losses	**(3.0)%**	(6.1)%	**(3.5)%**	(5.0)%
Prior period development	**2.3 %**	3.6 %	**2.6 %**	3.3 %
CAY loss ratio excluding catastrophe losses	**62.4 %**	61.1 %	**60.6 %**	59.7 %

The CAY loss ratio excluding CATs increased 1.3 percentage points and 0.9 percentage points for the three and nine months ended September 30, 2019, respectively, primarily due to the downward revision in the 2019 crop year margin estimate, higher than expected commercial property losses, and earned price changes modestly below loss trends primarily in long-tail lines, partially offset by the adverse impact of elevated homeowners losses in the prior year.

CAY P&C Combined Ratio excluding Catastrophe Losses

	Three Months Ended September 30		Nine Months Ended September 30	
	2019	2018	**2019**	2018
CAY Loss and loss expense ratio ex CATs	**62.4%**	61.1%	**60.6%**	59.7%
CAY Policy acquisition cost ratio ex CATs	**18.4%**	18.4%	**19.2%**	19.1%
CAY Administrative expense ratio ex CATs	**8.7%**	8.7%	**9.2%**	9.2%
CAY P&C combined ratio ex CATs	**89.5%**	88.2%	**89.0%**	88.0%

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.

Policy benefits were $158 million and $515 million for the three and nine months ended September 30, 2019, respectively, compared with $127 million and $428 million, respectively, in the prior year periods. Refer to the Life Insurance segment operating results section for further discussion.

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, 2019 and 2018
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 2018 Form 10-K.

For segment reporting purposes, certain items are presented in a different manner than in the consolidated financial statements. Management uses underwriting income (loss) as the main measures of segment performance. For the North America Agricultural Insurance segment, management includes gains and losses on crop derivatives as a component of adjusted losses and loss expenses within underwriting income. For the Life Insurance segment, management includes the gains and losses on separate account assets that do not qualify for separate account reporting under GAAP as a component of Life Insurance underwriting income.

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 (large corporate accounts and wholesale business), and the North America Commercial Insurance division (principally middle market and small commercial accounts).

	Three Months Ended September 30		% Change	Nine Months Ended September 30		% Change
(in millions of U.S. dollars, except for percentages)	**2019**	2018	Q-19 vs. Q-18	**2019**	2018	YTD-19 vs. YTD-18
Net premiums written	**$ 3,452**	$ 3,199	7.9%	**$ 9,937**	$ 9,342	6.4%
Net premiums earned	**3,185**	3,019	5.5%	**9,660**	9,325	3.6%
Losses and loss expenses	**2,051**	1,881	9.0%	**6,238**	5,873	6.2%
Policy acquisition costs	**459**	458	0.1%	**1,377**	1,378	(0.1)%
Administrative expenses	**256**	251	2.2%	**755**	735	2.7%
Underwriting income	**419**	429	(2.3)%	**1,290**	1,339	(3.6)%
Net investment income	**532**	503	5.7%	**1,563**	1,516	3.1%
Other (income) expense	**(1)**	(1)	—	**(4)**	(20)	(78.5)%
Segment income	**$ 952**	$ 933	1.9%	**$ 2,857**	$ 2,875	(0.6)%
Loss and loss expense ratio	**64.4%**	62.3%	2.1 pts	**64.6%**	63.0%	1.6 pts
Policy acquisition cost ratio	**14.4%**	15.2%	(0.8) pts	**14.2%**	14.7%	(0.5) pts
Administrative expense ratio	**8.1%**	8.3%	(0.2) pts	**7.8%**	7.9%	(0.1) pts
Combined ratio	**86.9%**	85.8%	1.1 pts	**86.6%**	85.6%	1.0 pt

Premiums
Net premiums written increased $253 million, or 7.9 percent, and $595 million, or 6.4 percent, for the three and nine months ended September 30, 2019, respectively, reflecting positive rate increases and new business written across most retail lines, including property, financial lines, excess casualty, global casualty, package and A&H, as well as in our wholesale and high excess Bermuda lines, and in our small commercial businesses.

Net premiums earned increased $166 million, or 5.5 percent, and $335 million, or 3.6 percent, for the three and nine months ended September 30, 2019, respectively, due to the growth in net premiums written described above. The table below shows the impact of large structured transactions as well as other transactions that are fully earned when written (e.g., audit and retrospective premium adjustments).

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S. dollars)	**2019**	2018	**2019**	2018
Net premiums written and earned in the same period	**$ 39**	$ (8)	**$ 386**	$ 334

Combined Ratio
The loss and loss expense ratio increased 2.1 percentage points and 1.6 percentage points for the three and nine months ended September 30, 2019, respectively, primarily due to lower favorable prior period development and reflecting higher than expected commercial property losses and earned price changes modestly below loss trends primarily in long-tail lines, partially offset by lower catastrophe losses.

The policy acquisition cost ratio decreased 0.8 percentage points and 0.5 percentage points for the three and nine months ended September 30, 2019, respectively, primarily due to a change in mix of business towards lower acquisition cost ratio lines and increased ceding commissions received from higher cessions under certain reinsurance agreements.

Catastrophe Losses and Prior Period Development

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S. dollars)	**2019**	2018	**2019**	2018
Catastrophe losses	**$ 88**	$ 196	**$ 319**	$ 347
Favorable prior period development	**$ 109**	$ 216	**$ 425**	$ 472

Catastrophe losses through September 30, 2019 and 2018 were primarily from the following events:

- 2019: Winter-related storms and other severe weather-related events in the U.S., Hurricane Dorian and Tropical Storm Imelda
- 2018: Hurricane Florence and severe weather-related events in the U.S.

Refer to the prior period development discussion in Note 4 to the Consolidated Financial Statements for additional information.

CAY Loss Ratio excluding Catastrophe Losses

	Three Months Ended September 30		Nine Months Ended September 30	
	2019	2018	**2019**	2018
Loss and loss expense ratio	**64.4 %**	62.3 %	**64.6 %**	63.0 %
Catastrophe losses	**(2.8)%**	(6.5)%	**(3.3)%**	(3.7)%
Prior period development	**3.9 %**	7.7 %	**4.5 %**	5.2 %
CAY loss ratio excluding catastrophe losses	**65.5 %**	63.5 %	**65.8 %**	64.5 %

The CAY loss ratio excluding catastrophe losses increased 2.0 percentage points and 1.3 percentage points for the three and nine months ended September 30, 2019, respectively, primarily due to higher than expected commercial property losses and earned price changes modestly below loss trends primarily in long-tail lines.

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.

(in millions of U.S. dollars, except for percentages)	Three Months Ended September 30 2019	2018	% Change Q-19 vs. Q-18	Nine Months Ended September 30 2019	2018	% Change YTD-19 vs. YTD-18
Net premiums written	**$ 1,251**	$ 1,218	2.7%	**$ 3,616**	$ 3,601	0.4%
Net premiums earned	**1,187**	1,167	1.7%	**3,509**	3,463	1.3%
Losses and loss expenses	**674**	860	(21.6)%	**2,178**	2,474	(11.9)%
Policy acquisition costs	**240**	236	1.6%	**708**	701	1.0%
Administrative expenses	**72**	69	3.8%	**211**	202	4.5%
Underwriting income	**201**	2	NM	**412**	86	378.5%
Net investment income	**66**	59	13.1%	**194**	177	9.7%
Other (income) expense	**1**	—	NM	**2**	1	51.5%
Amortization of purchased intangibles	**3**	4	(11.1)%	**9**	10	(11.1)%
Segment income	**$ 263**	$ 57	362.9%	**$ 595**	$ 252	136.4%
Loss and loss expense ratio	**56.9%**	73.7%	(16.8) pts	**62.1%**	71.5%	(9.4) pts
Policy acquisition cost ratio	**20.2%**	20.2%	—	**20.2%**	20.2%	—
Administrative expense ratio	**6.0%**	5.9%	0.1 pts	**6.0%**	5.8%	0.2 pts
Combined ratio	**83.1%**	99.8%	(16.7) pts	**88.3%**	97.5%	(9.2) pts

NM – not meaningful

Premiums
Net premiums written increased $33 million, or 2.7 percent, and $15 million, or 0.4 percent, for the three and nine months ended September 30, 2019, respectively, due to strong retention and rate increases, across most lines, partially offset by higher cessions in the current year related to the homeowners quota share reinsurance treaty effective October 1, 2018. In addition, the nine months ended September 30, 2018 benefited from a change we made to harmonize premium registration cut-off between our legacy registration systems.

Net premiums earned increased $20 million, or 1.7 percent, and $46 million, or 1.3 percent, for the three and nine months ended September 30, 2019, respectively, reflecting the growth in net premiums written described above.

Combined Ratio
The loss and loss expense ratio decreased 16.8 percentage points and 9.4 percentage points for the three and nine months ended September 30, 2019, respectively, primarily due to lower catastrophe losses and favorable prior period development in the current year compared to unfavorable prior period development in the prior year periods. Additionally, the prior year loss ratio was elevated principally due to increased frequency and severity, primarily non-catastrophe water and fire losses in our homeowners business. The decrease in the loss ratio for the nine months ended September 30, 2019 was partially offset by an increase in the underlying loss ratio, reflecting a re-evaluation of non-catastrophe loss activity.

Catastrophe Losses and Prior Period Development

(in millions of U.S. dollars)	Three Months Ended September 30 2019	2018	Nine Months Ended September 30 2019	2018
Catastrophe losses	**$ 83**	$ 136	**$ 329**	$ 521
Favorable (unfavorable) prior period development	**$ 62**	$ (58)	**$ 88**	$ (59)

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Catastrophe losses through September 30, 2019 and 2018 were primarily from the following events:
- 2019: Winter-related storms and other severe weather-related events in the U.S. and Hurricane Dorian
- 2018: Colorado rain and hailstorms, Hurricane Florence, California mudslides, Northeast winter storms, and other severe weather-related events in the U.S.

