MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATUTORY FINANCIAL STATEMENTS

As of June 30, 2017 and December 31, 2016 and for the six months ended
June 30, 2017 and 2016

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, 2017	December 31, 2016	$ Change	% Change
	($ In Millions)			
Assets:				
Bonds	$ 92,314	$ 88,208	$ 4,106	5 %
Preferred stocks	505	490	15	3
Common stocks – subsidiaries and affiliates	12,638	12,718	(80)	(1)
Common stocks – unaffiliated	1,201	1,122	79	7
Mortgage loans	23,046	21,932	1,114	5
Policy loans	12,992	12,700	292	2
Real estate	940	974	(34)	(3)
Partnerships and limited liability companies	7,659	7,387	272	4
Derivatives	9,866	10,272	(406)	(4)
Cash, cash equivalents and short-term investments	1,958	3,950	(1,992)	(50)
Other invested assets	399	370	29	8
Total invested assets	163,518	160,123	3,395	2
Investment income due and accrued	2,665	2,013	652	32
Federal income taxes	438	28	410	NM
Deferred income taxes	1,437	1,654	(217)	(13)
Other than invested assets	3,058	2,986	72	2
Total assets excluding separate accounts	171,116	166,804	4,312	3
Separate account assets	72,302	68,234	4,068	6
Total assets	$ 243,418	$ 235,038	$ 8,380	4 %
Liabilities and Surplus:				
Policyholders' reserves	$ 118,626	$ 116,354	$ 2,272	2 %
Liabilities for deposit-type contracts	12,406	11,665	741	6
Contract claims and other benefits	405	406	(1)	-
Policyholders' dividends	1,645	1,609	36	2
General expenses due or accrued	987	1,122	(135)	(12)
Asset valuation reserve	3,409	3,264	145	4
Repurchase agreements	4,465	4,966	(501)	(10)
Commercial paper and other borrowed money	250	250	-	-
Collateral	3,001	2,925	76	3
Derivatives	6,565	6,515	50	1
Other liabilities	3,956	2,314	1,642	71
Total liabilities excluding separate accounts	155,715	151,390	4,325	3
Separate account liabilities	72,303	68,225	4,078	6
Total liabilities	228,018	219,615	8,403	4
Surplus	15,400	15,423	(23)	-
Total liabilities and surplus	$ 243,418	$ 235,038	$ 8,380	4 %

NM = not meaningful

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

	Six Months Ended June 30, 2017	Six Months Ended June 30, 2016	$ Change	% Change
	($ In Millions)			
Revenue:				
Premium income	$ 9,804	$ 10,190	$ (386)	(4) %
Net investment income	3,624	3,234	390	12
Fees and other income	582	485	97	20
Total revenue	14,010	13,909	101	1
Benefits and expenses:				
Policyholders' benefits	10,416	8,609	1,807	21
Change in policyholders' reserves	1,006	4,088	(3,082)	(75)
Change in group annuity reserves assumed	(394)	(797)	403	51
General insurance expenses	1,452	975	477	49
Commissions	501	471	30	6
State taxes, licenses and fees	112	119	(7)	(6)
Total benefits and expenses	13,093	13,465	(372)	(3)
Net gain from operations before dividends and federal income taxes	917	444	473	107
Dividends to policyholders	761	796	(35)	(4)
Net gain (loss) from operations before federal income taxes	156	(352)	508	144
Federal income tax benefit	(114)	(173)	59	34
Net gain (loss) from operations	270	(179)	449	251
Net realized capital (losses) gains	(319)	60	(379)	(632)
Net loss	$ (49)	$ (119)	$ 70	59 %

See 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, 2017	Six Months Ended June 30, 2016	$ Change	% Change
	($ In Millions)			
Surplus, beginning of year	$ 15,423	$ 14,983	$ 440	3 %
(Decrease) increase due to:				
Net loss	(49)	(119)	70	59
Change in net unrealized capital (losses) gains, net of tax	(254)	1,748	(2,002)	(115)
Change in net unrealized foreign exchange capital gains (losses), net of tax	433	(167)	600	359
Change in other net deferred income taxes	(5)	31	(36)	(116)
Change in nonadmitted assets	(9)	(57)	48	84
Change in asset valuation reserve	(145)	(518)	373	72
Change in surplus notes	35	-	35	NM
Prior period adjustments	(10)	(25)	15	60
Other	(19)	(2)	(17)	(850)
Net (decrease) increase	(23)	891	(914)	(103)
Surplus, end of period	$ 15,400	$ 15,874	$ (474)	(3) %

NM = not meaningful

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

	Six Months Ended June 30, 2017	2016	$ Change	% Change
	($ In Millions)			
Cash from operations:				
Premium and other income collected	$ 10,156	$ 10,663	$ (507)	(5)%
Net investment income	3,231	3,086	145	5
Benefit payments	(10,430)	(8,530)	(1,900)	(22)
Net transfers from separate accounts	1,942	86	1,856	NM
Net receipts from RPG reinsurance agreement	394	797	(403)	(51)
Commissions and other expenses	(2,026)	(1,653)	(373)	(23)
Dividends paid to policyholders	(725)	(764)	39	5
Federal and foreign income taxes (paid) recovered	(143)	196	(339)	(173)
Net cash from operations	2,399	3,881	(1,482)	(38)
Cash from investments:				
Proceeds from investments sold, matured or repaid:				
Bonds	12,203	6,828	5,375	79
Preferred and common stocks – unaffiliated	227	213	14	7
Common stocks – affiliated	205	11	194	NM
Mortgage loans	1,111	1,685	(574)	(34)
Real estate	109	4	105	NM
Partnerships and limited liability companies	623	386	237	61
Derivatives	90	827	(737)	(89)
Other	(394)	(442)	48	11
Total investment proceeds	14,174	9,512	4,662	49
Cost of investments acquired:				
Bonds	(15,417)	(12,278)	(3,139)	(26)
Preferred and common stocks – unaffiliated	(293)	(229)	(64)	(28)
Common stocks – affiliated	(178)	(680)	502	74
Mortgage loans	(2,137)	(1,494)	(643)	(43)
Real estate	(97)	(88)	(9)	(10)
Partnerships and limited liability companies	(656)	(851)	195	23
Derivatives	(308)	(258)	(50)	(19)
Other	436	281	155	55
Total investments acquired	(18,650)	(15,597)	(3,053)	(20)
Net increase in policy loans	(292)	(204)	(88)	(43)
Net cash from investing activities	(4,768)	(6,289)	1,521	24
Cash from financing and miscellaneous sources:				
Net deposits on deposit-type contracts	664	287	377	131
Net cash provided by surplus notes	35	-	35	NM
Change in repurchase agreements	(501)	(273)	(228)	(84)
Change in collateral	74	1,789	(1,715)	(96)
Other cash provided	105	317	(212)	(67)
Net cash from financing and miscellaneous sources	377	2,120	(1,743)	(82)
Net change in cash, cash equivalents and short-term investments	(1,992)	(288)	(1,704)	(592)
Cash, cash equivalents and short-term investments:				
Beginning of year	3,950	3,424	526	15
End of period	$ 1,958	$ 3,136	$ (1,178)	(38)%

