MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATUTORY FINANCIAL STATEMENTS

As of June 30, 2020 and December 31, 2019 and for the six months ended June 30, 2020 and 2019

MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATUTORY FINANCIAL STATEMENTS
(UNAUDITED)

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MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATUTORY STATEMENTS OF FINANCIAL POSITION
(UNAUDITED)

	June 30, 2020	December 31, 2019
	($ In Millions)	
Assets:		
Bonds	$ 113,692	$ 106,023
Preferred stocks	549	756
Common stocks – subsidiaries and affiliates	16,063	15,253
Common stocks – unaffiliated	899	1,189
Mortgage loans	28,308	28,408
Policy loans	15,295	14,973
Real estate	345	358
Partnerships and limited liability companies	9,412	9,172
Derivatives	29,526	12,597
Cash, cash equivalents and short-term investments	13,697	4,317
Other invested assets	1,261	2,353
Total invested assets	229,047	195,399
Investment income due and accrued	3,324	2,784
Net deferred income taxes	202	1,140
Other than invested assets	3,285	3,952
Total assets excluding separate accounts	235,858	203,275
Separate account assets	75,124	76,659
Total assets	$ 310,982	$ 279,934
Liabilities and Surplus:		
Policyholders' reserves	$ 139,868	$ 134,564
Liabilities for deposit-type contracts	17,913	15,399
Contract claims and other benefits	725	495
Policyholders' dividends	1,726	1,684
General expenses due or accrued	941	1,214
Federal income taxes	-	16
Asset valuation reserve	5,227	4,783
Repurchase agreements	5,166	3,834
Commercial paper	250	250
Collateral	8,991	3,399
Derivatives	22,353	10,201
Funds held under coinsurance	4,349	4,252
Other liabilities	5,333	4,291
Total liabilities excluding separate accounts	212,842	184,382
Separate account liabilities	75,124	76,659
Total liabilities	287,966	261,041
Surplus	23,016	18,893
Total liabilities and surplus	$ 310,982	$ 279,934

See accompanying notes to condensed consolidated statutory financial statements

MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATUTORY STATEMENTS OF OPERATIONS
(UNAUDITED)

	Six Months Ended June 30, 2020	Six Months Ended June 30, 2019
	($ In Millions)	
Revenue:		
Premium income	$ 13,162	$ 10,515
Net investment income	3,545	3,832
Fees and other income	598	718
Total revenue	17,305	15,065
Benefits, expenses and other deductions:		
Policyholders' benefits	12,079	13,299
Change in policyholders' reserves	4,336	(767)
Change in group annuity reserves assumed	(416)	(596)
General insurance expenses	1,072	1,209
Commissions	550	540
State taxes, licenses and fees	134	150
Other deductions	90	153
Total benefits and expenses	17,845	13,988
Net (loss) gain from operations before dividends and federal income taxes	(540)	1,077
Dividends to policyholders	806	814
Net (loss) gain from operations before federal income taxes	(1,346)	263
Federal income tax (benefit) expense	(337)	17
Net (loss) gain from operations	(1,009)	246
Net realized capital gains (losses)	161	(89)
Net (loss) income	$ (848)	$ 157

See accompanying notes to condensed consolidated statutory financial statements

MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATUTORY STATEMENTS OF CHANGES IN SURPLUS
(UNAUDITED)

	Six Months Ended June 30,	
	2020	2019
	($ In Millions)	
Surplus, beginning of year	$ 18,893	$ 15,610
Net increase/(decrease) due to:		
Net (loss) income	(848)	157
Change in net unrealized capital gains (losses), net of tax	4,403	3,834
Change in net unrealized foreign exchange capital gains (losses), net of tax	(462)	(237)
Change in other net deferred income taxes	(147)	-
Change in nonadmitted assets	61	487
Change in asset valuation reserve	(444)	(1,360)
Change in reserve valuation basis	13	-
Change in surplus notes	1,537	-
Prior period adjustments	30	(19)
Other	(20)	(11)
Net increase	4,123	2,851
Surplus, end of period	$ 23,016	$ 18,461

See accompanying notes to condensed consolidated statutory financial statements

MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATUTORY STATEMENTS OF CASH FLOWS
(UNAUDITED)

	Six Months Ended June 30, 2020	Six Months Ended June 30, 2019
	($ In Millions)	
Cash from operations:		
Premium and other income collected	$ 13,735	$ 11,016
Net investment income	3,478	3,885
Benefit payments	(11,772)	(13,434)
Net transfers from separate accounts	1,381	3,774
Net receipts from group annuity reserves assumed	416	596
Commissions and other expenses	(2,083)	(1,968)
Dividends paid to policyholders	(766)	(780)
Federal and foreign income taxes recovered	119	313
Net cash from operations	4,508	3,402
Cash from investments:		
Proceeds from investments sold, matured or repaid:		
Bonds	10,469	10,399
Preferred and common stocks – unaffiliated	453	397
Common stocks – affiliated	-	3
Mortgage loans	1,689	1,387
Real estate	-	56
Partnerships and limited liability companies	749	472
Derivatives	2,221	570
Other	992	(448)
Total investment proceeds	16,573	12,836
Cost of investments acquired:		
Bonds	(17,455)	(14,463)
Preferred and common stocks – unaffiliated	(84)	(987)
Common stocks – affiliated	(51)	2
Mortgage loans	(2,070)	(2,125)
Real estate	(31)	(44)
Partnerships and limited liability companies	(830)	(560)
Derivatives	(299)	(177)
Other	415	196
Total investments acquired	(20,405)	(18,158)
Net increase in policy loans	(323)	(222)
Net cash used in investing activities	(4,155)	(5,544)
Cash from financing and miscellaneous sources:		
Net deposits on deposit-type contracts	2,414	360
Change in repurchase agreements	1,332	(347)
Change in collateral	5,591	(87)
Other cash (used) provided	(310)	188
Net cash provided from financing and miscellaneous sources	9,027	114
Net change in cash, cash equivalents and short-term investments	9,380	(2,028)
Cash, cash equivalents and short-term investments:		
Beginning of year	4,317	4,733
End of period	$ 13,697	$ 2,705

See accompanying notes to condensed consolidated statutory financial statements

1. Nature of operations

Massachusetts Mutual Life Insurance Company (MassMutual), a mutual life insurance company domiciled in the Commonwealth of Massachusetts, and its domestic life insurance subsidiaries domiciled in the State of Connecticut (collectively, the Company), provide individual and group life insurance, disability insurance, individual and group annuities and guaranteed interest contracts (GIC) to individual and institutional customers in all 50 states of the United States of America (U.S.), the District of Columbia and Puerto Rico. Products and services are offered primarily through the Company's MassMutual Financial Advisors (MMFA), Digital Direct to Consumer and Business to Business (DTC&B2B), Institutional Solutions (IS) and Workplace Solutions (WS) distribution channels.

MMFA is a sales force that includes financial advisors that operate in the U.S. MMFA sells individual life, individual annuities and disability insurance. The Company's DTC&B2B distribution channel sells individual life and supplemental health insurance primarily through direct response television advertising, digital media, search engine optimization and search engine marketing. The Company's IS distribution channel sells group annuities, group life and GIC primarily through retirement advisory firms, actuarial consulting firms, investment banks, insurance benefit advisors and investment management companies. The Company's WS distribution channel sells group life insurance and annuity products as well as individual life insurance, critical illness and long term care (LTC) products distributed through investment advisors.