Refer to the prior period development discussion in Note 4 to the Consolidated Financial Statements for additional information.

CAY Loss Ratio excluding Catastrophe Losses

	Three Months Ended September 30		Nine Months Ended September 30	
	2019	2018	**2019**	2018
Loss and loss expense ratio	**56.9 %**	73.7 %	**62.1 %**	71.5 %
Catastrophe losses	**(7.0)%**	(11.6)%	**(9.4)%**	(15.1)%
Prior period development	**5.2 %**	(5.0)%	**2.5 %**	(1.7)%
CAY loss ratio excluding catastrophe losses	**55.1 %**	57.1 %	**55.2 %**	54.7 %

The CAY loss ratio excluding catastrophe losses decreased 2.0 percentage points for the three months ended September 30, 2019. The prior year loss ratio was elevated, principally due to increased frequency and severity, primarily non-catastrophe water and fire losses in our homeowners business. The CAY loss ratio excluding catastrophe losses increased 0.5 percentage points for the nine months ended September 30, 2019 due to an increase in the underlying loss ratio, reflecting a re-evaluation of non-catastrophe loss activity.

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.

	Three Months Ended September 30		% Change	Nine Months Ended September 30		% Change
(in millions of U.S. dollars, except for percentages)	**2019**	2018	Q-19 vs. Q-18	**2019**	2018	YTD-19 vs. YTD-18
Net premiums written	**$ 938**	$ 884	6.2%	**$ 1,534**	$ 1,380	11.2%
Net premiums earned	**941**	857	9.8%	**1,374**	1,251	9.8%
Adjusted losses and loss expenses (1)	**880**	727	21.0%	**1,163**	953	22.0%
Policy acquisition costs	**56**	49	14.7%	**90**	74	22.3%
Administrative expenses	**4**	2	214.0%	**9**	—	NM
Underwriting income	**1**	79	(98.8)%	**112**	224	(50.3)%
Net investment income	**8**	7	19.8%	**22**	20	7.3%
Other (income) expense	**—**	—	—	**1**	1	—
Amortization of purchased intangibles	**7**	7	—	**21**	21	—
Segment income	**$ 2**	$ 79	(97.6)%	**$ 112**	$ 222	(49.7)%
Loss and loss expense ratio	**93.5%**	84.9%	8.6 pts	**84.7%**	76.2%	8.5 pts
Policy acquisition cost ratio	**6.0%**	5.7%	0.3 pts	**6.6%**	5.9%	0.7 pts
Administrative expense ratio	**0.4%**	0.1%	0.3 pts	**0.6%**	—	0.6 pts
Combined ratio	**99.9%**	90.7%	9.2 pts	**91.9%**	82.1%	9.8 pts

NM – not meaningful

(1) Includes gains (losses) on crop derivatives of $(14) million and $(8) million for the three and nine months ended September 30, 2019, respectively, and $(8) million and $2 million in 2018, respectively.

Premiums
Net premiums written increased $54 million, or 6.2 percent, and $154 million, or 11.2 percent for the three and nine months ended September 30, 2019, respectively, primarily due to an increase in MPCI premium reflecting higher retention, the non-renewal of a quota-share treaty effective with the current crop year, and an increase in current year production.

Net premiums earned increased $84 million, or 9.8 percent, and $123 million, or 9.8 percent, for the three and nine months ended September 30, 2019, respectively, reflecting the growth in net premiums written described above.

Combined Ratio
The loss and loss expense ratio increased 8.6 percentage points and 8.5 percentage points for the three and nine months ended September 30, 2019, respectively, principally due to the downward revision in the 2019 crop year margin estimate reflecting the adverse impact of weather conditions, which resulted in a reduction to crop insurance underwriting income. Unfavorable prior period development in the current quarter related to our Agribusiness and lower favorable prior period development in the current year also adversely impacted the loss ratio.

The policy acquisition cost ratio increased 0.3 percentage points and 0.7 percentage points for the three and nine months ended September 30, 2019, respectively, primarily due to reinsurance ceded commission earned in the prior year that benefited acquisition expenses.

The administrative expense ratio increased 0.3 percentage points and 0.6 percentage points for the three and nine months ended September 30, 2019, respectively, primarily due to normal operating expense and inflationary increases and a reduction in the current year Administrative and Operating (A&O) reimbursements on the MPCI business we earned under the government program.

Catastrophe Losses and Prior Period Development

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S. dollars)	**2019**	2018	**2019**	2018
Catastrophe losses	**$ 3**	$ 8	**$ 7**	$ 11
Favorable (unfavorable) prior period development	**$ (18)**	$ 1	**$ 43**	$ 77

Catastrophe losses through September 30, 2019 and 2018 were primarily from severe weather-related events in the U.S. in our farm, ranch, and specialty P&C businesses.

Refer to the prior period development discussion in Note 4 to the Consolidated Financial Statements for additional information.

For the three months ended September 30, 2019, net unfavorable prior period development was $18 million. For the nine months ended September 30, 2019, net favorable prior period development was $43 million which included $72 million of favorable incurred losses and $3 million of lower acquisition costs due to lower than expected MPCI losses for the 2018 crop year, partially offset by a $32 million decrease in net premiums earned related to the MPCI profit and loss calculation formula. For the three months ended September 30, 2018, net favorable prior period development was $1 million. For the nine months ended September 30, 2018, net favorable prior period development was $77 million which included $113 million of favorable incurred losses and $4 million of lower acquisition costs due to lower than expected MPCI losses for the 2017 crop year, partially offset by a $40 million decrease in net premiums earned related to the MPCI profit and loss calculation formula.

CAY Loss Ratio excluding Catastrophe Losses

	Three Months Ended September 30		Nine Months Ended September 30	
	2019	2018	**2019**	2018
Loss and loss expense ratio	**93.5 %**	84.9 %	**84.7 %**	76.2 %
Catastrophe losses	**(0.3)%**	(0.9)%	**(0.5)%**	(0.9)%
Prior period development	**(1.9)%**	0.1 %	**3.2 %**	6.5 %
CAY loss ratio excluding catastrophe losses	**91.3 %**	84.1 %	**87.4 %**	81.8 %

The CAY loss ratio excluding catastrophe losses increased 7.2 percentage points and 5.6 percentage points for the three and nine months ended September 30, 2019, respectively, principally due to the downward revision in the 2019 crop year margin estimate reflecting the adverse impact of weather conditions.

Overseas General Insurance

Overseas General Insurance segment comprises Chubb International and Chubb Global Markets (CGM). Chubb International comprises our international 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.

	Three Months Ended September 30		% Change	Nine Months Ended September 30		% Change
(in millions of U.S. dollars, except for percentages)	**2019**	2018	Q-19 vs. Q-18	**2019**	2018	YTD-19 vs. YTD-18
Net premiums written	**$ 2,228**	$ 2,081	7.1%	**$ 6,881**	$ 6,664	3.3%
Net premiums written - constant dollars (1)			10.7%			8.3%
Net premiums earned	**2,256**	2,157	4.6%	**6,595**	6,425	2.6%
Losses and loss expenses	**1,154**	1,114	3.6%	**3,385**	3,263	3.7%
Policy acquisition costs	**630**	582	8.5%	**1,855**	1,754	5.8%
Administrative expenses	**257**	252	1.5%	**771**	757	1.8%
Underwriting income	**215**	209	3.1%	**584**	651	(10.3)%
Underwriting income - constant dollars (1)			9.3%			(2.9)%
Net investment income	**148**	155	(4.9)%	**443**	461	(4.0)%
Other (income) expense	**3**	(7)	NM	**10**	(12)	NM
Amortization of purchased intangibles	**11**	8	17.9%	**34**	29	14.2%
Segment income	**$ 349**	$ 363	(3.7)%	**$ 983**	$ 1,095	(10.2)%
Loss and loss expense ratio	**51.1%**	51.7%	(0.6) pts	**51.3%**	50.8%	0.5 pts
Policy acquisition cost ratio	**28.0%**	26.9%	1.1 pts	**28.1%**	27.3%	0.8 pts
Administrative expense ratio	**11.4%**	11.7%	(0.3) pts	**11.7%**	11.8%	(0.1) pts
Combined ratio	**90.5%**	90.3%	0.2 pts	**91.1%**	89.9%	1.2 pts

NM – not meaningful

Net Premiums Written by Region

(in millions of U.S. dollars, except for percentages)

Region	**2019**	**2019 % of Total**	2018	2018 % of Total	C$ (1) 2018	2019 vs. 2018	C$ (1) 2019 vs. 2018
				Three months ended September 30		Q-19 vs. Q-18 % Change	
Europe	**$ 782**	**35%**	$ 727	35%	$ 701	7.6%	11.6%
Latin America	**551**	**25%**	519	25%	502	6.0%	9.8%
Asia	**798**	**36%**	755	36%	733	5.8%	8.9%
Other (2)	**97**	**4%**	80	4%	77	21.8%	25.9%
Net premiums written	**$ 2,228**	**100%**	$ 2,081	100%	$ 2,013	7.1%	10.7%
				Nine months ended September 30		YTD-19 vs. YTD-18 % Change	
Europe	**$ 2,698**	**39%**	$ 2,641	40%	$ 2,520	2.2%	7.1%
Latin America	**1,657**	**24%**	1,597	24%	1,491	3.7%	11.1%
Asia	**2,259**	**33%**	2,176	33%	2,103	3.8%	7.5%
Other (2)	**267**	**4%**	250	3%	239	6.8%	11.5%
Net premiums written	**$ 6,881**	**100%**	$ 6,664	100%	$ 6,353	3.3%	8.3%

(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) Comprises Combined International, Eurasia and Africa region, and other international.