NM = not meaningful

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 (GICs) 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 MM Financial Advisors (MMFA), Direct to Consumer, Institutional Solutions and Workplace Solutions 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 Direct to Consumer distribution channel sells individual life primarily through direct response television advertising, digital media, search engine optimization and search engine marketing. The Company's Institutional Solutions distribution channel sells group annuities, group life and GICs primarily through retirement advisory firms, actuarial consulting firms, investment banks, insurance benefit advisors and investment management companies. The Company's Workplace Solutions distribution channel sells group annuities as well as individual and group life 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 subsidiaries, C.M. Life Insurance Company (C.M. Life) and C.M. Life's wholly-owned subsidiary, MML Bay State Life Insurance Company (MML Bay State). 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 (the Division); 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, 2017 and December 31, 2016 and for the six months ended June 30, 2017 and 2016 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 2016 audited yearend financial statements as these condensed consolidated statutory financial statements disclose only significant changes from year end 2016. 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, 2016 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 2016 audited consolidated yearend financial statements.

b. Corrections of errors and reclassifications

For the six months ended June 30, 2017, corrections of prior year errors were recorded in surplus, net of tax:

	Increase (Decrease) to: Prior Years Net Income	Increase (Decrease) to: Current Year Surplus	Correction of Asset or Liability Balances
	(In Millions)		
Partnerships and limited liability companies	$ -	$ (2)	$ (2)
Cash, cash equivalents and short-term investments	(9)	(9)	(9)
Other than invested assets	(4)	(4)	(4)
Policyholders' reserves	5	5	(5)
Total	$ (8)	$ (10)	$ (20)

Of the $10 million decrease to surplus for prior year errors, $8 million was recorded as prior period adjustments and $2 million recorded as a change in nonadmitted assets, net of tax in the Condensed Consolidated Statutory Statements of Changes in Surplus.

For the six months ended June 30, 2016, corrections of prior year errors were recorded in surplus, net of tax:

	Increase (Decrease) to: Prior Years Net Income	Increase (Decrease) to: Current Year Surplus	Correction of Asset or Liability Balances
	(In Millions)		
Federal income tax receivable	$ (23)	$ (23)	$ 23
Partnerships and limited liability companies	-	(5)	5
Fees and other income	(3)	(3)	3
Total	$ (26)	$ (31)	$ 31

Of the $31 million decrease to surplus for prior year errors, $26 million was recorded as prior period adjustments and $5 million was recorded as a change in net unrealized capital gains (losses), net of tax in the Condensed Consolidated Statutory Statements of Changes in Surplus.

Certain prior year amounts within these financial statements have been reclassified to conform to the current year presentation.

c. Common stocks - subsidiaries and affiliates

Common stocks of unconsolidated subsidiaries, primarily MassMutual Holding LLC (MMHLLC) and MassMutual International LLC (MMI), are accounted for using the statutory equity method. The Company accounts for the value of MMHLLC and MMI at its underlying U.S. GAAP equity value adjusted to remove certain nonadmitted and intangible assets. MMHLLC’s value is also adjusted by a portion of its noncontrolling interests (NCI) and appropriated retained earnings, after consideration of MMHLLC's fair value and the Company’s capital levels. The Division has affirmed the statutory recognition of the Company’s application of the NCI guidelines in MMHLLC’s statutory carrying value. However, the Company has limited this recognition to $2,582 million as of June 30, 2017 and $2,675 million as of December 31, 2016. Operating results, less dividend distributions, for MMHLLC are reflected as net unrealized capital gains (losses) in the Consolidated Statutory Statements of Changes in Surplus. Dividend distributions declared from MMHLLC are recorded in net investment income 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 4b. "Common stocks – subsidiaries and affiliates"* for further information on the valuation of MMHLLC and MMI.

3. New accounting standards

Adoption of new accounting standards

In April 2016, the NAIC adopted modifications to SSAP No. 41, *Surplus Notes*, which were effective January 1, 2017. These modifications required that the surplus notes with a designation equivalent to NAIC 3 through 6 be reported at the lesser of amortized cost or fair value. Currently these surplus notes are reported at amortized cost. The modifications also incorporate guidance to clarify when surplus notes shall be nonadmitted, an unrealized loss should be recognized, and an other-than-temporary (OTTI) assessment should be performed. These modifications did not have an impact on the Company’s financial statements.

In June 2016, the NAIC adopted modifications to SSAP No. 26, *Bonds*, *Excluding Loan-backed and Structured Securities*, and SSAP No. 43R, *Loan-backed and Structured Securities*, which were effective January 1, 2017 and should be prospectively applied. These modifications clarified that the amount of prepayment penalties or acceleration fees reported as investment income should equal the total proceeds received less the par value of the investment; and any difference between the carrying value and the par value at the time of disposal will be reported as realized capital gains and losses. These modifications also added specific disclosures related to securities sold, redeemed or otherwise disposed of as a result of a callable feature. These modifications did not have a significant impact on the Company’s financial statements.