2. Summary of significant accounting policies

a. Basis of presentation

These condensed consolidated statutory financial statements include MassMutual and its wholly owned U.S. domiciled life insurance subsidiary C.M. Life Insurance Company (C.M. Life), and C.M. Life's wholly owned U.S. domiciled life insurance subsidiary, MML Bay State Life Insurance Company. All intercompany transactions and balances for these consolidated entities have been eliminated. Other subsidiaries and affiliates are accounted for under the equity method in accordance with statutory accounting practices. Statutory financial statements filed with regulatory authorities are not presented on a consolidated basis.

The condensed consolidated statutory financial statements have been prepared in conformity with the statutory accounting practices of the National Association of Insurance Commissioners (NAIC) and the accounting practices prescribed or permitted by the Commonwealth of Massachusetts Division of Insurance; and for the wholly owned U.S. domiciled life insurance subsidiaries, the State of Connecticut Insurance Department.

The condensed consolidated statutory financial statements and notes as of June 30, 2020 and December 31, 2019 and for the six months ended June 30, 2020 and 2019 are unaudited. These condensed consolidated statutory financial statements, in the opinion of management, reflect the fair presentation of the financial position, results of operations, changes in surplus and cash flows for the interim periods. These condensed consolidated statutory financial statements and notes should be read in conjunction with the consolidated statutory financial statements and notes thereto included in the Company's 2019 audited yearend financial statements as these condensed consolidated statutory financial statements disclose only significant changes from yearend 2019. The results of operations for the interim periods should not be considered indicative of results to be expected for the full year. The Condensed Consolidated Statutory Statements of Financial Position as of December 31, 2019 have been derived from the audited consolidated financial statements at that date, but do not include all of the information and footnotes required by statutory accounting practices for complete financial statements.

For the full description of accounting policies, see *Note 2. "Summary of significant accounting policies"* of Notes to Consolidated Statutory Financial Statements included in the Company's 2019 audited consolidated yearend financial statements.

b. Common stocks - subsidiaries and affiliates

Common stocks of unconsolidated subsidiaries, primarily MassMutual Holding LLC (MMHLLC), is accounted for using the statutory equity method. The Company accounts for the value of MMHLLC at its underlying U.S. GAAP equity value less an adjustment of $179 million as of June 30, 2020 for a portion of its noncontrolling interests. Operating results, less dividends declared, for MMHLLC is reflected as net unrealized capital gains (losses) in the Statutory Statements of Changes in Surplus. Dividends declared from MMHLLC are recorded in net investment income when declared and are limited to MMHLLC's U.S. GAAP retained earnings. The cost basis of common stocks – subsidiaries and affiliates is adjusted for impairments deemed to be other than temporary.

Refer to Note 5b. "Common stocks – subsidiaries and affiliates" for further information on the valuation of MMHLLC.

3. New accounting standards

Adoption of new accounting standards

In June 2016, the NAIC adopted modifications to Statements of Statutory Accounting Principles (SSAP) No. 51R, *Life Contracts*, to incorporate references to the Valuation Manual and to facilitate the implementation of principles-based reserving (PBR), which were effective on January 1, 2017. The adoption of PBR only applies to new life insurance policies issued after January 1, 2017, however the Company adopted these revisions to SSAP No. 51R using the 3-year phased in approach as of January 1, 2020. Prior to adoption, the Company used formulas and assumptions to determine reserves as prescribed by state laws and regulations. Under PBR, the Company is required to hold the higher of (a) the reserve using prescribed factors and (b) the PBR reserve which considers a wide range of future economic conditions, computed using justified company experience factors, such as mortality, policyholder behavior and expenses. At the time of adoption, the modifications did not have a material effect on the Company's total life reserves and surplus in the consolidated financial statements.

In April 2019, the NAIC adopted modifications to SSAP No. 16R, *Electronic Data Processing Equipment and Software,* effective January 1, 2020, the Company elected to early adopt effective April 1, 2019. This guidance aligns and clarifies the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract, with the requirement for capitalizing implementation costs incurred to develop or obtain internal-use software. Costs for implementation activities in the application development stage is capitalized, depending on the nature of the costs and would be nonadmitted, while costs incurred during preliminary project or post implementation stages are expensed as incurred. The amendments also require the entity to expense the capitalized implementation costs of a hosting arrangement that is a service contract over the lesser of the expected term of the hosting arrangement or five years. The Company adopted this guidance on a prospective basis and the adoption did not have a material impact to its financial statements.

In August 2019, the NAIC adopted modifications to SSAP No. 51R, *Life Contracts*, to incorporate references to the Valuation Manual and to facilitate the implementation of PBR. The adoption, effective January 1, 2020, only applies to certain annuity products and includes inforce policies issued after 1980. Prior to adoption, the Company used formulas and assumptions to determine reserves as prescribed by state laws and regulations. Under PBR, the aggregate reserve for contracts falling within the scope of these requirements shall equal the stochastic reserve plus the additional standard projection amount less the projected interest maintenance reserve (IMR) included in the starting assets. These requirements constitute the Commissioners Annuity Reserve Valuation Method for all contracts encompassed by the scope. The modifications did not have a material effect on the Company's total annuity reserves and surplus in the consolidated financial statements.

In April 2020, the NAIC adopted modifications to SSAP Nos. 15, 22R and 86. These revisions adopt Financial Accounting Standards Board Accounting Standard Update No. 2020-04 *Reference Rate Reform*, which applies only to contracts, hedging relationships, and other transactions that reference London Inter-Bank Offered Rate (LIBOR) or another reference rate expected to be discontinued because of reference rate reform. Optional expedients allow entities (under certain circumstances) to avoid having to remeasure contracts or reassess a previous accounting determination for hedged items. The guidance is effective through December 31, 2022. The Company has adopted this guidance and the adoption did not have a material impact on its financial statements.

In April 2020, the NAIC adopted modifications to SSAP Nos. 6, 47, 51R and 65. This guidance extends the 90-Day Rule due to the impacts of COVID-19 and provides exception to the 90-day past due rule for nonadmittance required in SSAP No. 6 for premiums, SSAP No. 47 for uncollected uninsured plan receivables, SSAP No. 51R for life premiums and SSAP No. 65 for high deductible policies. It is applicable only for the first and second quarters of 2020 and expires on September 29, 2020. The Company has adopted this guidance and the adoption did not have a material impact on its financial statements.

In April 2020, the NAIC adopted modifications to SSAP No. 36. This guidance notes a mortgage loan or bank loan modification due to the impacts of COVID-19 on the borrower will not automatically be categorized as a troubled debt restructuring (TDR). To qualify for relief, the borrower must have been in good standing as of December 31, 2019 (not more than 30 days past due). This guidance expires at the earlier of 60 days after the date of termination of the National Emergency or December 31, 2020. The Company has adopted this guidance and the adoption did not have a material impact on its financial statements.

In April 2020, the NAIC adopted modifications to SSAP Nos. 26R, 30R, 37, 43R and 48. This guidance provides limited time exceptions for impairment assessments related to mortgage loans, bank loans and other investments that predominantly invest in mortgage loans and does not require an impairment classification under SSAP No. 37 for mortgage loans or SSAP No. 26R for bank loans that are deferred/modified in response to the impacts of COVID-19. It also provides limited-scope provisions for assessing impairment for other investments (e.g., mutual funds, limited liability companies) that predominantly invest in mortgage loans impacted due to fair value declines if the entity does not intend to sell. This guidance only defers the assessment of impairment due to situations caused by the forbearance or modification of mortgage loan or bank loan payments for borrowers who are or may be unable to meet their contractual payment obligations because they are experiencing short-term financial or operational problems due to the effects of COVID-19. This guidance is only applicable for the first and second quarters of 2020 as it expires on September 29, 2020. The Company has adopted this guidance and the adoption did not have a material impact on its financial statements.