Premiums
Net premiums written increased $147 million and $217 million, or $215 million (10.7 percent) and $528 million (8.3 percent) on a constant-dollar basis for the three and nine months ended September 30, 2019, respectively, reflecting growth across all regions and most lines of business. P&C lines growth was across all regions and was principally due to positive rate increases and new business in property, casualty, and financial lines. Personal lines growth was driven by new business principally in Latin America and Europe. Accident and health (A&H) lines growth was principally in Asia and Latin America driven by new business.

Net premiums earned increased $99 million and $170 million, or $168 million (8.0 percent) and $481 million (7.9 percent) on a constant-dollar basis for the three and nine months ended September 30, 2019, respectively, reflecting the increase in net premiums written.

Combined Ratio
The loss and loss expense ratio decreased 0.6 percentage points for the three months ended September 30, 2019 primarily due to earned price changes modestly above loss trends and a change in mix of business towards products and regions that have a lower loss and loss expense ratio and a higher policy acquisition cost ratio, as well as lower catastrophe losses which was partially offset by lower favorable prior period development. The loss and loss expense ratio increased 0.5 percentage points for the nine months ended September 30, 2019 due to lower favorable prior period development, partially offset by lower catastrophe losses as well as the same factors driving the decrease for the three months ended September 30, 2019 as noted above.

The policy acquisition cost ratio increased 1.1 percentage points and 0.8 percentage points for the three and nine months ended September 30, 2019, respectively, due to a change in mix of business towards products and regions that have a higher policy acquisition cost ratio and lower loss and loss expense ratio as noted above and higher underwriting costs resulting from the successful acquisition of business.

The administrative expense ratio decreased 0.3 percentage points and 0.1 percentage points for the three and nine months ended September 30, 2019, respectively, primarily driven by higher underwriting costs as noted above.

Catastrophe Losses and Prior Period Development

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S. dollars)	**2019**	2018	**2019**	2018
Catastrophe losses	**$ 35**	$ 80	**$ 69**	$ 121
Favorable prior period development	**$ 25**	$ 72	**$ 49**	$ 166

Catastrophe losses through September 30, 2019 and 2018 were primarily from the following events:
- 2019: Typhoon Faxai, Hurricane Dorian, storms in Australia, and other international weather-related events
- 2018: Typhoons Jebi and Mangkhut and Hurricane Florence

Refer to the prior period development discussion in Note 4 to the Consolidated Financial Statements for additional information.

CAY Loss Ratio excluding Catastrophe Losses

	Three Months Ended September 30		Nine Months Ended September 30	
	2019	2018	**2019**	2018
Loss and loss expense ratio	**51.1 %**	51.7 %	**51.3 %**	50.8 %
Catastrophe losses	**(1.5)%**	(3.8)%	**(1.0)%**	(1.9)%
Prior period development	**1.1 %**	3.4 %	**0.7 %**	2.6 %
CAY loss ratio excluding catastrophe losses	**50.7 %**	51.3 %	**51.0 %**	51.5 %

The CAY loss ratio excluding catastrophe losses decreased 0.6 percentage points and 0.5 percentage points for the three and nine months ended September 30, 2019, respectively, primarily due to earned price changes modestly above loss trends and a change in mix of business towards products and regions that have a lower loss and loss expense ratio and a higher policy acquisition cost ratio.

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.

	Three Months Ended September 30		% Change	Nine Months Ended September 30		% Change
(in millions of U.S. dollars, except for percentages)	**2019**	2018	Q-19 vs. Q-18	**2019**	2018	YTD-19 vs. YTD-18
Net premiums written	**$ 141**	$ 164	(14.0)%	**$ 540**	$ 554	(2.5)%
Net premiums earned	**160**	157	1.9%	**487**	492	(1.1)%
Losses and loss expenses	**79**	86	(8.0)%	**245**	236	3.7%
Policy acquisition costs	**42**	40	5.8%	**127**	120	6.3%
Administrative expenses	**9**	10	(17.7)%	**26**	29	(12.8)%
Underwriting income	**30**	21	44.9%	**89**	107	(16.6)%
Net investment income	**55**	63	(12.9)%	**166**	192	(13.3)%
Other (income) expense	**(16)**	(13)	25.9%	**(40)**	(26)	52.6%
Segment income	**$ 101**	$ 97	4.6%	**$ 295**	$ 325	(9.1)%
Loss and loss expense ratio	**49.6%**	55.0%	(5.4) pts	**50.3%**	48.0%	2.3 pts
Policy acquisition cost ratio	**26.2%**	25.2%	1.0 pt	**26.1%**	24.3%	1.8 pts
Administrative expense ratio	**5.3%**	6.5%	(1.2) pts	**5.3%**	6.0%	(0.7) pts
Combined ratio	**81.1%**	86.7%	(5.6) pts	**81.7%**	78.3%	3.4 pts

Premiums

Net premiums written decreased $23 million, or $21 million (12.8 percent) on a constant-dollar basis, for the three months ended September 30, 2019, primarily due to the timing of a large treaty, renewed in the first quarter of 2019, which was previously written mainly in the third quarter of 2018, partially offset by an increase in new business writings. For the nine months ended September 30, 2019, net premiums written decreased $14 million, or $6 million (1.1 percent) on a constant-dollar basis, due to an increase in ceded retrocessions as well as reductions in the International motor line, offset by an increase in new business written in property and marine lines.

Net premiums earned increased $3 million, or $5 million (3.1 percent) on a constant-dollar basis, for the three months ended September 30, 2019 principally reflecting an increase in new business writings. For the nine months ended September 30, 2019, net premiums earned decreased $5 million, but increased $3 million (0.7 percent) on a constant-dollar basis, reflecting new business writings in 2018 and 2019.

Combined Ratio

The loss and loss expense ratio decreased 5.4 percentage points for the three months ended September 30, 2019 primarily due to lower catastrophe losses and favorable loss experience in property and motor lines. The loss and loss expense ratio increased 2.3 percentage points for the nine months ended September 30, 2019 primarily due to lower favorable prior period development, partially offset by lower catastrophe losses and favorable loss experience in property and motor lines. In addition, the increase for the nine months ended September 30, 2019 was also driven by proportionally less premiums earned from property catastrophe business, which has a lower loss ratio.

The policy acquisition cost ratio increased 1.0 percentage point and 1.8 percentage points for the three and nine months ended September 30, 2019, respectively, primarily due to higher profit commissions paid on property and motor lines treaties with adjustable commission features, partially offset by favorable commission benefits on increased ceded retrocessions.

The administrative expense ratio decreased 1.2 percentage points and 0.7 percentage points for the three and nine months ended September 30, 2019, respectively, primarily driven by lower variable costs.

Catastrophe Losses and Prior Period Development

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S dollars)	**2019**	2018	**2019**	2018
Catastrophe losses [(1)]	**$ 25**	$ 34	**$ 35**	$ 45
Favorable prior period development	**$ 25**	$ 24	**$ 33**	$ 54

(1) Excludes catastrophe reinstatement premiums

Catastrophe losses through September 30, 2019 and 2018 were primarily from the following events:
- 2019: Hurricane Dorian and various U.S. and Japanese severe weather-related events
- 2018: Hurricane Florence, Typhoon Jebi, Windstorm Friederike, and other various U.S., Canada, and Japanese severe weather-related events

Refer to the prior period development discussion in Note 4 to the Consolidated Financial Statements for additional information.

CAY Loss Ratio excluding Catastrophe Losses

	Three Months Ended September 30		Nine Months Ended September 30	
	2019	2018	**2019**	2018
Loss and loss expense ratio	**49.6 %**	55.0 %	**50.3 %**	48.0 %
Catastrophe losses	**(15.4)%**	(20.6)%	**(7.0)%**	(8.7)%
Prior period development	**15.7 %**	16.8 %	**6.7 %**	11.3 %
CAY loss ratio excluding catastrophe losses	**49.9 %**	51.2 %	**50.0 %**	50.6 %

The CAY loss ratio excluding catastrophe losses decreased 1.3 percentage points and 0.6 percentage points for the three and nine months ended September 30, 2019, respectively, due to favorable loss experience in property and motor lines. The decrease for the nine months ended September 30, 2019 was partially offset by proportionally less premiums earned from property catastrophe business, which has a lower loss ratio.

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.

	Three Months Ended September 30		% Change	Nine Months Ended September 30		% Change
(in millions of U.S. dollars, except for percentages)	**2019**	2018	Q-19 vs. Q-18	**2019**	2018	YTD-19 vs. YTD-18
Net premiums written	**$ 612**	$ 564	8.5 %	**$ 1,770**	$ 1,688	4.8 %
Net premiums earned	**598**	551	8.7 %	**1,730**	1,643	5.3 %
Losses and loss expenses	**190**	195	(2.0)%	**581**	584	(0.5)%
Policy benefits (1)	**158**	127	23.2 %	**515**	428	20.2 %
(Gains) losses from fair value changes in separate account assets (1)	**7**	14	(46.3)%	**(20)**	18	NM
Policy acquisition costs	**176**	139	27.2 %	**454**	405	12.2 %
Administrative expenses	**80**	77	3.8 %	**237**	235	1.0 %
Net investment income	**92**	85	7.8 %	**278**	253	10.0 %
Life Insurance underwriting income	**79**	84	(6.8)%	**241**	226	6.4 %
Other (income) expense (1)	**(17)**	6	NM	**(37)**	6	NM
Amortization of purchased intangibles	**1**	—	NM	**2**	1	24.7 %
Segment income	**$ 95**	$ 78	20.9 %	**$ 276**	$ 219	25.9 %

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 $48 million and $82 million, or $51 million (9.1 percent) and $103 million (6.2 percent) on a constant-dollar basis, for the three and nine months ended September 30, 2019, respectively, primarily reflecting growth in our Asian and Latin American international life operations and North American Combined Insurance supplemental A&H program, 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:

	Three Months Ended September 30			% Change		Nine Months Ended September 30			% Change	
(in millions of U.S. dollars, except for percentages)	**2019**	2018	C$ (1) 2018	Q-19 vs. Q-18	C$ (1) Q-19 vs. Q-18	**2019**	2018	C$ (1) 2018	Y-19 vs. Y-18	C$ (1) Y-19 vs. Y-18
Deposits collected on Universal life and investment contracts	**$ 369**	$ 392	$ 381	(5.9)%	(3.0)%	**$ 1,059**	$ 1,163	$ 1,124	(9.0)%	(5.8)%

(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 both the three and nine months ended September 30, 2019 primarily due to a decline in Taiwan driven by competitive market conditions, partially offset by growth in Vietnam.