In June 2016, the NAIC adopted modifications to SSAP No. 103R, *Transfers and Servicing of Financial Assets and Extinguishment of Liabilities*, which were effective January 1, 2017. These modifications required that obligations to deliver securities resulting from short sales be accounted for as contra-assets, and measured at fair value with changes in fair value recognized as unrealized gains and losses. The modifications also required new disclosures about short sale transactions. The unrealized gains and losses are realized upon settlement of the short sale obligation. Interest on short sale positions is accrued periodically and reported as interest expense. These modifications did not have an impact on the Company’s financial statements.

In June 2016, the NAIC adopted substantive revisions to SSAP No. 51, *Life Contracts*, to incorporate references to the Valuation Manual (VM) and to facilitate the implementation of 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 plans to adopt these revisions to SSAP No. 51 using the 3-year phased in approach by no later than January 1, 2020. The Company currently uses formulas and assumptions to determine reserves as prescribed by state laws and regulations. Under PBR, the Company will be 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. The Company is currently assessing the impact of these modifications on the Company’s financial statements.

In August 2016, the NAIC adopted modifications to SSAP No. 51, *Life Contracts*, which were effective January 1, 2017. These modifications clarified that annual assumption changes from reserving methods used in principles-based reserving (PBR) would not qualify as a change in valuation basis. Changes in valuation basis are recorded directly to surplus instead of through income. These modifications were made to accommodate PBR which became effective January 1, 2017. This modification did not have an impact on the Company's financial statements.

In June 2017, the NAIC adopted modifications to SSAP No. 30, *Investment in Common Stock*, SSAP No. 48, *Joint Ventures, Partnerships and Limited Liability Method of Accounting*, and SSAP No. 97, *Investments in Subsidiary Controlled and Affiliated Entities* as they relate to ASU 2016-07, *Simplifying the Transition to the Equity Method of Accounting* which were effective January 1, 2017. These modifications included the definition of control and provided guidance as to when an investment qualified (or no longer qualifies) for the equity method of accounting. These modifications further specified that when the level of investment in a subsidiary, controlled or affiliated (SCA) entity fell below the level of control, defined as the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of the investee in SSAP No. 97, the reporting entity should discontinue the use of the equity method of accounting. When an entity becomes qualified to use the equity method of accounting, the entity should add the cost of acquiring the additional interest in the investee to the current basis of the previously held interest and apply the equity method of accounting, prospectively. The Company has adopted these modifications.

Future adoption of new accounting standards

In December 2016, the NAIC adopted modifications to SSAP No. 2R, *Cash, Drafts, and Short-Term Investments*, which will be effective December 31, 2017. These modifications require that money market mutual funds shall be (a) reclassified from short-term investments to cash equivalents and (b) valued at fair value or NAV as a practical expedient. The adoption of these modifications is not expected to have an impact on the Company's financial statements.

In April 2017, the NAIC adopted modifications to SSAP No. 26R, *Bonds*, which will be effective December 31, 2017. These modifications are part of an ongoing investment classification project. These modifications (a) provide a definition of a security, (b) update the description of bonds included in scope of the guidance, and (c) require fair value accounting for certain Securities Valuation Office identified investments, such as bond exchange traded funds, unless a systematic value has been elected. While the scope specifically includes bank loans acquired through participation, syndication or assignment, additional guidance on bank loans is being redeliberated as a separate topic. The Company is currently assessing the impact of these modifications on the Company's financial statements.

In April 2017, the NAIC adopted modifications to SSAP No. 69, *Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments*, to adopt ASU No. 2016-15, *Classification of Certain Cash Receipts and Cash Payments*, in its entirety, including the related effective date and transition guidance which will be effective January 1, 2018 with early adoption permitted. These modifications address the classification of: (a) debt prepayment or extinguishment costs; (b) interest accretion and principal payment on zero coupon debt; (c) contingent consideration payments made after a business combination; (d) proceeds from the settlement of insurance claims; (e) proceeds from the settlement of corporate owned life insurance (COLI) policies; (f) distributions received from equity method investees; (g) beneficial interest in securitization transactions; and (h) separately identifiable cash flows and the application of the predominance principle. The Company is currently assessing the impact of these modifications on its financial statements.

In June 2017, the NAIC adopted modifications to SSAP No. 37, *Mortgage Loans*, which will be effective by December 31, 2017. These modifications clarify that a reporting entity providing a mortgage loan as a "participant in a mortgage loan agreement", should consider the mortgage loan in scope of SSAP No. 37. In addition to clarifying that these mortgage loans are not securities and are in scope of SSAP No. 37, these modifications further clarify the impairment assessment for these mortgage loans and incorporate disclosures for these structures, including additional disclosures to identify mortgage loans in which the insurer is a participant or co-lender. These modifications will require additional disclosures on the Company's financial statements.

4. 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, 2017			
	Carrying Value	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	(In Millions)			
U.S. government and agencies	$ 7,257	$ 618	$ 16	$ 7,859
All other governments	1,074	66	7	1,133
States, territories and possessions	670	60	5	725
Political subdivisions	503	42	1	544
Special revenue	5,771	692	11	6,452
Industrial and miscellaneous	71,005	3,315	462	73,858
Parent, subsidiaries and affiliates	6,034	147	16	6,165
Total	$ 92,314	$ 4,940	$ 518	$ 96,736

The June 30, 2017 gross unrealized losses exclude $27 million of losses included in the carrying value. These losses include $22 million from NAIC Class 6 bonds and $5 million from residential mortgage-backed securities (RMBS) and commercial mortgage-backed securities (CMBS) whose ratings were obtained from outside modelers. These losses were primarily included in industrial and miscellaneous or parent, subsidiaries and affiliates.

	December 31, 2016			
	Carrying Value	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	(In Millions)			
U.S. government and agencies	$ 7,130	$ 576	$ 53	$ 7,653
All other governments	925	38	27	936
States, territories and possessions	709	55	5	759
Political subdivisions	498	34	2	530
Special revenue	5,731	600	27	6,304
Industrial and miscellaneous	66,432	2,600	792	68,240
Parent, subsidiaries and affiliates	6,783	136	33	6,886
Total	$ 88,208	$ 4,039	$ 939	$ 91,308

The December 31, 2016 gross unrealized losses exclude $25 million of losses included in the carrying value. These losses include $20 million from NAIC Class 6 bonds and $5 million from RMBS and CMBS whose ratings were obtained from outside modelers. These losses were primarily included in industrial and miscellaneous or parent, subsidiaries and affiliates.