In May 2020, the NAIC adopted modifications to SSAP No. 34. This guidance notes if investments have been impacted by forbearance or other modification provisions, a reporting entity shall assess whether the investment income has been earned in accordance with the modified terms. This guidance is applicable for the second quarter of 2020 as it expires on September 29. 2020. The Company has adopted this guidance and the adoption did not have a material impact on its financial statements.

In May 2020, the NAIC adopted modifications to SSAP Nos. 26R, 36, 43R and 103R. This guidance clarifies how to determine when restructuring or modification of certain debt investments due to COVID-19 are a TDR. The guidance also clarifies whether a modification that is not a TDR needs to be assessed as an exchange under SSAP No. 103R. This guidance has the same end date as the Coronavirus Aid, Relief, and Economic Security (CARES) Act and is effective for the specific purpose to provide practical expedients in assessing whether modifications in response to COVID-19 are insignificant under SSAP No. 36 and in assessing whether a change is substantive under SSAP No. 103R. The Company has adopted this guidance and the adoption did not have a material impact on its financial statements.

4. *Fair value of financial instruments*

The following presents a summary of the carrying values and fair values of the Company's financial instruments:

	June 30, 2020				
	Carrying Value	Fair Value	Level 1	Level 2	Level 3
	(In Millions)				
Financial assets:					
Bonds:					
U. S. government and agencies	$ 5,107	$ 6,172	$ -	$ 6,172	$ -
All other governments	1,717	1,868	-	1,802	66
States, territories and possessions	475	557	-	557	-
Political subdivisions	466	546	-	546	-
Special revenue	6,016	7,087	-	7,077	10
Industrial and miscellaneous	93,362	99,556	10	56,511	43,035
Parent, subsidiaries and affiliates	6,549	6,920	-	-	6,920
Preferred stocks	549	560	1	-	559
Common stocks - subsidiaries and affiliates	305	305	174	-	131
Common stocks - unaffiliated	899	899	636	-	263
Mortgage loans - commercial	24,926	26,019	-	-	26,019
Mortgage loans - residential	3,382	3,395	-	-	3,395
Derivatives:					
Interest rate swaps	26,434	31,626	-	31,626	-
Options	630	630	95	535	-
Currency swaps	2,389	2,389	-	2,389	-
Forward contracts	55	55	-	55	-
Credit default swaps	8	7	-	7	-
Financial futures	10	10	10	-	-
Cash, cash equivalents and short-term investments	13,697	13,697	576	13,121	-
Separate account assets	75,124	75,195	48,123	25,939	1,133
Financial liabilities:					
Guaranteed interest contracts	12,392	12,993	-	-	12,993
Group annuity contracts and other deposits	18,856	20,750	-	-	20,750
Individual annuity contracts	13,431	16,051	-	-	16,051
Supplementary contracts	1,228	1,230	-	-	1,230
Repurchase agreements	5,166	5,166	-	5,166	-
Commercial paper	250	250	-	250	-
Derivatives:					
Interest rate swaps	22,141	23,897	-	23,897	-
Options	16	16	12	4	-
Currency swaps	29	29	-	29	-
Forward contracts	133	133	-	133	-
Credit default swaps	8	2	-	2	-
Financial futures	26	26	26	-	-

Common stocks - subsidiaries and affiliates do not include unconsolidated subsidiaries, which had statutory carrying values of $15,758 million.

	December 31, 2019				
	Carrying Value	Fair Value	Level 1	Level 2	Level 3
	(In Millions)				
Financial assets:					
Bonds:					
U. S. government and agencies	$ 4,405	$ 4,988	$ -	$ 4,988	$ -
All other governments	1,590	1,763	-	1,694	69
States, territories and possessions	576	636	-	636	-
Political subdivisions	535	589	-	589	-
Special revenue	5,921	6,724	-	6,714	10
Industrial and miscellaneous	86,293	92,193	10	50,776	41,407
Parent, subsidiaries and affiliates	6,703	6,866	-	388	6,478
Preferred stocks	756	795	11	-	784
Common stocks - subsidiaries and affiliates	299	299	179	-	120
Common stocks - unaffiliated	1,189	1,189	917	-	272
Mortgage loans - commercial	24,993	25,957	-	-	25,957
Mortgage loans - residential	3,415	3,407	-	-	3,407
Derivatives:					
Interest rate swaps	11,037	12,449	-	12,449	-
Options	605	605	40	565	-
Currency swaps	915	915	-	915	-
Forward contracts	12	12	-	12	-
Credit default swaps	22	31	-	31	-
Financial futures	6	6	6	-	-
Cash, cash equivalents and short-term investments	4,317	4,317	259	4,058	-
Separate account assets	76,659	76,698	51,039	24,681	978
Financial liabilities:					
Guaranteed interest contracts	9,815	9,909	-	-	9,909
Group annuity contracts and other deposits	17,963	18,600	-	-	18,600
Individual annuity contracts	11,332	13,962	-	-	13,962
Supplementary contracts	1,281	1,283	-	-	1,283
Repurchase agreements	3,834	3,834	-	3,834	-
Commercial paper	250	250	-	250	-
Derivatives:					
Interest rate swaps	9,684	10,532	-	10,532	-
Options	10	10	2	8	-
Currency swaps	216	216	-	216	-
Forward contracts	162	162	-	162	-
Financial futures	129	129	129	-	-

Common stocks - subsidiaries and affiliates do not include unconsolidated subsidiaries, which had statutory carrying values of $14,954 million.

The use of different assumptions or valuation methodologies may have a material impact on the estimated fair value amounts.

The following presents the Company's fair value hierarchy for assets and liabilities that are carried at fair value:

	June 30, 2020			
	Level 1	Level 2	Level 3	Total
	(In Millions)			
Financial assets:				
Bonds:				
All other governments	$ -	$ 2	$ -	$ 2
Special revenue	-	1	-	1
Industrial and miscellaneous	10	177	185	372
Preferred stocks	-	-	9	9
Common stocks - subsidiaries and affiliates	174	-	131	305
Common stocks - unaffiliated	636	-	263	899
Derivatives:				
Interest rate swaps	-	26,434	-	26,434
Options	95	535	-	630
Currency swaps	-	2,389	-	2,389
Forward contracts	-	55	-	55
Financial futures	10	-	-	10
Separate account assets	48,122	24,713	1,122	73,957
Total financial assets carried at fair value	$ 49,047	$ 54,306	$ 1,710	$ 105,063
Financial liabilities:				
Derivatives:				
Interest rate swaps	$ -	$ 22,141	$ -	$ 22,141
Options	12	4	-	16
Currency swaps	-	29	-	29
Forward contracts	-	133	-	133
Financial futures	26	-	-	26
Total financial liabilities carried at fair value	$ 38	$ 22,307	$ -	$ 22,345

The Company does not have any financial instruments that were carried at net asset value as a practical expedient.