Life Insurance underwriting income and Segment income
Life Insurance underwriting income decreased $5 million for the three months ended September 30, 2019 as the prior year benefited from a favorable reserve development of $8 million. Life Insurance underwriting income increased $15 million for the nine months ended September 30, 2019, principally reflecting an increase in net investment income, partially offset by a favorable reserve development in the prior year. Additionally, segment income benefited from other income of $17 million and $37 million, for the three and nine months ended September 30, 2019, respectively, principally due to our share of net income from Huatai Life, our partially-owned life insurance entity in China.

Corporate

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

	Three Months Ended September 30		% Change	Nine Months Ended September 30		% Change
(in millions of U.S. dollars, except for percentages)	**2019**	2018	Q-19 vs. Q-18	**2019**	2018	YTD-19 vs. YTD-18
Losses and loss expenses	**$ 38**	$ 13	184.6 %	**$ 83**	$ 72	14.9 %
Administrative expenses	**74**	58	31.5 %	**211**	200	6.2 %
Underwriting loss	**112**	71	59.1 %	**294**	272	8.1 %
Net investment income (loss)	**(28)**	(49)	(42.9)%	**(98)**	(162)	(40.1)%
Interest expense	**138**	164	(16.1)%	**418**	488	(14.5)%
Net realized gains (losses)	**(141)**	27	NM	**(467)**	33	NM
Other (income) expense	**(34)**	(144)	(75.6)%	**(238)**	(275)	(13.4)%
Amortization of purchased intangibles	**54**	64	(14.2)%	**163**	192	(14.3)%
Chubb integration expenses	**2**	16	(89.9)%	**9**	39	(76.9)%
Income tax expense	**230**	183	25.8 %	**626**	536	16.8 %
Net loss	**$ (671)**	$ (376)	78.7 %	**$ (1,837)**	$ (1,381)	33.1 %

NM - not meaningful

Losses and loss expenses for the three months ended September 30, 2019 and 2018 were primarily from adverse development relating to our Brandywine environmental exposures and unallocated loss adjustment expenses of the A&E claims operations. In addition, the prior year included a favorable adjustment in our estimate of reinsurance recoverables. Losses and loss expenses for the nine months ended September 30, 2019 and 2018 also included charges in the second quarter for our non-A&E run-off casualty exposures, including workers' compensation.

Administrative expenses increased $16 million and $11 million for the three and nine months ended September 30, 2019, respectively, primarily due to higher global advertising expenses.

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. Chubb integration expenses in 2019 principally consisted of small residual items related to the Chubb acquisition, and Chubb integration expenses in 2018 principally consisted of personnel-related expenses and rebranding.

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 US 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, 2019, our effective income tax rate was 17.4 percent and 16.0 percent, respectively, compared to 12.9 percent, in both prior year periods. The effective income tax rates in the current year were higher compared to the prior year periods primarily due to a higher percentage of income generated in higher tax jurisdictions, a higher percentage of realized losses generated in lower tax jurisdictions and lower amounts of tax-exempt income.

In a referendum held on May 19, 2019, the Swiss voters affirmed the Federal Act on Tax Reform (Swiss tax reform). The reform was enacted on August 6, 2019. The majority of the measures associated with this reform will be effective on January 1, 2020. While we are still reviewing the impact, we do not expect these reforms to have a material impact on our effective tax rate, financial condition, or results of operations.

Non-GAAP Reconciliation

In presenting our results, we included and discussed certain non-GAAP measures. These non-GAAP measures, which may be defined differently by other companies, are important for an understanding of our overall results of operations and financial condition. However, they should not be viewed as a substitute for measures determined in accordance with generally accepted accounting principles (GAAP).

We provide financial measures, including net premiums written, net premiums earned, and underwriting income on a constant-dollar basis. We believe it is useful to evaluate the trends in our results exclusive of the effect of fluctuations in exchange rates between the U.S. dollar and the currencies in which our international business is transacted, as these exchange rates could fluctuate significantly between periods and distort the analysis of trends. The impact is determined by assuming constant foreign exchange rates between periods by translating prior period results using the same local currency exchange rates as the comparable current period.

P&C performance metrics 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 the sum of the loss and loss expense ratio, acquisition cost ratio and the administrative expense ratio excluding the life business and including the realized gains and losses on the 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 impacts underwriting results. We view gains and losses on these derivatives as part of the results of our underwriting operations.

CAY P&C combined ratio excluding catastrophe losses (CATs) excludes CATs and prior period development (PPD) from the P&C combined ratio. 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 CATs, 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 P&C 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 PPD 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 adjustable 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.

For this disclosure purpose, the normalized level of CATs, or expected level of CATs, is not intended to represent a probability weighted expectation for the company but rather to represent management's view of what might be more typical for a given period, 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). The following table presents CATs above (below) expected level and the impact on the combined ratio:

	Three Months Ended September 30		Nine Months Ended September 30	
(in millions of U.S. dollars, except for percentage points)	**2019**	2018	**2019**	2018
Actual level of CATs - pre-tax	**$ 232**	$ 450	**$ 757**	$ 1,041
Less: Expected level of CATs - pre-tax	**336**	342	**783**	772
CATs above (below) expected level - pre-tax	**$ (104)**	$ 108	**$ (26)**	$ 269
Adverse (favorable) impact of CATs above (below) an expected level on combined ratio	**(1.3)%**	1.5%	**(0.1)%**	1.4%

The following tables present the calculation of combined ratio, as reported for each segment to P&C combined ratio, adjusted for catastrophe losses (CATs) and PPD:

Three Months Ended September 30, 2019 (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		$ 2,051	$ 674	$ 866	$ 1,154	$ 79	$ 38	$ 4,862
Realized (gains) losses on crop derivatives		—	—	14	—	—	—	14
Adjusted losses and loss expenses	A	$ 2,051	$ 674	$ 880	$ 1,154	$ 79	$ 38	$ 4,876
CATs (excludes reinstatement premiums)		(88)	(83)	(3)	(35)	(25)	—	(234)
PPD and related adjustments								
PPD, net of related adjustments - favorable (unfavorable)		109	62	(18)	25	25	(36)	167
Net premiums earned adjustments on PPD - unfavorable (favorable)		39	—	—	—	1	—	40
Expense adjustments - unfavorable (favorable)		3	—	—	—	(1)	—	2
PPD reinstatement premiums - unfavorable (favorable)		(1)	(1)	—	1	—	—	(1)
PPD - gross of related adjustments - favorable (unfavorable)		150	61	(18)	26	25	(36)	208
CAY loss and loss expense ex CATs	**B**	**$ 2,113**	**$ 652**	**$ 859**	**$ 1,145**	**$ 79**	**$ 2**	**$ 4,850**
Policy acquisition costs and administrative expenses								
Policy acquisition costs and administrative expenses	C	$ 715	$ 312	$ 60	$ 887	$ 51	$ 74	$ 2,099
Expense adjustments - favorable (unfavorable)		(3)	—	—	—	1	—	(2)
Policy acquisition costs and administrative expenses, adjusted	D	$ 712	$ 312	$ 60	$ 887	$ 52	$ 74	$ 2,097
Denominator								
Net premiums earned	**E**	**$ 3,185**	**$ 1,187**	**$ 941**	**$ 2,256**	**$ 160**		**$ 7,729**
Reinstatement premiums (collected) expensed on catastrophe losses		—	—	—	—	(2)		(2)
Net premiums earned adjustments on PPD - unfavorable (favorable)		39	—	—	—	1		40
PPD reinstatement premiums - unfavorable (favorable)		(1)	(1)	—	1	—		(1)
Net premiums earned excluding adjustments	**F**	**$ 3,223**	**$ 1,186**	**$ 941**	**$ 2,257**	**$ 159**		**$ 7,766**
P&C Combined ratio								
Loss and loss expense ratio	A/E	64.4%	56.9%	93.5%	51.1%	49.6%		63.1%
Policy acquisition cost and administrative expense ratio	C/E	22.5%	26.2%	6.4%	39.4%	31.5%		27.1%
P&C Combined ratio		86.9%	83.1%	99.9%	90.5%	81.1%		90.2%
CAY P&C Combined ratio ex CATs								
Loss and loss expense ratio, adjusted	B/F	65.5%	55.1%	91.3%	50.7%	49.9%		62.4%
Policy acquisition cost and administrative expense ratio, adjusted	D/F	22.1%	26.2%	6.4%	39.3%	32.2%		27.1%
CAY P&C Combined ratio ex CATs		87.6%	81.3%	97.7%	90.0%	82.1%		89.5%
Combined ratio								

Combined ratio	**90.0%**
Add: impact of gains and losses on crop derivatives	**0.2%**
P&C Combined ratio	**90.2%**

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.