Sales proceeds and related gross realized capital gains (losses) from bonds were as follows:

	Six Months Ended June 30, 2017	Six Months Ended June 30, 2016
	(In Millions)	
Proceeds from sales	$ 5,551	$ 2,632
Gross realized capital gains from sales	93	66
Gross realized capital losses from sales	(138)	(103)

The following is a summary of the fair values and gross unrealized losses aggregated by bond category and length of time that the securities were in a continuous unrealized loss position:

	June 30, 2017					
	Less Than 12 Months			12 Months or Longer		
	Fair Value	Unrealized Losses	Number of Issuers	Fair Value	Unrealized Losses	Number of Issuers
	($ In Millions)					
U.S. government and agencies	$ 368	$ 14	16	$ 46	$ 2	5
All other governments	324	6	23	15	1	4
States, territories and possessions	189	5	9	-	-	-
Political subdivisions	59	1	5	9	-	2
Special revenue	729	9	105	36	1	20
Industrial and miscellaneous	19,965	276	1,454	4,595	211	703
Parent, subsidiaries and affiliates	3,397	16	7	185	3	17
Total	$ 25,031	$ 327	1,619	$ 4,886	$ 218	751

The June 30, 2017 gross unrealized losses include $27 million of losses included in the carrying value. These losses include $22 million from NAIC Class 6 bonds and $5 million from RMBS and CMBS whose ratings were obtained from outside modelers. These losses were primarily included in industrial and miscellaneous or parent, subsidiaries and affiliates.

	December 31, 2016					
	Less Than 12 Months			12 Months or Longer		
	Fair Value	Unrealized Losses	Number of Issuers	Fair Value	Unrealized Losses	Number of Issuers
	($ In Millions)					
U.S. government and agencies	$ 799	$ 51	13	$ 87	$ 3	4
All other governments	452	25	47	20	1	8
States, territories and possessions	66	1	5	42	4	2
Political subdivisions	57	2	13	-	-	-
Special revenue	797	24	174	41	2	141
Industrial and miscellaneous	16,213	470	1,283	7,730	343	690
Parent, subsidiaries and affiliates	4,096	30	8	446	8	20
Total	$ 22,480	$ 603	1,543	$ 8,366	$ 361	865

The December 31, 2016 gross unrealized losses exclude $25 million of losses included in the carrying value. These losses include $20 million from NAIC Class 6 bonds and $5 million from RMBS and CMBS whose ratings were obtained from outside modelers. These losses were primarily included in industrial and miscellaneous or parent, subsidiaries and affiliates.

As of June 30, 2017 and December 31, 2016, management has not deemed these unrealized losses to be other than temporary because the investment's carrying value is expected to be realized and the Company has the ability and intent not to sell these investments until recovery, which may be at maturity.

As of June 30, 2017, investments in structured and loan-backed securities that had unrealized losses, which were not recognized in earnings, had a fair value of $6,240 million. Securities in an unrealized loss position for less than 12 months had a fair value of $3,721 million and unrealized losses of $29 million. Securities in an unrealized loss position for greater than 12 months had a fair value of $2,519 million and unrealized losses of $66 million. These securities were primarily categorized as industrial and miscellaneous or parent, subsidiaries and affiliates.

As of December 31, 2016, investments in structured and loan-backed securities that had unrealized losses, which were not recognized in earnings, had a fair value of $8,377 million. Securities in an unrealized loss position for less than 12 months had a fair value of $3,472 million and unrealized losses of $67 million. Securities in an unrealized loss position for greater than 12 months had a fair value of $4,905 million and unrealized losses of $108 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, 2017 or for the year ended December 31, 2016, that were reacquired within 30 days of the sale date.

Residential mortgage-backed exposure

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, 2017, RMBS had a total carrying value of $1,441 million and a fair value of $1,644 million, of which approximately 24%, based on carrying value, was classified as Alt-A. Alt-A and subprime RMBS had a total carrying value of $662 million and a fair value of $798 million.

As of December 31, 2016, RMBS had a total carrying value of $1,590 million and a fair value of $1,813 million, of which approximately 23%, based on carrying value, was classified as Alt-A. Alt-A and subprime RMBS had a total carrying value of $727 million and a fair value of $872 million.

b. Common stocks – subsidiaries and affiliates

The MMHLLC statutory carrying values consist of $8,768 million as of June 30, 2017 and $8,870 million as of December 31, 2016. The MMI statutory carrying values consist of $2,321 million as of June 30, 2017 and $2,211 million as of December 31, 2016.

On July 1, 2016, MassMutual's purchase of MSI Financial Services (MSIFS) was accounted for under the statutory purchase method, classified as investments in common stocks – subsidiaries and affiliates at a cost of $126 million which included the recognition of statutory goodwill of $38 million. In 2017, MassMutual contributed MSIFS to MMHLLC at carrying value of $115 million which excluded the remaining unamortized statutory goodwill of $35 million. The remaining unamortized statutory goodwill was transferred from MassMutual's carrying value of MSIFS to its carrying value of MMHLLC. MSIFS was subsequently merged with MMHLLC's other broker dealer, MML Investor Services.

MassMutual recorded dividends in net investment income, from MMHLLC of $403 million through the six months ended June 30, 2017 and $200 million through the six months ended June 30, 2016.

MassMutual contributed additional capital of $20 million to MMHLLC through the six months ended June 30, 2017 and $669 million through the six months ended June 30, 2016. As part of last year's capital contributions, MassMutual contributed nine investments with a book value of $670 million to MMHLLC during the first quarter of 2016. This contribution was recorded at book value, and accordingly, there was no gain or loss recognized.