The following presents the Company's fair value hierarchy for assets and liabilities that are carried at fair value:

	December 31, 2019			
	Level 1	Level 2	Level 3	Total
	(In Millions)			
Financial assets:				
Bonds:				
Industrial and miscellaneous	$ 10	$ 148	$ 120	$ 278
Preferred stocks	-	-	13	13
Common stocks - subsidiaries and affiliates	179	-	120	299
Common stocks - unaffiliated	917	-	272	1,189
Derivatives:				
Interest rate swaps	-	11,037	-	11,037
Options	40	565	-	605
Currency swaps	-	915	-	915
Forward contracts	-	12	-	12
Financial futures	6	-	-	6
Separate account assets	51,039	23,498	967	75,504
Total financial assets carried at fair value	$ 52,191	$ 36,175	$ 1,492	$ 89,858
Financial liabilities:				
Derivatives:				
Interest rate swaps	$ -	$ 9,685	$ -	$ 9,685
Options	2	7	-	9
Currency swaps	-	216	-	216
Forward contracts	-	162	-	162
Financial futures	129	-	-	129
Total financial liabilities carried at fair value	$ 131	$ 10,070	$ -	$ 10,201

The Company reviews the fair value hierarchy classifications each reporting period. Changes in the observability of the valuation attributes and the level of market activity may result in a reclassification of certain financial assets or liabilities between fair value hierarchy classifications. Such reclassifications are reported as transfers between levels in the beginning fair value for the reporting period in which the changes occur.

The following presents changes in the Company's Level 3 assets carried at fair value:

	Balance as of 1/1/20	Gains (Losses) in Net Income	Losses (Gains) in Surplus	Purchases	Issuances	Sales	Settlements	Transfers In	Transfers Out	Other	Balance as of 06/30/20
	(In Millions)										
Financial assets:											
Bonds:											
Industrial and miscellaneous	$ 120	$ -	$ (24)	$ 1	$ 7	$ -	$ (2)	$ 2	$ (28)	$ 109	$ 185
Preferred stocks	13	-	(14)	-	-	-	-	-	-	10	9
Common stocks - subsidiaries and affiliates	120	-	(38)	2	47	-	(2)	-	-	2	131
Common stocks - unaffiliated	272	1	(12)	5	1	(1)	(3)	-	-	-	263
Separate account assets	967	11	-	158	-	(14)	-	-	-	-	1,122
Total financial assets	$ 1,492	$ 12	$ (88)	$ 166	$ 55	$ (15)	$ (7)	$ 2	$ (28)	$ 121	$ 1,710

	Balance as of 1/1/19	Gains (Losses) in Net Income	Losses (Gains) in Surplus	Purchases	Issuances	Sales	Settlements	Transfers In	Transfers Out	Other	Balance as of 12/31/19
	(In Millions)										
Financial assets:											
Bonds:											
Industrial and miscellaneous	$ 68	$ (2)	$ (2)	$ 28	$ 1	$ -	$ (5)	$ 2	$ -	$ 30	$ 120
Parent, subsidiaries, and affiliates	72	-	-	-	-	-	-	-	(8)	(64)	-
Preferred stocks	-	-	(1)	2	-	-	-	-	-	12	13
Common stocks - subsidiaries and affiliates	165	1	(41)	1	-	-	(6)	-	-	-	120
Common stocks - unaffiliated	308	19	10	5	-	(60)	(10)	-	-	-	272
Separate account assets	551	42	-	797	-	(423)	-	-	-	-	967
Total financial assets	$ 1,164	$ 60	$ (34)	$ 833	$ 1	$ (483)	$ (21)	$ 2	$ (8)	$ (22)	$ 1,492

Other transfers include assets that are either no longer carried at fair value, or have just begun to be carried at fair value, such as assets with no level changes but a change in the lower of cost or market carrying basis. Industrial and miscellaneous bonds in other contain assets that are now carried at fair value due to ratings changes and assets are no longer carried at fair value where the fair value is now higher than the book value.

Level 3 transfers in are assets that are consistently carried at fair value but have had a level change. Common stocks unaffiliated assets were transferred from Level 2 to Level 3 due to a change in the observability of pricing inputs, at the beginning fair value for the reporting period.

5. Investments

The Company maintains a diversified investment portfolio. Investment policies limit concentration in any asset class, geographic region, industry group, economic characteristic, investment quality or individual investment.

a. Bonds

The carrying value and fair value of bonds were as follows:

	June 30, 2020			
	Carrying Value	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	(In Millions)			
U.S. government and agencies	$ 5,107	$ 1,065	$ -	$ 6,172
All other governments	1,717	165	14	1,868
States, territories and possessions	475	82	-	557
Political subdivisions	466	80	-	546
Special revenue	6,016	1,081	10	7,087
Industrial and miscellaneous	93,362	7,789	1,595	99,556
Parent, subsidiaries and affiliates	6,549	381	10	6,920
Total	$ 113,692	$ 10,643	$ 1,629	$ 122,706

The June 30, 2020 gross unrealized losses exclude $104 million of losses included in the carrying value. These losses include $100 million from NAIC Class 6 bonds and $4 million from residential mortgage backed securities (RMBS) and commercial mortgage backed securities whose ratings were obtained from third-party modelers. These losses were primarily included in industrial and miscellaneous or parent, subsidiaries and affiliates.

	December 31, 2019			
	Carrying Value	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	(In Millions)			
U.S. government and agencies	$ 4,405	$ 585	$ 2	$ 4,988
All other governments	1,590	174	1	1,763
States, territories and possessions	576	60	-	636
Political subdivisions	535	54	-	589
Special revenue	5,921	805	2	6,724
Industrial and miscellaneous	86,293	6,190	290	92,193
Parent, subsidiaries and affiliates	6,703	163	-	6,866
Total	$ 106,023	$ 8,031	$ 295	$ 113,759

The December 31, 2019 gross unrealized losses exclude $27 million of losses included in the carrying value. These losses include $26 million from NAIC Class 6 bonds and were primarily included in industrial and miscellaneous or parent, subsidiaries and affiliates.

As of June 30, 2020, investments in structured and loan-backed securities that had unrealized losses, which were not recognized in earnings, had a fair value of $12,965 million. Securities in an unrealized loss position for less than 12 months had a fair value of $9,452 million and unrealized losses of $680 million. Securities in an unrealized loss position for greater than 12 months had a fair value of $3,514 million and unrealized losses of $221 million. These securities were primarily categorized as industrial and miscellaneous or parent, subsidiaries and affiliates.

As of December 31, 2019, investments in structured and loan-backed securities that had unrealized losses, which were not recognized in earnings, had a fair value of $7,822 million. Securities in an unrealized loss position for less than 12 months had a fair value of $2,338 million and unrealized losses of $24 million. Securities in an unrealized loss position for greater than 12 months had a fair value of $5,484 million and unrealized losses of $96 million. These securities were primarily categorized as industrial and miscellaneous or parent, subsidiaries and affiliates.

In the course of the Company's investment management activities, securities may be sold and reacquired within 30 days to enhance the Company's yield on its investment portfolio. The Company did not sell any securities with the NAIC Designation 3 or below for the six months ended June 30, 2020 or 2019, that were reacquired within 30 days of the sale date.

Residential mortgage-backed exposure

Residential mortgage-backed securities (RMBS) are included in the U.S. government and agencies, special revenue and industrial and miscellaneous bond categories. The Alt-A category includes option adjustable-rate mortgages and the subprime category includes 'scratch and dent' or reperforming pools, high loan-to-value pools and pools where the borrowers have very impaired credit but the average loan-to-value is low, typically 70% or below. In identifying Alt-A and subprime exposure, management used a combination of qualitative and quantitative factors, including FICO scores and loan-to-value ratios.