Three 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		$ 1,881	$ 860	$ 719	$ 1,114	$ 86	$ 13	$ 4,673
Realized (gains) losses on crop derivatives		—	—	8	—	—	—	8
Adjusted losses and loss expenses	A	$ 1,881	$ 860	$ 727	$ 1,114	$ 86	$ 13	$ 4,681
CATs (excludes reinstatement premiums)		(196)	(136)	(8)	(80)	(34)	—	(454)
PPD and related adjustments								
PPD, net of related adjustments - favorable (unfavorable)		216	(58)	1	72	24	(12)	243
Net premiums earned adjustments on PPD - unfavorable (favorable)		40	—	—	—	4	—	44
Expense adjustments - unfavorable (favorable)		1	—	—	—	—	—	1
PPD reinstatement premiums - unfavorable (favorable)		1	1	—	2	—	—	4
PPD - gross of related adjustments - favorable (unfavorable)		258	(57)	1	74	28	(12)	292
CAY loss and loss expense ex CATs	B	$ 1,943	$ 667	$ 720	$ 1,108	$ 80	$ 1	$ 4,519
Policy acquisition costs and administrative expenses								
Policy acquisition costs and administrative expenses	C	$ 709	$ 305	$ 51	$ 834	$ 50	$ 58	$ 2,007
Expense adjustments - favorable (unfavorable)		(1)	—	—	—	—	—	(1)
Policy acquisition costs and administrative expenses, adjusted	D	$ 708	$ 305	$ 51	$ 834	$ 50	$ 58	$ 2,006
Denominator								
Net premiums earned	E	$ 3,019	$ 1,167	$ 857	$ 2,157	$ 157		$ 7,357
Reinstatement premiums (collected) expensed on catastrophe losses		—	—	—	—	(4)		(4)
Net premiums earned adjustments on PPD - unfavorable (favorable)		40	—	—	—	4		44
PPD reinstatement premiums - unfavorable (favorable)		1	1	—	2	—		4
Net premiums earned excluding adjustments	F	$ 3,060	$ 1,168	$ 857	$ 2,159	$ 157		$ 7,401
P&C Combined ratio								
Loss and loss expense ratio	A/E	62.3%	73.7%	84.9%	51.7%	55.0%		63.6%
Policy acquisition cost and administrative expense ratio	C/E	23.5%	26.1%	5.8%	38.6%	31.7%		27.3%
P&C Combined ratio		85.8%	99.8%	90.7%	90.3%	86.7%		90.9%
CAY P&C Combined ratio ex CATs								
Loss and loss expense ratio, adjusted	B/F	63.5%	57.1%	84.1%	51.3%	51.2%		61.1%
Policy acquisition cost and administrative expense ratio, adjusted	D/F	23.2%	26.1%	5.8%	38.7%	31.6%		27.1%
CAY P&C Combined ratio ex CATs		86.7%	83.2%	89.9%	90.0%	82.8%		88.2%
Combined ratio								
Combined ratio								90.8%

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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Nine Months Ended September 30, 2019 (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		$ 6,238	$ 2,178	$ 1,155	$ 3,385	$ 245	$ 83	$ 13,284
Realized (gains) losses on crop derivatives		—	—	8	—	—	—	8
Adjusted losses and loss expenses	A	$ 6,238	$ 2,178	$ 1,163	$ 3,385	$ 245	$ 83	$ 13,292
CATs (excludes reinstatement premiums)		(319)	(329)	(7)	(69)	(35)	—	(759)
PPD and related adjustments								
PPD, net of related adjustments - favorable (unfavorable)		425	88	43	49	33	(79)	559
Net premiums earned adjustments on PPD - unfavorable (favorable)		38	—	32	—	1	—	71
Expense adjustments - unfavorable (favorable)		(3)	—	(3)	—	(1)	—	(7)
PPD reinstatement premiums - unfavorable (favorable)		(1)	(4)	—	1	—	—	(4)
PPD - gross of related adjustments - favorable (unfavorable)		459	84	72	50	33	(79)	619
CAY loss and loss expense ex CATs	**B**	**$ 6,378**	**$ 1,933**	**$ 1,228**	**$ 3,366**	**$ 243**	**$ 4**	**$ 13,152**
Policy acquisition costs and administrative expenses								
Policy acquisition costs and administrative expenses	C	$ 2,132	$ 919	$ 99	$ 2,626	$ 153	$ 211	$ 6,140
Expense adjustments - favorable (unfavorable)		3	—	3	—	1	—	7
Policy acquisition costs and administrative expenses, adjusted	D	$ 2,135	$ 919	$ 102	$ 2,626	$ 154	$ 211	$ 6,147
Denominator								
Net premiums earned	**E**	**$ 9,660**	**$ 3,509**	**$ 1,374**	**$ 6,595**	**$ 487**		**$ 21,625**
Reinstatement premiums (collected) expensed on catastrophe losses		—	—	—	—	(2)		(2)
Net premiums earned adjustments on PPD - unfavorable (favorable)		38	—	32	—	1		71
PPD reinstatement premiums - unfavorable (favorable)		(1)	(4)	—	1	—		(4)
Net premiums earned excluding adjustments	**F**	**$ 9,697**	**$ 3,505**	**$ 1,406**	**$ 6,596**	**$ 486**		**$ 21,690**
P&C Combined ratio								
Loss and loss expense ratio	A/E	64.6%	62.1%	84.7%	51.3%	50.3%		61.5%
Policy acquisition cost and administrative expense ratio	C/E	22.0%	26.2%	7.2%	39.8%	31.4%		28.4%
P&C Combined ratio		86.6%	88.3%	91.9%	91.1%	81.7%		89.9%
CAY P&C Combined ratio ex CATs								
Loss and loss expense ratio, adjusted	B/F	65.8%	55.2%	87.4%	51.0%	50.0%		60.6%
Policy acquisition cost and administrative expense ratio, adjusted	D/F	22.0%	26.2%	7.2%	39.8%	31.7%		28.4%
CAY P&C Combined ratio ex CATs		87.8%	81.4%	94.6%	90.8%	81.7%		89.0%
Combined ratio								
Combined ratio								89.9%
Add: impact of gains and losses on crop								

derivatives	—
P&C Combined ratio	**89.9%**

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.

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
CATs (excludes reinstatement premiums)		(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								
Loss and loss expense ratio	**A/E**	63.0%	71.5%	76.2%	50.8%	48.0%		61.4%
Policy acquisition cost 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 cost 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								—

P&C Combined ratio	89.8%

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.

Other Income and Expense

(in millions of U.S. dollars)	Three Months Ended September 30 2019	Three Months Ended September 30 2018	Nine Months Ended September 30 2019	Nine Months Ended September 30 2018
Equity in net (income) loss of partially-owned entities	**$ (81)**	$ (178)	**$ (353)**	$ (354)
(Gains) losses from fair value changes in separate account assets (1)	**7**	14	**(20)**	18
Federal excise and capital taxes	**5**	7	**17**	14
Other	**12**	12	**30**	15
Other (income) expense	**$ (57)**	$ (145)	**$ (326)**	$ (307)

(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 $76 million and $229 million for the three and nine months ended September 30, 2019, respectively, compared with $83 million and $253 million, respectively, in the prior year periods. The decrease in amortization expense of purchased intangibles reflects lower intangible amortization expense related to agency distribution relationships and renewal rights and no expense related to internally developed software, which was fully amortized in 2018, partially offset by a lower amortization benefit from the fair value adjustment on unpaid losses and loss expenses.

The following table presents, as of September 30, 2019, the estimated pre-tax amortization expense (benefit) of purchased intangibles, at current foreign currency exchange rates, for the fourth quarter of 2019 and the next five years:

	Associated with the Chubb Corp Acquisition				
For the Years Ending December 31 (in millions of U.S. dollars)	Agency distribution relationships and renewal rights	Fair value adjustment on Unpaid losses and loss expenses	Total (1)	Other intangible assets (2)	Total Amortization of purchased intangibles
Fourth quarter of 2019	$ 70	$ (15)	$ 55	$ 21	$ 76
2020	238	(35)	203	86	289
2021	215	(20)	195	85	280
2022	196	(15)	181	94	275
2023	177	(6)	171	92	263
2024	159	(5)	154	86	240
Total	$ 1,055	$ (96)	$ 959	$ 464	$ 1,423

(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, 2019, the deferred tax liability associated with Other intangible assets (excluding the fair value adjustment on Unpaid losses and loss expense) was $1,368 million.

The following table presents, as of September 30, 2019, the expected reduction of the deferred tax liability associated with Other intangible assets (which reduces as agency distribution relationships and renewal rights and other intangible assets amortize), at current foreign currency exchange rates, for the fourth quarter of 2019 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 2019	$	20
2020		72
2021		67
2022		65
2023		60
2024		55
Total	$	339

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

The following table presents at September 30, 2019, 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 2019 and for the next five years:

	Amortization (expense) benefit of the fair value adjustment on			
For the Years Ending December 31 (in millions of U.S. dollars)		Acquired invested assets (1)		Assumed long-term debt (2)
Fourth quarter of 2019	$	(35)	$	6
2020		(135)		21
2021		(105)		21
2022		(92)		21
2023		—		21
2024		—		21
Total	$	(367)	$	111

(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 the estimated interest expense for the fourth quarter of 2019 based on our existing debt obligations as well as fees based on our expected usage of certain facilities including letters of credit, collateral fees, and repurchase agreements.

Our estimated fixed interest expense, at current foreign currency exchange rates, is based on outstanding debt obligations during the period. We redeemed the $500 million 5.9 percent senior note on June 15, 2019, therefore, no interest expense was included after the date of redemption.