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 should 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 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, 2017		December 31, 2016	
	Carrying Value	Fair Value	Carrying Value	Fair Value
	(In Millions)			
Commercial mortgage loans:				
Primary lender	$ 21,050	$ 21,648	$ 19,935	$ 20,424
Mezzanine loans	38	39	74	76
Total commercial mortgage loans	21,088	21,687	20,009	20,500
Residential mortgage loans:				
FHA insured and VA guaranteed	1,952	1,914	1,916	1,871
Other residential loans	6	6	7	7
Total residential mortgage loans	1,958	1,920	1,923	1,878
Total mortgage loans	$ 23,046	$ 23,607	$ 21,932	$ 22,378

As of June 30, 2017, the Company had no impaired mortgage loans with or without a valuation allowance.

The following presents a summary of the Company's impaired mortgage loans as of June 30, 2016:

	Carrying Value	Average Carrying Value	Unpaid Principal Balance	Valuation Allowance	Interest Income
	(In Millions)				
With no allowance recorded:					
Commercial mortgage loans:					
Primary lender	$ 7	$ 11	$ 15	$ -	$ -

The following presents changes in the valuation allowance recorded for the Company's commercial mortgage loans:

	Six Months Ended June 30, 2017	Six Months Ended June 30, 2016
	Primary Lender (In Millions)	
Beginning balance	$ (3)	$ -
Additions	-	(6)
Decreases	3	-
Write-downs	-	6
Ending balance	$ -	$ -

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 and foreign currency exposure or to create an investment in a particular asset. The Company held synthetic investments with a notional amount of $13,029 million as of June 30, 2017 and $12,147 million as of December 31, 2016. These notional amounts included replicated asset transaction values of $11,349 million as of June 30, 2017 and $10,739 million as of December 31, 2016, as defined under statutory accounting practices as the result of pairing of a long derivative contract with cash instruments.

The Company's principal derivative market risk exposures are interest rate risk, which includes the impact of inflation, and credit risk. Interest rate risk pertains to the change in fair value of the derivative instruments as market interest rates move. The Company is exposed to credit-related losses in the event of nonperformance by counterparties to derivative financial instruments. To minimize credit risk for bilateral transactions (individual contracts entered between the Company and a counterparty), the Company and its derivative counterparties generally enter into master netting agreements that allow the use of credit support annexes and require collateral 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 same 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 $3,102 million as of June 30, 2017 and $3,236 million as of December 31, 2016. The Company had the right to rehypothecate or repledge securities totaling $798 million of the $3,102 million as of June 30, 2017 and $1,031 million of the $3,236 million as of December 31, 2016 of net collateral pledged by counterparties. There were no securities rehypothecated to other counterparties as of June 30, 2017 and December 31, 2016. In the event of default, the full market value exposure at risk in a net gain position, net of offsets and collateral, was $77 million as of June 30, 2017 and $264 million as of December 31, 2016. The statutory net amount at risk, defined as net collateral pledged and statement values excluding accrued interest, was $627 million as of June 30, 2017 and $766 million as of December 31, 2016. 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. The Company monitors its derivative credit exposure as part of its overall risk management program.

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

	June 30, 2017			
	Assets		Liabilities	
	Carrying Value	Notional Amount	Carrying Value	Notional Amount
	(In Millions)			
Interest rate swaps	$ 8,376	$ 77,435	$ 6,325	$ 95,224
Options	725	7,908	8	883
Currency swaps	718	5,800	151	3,994
Forward contracts	8	938	78	5,675
Credit default swaps	39	2,420	3	110
Financial futures	-	3,836	-	-
Total	$ 9,866	$ 98,337	$ 6,565	$ 105,886

	December 31, 2016			
	Assets		Liabilities	
	Carrying Value	Notional Amount	Carrying Value	Notional Amount
	(In Millions)			
Interest rate swaps	$ 8,510	$ 79,094	$ 6,413	$ 92,220
Options	679	6,898	6	5
Currency swaps	991	7,229	37	1,098
Forward contracts	54	3,444	58	2,941
Credit default swaps	38	2,435	1	215
Financial futures	-	3,646	-	-
Total	$ 10,272	$ 102,746	$ 6,515	$ 96,479

In most cases, notional amounts are not a measure of the Company's credit exposure. However, notional amounts are a measure of the Company's credit exposure for credit default swaps that are in the form of a replicated asset and mortgage-backed forwards. For these swaps and forwards, the Company is fully exposed to notional amounts of $4,135 million as of June 30, 2017 and $3,793 million as of December 31, 2016.

The collateral amounts exchanged are calculated on the basis of the notional amounts and the other terms of the instruments, which relate to interest rates, exchange rates, security prices or financial or other indices.

The average fair value of outstanding derivative assets was $9,899 million for the six months ended June 30, 2017 and $13,593 million for the six months ended June 30, 2016. The average fair value of outstanding derivative liabilities was $6,364 million for the six months ended June 30, 2017 and $9,802 million for the six months ended June 30, 2016.

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

	June 30, 2017	December 31, 2016
	(In Millions)	
Due in one year or less	$ 30	$ 205
Due after one year through five years	2,500	2,445
Total	$ 2,530	$ 2,650

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,			
	2017		2016	
	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	$ (167)	$ (45)	$ (2)	$ 391
Currency swaps	63	(386)	12	305
Options	(60)	(82)	(15)	133
Credit default swaps	10	1	(5)	1
Forward contracts	(77)	(65)	65	74
Financial futures	135	-	538	-
Total	$ (96)	$ (577)	$ 593	$ 904

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

	June 30, 2017			December 31, 2016		
	Derivative Assets	Derivative Liabilities	Net	Derivative Assets	Derivative Liabilities	Net
	(In Millions)					
Gross	$ 9,866	$ 6,565	$ 3,301	$ 10,272	$ 6,515	$ 3,757
Due and accrued	891	1,792	(901)	893	1,723	(830)
Gross amounts offset	(7,529)	(7,529)	-	(7,359)	(7,359)	-
Net asset	3,228	828	2,400	3,806	879	2,927
Collateral posted	(3,798)	(696)	(3,102)	(3,916)	(680)	(3,236)
Net	$ (570)	$ 132	$ (702)	$ (110)	$ 199	$ (309)

e. Net investment income

Net investment income, including interest maintenance reserve (IMR) amortization, comprised the following:

	Six Months Ended June 30, 2017	Six Months Ended June 30, 2016
	(In Millions)	
Bonds	$ 1,896	$ 1,841
Preferred stocks	4	10
Common stocks - subsidiaries and affiliates	405	201
Common stocks - unaffiliated	19	33
Mortgage loans	482	527
Policy loans	391	376
Real estate	88	88
Partnerships and LLCs	397	223
Derivatives	167	178
Cash, cash equivalents and short-term investments	21	16
Other	7	(4)
Subtotal investment income	3,877	3,489
Amortization of the IMR	65	74
Investment expenses	(319)	(329)
Net investment income	$ 3,624	$ 3,234

f. Net realized capital (losses) gains

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

	Six Months Ended June 30, 2017	Six Months Ended June 30, 2016
	(In Millions)	
Bonds	$ (60)	$ (123)
Preferred stocks	-	4
Common stocks - subsidiaries and affiliates	8	(2)
Common stocks - unaffiliated	(8)	(25)
Mortgage loans	(11)	(11)
Real estate	29	(1)
Partnerships and LLCs	(61)	(49)
Derivatives	(96)	593
Other	(267)	(26)
Net realized capital (losses) gains before federal and state taxes and deferral to the IMR	(466)	360
Net federal and state tax benefit	152	12
Net realized capital (losses) gains before deferral to the IMR	(314)	372
Net after tax (gains) deferred to the IMR	(5)	(312)
Net realized capital (losses) gains	$ (319)	$ 60

The IMR liability balance was $55 million as of June 30, 2017 and $42 million as of December 31, 2016 and was included in other liabilities on the Condensed Consolidated Statutory Statements of Financial Position. Refer to *Note 13. "Surplus notes"* for information on the Other realized capital loss.

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

	Six Months Ended June 30, 2017	Six Months Ended June 30, 2016
	(In Millions)	
Bonds	$ (20)	$ (57)
Common stocks	(37)	(8)
Preferred stocks	-	(1)
Mortgage loans	-	(8)
Partnerships and LLCs	(42)	(46)
Total OTTI	$ (99)	$ (120)

The Company recognized OTTI of $1 million for the six months ended June 30, 2017 and $3 million for the six months ended June 30, 2016 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.

5. Federal income taxes

No significant changes.

6. Other than invested assets

Fixed assets

In March 2017, the Company recorded an impairment on previously capitalized software costs of $221 million. This impairment was recorded as general insurance expenses in the Condensed Consolidated Statutory Statements of Operations. This impairment did not impact surplus, as the asset was previously nonadmitted.

7. Policyholders' liabilities

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

The following shows the changes in the liabilities for GMDBs, GMIBs, GMABs and GMWBs (in millions):

Liability as of January 1, 2016	$ 579
Incurred guarantee benefits	81
Paid guarantee benefits	(6)
Liability as of December 31, 2016	654
Incurred guarantee benefits	(98)
Paid guarantee benefits	(2)
Liability as of June 30, 2017	$ 554

The Company held reserves in accordance with the stochastic scenarios as of June 30, 2017 and December 31, 2016. As of June 30, 2017 and December 31, 2016, the Company held additional reserves above those indicated based on the stochastic scenarios in order to maintain a prudent level of reserve adequacy.

The following summarizes the account values, net amount at risk and weighted average attained age for variable annuity contracts with GMDBs, GMIBs, GMABs and GMWBs 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, 2017			December 31, 2016		
	Account Value	Net Amount at Risk	Weighted Average Attained Age	Account Value	Net Amount at Risk	Weighted Average Attained Age
	($ In Millions)					
GMDB	$ 21,289	$ 59	64	$ 20,473	$ 72	63
GMIB Basic	904	59	67	894	92	67
GMIB Plus	3,153	478	66	3,059	589	66
GMAB	3,237	12	59	3,158	22	58
GMWB	212	11	69	206	15	69

As of June 30, 2017, the GMDB account value above consists of $4,456 million within the general account and $16,833 million within separate accounts that includes $4,507 million of modified coinsurance assumed. As of December 31, 2016, the GMDB account value above consists of $4,408 million within the general account and $16,065 million within separate accounts that includes $4,247 million of modified coinsurance assumed.

8. *Reinsurance*

No significant changes.

9. *Withdrawal characteristics*

No significant changes.

10. *Debt*

No significant changes.

11. *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,			
	2017	2016	2017	2016
	Pension Benefits		Other Postretirement Benefits	
	(In Millions)			
Service cost	$ 63	$ 43	$ 6	$ 6
Interest cost	56	56	7	6
Expected return on plan assets	(74)	(72)	-	-
Amortization of unrecognized net actuarial and other losses	33	35	1	2
Amortization of unrecognized prior service cost	2	2	(3)	(3)
Total net periodic cost	$ 80	$ 64	$ 11	$ 11

12. Employee compensation plans

No significant changes.

13. Surplus notes

The Company executed a tender offer in March 2017 for $440 million par value of surplus notes maturing in 2039. The Company paid $711 million of cash to settle the tender offer which resulted in a pre-tax loss of $271 million. This loss is included in net realized gains (losses) within the Condensed Consolidated Statutory Statements of Operations and other costs of investments acquired within the Condensed Consolidated Statutory Statements of Cash Flows and is net of a tax benefit of $95 million.

The following table summarizes the surplus notes issued and outstanding as of June 30, 2017:

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	250	249	5.625%	05/15/2033	May 15 & Nov 15
06/01/2009	310	307	8.875%	06/01/2039	Jun 1 & Dec 1
01/17/2012	400	399	5.375%	12/01/2041	Jun 1 & Dec 1
04/15/2015	500	491	4.500%	04/15/2065	Apr 15 & Oct 15
03/20/2017	475	471	4.900%	04/01/2077	Apr 1 & Oct 1
Total	$ 2,285	$ 2,267			

14. 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, 2017 and 2016. 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, 2017 and 2016.