As of June 30, 2020, RMBS had a total carrying value of $1,736 million and a fair value of $1,809 million, of which approximately 20%, based on carrying value, was classified as Alt-A. Alt-A and subprime RMBS had a total carrying value of $855 million and a fair value of $866 million. As of December 31, 2019, RMBS had a total carrying value of $1,823 million and a fair value of $1,939 million, of which approximately 19%, based on carrying value, was classified as Alt-A. Alt-A and subprime RMBS had a total carrying value of $904 million and a fair value of $969 million.

b. Common stocks – subsidiaries and affiliates

MMHLLC paid $200 million in dividends to MassMutual for the six months ended June 30, 2020, which were declared in 2019, and paid $650 million in dividends for the six months ended June 30, 2019, which were declared in 2018. There were no dividends declared for the six months ended June 30, 2020 and $300 million declared for the six months ended June 30, 2019, which were paid subsequently.

MassMutual contributed capital of $34 million to MMHLLC for the six months ended June 30, 2020 and $50 million for the six months ended June 30, 2019.

On May 24, 2019, an indirectly wholly owned subsidiary of MassMutual, MM Asset Management Holding LLC (MMAMH) executed the sale of its retail asset management affiliate, Oppenheimer Acquisition Corp. (OAC), to Invesco Ltd (Invesco), a global asset manager. Under the terms of the sale, MMAMH and OAC employee shareholders received 81.8 million of Invesco common shares and $4.0 billion in perpetual, non-cumulative preference shares with a fixed cash dividend rate of 5.9%. MMAMH is a directly wholly owned subsidiary of MMHLLC. In turn, at the time of the transaction, MMAMH received a 15.7% common equity interest in post transaction Invesco and MMAMH entered into a shareholder agreement pursuant to which MMAMH has customary minority shareholder rights, including the appointment of a director to Invesco's board of directors. MassMutual's investment in MMHLLC was increased from the impact of this sale through change in unrealized capital gains of $3,361 million, with an approximate net increase to surplus of $2,500 million.

Subsidiaries of MMHLLC are involved in litigation and investigations arising in the ordinary course of their business, which seek compensatory damages, punitive damages and equitable remedies. Although the Company is not aware of any actions or allegations that reasonably could give rise to a material adverse impact to the Company's financial position or liquidity, the outcome of litigation cannot be foreseen with certainty. It is the opinion of management that the ultimate resolution of these matters will not materially impact the Company's financial position or liquidity. However, the outcome of a particular proceeding may be material to the Company's Condensed Consolidated Statutory Statements of Changes in Surplus for a particular period depending upon, among other factors, the size of the loss and the level of the Company's changes in surplus for the period.

c. Mortgage loans

Mortgage loans comprised commercial mortgage loans and residential mortgage loans. The Company's commercial mortgage loans primarily finance various types of real estate properties throughout the U.S., the United Kingdom and Canada. The Company holds commercial mortgage loans for which it is the primary lender or a participant or co-lender in a mortgage loan agreement and mezzanine loans that are subordinate to senior secured first liens. Residential mortgage loans are primarily seasoned pools of homogeneous residential mortgage loans substantially backed by Federal Housing Administration (FHA) and Veterans Administration (VA) guarantees.

The carrying value and fair value of the Company's mortgage loans were as follows:

	June 30, 2020		December 31, 2019	
	Carrying Value	Fair Value	Carrying Value	Fair Value
	(In Millions)			
Commercial mortgage loans:				
Primary lender	$ 24,926	$ 26,019	$ 24,993	$ 25,957
Total commercial mortgage loans	24,926	26,019	24,993	25,957
Residential mortgage loans:				
FHA insured and VA guaranteed	2,501	2,528	2,684	2,673
Other residential loans	881	867	731	734
Total residential mortgage loans	3,382	3,395	3,415	3,407
Total mortgage loans	$ 28,308	$ 29,414	$ 28,408	$ 29,364

As of June 30, 2020, and December 31, 2019, the loan-to-value ratios of 99% of the Company's commercial mortgage loans were less than 81%.

As of June 30, 2020 and December 31, 2019, the Company had no impaired mortgage loans with or without a valuation allowance or mortgage loans derecognized as a result of foreclosure, including mortgage loans subject to a participant or co-lender mortgage loan agreement with a unilateral mortgage loan foreclosure restriction or mortgage loan derecognized as a result of a foreclosure.

As of and for the six months ended June 30, 2020, the Company had a $5 million valuation allowance recorded for commercial mortgage loans. As of and for the six months ended June 30, 2019, the Company had no valuation allowance recorded.

d. Derivatives

The Company uses derivative financial instruments in the normal course of business to manage risks, primarily to reduce currency, interest rate and duration imbalances determined in asset/liability analyses. The Company also uses a combination of derivatives and fixed income investments to create synthetic investments. These synthetic investments are created when they are economically more attractive than the actual instrument or when similar instruments are unavailable. Synthetic investments are created either to hedge and reduce the Company's credit exposure or to create an investment in a particular asset. The Company held synthetic investments with a notional amount of $20,971 million as of June 30, 2020 and $18,039 million as of December 31, 2019. These notional amounts included replicated asset transaction values of $18,971 million as of June 30, 2020 and $16,039 million as of December 31, 2019, as defined under statutory accounting practices as the result of pairing of a long derivative contract with cash instruments.

The Company’s principal derivative exposures to market risk are interest rate risk, which includes inflation and credit risk. Interest rate risk pertains to the change in fair value of the derivative instruments as a result of changes in market interest rates. The Company is exposed to credit-related losses in the event of nonperformance by counterparties to derivative financial instruments. The Company regularly monitors counterparty credit ratings, derivative positions, valuations and the value of collateral posted to ensure counterparties are credit-worthy and the concentration of exposure is minimized, and monitors its derivative credit exposure as part of its overall risk management program.

The Company enters derivative transactions through bilateral derivative agreements with counterparties, or through over the counter cleared derivatives with a counterparty and the use of a clearinghouse. To minimize credit risk for bilateral transactions, the Company and its counterparties generally enter into master netting agreements based on agreed upon requirements that outline the framework for how collateral is to be posted in the amount owed under each transaction, subject to certain minimums. For over the counter cleared derivative transactions between the Company and a counterparty, the parties enter into a series of master netting and other agreements that govern, among other things, clearing and collateral requirements. These transactions are cleared through a clearinghouse and each derivative counterparty is only exposed to the default risk of the clearinghouse. Certain interest rate swaps and credit default swaps are considered cleared transactions. These cleared transactions require initial and daily variation margin collateral postings. These agreements allow for contracts in a positive position, in which amounts are due to the Company, to be offset by contracts in a negative position. This right of offset, combined with collateral obtained from counterparties, reduces the Company’s credit exposure.

Net collateral pledged by the counterparties was $9,524 million as of June 30, 2020 and $2,146 million as of December 31, 2019. In the event of default, the full market value exposure at risk in a net gain position, net of offsets and collateral, was $123 million as of June 30, 2020 and $54 million as of December 31, 2019. The statutory net amount at risk, defined as net collateral pledged and statement values excluding accrued interest, was $709 million as of June 30, 2020 and $421 million as of December 31, 2019.

The Company had the right to rehypothecate or repledge securities totaling $1,761 million of the $9,524 million as of June 30, 2020 and $1,136 million of the $2,146 million as of December 31, 2019 of net collateral pledged by counterparties. There were no securities rehypothecated to other counterparties as of June 30, 2020 or December 31, 2019.