We issued €575 million of 0.875 percent and €575 million of 1.4 percent Euro denominated senior notes on June 18, 2019 ($650 million each based on the foreign exchange rate at the date of issuance). Interest expense is included after the date of issuance. Refer to Note 5 to the Consolidated Financial Statements for further information.

Our estimated variable interest expense is based on expected usage and interest rates and may fluctuate. These interest expenses include: fees on collateral, repurchase agreements, and credit facilities.

				Estimated Interest Expense	
	First Quarter	Second Quarter	**Third Quarter**	Fourth Quarter	Full Year
(in millions of U.S. dollars)	2019	2019	**2019**	2019	2019
Fixed interest expense based on outstanding debt	$ 124	$ 123	**$ 120**	$ 120	$ 487
Variable interest expense based on expected usage	21	22	**23**	19	85
Adjusted interest expense	$ 145	$ 145	**$ 143**	$ 139	$ 572
Amortization of the fair value of debt related to the Chubb Corp acquisition	(5)	(5)	**(5)**	(6)	(21)
Total interest expense, including amortization of the fair value of debt	$ 140	$ 140	**$ 138**	$ 133	$ 551

	Actual Interest Expense				
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Full Year
(in millions of U.S. dollars)	2018	2018	2018	2018	2018
Fixed interest expense based on outstanding debt	$ 140	$ 131	$ 125	$ 124	$ 520
Variable interest expense	29	46	45	34	154
Adjusted interest expense	$ 169	$ 177	$ 170	$ 158	$ 674
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	$ 153	$ 641

Net Investment Income

(in millions of U.S. dollars)	Three Months Ended September 30 2019	Three Months Ended September 30 2018	Nine Months Ended September 30 2019	Nine Months Ended September 30 2018
Fixed maturities [1]	**$ 862**	$ 779	**$ 2,533**	$ 2,329
Short-term investments	**21**	26	**67**	66
Other interest income [2]	**7**	32	**19**	98
Equity securities	**6**	7	**22**	26
Other investments	**20**	21	**57**	64
Gross investment income	**916**	865	**2,698**	2,583
Investment expenses	**(43)**	(42)	**(130)**	(126)
Net investment income	**$ 873**	$ 823	**$ 2,568**	$ 2,457
[1] Includes amortization expense related to fair value adjustment on acquired invested assets related to the Chubb Corp acquisition	**$ (37)**	$ (60)	**$ (126)**	$ (193)

[2] 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 6.0 percent and 4.5 percent for the three and nine months ended September 30, 2019, respectively, compared with the prior year periods. The increase was primarily due to higher average invested assets, partially offset by a reduction in the usage of notional cash pooling programs and unfavorable foreign exchange.

Investment income for private equities where we own less than three percent is included within Net investment income and is shown in "Other investments" in the table above. Investment income for private equities where we own more than three percent is included within Other income (expense) in the Consolidated statements of operations. The mark-to-market movement for private equities is included within either Other income (expense) or Net realized gains (losses) based on our percentage of ownership, which in total, was as follows:

(in millions of U.S. dollars)	March 31 2019	June 30 2019	Three Months Ended September 30 2019	Nine Months Ended September 30 2019
Total mark-to-market on private equity, pre-tax	$ (47)	$ 240	**$ 34**	**$ 227**

(in millions of U.S. dollars)	March 31 2018	June 30 2018	September 30 2018	Three Months Ended December 31 2018	Year Ended December 31 2018
Total mark-to-market on private equity, pre-tax	$ 74	$ 86	$ 157	$ (19)	$ 298

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. 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. Additionally, Net income is impacted through the reporting of changes in the fair value of equity securities and private equity securities where we own less than three percent and 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 (loss) in Shareholders' equity in the Consolidated balance sheets.

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

	Three Months Ended September 30, 2019			Three Months Ended September 30, 2018		
(in millions of U.S. dollars)	**Net Realized Gains (Losses)**	**Net Unrealized Gains (Losses)**	**Net Impact**	Net Realized Gains (Losses)	Net Unrealized Gains (Losses)	Net Impact
Fixed maturities	**$ (11)**	**$ 705**	**$ 694**	$ (38)	$ (213)	$ (251)
Fixed income and equity derivatives	**(97)**	**—**	**(97)**	37	—	37
Public equity	**24**	**—**	**24**	48	—	48
Mark-to-market on public equity	**(21)**	**—**	**(21)**	(13)	—	(13)
Private equity	**(2)**	**—**	**(2)**	—	—	—
Mark-to-market on private equity (1)	**(2)**	**—**	**(2)**	5	—	5
Total investment portfolio (2)	**(109)**	**705**	**596**	39	(213)	(174)
Variable annuity reinsurance derivative transactions, net of applicable hedges	**(112)**	**—**	**(112)**	(46)	—	(46)
Other derivatives	**(14)**	**—**	**(14)**	(8)	—	(8)
Foreign exchange	**84**	**(193)**	**(109)**	39	(482)	(443)
Other	**(4)**	**(17)**	**(21)**	(5)	(21)	(26)
Net gains (losses), pre-tax	**$ (155)**	**$ 495**	**$ 340**	$ 19	$ (716)	$ (697)

(1) Represents mark-to-market movements for private equity investments where we own less than three percent.

(2) For the three months ended September 30, 2019 and 2018, other-than-temporary impairments in Net realized gains (losses) included $24 million and $11 million, respectively, for fixed maturities.

	Nine Months Ended September 30, 2019			Nine Months Ended September 30, 2018		
(in millions of U.S. dollars)	**Net Realized Gains (Losses)**	**Net Unrealized Gains (Losses)**	**Net Impact**	Net Realized Gains (Losses)	Net Unrealized Gains (Losses)	Net Impact
Fixed maturities	**$ (43)**	**$ 3,834**	**$ 3,791**	$ (142)	$ (1,921)	$ (2,063)
Fixed income and equity derivatives	**(408)**	**—**	**(408)**	78	—	78
Public equity	**57**	**—**	**57**	63	—	63
Mark-to-market on public equity	**9**	**—**	**9**	(41)	—	(41)
Private equity	**(4)**	**—**	**(4)**	—	—	—
Mark-to-market on private equity (1)	**(14)**	**—**	**(14)**	23	—	23
Total investment portfolio (2)	**(403)**	**3,834**	**3,431**	(19)	(1,921)	(1,940)
Variable annuity reinsurance derivative transactions, net of applicable hedges	**(146)**	**—**	**(146)**	11	—	11
Other derivatives	**(8)**	**—**	**(8)**	2	—	2
Foreign exchange	**86**	**(143)**	**(57)**	102	(659)	(557)
Other	**(4)**	**(62)**	**(66)**	(61)	(61)	(122)
Net gains (losses), pre-tax	**$ (475)**	**$ 3,629**	**$ 3,154**	$ 35	$ (2,641)	$ (2,606)

(1) Represents mark-to-market movements for private equity investments where we own less than three percent.

(2) For the nine months ended September 30, 2019 and 2018, other-than-temporary impairments in Net realized gains (losses) included $50 million and $16 million, respectively, for fixed maturities.

The variable annuity reinsurance derivative transactions resulted in realized losses of $112 million and $146 million for the three and nine months ended September 30, 2019, respectively, reflecting a net increase in the fair value of GLB liabilities of $106 million and $57 million, respectively. The net increase in the fair value of GLB liabilities was principally due to lower interest rates. 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 $6 million and $89 million for the three and nine months ended September 30, 2019, respectively, related to other derivative instruments.

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 other 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 3.8 years and 3.7 years at September 30, 2019 and December 31, 2018, respectively. We estimate that a 100 basis point (bps) increase in interest rates would reduce the valuation of our fixed income portfolio by approximately $3.8 billion at September 30, 2019.

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

	September 30, 2019		December 31, 2018	
(in millions of U.S. dollars)	**Fair Value**	**Cost/ Amortized Cost**	Fair Value	Cost/ Amortized Cost
Fixed maturities available for sale	**$ 85,044**	**$ 82,036**	$ 78,470	$ 79,323
Fixed maturities held to maturity	**13,096**	**12,622**	13,259	13,435
Short-term investments	**2,835**	**2,838**	3,016	3,016
	100,975	**97,496**	94,745	95,774
Equity securities	**722**	**722**	770	770
Other investments	**5,955**	**5,955**	5,277	5,277
Total investments	**$ 107,652**	**$ 104,173**	$ 100,792	$ 101,821

The fair value of our total investments increased $6.9 billion during the nine months ended September 30, 2019, primarily due to unrealized appreciation driven by declining interest rates, the investing of operating cash flows and the investing of net proceeds from the debt issuance. This increase was partially offset by the payment of dividends on our Common Shares and share repurchases.