	Six Months Ended June 30, 2017	Six Months Ended June 30, 2016
	(In Millions)	
Bond conversions and refinancing	$ 414	$ 170
Bonds received as consideration for a group annuity contract	271	-
Transfer of affiliated common stock	103	-
Other invested assets to bonds	94	3
Partnerships and LLCs contributed to MMHLLC	-	682
Stock distributions from partnerships and LLCs	-	114
Other	78	37

15. *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, 2017				
	Carrying Value	Fair Value	Level 1	Level 2	Level 3
	(In Millions)				
Financial assets:					
Bonds:					
U. S. government and agencies	$ 7,257	$ 7,859	$ -	$ 7,855	$ 4
All other governments	1,074	1,133	-	1,062	71
States, territories and possessions	670	725	-	725	-
Political subdivisions	503	544	-	544	-
Special revenue	5,771	6,452	-	6,442	10
Industrial and miscellaneous	71,005	73,858	-	44,053	29,805
Parent, subsidiaries and affiliates	6,034	6,165	-	519	5,646
Preferred stocks	505	526	61	-	465
Common stocks - subsidiaries and affiliates	616	616	511	-	105
Common stocks - unaffiliated	1,201	1,201	914	-	287
Mortgage loans - commercial	21,088	21,687	-	-	21,687
Mortgage loans - residential	1,958	1,920	-	-	1,920
Derivatives:					
Interest rate swaps	8,376	8,991	-	8,991	-
Options	725	725	-	725	-
Currency swaps	718	718	-	718	-
Forward contracts	8	14	-	14	-
Credit default swaps	39	46	-	46	-
Cash, cash equivalents and short-term investments	1,958	1,958	106	1,852	-
Separate account assets	72,302	72,319	45,474	26,077	768
Financial liabilities:					
Guaranteed interest contracts	8,037	8,043	-	-	8,043
Group annuity contracts and other deposits	18,057	18,611	-	-	18,611
Individual annuity contracts	9,610	11,583	-	-	11,583
Supplementary contracts	1,237	1,239	-	-	1,239
Repurchase agreements	4,465	4,465	-	4,465	-
Commercial paper	250	250	-	250	-
Derivatives:					
Interest rate swaps	6,325	6,354	-	6,354	-
Options	8	8	-	8	-
Currency swaps	151	151	-	151	-
Forward contracts	78	79	-	79	-
Credit default swaps	3	3	-	3	-

Common stocks - subsidiaries and affiliates do not include unconsolidated subsidiaries, which had statutory carrying values of $12,022 million.

	December 31, 2016				
	Carrying Value	Fair Value	Level 1	Level 2	Level 3
	(In Millions)				
Financial assets:					
Bonds:					
U. S. government and agencies	$ 7,130	$ 7,653	$ -	$ 7,649	$ 4
All other governments	925	936	-	865	71
States, territories and possessions	709	759	-	759	-
Political subdivisions	498	530	-	530	-
Special revenue	5,731	6,304	-	6,271	33
Industrial and miscellaneous	66,432	68,240	-	41,334	26,906
Parent, subsidiaries and affiliates	6,783	6,886	-	657	6,229
Preferred stocks	490	507	16	31	460
Common stocks - subsidiaries and affiliates	594	594	508	23	63
Common stocks - unaffiliated	1,122	1,122	582	349	191
Mortgage loans - commercial	20,009	20,500	-	-	20,500
Mortgage loans - residential	1,923	1,878	-	-	1,878
Derivatives:					
Interest rate swaps	8,510	9,059	-	9,059	-
Options	679	679	-	679	-
Currency swaps	991	991	-	991	-
Forward contracts	54	54	-	54	-
Credit default swaps	38	40	-	40	-
Cash, cash equivalents and short-term investments	3,950	3,950	(86)	4,036	-
Separate account assets	68,234	68,242	42,282	25,206	754
Financial liabilities:					
Guaranteed interest contracts	7,086	7,028	-	-	7,028
Group annuity contracts and other deposits	19,097	19,661	-	-	19,661
Individual annuity contracts	9,807	11,911	-	-	11,911
Supplementary contracts	1,229	1,231	-	-	1,231
Repurchase agreements	4,966	4,966	-	4,966	-
Commercial paper and other borrowed money	250	250	-	250	-
Derivatives:					
Interest rate swaps	6,413	6,458	-	6,458	-
Options	6	6	-	6	-
Currency swaps	37	37	-	37	-
Forward contracts	58	58	-	58	-
Credit default swaps	1	1	-	1	-

Common stocks - subsidiaries and affiliates do not include unconsolidated subsidiaries, which had statutory carrying values of $12,124 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, 2017			
	Level 1	Level 2	Level 3	Total
	(In Millions)			
Financial assets:				
Bonds:				
States, territories and possessions	$ -	$ 5	$ -	$ 5
Special revenue	-	1	-	1
Industrial and miscellaneous	-	7	48	55
Parent, subsidiaries and affiliates	-	37	64	101
Preferred stocks	3	-	3	6
Common stocks - subsidiaries and affiliates	511	-	12	523
Common stocks - unaffiliated	914	-	287	1,201
Derivatives:				
Interest rate swaps	-	8,376	-	8,376
Options	-	725	-	725
Currency swaps	-	718	-	718
Forward contracts	-	8	-	8
Credit default swaps	-	1	-	1
Separate account assets	45,474	24,977	753	71,204
Total financial assets carried at fair value	$ 46,902	$ 34,855	$ 1,167	$ 82,924
Financial liabilities:				
Derivatives:				
Interest rate swaps	$ -	$ 6,325	$ -	$ 6,325
Options	-	8	-	8
Currency swaps	-	151	-	151
Forward contracts	-	78	-	78
Credit default swaps	-	1	-	1
Total financial liabilities carried at fair value	$ -	$ 6,563	$ -	$ 6,563

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 at the beginning fair value for the reporting period in which the changes occur. For the period ended June 30, 2017, $298 million of equity securities were transferred from Level 2 to Level 1.