The following summarizes the carrying values and notional amounts of the Company’s derivative financial instruments:

	June 30, 2020			
	Assets		Liabilities	
	Carrying Value	Notional Amount	Carrying Value	Notional Amount
	(In Millions)			
Interest rate swaps	$ 26,434	$ 115,349	$ 22,141	$ 125,061
Options	630	18,994	16	234
Currency swaps	2,389	15,708	29	1,250
Forward contracts	55	3,877	133	6,332
Credit default swaps	8	600	8	110
Financial futures	10	445	26	3,313
Total	$ 29,526	$ 154,973	$ 22,353	$ 136,300

	December 31, 2019			
	Assets		Liabilities	
	Carrying Value	Notional Amount	Carrying Value	Notional Amount
	(In Millions)			
Interest rate swaps	$ 11,037	$ 94,955	$ 9,684	$ 119,053
Options	605	19,710	10	272
Currency swaps	915	11,124	216	5,634
Forward contracts	12	2,289	162	8,301
Credit default swaps	22	1,185	-	35
Financial futures	6	291	129	3,424
Total	$ 12,597	$ 129,554	$ 10,201	$ 136,719

The average fair value of outstanding derivative assets was $27,260 million for the six months ended June 30, 2020 and $9,952 million for the six months ended June 30, 2019. The average fair value of outstanding derivative liabilities was $20,279 million for the six months ended June 30, 2020 and $6,626 million for the six months ended June 30, 2019.

The following summarizes the notional amounts of the Company's credit default swaps by contractual maturity:

	June 30, 2020	December 31, 2019
	(In Millions)	
Due in one year or less	$ -	$ 10
Due after one year through five years	710	1,210
Total	$ 710	$ 1,220

The following summarizes the Company's net realized gains (losses) on closed contracts and change in net unrealized gains (losses) related to market fluctuations on open contracts by derivative type:

	Six Months Ended June 30,			
	2020		2019	
	Net Realized Gains (Losses) on Closed Contracts	Change In Net Unrealized Gains (Losses) on Open Contracts	Net Realized Gains (Losses) on Closed Contracts	Change In Net Unrealized Gains (Losses) on Open Contracts
	(In Millions)			
Interest rate swaps	$ 240	$ 2,943	$ (37)	$ (83)
Currency swaps	68	1,662	17	234
Options	510	5	(75)	(130)
Credit default swaps	2	-	5	-
Interest rate caps and floors	-	-	-	(6)
Forward contracts	262	71	154	(58)
Financial futures	718	107	325	(53)
Total	$ 1,800	$ 4,788	$ 389	$ (96)

The following summarizes gross and net information of derivative assets and liabilities, along with collateral posted in connection with master netting agreements:

	June 30, 2020			December 31, 2019		
	Derivative Assets	Derivative Liabilities	Net	Derivative Assets	Derivative Liabilities	Net
	(In Millions)					
Gross	$ 29,526	$ 22,353	$ 7,173	$ 12,597	$ 10,201	$ 2,396
Due and accrued	1,046	2,234	(1,188)	843	2,003	(1,160)
Gross amounts offset	(23,740)	(23,740)	-	(9,983)	(9,983)	-
Net asset	6,832	847	5,985	3,457	2,221	1,236
Collateral posted	(10,752)	(1,228)	(9,524)	(4,531)	(2,385)	(2,146)
Net	$ (3,920)	$ (381)	$ (3,539)	$ (1,074)	$ (164)	$ (910)

e. Net investment income

Net investment income, including IMR amortization, comprised the following:

	Six Months Ended June 30, 2020	Six Months Ended June 30, 2019
	(In Millions)	
Bonds	$ 2,237	$ 2,306
Preferred stocks	10	11
Common stocks - subsidiaries and affiliates	-	300
Common stocks - unaffiliated	25	18
Mortgage loans	626	547
Policy loans	468	455
Real estate	48	75
Partnerships and limited liability companies	146	240
Derivatives	219	188
Cash, cash equivalents and short-term investments	79	45
Other	13	30
Subtotal investment income	3,871	4,215
Amortization of the IMR	20	15
Investment expenses	(346)	(398)
Net investment income	$ 3,545	$ 3,832

f. Net realized capital gains

Net realized capital gains (losses), which include other-than-temporary impairments (OTTI) and are net of deferral to the IMR, comprised the following:

	Six Months Ended June 30, 2020	Six Months Ended June 30, 2019
	(In Millions)	
Bonds	$ (56)	$ (39)
Preferred stocks	(20)	-
Common stocks - subsidiaries and affiliates	-	1
Common stocks - unaffiliated	(109)	8
Mortgage loans	-	1
Real estate	-	(20)
Partnerships and limited liability companies	(64)	(30)
Derivatives	1,800	389
Other	2	(9)
Net realized capital gains before federal and state taxes and deferral to the IMR	1,553	301
Net federal and state tax (expense) benefit	(192)	3
Net realized capital gains before deferral to the IMR	1,361	304
Net after tax (gains) deferred to the IMR	(1,200)	(393)
Net realized capital gains (losses)	$ 161	$ (89)

The IMR liability balance was $1,718 million as of June 30, 2020 and $547 million as of December 31, 2019 and was included in other liabilities on the Condensed Consolidated Statutory Statements of Financial Position.

OTTI, included in the realized capital losses, consisted of the following:

	Six Months Ended June 30, 2020	Six Months Ended June 30, 2019
	(In Millions)	
Bonds	$ (66)	$ (67)
Common stocks - unaffiliated	(80)	(8)
Partnerships and limited liability companies	(70)	(35)
Total OTTI	$ (216)	$ (110)

The Company recognized OTTI of $6 million for the six months ended June 30, 2020 and $1 million for the six months ended June 30, 2019 on structured and loan-backed securities, which are included in bonds, primarily due to the present value of expected cash flows being less than the amortized cost.

6. Federal income taxes

In response to the COVID-19 pandemic, the CARES Act was signed into law on March 27, 2020. The CARES Act, among other things, permits net operating loss (NOL) carryovers and carrybacks to offset 100% of taxable income for taxable years beginning before 2021. In addition, the CARES Act allows NOLs incurred in 2018, 2019, and 2020 to be carried back to each of the five preceding taxable years to generate a refund of previously paid income taxes. The Company is currently evaluating the impact of the CARES Act, but does not expect that the business tax provisions of the CARES Act to have a material impact on the financial statements.

7. Other than invested assets

No significant changes.

8. Policyholders' liabilities

a. Liabilities for deposit-type contracts

On January 14, 2020, MassMutual issued a $550 million funding agreement with a 2.35% fixed rate and a 7-year maturity.

On January 15, 2020, MassMutual issued a $540 million funding agreement with a 3-month LIBOR rate and a 2-year maturity.

On June 9, 2020, MassMutual issued a $1,000 million funding agreement with a 0.85% fixed rate and a 3-year maturity.

b. Additional liability for annuity contracts

Certain variable annuity contracts include additional death or other insurance benefit features, such as guaranteed minimum death benefits (GMDB), guaranteed minimum income benefits (GMIB), guaranteed minimum accumulation benefits (GMAB) and guaranteed minimum withdrawal benefits (GMWB). In general, living benefit guarantees require the contract holder or policyholder to adhere to a company approved asset allocation strategy. Election of these benefit guarantees is generally only available at contract issue.