The following tables present the market value of our fixed maturities and short-term investments at September 30, 2019 and December 31, 2018. The first table lists investments according to type and second according to S&P credit rating:

	September 30, 2019		December 31, 2018	
(in millions of U.S. dollars, except for percentages)	Market Value	% of Total	Market Value	% of Total
Treasury / Agency	$ 4,840	5%	$ 5,327	6%
Corporate and asset-backed	33,881	34%	29,091	31%
Mortgage-backed	21,488	21%	18,026	19%
Municipal	13,369	13%	16,327	17%
Non-U.S.	24,562	24%	22,958	24%
Short-term investments	2,835	3%	3,016	3%
Total	$ 100,975	100%	$ 94,745	100%
AAA	$ 14,696	15%	$ 14,571	15%
AA	37,752	37%	36,715	39%
A	18,977	19%	17,253	18%
BBB	13,228	13%	12,035	13%
BB	9,317	9%	8,363	9%
B	6,739	7%	5,596	6%
Other	266	—	212	—
Total	$ 100,975	100%	$ 94,745	100%

Corporate and asset-backed securities

The following table presents our 10 largest global exposures to corporate bonds by market value at September 30, 2019:

(in millions of U.S. dollars)	Market Value
Wells Fargo & Co	$ 630
JP Morgan Chase & Co	576
Bank of America Corp	558
Comcast Corp	459
HSBC Holdings Plc	385
AT&T Inc	384
Verizon Communications Inc	378
Citigroup Inc	359
Morgan Stanley	337
Goldman Sachs Group Inc	337

Mortgage-backed securities

	S&P Credit Rating					Market Value	Amortized Cost
September 30, 2019 (in millions of U.S. dollars)	AAA	AA	A	BBB	BB and below	Total	Total
Agency residential mortgage-backed (RMBS)	$ 191	$ 17,606	$ —	$ —	$ —	$ 17,797	$ 17,257
Non-agency RMBS	132	48	74	17	11	282	280
Commercial mortgage-backed	3,031	247	125	6	—	3,409	3,311
Total mortgage-backed securities	$ 3,354	$ 17,901	$ 199	$ 23	$ 11	$ 21,488	$ 20,848

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 SE which is headquartered in France 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 50 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. 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, 2019:

(in millions of U.S. dollars)	Market Value	Amortized Cost
Republic of Korea	$ 1,056	$ 926
United Kingdom	893	860
Canada	848	833
Federative Republic of Brazil	732	709
Kingdom of Thailand	644	544
Province of Ontario	632	616
United Mexican States	551	538
Province of Quebec	496	480
Commonwealth of Australia	356	301
French Republic	312	268
Other Non-U.S. Government Securities (1)	4,851	4,628
Total	$ 11,371	$ 10,703

(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, 2019:

(in millions of U.S. dollars)	Market Value	Amortized Cost
United Kingdom	$ 2,148	$ 2,061
Canada	1,690	1,642
United States (1)	1,144	1,101
France	1,048	998
Australia	826	788
Netherlands	654	624
Japan	580	568
Germany	539	514
Switzerland	485	463
China	355	344
Other Non-U.S. Corporate Securities	3,722	3,569
Total	$ 13,191	$ 12,672

(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, 2019, our corporate fixed income investment portfolio included below-investment grade and non-rated securities which, in total, comprised approximately 14 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 $154 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. Twelve 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, 2019, 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 2018 Form 10-K.

Reinsurance recoverable on ceded reinsurance

	September 30, 2019		December 31, 2018	
(in millions of U.S. dollars)	**Net Reinsurance Recoverable (1)**	**Provision for Uncollectible**	Net Reinsurance Recoverable (1)	Provision for Uncollectible
Reinsurance recoverable on unpaid losses and loss expenses	**$ 14,332**	**$ 250**	$ 14,689	$ 251
Reinsurance recoverable on paid losses and loss expenses	**1,195**	**70**	1,304	72
Reinsurance recoverable on losses and loss expenses	**$ 15,527**	**$ 320**	$ 15,993	$ 323
Reinsurance recoverable on policy benefits	**$ 199**	**$ 4**	$ 202	$ 4

(1) Net of provision for uncollectible reinsurance.

The decrease in reinsurance recoverable on losses and loss expenses was primarily due to collections on catastrophe losses and collections related to favorable reinsurance settlements in the second quarter.

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 Chubb, primarily because of disputes under reinsurance contracts and insolvencies. We have established provisions for amounts estimated to be uncollectible on both unpaid and paid losses as well as future policy benefits.

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, 2018	$ 62,960	$ 14,689	$ 48,271
Losses and loss expenses incurred	17,802	3,937	13,865
Losses and loss expenses paid	(17,529)	(4,235)	(13,294)
Foreign currency revaluation and other	(221)	(59)	(162)
Balance at September 30, 2019	**$ 63,012**	**$ 14,332**	**$ 48,680**

(1) Net of provision for uncollectible reinsurance.

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, 2019, we increased environmental net loss reserves for Brandywine managed operations by $27 million. A&E reserves are included in Corporate. Refer to our 2018 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 such as setting risk limits based on probable maximum loss (PML) and purchasing catastrophe reinsurance. The table below presents our modeled pre-tax estimates of natural catastrophe PML, net of reinsurance, at September 30, 2019, for Worldwide, U.S. hurricane and California earthquake events, based on our in-force portfolio at July 1, 2019 and reflecting the April 1, 2019 reinsurance program (see Natural Catastrophe Property Reinsurance Program section) as well as inuring reinsurance protection coverages. According to the model, for the 1-in-100 return period scenario, there is a one percent chance that our annual aggregate losses incurred in any year from U.S. hurricane events could be in excess of $2,671 million (or 4.9 percent of our total shareholders' equity at September 30, 2019).

	Modeled Net Probable Maximum Loss (PML)					
	Worldwide (1) Annual Aggregate		U.S. Hurricane (2) Annual Aggregate		California Earthquake (3) Single Occurrence	
(in millions of U.S. dollars, except for percentages)	**Chubb**	**% of Total Shareholders' Equity**	**Chubb**	**% of Total Shareholders' Equity**	**Chubb**	**% of Total Shareholders' Equity**
1-in-10	$ 1,866	3.4%	$ 1,076	2.0%	$ 127	0.2%
1-in-100	$ 3,772	6.9%	$ 2,671	4.9%	$ 1,340	2.5%
1-in-250	$ 6,140	11.3%	$ 4,681	8.6%	$ 1,521	2.8%

(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.
(2) U.S. Hurricane losses include losses from wind and storm-surge and exclude rainfall.
(3) California earthquakes include fire-following perils.

The above estimates of Chubb's loss profile are inherently uncertain for many reasons, including the following:
- 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;
- 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; and
- The potential effects of climate change add to modeling complexity.

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, 2019 through March 31, 2020, with modest enhancements in coverage from the expiring program. The program consists of three layers in excess of losses retained by Chubb on a per occurrence basis. 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, 2019 through March 31, 2020 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 – $1.2 billion	All natural perils and terrorism	(b)
United States (excluding Alaska and Hawaii)	$1.2 billion – $2.2 billion	All natural perils and terrorism	(c)
United States (excluding Alaska and Hawaii)	$2.2 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 – $1.175 billion	All natural perils and terrorism	(c)
Alaska, Hawaii, and Canada	$1.175 billion – $2.475 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 partially placed with Reinsurers.

(c) These coverages are both part of the same Second layer within the Global Catastrophe Program and are fully placed with Reinsurers.

(d) These coverages are both part of the same Third layer within the Global Catastrophe Program and are fully placed with Reinsurers.

Chubb also has a property catastrophe bond in place 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 $427 million layer in excess of $2.0 billion 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, offered in conjunction with the U.S. Department of Agriculture's Risk Management Agency (RMA), is a federal subsidized insurance program that covers revenue shortfalls or production losses due to natural causes such as drought, excessive moisture, hail, wind, freeze, insects, and disease. These Revenue Products are defined as providing both commodity price and yield coverages. Policies are available for various crops in different areas of the U.S. and generally have deductibles generally 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 participant in the MPCI program, we report all details of policies 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 (i.e., the 2020 SRA covers the 2020 reinsurance year from July 1, 2019 through June 30, 2020). There were no significant changes in the terms and conditions from the 2019 SRA and therefore, the new SRA does not impact Chubb's outlook on the crop program relative to 2020.

We recognize net premiums written as soon as estimable on our MPCI business, 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 MPCI 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 MPCI premium is determined using a number of factors including commodity prices and related volatility (i.e., both impact the amount of premium we can charge to the policyholder). For example, in most states, the pricing for the MPCI Revenue Product for corn (i.e., insurance coverage for lower than expected crop revenue in a given season) includes a factor based on the average commodity price in February. If corn commodity prices are higher in February, compared to the February price in the prior year, and all other factors are the same, the increase in price will increase the corn premium year-over-year. Pricing is also impacted by volatility factors, which measure the likelihood commodity prices will fluctuate over the crop year. For example, if volatility is set at a higher rate compared to the prior year, and all other factors are the same, the premium charged to the policyholder will be higher year-over-year for the same level of coverage.

Losses incurred on the MPCI business are determined using both commodity price and crop yield. With respect to commodity price, there are two important periods on a large portion of the business: The month of February when the initial premium base is set, and the month of October when the final harvest price is set. If the price declines from February to October, with yield remaining at normal levels, the policyholder may be eligible to recover on the policy. However, in most cases there are deductibles on these policies, therefore, the impact of a decline in price would have to exceed the deductible before a policyholder would be eligible to recover.

We evaluate our MPCI business at an aggregate level and the combination of all of our insured crops (both winter and summer) go into our underwriting gain or loss estimate in any given year. Typically, we do not have enough information on the harvest prices or crop yield outputs to quantify the preliminary estimated impact to our underwriting results until the fourth quarter.

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 and the recognition of earned premium is also more heavily concentrated during this timeframe. 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 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. We have the ability to increase the capacity to $2.0 billion under certain conditions, but any such increase would not raise the sub-limit for revolving loans above $1.0 billion. At September 30, 2019, our letter of credit usage was $421 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, 2019. 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 2018 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, 2019, 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 $200 million and $75 million from its Bermuda subsidiaries during the nine months ended September 30, 2019 and 2018, 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, 2019 and 2018. 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 $1.7 billion and $4.8 billion from its subsidiaries during the nine months ended September 30, 2019 and 2018, 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, 2019 and 2018.