The following shows the changes in the liabilities for GMDB, GMIB, GMAB and GMWB (in millions):

Liability as of January 1, 2019	$ 760
Incurred guarantee benefits	(163)
Paid guarantee benefits	(9)
Liability as of December 31, 2019	588
Incurred guarantee benefits	934
Paid guarantee benefits	(6)
Liability as of June 30, 2020	$ 1,516

The following summarizes the account values, net amount at risk and weighted average attained age for variable annuity contracts with GMDB, GMIB, GMAB and GMWB classified as policyholders' reserves and separate account liabilities. The net amount at risk is defined as the minimum guarantee less the account value calculated on a policy-by-policy basis, but not less than zero.

	June 30, 2020			December 31, 2019		
	Account Value	Net Amount at Risk	Weighted Average Attained Age	Account Value	Net Amount at Risk	Weighted Average Attained Age
	($ In Millions)					
GMDB	$ 18,991	$ 93	65	$ 19,980	$ 63	65
GMIB Basic	642	50	70	718	28	69
GMIB Plus	2,645	759	68	2,906	532	68
GMAB	2,263	18	60	2,544	2	60
GMWB	134	17	72	151	10	71

As of June 30, 2020, the GMDB account value above consists of $4,186 million within the general account and $14,805 million within separate accounts that includes $3,962 million of modified coinsurance (MODCO) assumed. As of December 31, 2019, the GMDB account value above consists of $4,121 million within the general account and $15,859 million within separate accounts that includes $4,088 million of MODCO assumed.

9. Reinsurance

For the six months ended June 30, 2020, the Company increased its gross LTC policyholders' reserves by $94 million through various assumption changes to reflect the risk inherent in the cash flows of this business. This risk is ceded to an unaffiliated reinsurer, therefore the ceded policyholders' reserves have also been increased by an additional $94 million.

10. Withdrawal characteristics

No significant changes.

11. Debt

No significant changes.

12. Employee benefit plans

The Company sponsors multiple employee benefit plans providing retirement, life, health and other benefits to employees, certain employees of unconsolidated subsidiaries, agents, general agents and retirees who meet plan eligibility requirements.

Net periodic cost

The net periodic cost represents the annual accounting income or expense recognized by the Company and is included in general insurance expenses in the Condensed Consolidated Statutory Statements of Operations. The net periodic cost recognized is as follows:

	Six Months Ended June 30,			
	2020	2019	2020	2019
	Pension Benefits		Other Postretirement Benefits	
	(In Millions)			
Service cost	$ 57	$ 55	$ 7	$ 7
Interest cost	49	59	6	7
Expected return on plan assets	(89)	(80)	-	-
Amortization of unrecognized net actuarial and other losses	26	28	2	-
Amortization of unrecognized prior service cost	-	-	(4)	(3)
Total net periodic cost	$ 43	$ 62	$ 11	$ 11

13. Employee compensation plans

No significant changes.

14. Surplus notes

On April 16, 2020, MassMutual issued $700 million of surplus notes at a fixed 3.375% coupon rate maturing in 2050.

On June 24, 2020, MassMutual executed a drawdown of $600 million from its pre-capitalized surplus notes (P-Caps) facility and received $837 million in market value proceeds, at a fixed 5.077% coupon rate, maturing in 2069 and callable beginning in 2049. As of June 30, 2020, there was a remaining capacity of raising $200 million of capital through the P-Caps facility.

The following table summarizes the surplus notes issued and outstanding as of June 30, 2020:

Issue Date	Face Amount	Carrying Value	Interest Rate	Maturity Date	Scheduled Interest Payment Dates
	($ In Millions)				
11/15/1993	$ 250	$ 250	7.625%	11/15/2023	May 15 & Nov 15
03/01/1994	100	100	7.500%	03/01/2024	Mar 1 & Sept 1
05/12/2003	193	193	5.625%	05/15/2033	May 15 & Nov 15
06/01/2009	130	128	8.875%	06/01/2039	Jun 1 & Dec 1
01/17/2012	263	263	5.375%	12/01/2041	Jun 1 & Dec 1
04/15/2015	258	254	4.500%	04/15/2065	Apr 15 & Oct 15
03/20/2017	475	471	4.900%	04/01/2077	Apr 1 & Oct 1
10/11/2019	838	579	3.729%	10/15/2070	Apr 15 & Oct 15
04/16/2020	700	697	3.375%	04/15/2050	Apr 15 & Oct 15
06/24/2020	600	837	5.077%	02/15/2069	Apr 15 & Oct 15
Total	$ 3,807	$ 3,772			

15. *Presentation of the Condensed Consolidated Statutory Statements of Cash Flows*

The following table presents those transactions that have affected the Company's recognized assets or liabilities but have not resulted in cash receipts or payments during the six months ended June 30, 2020 and 2019. Accordingly, the Company has excluded these non-cash activities from the Condensed Consolidated Statutory Statements of Cash Flows for the six months ended June 30, 2020 and 2019.

	Six Months Ended June 30, 2020	Six Months Ended June 30, 2019
	(In Millions)	
Bonds received as consideration for surplus notes	$ (837)	$ -
Surplus notes issued in exchange for bonds	837	-
Bonds received as consideration for group annuity contracts	(387)	(223)
Premium income recognized for group annuity contracts	387	223
Transfer of mortgage loans to partnerships and LLCs	354	91
Bond conversions and refinancing	234	697
Stock conversion	63	54
Assets received in-kind for bond maturity	57	-
Change in market value of COLI	55	105
Net investment income payment-in-kind bonds	5	-
Other	-	4

16. *Business risks, commitments and contingencies*

a. Risks and uncertainties

The Company operates in a business environment subject to various risks and uncertainties. The principal risks include insurance and underwriting risks, investment and interest rate risks, currency exchange risk and credit risk. The combined impact of these risks could have a material, adverse effect on the Company’s financial statements or result in operating losses in future periods. The Company employs the use of reinsurance, portfolio diversification, asset/liability management processes and other risk management techniques to mitigate the impact of these risks. The condensed risks and uncertainties disclosure should be read in conjunction with the consolidated statutory disclosure in the Company’s 2019 audited yearend financial statements.

Insurance and underwriting risks

The Company prices its products based on estimated benefit payments reflecting assumptions with respect to mortality, morbidity, longevity, persistency, interest rates and other factors. If actual policy experience emerges that is significantly and adversely different from assumptions used in product pricing, the effect could be material to the profitability of the Company. For participating whole life products, the Company’s dividends to policyholders primarily reflect the difference between actual investment, mortality, expense and persistency experience and the experience embedded in the whole life premiums and guaranteed elements. The Company also reinsures certain life insurance and other long-term care insurance policies to mitigate the impact of its underwriting risk.

Investment and interest rate risks

The fair value, cash flows and earnings of investments can be influenced by a variety of factors including changes in interest rates, credit spreads, equity markets, portfolio asset allocation and general economic conditions. The Company employs a rigorous asset/liability management process to help mitigate the economic impacts of various investment risks, in particular, interest rate risk. By effectively matching the market sensitivity of assets with the liabilities they support, the impact of interest rate changes is addressed, on an economic basis, as the change in the value of the asset is offset by a corresponding change in the value of the supported liability. The Company uses derivatives, such as interest rate swaps and swaptions, as well as synthetic assets to reduce interest rate and duration imbalances determined in asset/liability analyses.

The levels of U.S. interest rates are influenced by U.S. monetary policies and by the relative attractiveness of U.S. markets to investors versus other global markets. As interest rates increase, certain debt securities may experience amortization or prepayment speeds that are slower than those assumed at purchase, impacting the expected maturity of these securities and the ability to reinvest the proceeds at the higher yields. Rising interest rates may also result in a decrease in the fair value of the investment portfolio. As interest rates decline, certain debt securities may experience accelerated amortization and prepayment speeds than what was assumed at purchase. During such periods, the Company is at risk of lower net investment income as it may not be able to reinvest the proceeds at comparable yields. Declining interest rates may also increase the fair value of the investment portfolio.