Operating cash flows were $4.9 billion in the nine months ended September 30, 2019, compared to $3.9 billion in the prior year period. The $1.0 billion increase reflected both higher underwriting cash flow and a benefit of approximately $350 million from the deferral of crop insurance premiums remittance as allowed by the Federal Crop Insurance Corporation (FCIC) until the fourth quarter. This payment typically occurs in the third quarter. The increase in operating cash flow was offset by higher taxes paid, principally due to timing of tax payments.

Cash used for investing was $3.6 billion in the nine months ended September 30, 2019, compared to $2.1 billion in the prior year period. The current year included the purchase of an additional 6.2 percent ownership interest in Huatai Insurance Group Company Limited for $329 million and the purchase of other intangible assets for $245 million. Cash used for financing was $1.1 billion in the nine months ended September 30, 2019, compared to $1.4 billion in the prior year period. The current year included $1.2 billion of share repurchases and $1.0 billion of dividends paid on Common Shares, partially offset by $785 million of net proceeds from the issuance of long-term debt (net of repayments). The prior year included $732 million of share repurchases and $1.0 billion of dividends paid on Common Shares, partially offset by $170 million of net proceeds from the issuance of long-term debt (net of repayments).

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, 2019, there were $1.4 billion in repurchase agreements outstanding with various maturities over the next six 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 2019**	December 31 2018
Short-term debt	**$ 10**	$ 509
Long-term debt	**13,285**	12,087
Total financial debt	**13,295**	12,596
Trust preferred securities	**308**	308
Total shareholders’ equity	**54,572**	50,312
Total capitalization	**$ 68,175**	$ 63,216
Ratio of financial debt to total capitalization	**19.5%**	19.9%
Ratio of financial debt plus trust preferred securities to total capitalization	**20.0%**	20.4%

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.

Refer to Note 5 to the Consolidated Financial Statements for information about the debt issued and debt redeemed.

For the nine months ended September 30, 2019, we repurchased $1.2 billion of Common Shares in a series of open market transactions under the Board of Directors (Board) share repurchase authorization. At September 30, 2019, there were 26,250,222 Common Shares in treasury with a weighted average cost of $133.47 per share. For the period October 1 through October 30, 2019, we repurchased 700,900 Common Shares for a total of $108 million in a series of open market transactions. At October 30, 2019, $150 million in share repurchase authorization remained through December 31, 2019.

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.

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 2019 annual general meeting, our shareholders approved an annual dividend for the following year of up to $3.00 per share, or CHF 3.00 per share, calculated using the USD/CHF exchange rate as published in the Wall Street Journal on May 16, 2019, expected to be paid in four quarterly installments of $0.75 per share after the general meeting by way of a distribution from capital contribution reserves, transferred to free reserves for payment. The Board determines the record and payment dates at which the annual dividend may be paid until the date of the 2020 annual general meeting, and is authorized to abstain from distributing a dividend at its discretion. The annual dividend approved in May 2019 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 21, 2018	January 11, 2019	$0.73 (CHF 0.73)
March 22, 2019	April 12, 2019	$0.73 (CHF 0.72)
June 21, 2019	July 12, 2019	$0.75 (CHF 0.75)
September 20, 2019	October 11, 2019	$0.75 (CHF 0.73)

ITEM 3. Quantitative and Qualitative Disclosures about Market Risk

Refer to Item 7A included in our 2018 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 2018 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, 2018 balances disclosed in the 2018 Form 10-K.

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. 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, 2019 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, 2019.
- 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 only to U.S. equity markets.

  - 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), 25 percent—35 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 impacts the rate used to discount cash flows in the fair value model. AA-rated credit spreads are a proxy for both our own credit spreads and the credit spreads of the ceding insurers.

- The hedge sensitivity is from September 30, 2019 market levels and only applicable to the equity and interest rate sensitivities table below.

- 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. This realized loss occurs primarily because the guarantees provided in the underlying contracts continue to become more valuable even when markets remain unchanged. 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.

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Sensitivities to equity and interest rate movements

(in millions of U.S. dollars)		Worldwide Equity Shock					
Interest Rate Shock		+10%	Flat	-10%	-20%	-30%	-40%
+100 bps	(Increase)/decrease in Gross FVL	$ 353	$ 216	$ 57	$ (128)	$ (338)	$ (568)
	Increase/(decrease) in hedge value	(58)	—	58	115	173	231
	Increase/(decrease) in net income	$ 295	$ 216	$ 115	$ (13)	$ (165)	$ (337)
Flat	(Increase)/decrease in Gross FVL	$ 157	$ —	$ (180)	$ (386)	$ (614)	$ (856)
	Increase/(decrease) in hedge value	(58)	—	58	115	173	231
	Increase/(decrease) in net income	$ 99	$ —	$ (122)	$ (271)	$ (441)	$ (625)
-100 bps	(Increase)/decrease in Gross FVL	$ (77)	$ (248)	$ (442)	$ (658)	$ (891)	$ (1,130)
	Increase/(decrease) in hedge value	(58)	—	58	115	173	231
	Increase/(decrease) in net income	$ (135)	$ (248)	$ (384)	$ (543)	$ (718)	$ (899)

Sensitivities to Other Economic Variables

	AA-rated Credit Spreads		Interest Rate Volatility		Equity Volatility	
(in millions of U.S. dollars)	+100 bps	-100 bps	+2%	-2%	+2%	-2%
(Increase)/decrease in Gross FVL	$ 74	$ (82)	$ —	$ —	$ (8)	$ 7
Increase/(decrease) in net income	$ 74	$ (82)	$ —	$ —	$ (8)	$ 7

Sensitivities to Actuarial Assumptions

	Mortality			
(in millions of U.S. dollars)	+20%	+10%	-10%	-20%
(Increase)/decrease in Gross FVL	$ 20	$ 10	$ (10)	$ (20)
Increase/(decrease) in net income	$ 20	$ 10	$ (10)	$ (20)

	Lapses			
(in millions of U.S. dollars)	+50%	+25%	-25%	-50%
(Increase)/decrease in Gross FVL	$ 102	$ 53	$ (58)	$ (122)
Increase/(decrease) in net income	$ 102	$ 53	$ (58)	$ (122)

	Annuitization			
(in millions of U.S. dollars)	+50%	+25%	-25%	-50%
(Increase)/decrease in Gross FVL	$ (534)	$ (283)	$ 319	$ 602
Increase/(decrease) in net income	$ (534)	$ (283)	$ 319	$ 602

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, 2019. 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 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.

On January 14, 2016, Chubb completed the acquisition of The Chubb Corporation. For the three months ended September 30, 2019, 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 for the three months ended September 30, 2019 that have materially affected, or are reasonably likely to materially affect, Chubb's internal controls over financial reporting.

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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

The following supplements the risk factors that could have a material impact on our results of operations or financial condition as described under "Risk Factors" in Item 1A of Part I of our 2018 Form 10-K.

The effects of emerging coverage issues with our business are uncertain.
As industry practices and legislative, regulatory, judicial, social, financial, technological and other environmental conditions change, unexpected and unintended issues related to claims and coverage may emerge. These issues may adversely affect our business by either extending coverage beyond our underwriting intent or by increasing the frequency and severity of claims. In some instances, these changes may not become apparent until after we have issued insurance or reinsurance contracts that are affected by the changes. For example, recently enacted "reviver" legislation in certain states does allow civil claims relating to molestation and abuse to be asserted against policyholders that would otherwise be barred by statutes of limitations. As a result, the full extent of liability under our insurance may not be known for many years after issuance.

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, 2019:

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	792,334	$ 150.49	790,417	$ 617 million
August 1 through August 31	1,279,697	$ 154.63	1,270,000	$ 420 million
September 1 through September 30	1,019,878	$ 159.43	1,019,201	$ 258 million
Total	3,091,909	$ 155.15	3,079,618	

(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, 2019 as part of the publicly announced plan was $478 million.

(3) Refer to Note 7 to the Consolidated Financial Statements for more information on the Chubb Limited securities repurchase authorization. In December 2018, the Board authorized the repurchase of up to $1.5 billion of Chubb's Common Shares from December 1, 2018 through December 31, 2019. For the period October 1, 2019 through October 30, 2019, we repurchased 700,900 Common Shares for a total of $108 million in a series of open market transactions. At October 30, 2019, $150 million in share repurchase authorization remained through December 31, 2019.

ITEM 6. Exhibits

Exhibit Number	Exhibit Description	Incorporated by Reference: Form	Original Number	Date Filed	Filed Herewith
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, 2019 formatted in Inline XBRL: (i) Consolidated Balance Sheets at September 30, 2019, and December 31, 2018; (ii) Consolidated Statements of Operations and Comprehensive Income for the three and nine months ended September 30, 2019 and 2018; (iii) Consolidated Statements of Shareholders' Equity for the three and nine months ended September 30, 2019 and 2018; (iv) Consolidated Statements of Cash Flows for the nine months ended September 30, 2019 and 2018; 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 31, 2019	/s/ Evan G. Greenberg
	Evan G. Greenberg
	Chairman, President and Chief Executive Officer
October 31, 2019	/s/ Philip V. Bancroft
	Philip V. Bancroft
	Executive Vice President and Chief Financial Officer

Exhibit 31.1

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 31, 2019

/s/ Evan G. Greenberg

Evan G. Greenberg
Chairman, President and Chief Executive Officer

Exhibit 31.2

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 31, 2019

/s/ Philip V. Bancroft

Philip V. Bancroft
Executive Vice President and Chief Financial Officer

Exhibit 32.1

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, 2019, 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.

Date: October 31, 2019	/s/ Evan G. Greenberg
	Evan G. Greenberg
	Chairman, President and Chief Executive Officer

Exhibit 32.2

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, 2019, 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.

Date: October 31, 2019	/s/ Philip V. Bancroft
	Philip V. Bancroft
	Executive Vice President and Chief Financial Officer