Interest rates also have an impact on the Company's products with guaranteed minimum payouts and on interest credited to account holders. As interest rates decrease, investment spreads may contract as crediting rates approach minimum guarantees, resulting in an increased liability.

In periods of increasing interest rates, policy loans, surrenders and withdrawals may increase as policyholders seek investments with higher perceived returns. This could result in cash outflows requiring the Company to sell invested assets at a time when the prices of those assets are adversely affected by the increase in market interest rates, which could cause the Company to realize investment losses.

Currency exchange risk

The Company has currency risk due to its non-U.S. dollar denominated investments and medium-term notes along with its indirect international operations. The Company mitigates a portion of its currency risk through the use of cross-currency swaps and forward contracts. Cross-currency swaps are used to minimize currency risk for certain non-U.S. dollar assets and liabilities through a pre-specified exchange of interest and principal. Forward contracts are used to hedge movements in exchange rates.

Credit and other market risks

The Company manages its investments to limit credit and other market risks by diversifying its portfolio among various security types and industry sectors as well as purchasing credit default swaps to transfer some of the risk.

Stressed conditions, volatility and disruptions in global capital markets or in particular markets or financial asset classes can have an adverse effect on the Company, in part because the Company has a large investment portfolio and assets supporting the Company's insurance liabilities are sensitive to changing market factors. Global market factors, including interest rates, credit spread, equity prices, real estate markets, foreign currency exchange rates, consumer spending, business investment, government spending, the volatility and strength of the capital markets, deflation and inflation, all affect the business and economic environment and, ultimately, the profitability of the Company's business. Disruptions in one market or asset class can also spread to other markets or asset classes. Upheavals in the financial markets can also affect the Company's business through their effects on general levels of economic activity, employment and customer behavior.

Asset-based fees calculated as a percentage of the separate account assets are a source of revenue to the Company. Gains and losses in the investment markets may result in corresponding increases and decreases in the Company's separate account assets and related revenue.

The spread of the coronavirus, causing increased cases of COVID-19, around the world in the first six months of 2020 has caused significant volatility in U.S. and international markets. There is significant uncertainty around the breadth and duration of business disruptions related to COVID-19, as well as its impact on the U.S. and international economies. At this time, the Company is not able to reliably estimate the length and severity of the COVID-19 public health crises and, as such, cannot quantify its impact on the financial results, liquidity and capital resources and its operations in future periods.

b. Litigation and regulatory matters

In the normal course of business, the Company is involved in disputes, litigation and governmental or regulatory inquiries, administrative proceedings, examinations and investigations, both pending and threatened. These matters, if resolved adversely against the Company or settled, may result in monetary damages, fines and penalties or require changes in the Company's business practices. The resolution or settlement of these matters is inherently difficult to predict. Based upon the Company's assessment of these pending matters, the Company does not believe that the amount of any judgment, settlement or other action arising from any pending matter is likely to have a material adverse effect on the consolidated statement of financial position. However, an adverse outcome in certain matters could have a material adverse effect on the consolidated results of operations for the period in which such matter is resolved, or an accrual is determined to be required, on the consolidated financial statement financial position, or on our reputation.

The Company evaluates the need for accruals of loss contingencies for each matter. When a liability for a matter is probable and can be estimated, the Company accrues an estimate of the loss and any related insurance recoveries, if any. An accrual is subject to subsequent adjustment as a result of additional information and other developments. The resolution of matters is inherently difficult to predict, especially in the early stages of matter. Even if a loss is probable, due to many complex factors, such as speed of discovery and the timing of court decisions or rulings, a loss or range of loss may not be reasonably estimated until the later stages of the matter. For matters where a loss is material and it is either probable or reasonably possible then it is disclosed. For matters where a loss may be reasonably possible, but not probable, or is probable but not reasonably estimated, no accrual is established, but the matter, if material, is disclosed.

In connection with the May 24, 2019 sale of OAC to Invesco, Invesco has identified an accounting matter related to four Master Limited Partnership funds managed by a subsidiary of OAC prior to the sale that Invesco has stated may result in an indemnification claim against MassMutual under the terms of the acquisition agreement. Under the terms of the agreement, MassMutual may be liable to Invesco under the acquisition agreement for a portion of any actual losses incurred by Invesco in excess of $173 million and up to a cap of $575 million. There are currently considerable uncertainties as to the nature, scope and amount of the potential losses for which Invesco may seek indemnity. In addition to the $173 million deductible, it is uncertain whether the indemnification obligations set forth in the acquisition agreement would apply to this situation and MassMutual believes it has a number of defenses available that may mitigate its exposure to any losses claimed by Invesco should such obligations apply. However, the outcome of any indemnification dispute (including any resulting litigation), should Invesco assert such a claim, and its potential impact on MassMutual's financial position cannot be foreseen with certainty at this time.

17. Related party transactions

In May 2020, MassMutual transferred $335 million of mortgage loans to Barings Multifamily TEBS 2020 LLC, a wholly owned subsidiary, for consideration of $288 million.

In June 2020, Insurance Road LLC, a wholly owned subsidiary, issued a return of capital of $90 million to MassMutual for the six months ended June 30, 2020, to be paid in August 2020.

18. Subsequent events

Management of the Company has evaluated subsequent events through August 14, 2020, the date the financial statements were available to be issued to state regulators and subsequently on the Company’s website. No events have occurred subsequent to the date of the financial statements, except for:

On July 1, 2020, MassMutual recaptured a coinsurance agreement and ceded the recaptured inforce business to a subsidiary of the initial reinsurer through a coinsurance funds withheld agreement. This resulted in an increase of invested assets of $4,986 million with an offsetting funds withheld liability.

Glossary of Terms

Term	Description
B2B	Business to Business
CARES	Coronavirus Aid, Relief, and Economic Security
C.M. Life	C.M. Life Insurance Company
DTC	Direct to Consumer
FHA	Federal Housing Administration
GIC	Guaranteed interest contracts
GMAB	Guaranteed minimum accumulation benefits
GMDB	Guaranteed minimum death benefits
GMIB	Guaranteed minimum income benefits
GMWB	Guaranteed minimum withdrawal benefits
IMR	Interest maintenance reserve
Invesco	Invesco Ltd
IS	Institutional Solutions
LLC	Limited liability companies
LIBOR	London Inter-Bank Offered Rate
LTC	Long-term care
MassMutual	Massachusetts Mutual Life Insurance Company
MMFA	MassMutual Financial Advisors
MMHLLC	MassMutual Holding LLC
MODCO	Modified coinsurance
NAIC	National Association of Insurance Commissioners
NOL	Net Operating Loss
OAC	Oppenheimer Acquisition Corporation
OTTI	Other-than-temporary impairment(s)
PBR	Principles-based reserving
P-Caps	Pre-capitalized surplus notes
RMBS	Residential mortgage-backed securities
SSAP	Statements of Statutory Accounting Principles
TDR	Troubled debt restructuring
The Company	Massachusetts Mutual Life Insurance Company, a mutual life insurance company domiciled in the Commonwealth of Massachusetts, and its domestic life insurance subsidiaries domiciled in the State of Connecticut
U.S. GAAP	U.S. generally accepted accounting principles
VA	Veterans Administration
WS	Workplace Solutions