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

	December 31, 2016			
	Level 1	Level 2	Level 3	Total
	(In Millions)			
Financial assets:				
Bonds:				
States, territories and possessions	$ -	$ 8	$ -	$ 8
Special revenue	-	1	-	1
Industrial and miscellaneous	-	4	58	62
Parent, subsidiaries and affiliates	-	60	58	118
Preferred stocks	1	-	3	4
Common stocks - subsidiaries and affiliates	508	23	63	594
Common stocks - unaffiliated	582	349	191	1,122
Derivatives:				
Interest rate swaps	-	8,510	-	8,510
Options	-	679	-	679
Currency swaps	-	991	-	991
Forward contracts	-	54	-	54
Credit default swaps	-	4	-	4
Separate account assets	42,282	24,127	738	67,147
Total financial assets carried at fair value	$ 43,373	$ 34,810	$ 1,111	$ 79,294
Financial liabilities:				
Derivatives:				
Interest rate swaps	$ -	$ 6,413	$ -	$ 6,413
Options	-	6	-	6
Currency swaps	-	37	-	37
Forward contracts	-	58	-	58
Credit default swaps	-	1	-	1
Total financial liabilities carried at fair value	$ -	$ 6,515	$ -	$ 6,515

For the year ended December 31, 2016, there were no significant transfers between Level 1 and Level 2.

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

	Period Ended June 30, 2017						
	Bonds						
	Industrial and Miscellaneous	Parent, Subsidiaries, and Affiliates	Preferred Stock	Common Stock Affiliated	Common Stock Unaffiliated	Separate Account Assets	Total Level 3 Financial Assets Carried at Fair Value
	(In Millions)						
Balance as of January 1, 2017	$ 58	$ 58	$ 3	$ 63	$ 191	$ 738	$ 1,111
Gains in net income	1	-	-	-	-	32	33
Gains in net surplus	5	6	-	30	46	-	87
Purchases	-	-	-	-	30	38	68
Sales	(1)	-	-	-	(2)	(54)	(57)
Settlements	(3)	-	-	-	(35)	(1)	(39)
Transfers in	10	-	-	12	183	-	205
Transfers out	(22)	-	-	-	(126)	-	(148)
Balance as of June 30, 2017	$ 48	$ 64	$ 3	$ 105	$ 287	$ 753	$ 1,260

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.

	Year Ended December 31, 2016						
	Bonds						
	Industrial and Miscellaneous	Parent, Subsidiaries, and Affiliates	Preferred Stock	Common Stock Affiliated	Common Stock Unaffiliated	Separate Account Assets	Total Level 3 Financial Assets Carried at Fair Value
	(In Millions)						
Balance as of January 1, 2016	$ 22	$ 50	$ 3	$ 40	$ 181	$ 725	$ 1,021
Gains (losses) in net income	(11)	1	-	-	-	22	12
(Losses) gains in net surplus	(14)	8	-	7	(5)	-	(4)
Purchases	-	2	2	-	12	149	165
Issuances	4	11	-	1	1	-	17
Sales	-	(3)	-	-	(2)	(153)	(158)
Settlements	(6)	(20)	-	(1)	(1)	(10)	(38)
Transfers out	-	-	-	-	-	5	5
Other transfers	63	9	(2)	16	5	-	91
Balance as of December 31, 2016	$ 58	$ 58	$ 3	$ 63	$ 191	$ 738	$ 1,111

Level 3 transfers in are assets that are consistently carried at fair value but have a level change. The separate account assets were transferred from Level 2 to Level 3 due to a change in the observability of pricing inputs.

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 were transferred from Level 2 to Level 3 due to a change in the observability of pricing inputs.

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. This condensed risks and uncertainties disclosure should be read in conjunction with the consolidated statutory disclosure in the Company's 2016 audited year-end 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 investments and medium-term notes along with its indirect international operations. The Company mitigates 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 quality, 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.

Significant volatility in the financial markets, and government actions taken in response, may exacerbate some of the risks the Company faces. The Company holds investments in energy and certain other commodity sectors, which have experienced similar overall market volatility and declines. With the continued weaker economic outlook in these sectors, there may be an increase in reported default rates or potential downgrades to the ratings of companies exposed to these sectors. In addition, concerns over the solvency of certain countries and sovereignties and the entities that have significant exposure to their debt have created market volatility. This volatility may continue to affect the performance of various asset classes until there is an ultimate resolution of the sovereign debt related concerns.

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.

Political Uncertainties

Political events, such as the ongoing volatility with respect to the European Union, may trigger or exacerbate the risk factors described above. Whether those underlying risk factors are driven by politics or not, the Company's dynamic approach to managing risks enables us to utilize the mitigating actions described above to attempt to reduce the potential impact of each underlying risk factor on the Company.

b. Litigation

The Company is involved in litigation arising in the normal course of business, which seeks compensatory damages, punitive damages and equitable remedies. Although the Company is not aware of any actions or allegations that reasonably should 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 results of operations for a particular period depending upon, among other factors, the size of the loss and the level of the Company's results of operations for the period.

In 2009, several lawsuits were filed as putative class actions and later consolidated before the federal district court in Colorado in connection with the investment performance of Oppenheimer Rochester California Municipal Fund (the California Fund Suit). This fund was advised by OppenheimerFunds, Inc. (OFI) and distributed by its subsidiary OppenheimerFunds Distributor, Inc. (OFDI). The plaintiffs in the California Fund Suit asserted claims against MassMutual, OFI, OFDI and certain present and former trustees and officers of the fund under federal securities laws and alleged, among other things, the disclosure documents of the fund contained misrepresentations and omissions, that the investment policies of the fund were not followed, and that the fund and the other defendants violated federal securities laws and regulations and certain state laws. In March 2015, the district court granted the plaintiffs' motion to certify a class and to appoint class representatives and class counsel. In 2016, OFI recorded a liability of $33 million as an estimate of the probable amount of the costs it would incur in connection with the proposed settlement. At that time, OFI also concluded that a portion of the costs it would incur would be covered by the proceeds of insurance policies and recorded an insurance recovery of $14 million. In April 2017, the parties executed a memorandum of understanding setting forth the terms of a proposed $51 million settlement. The proposed settlement is subject to the negotiation and execution of final settlement documentation and approval by the court. As of June 30, 2017, OFI has recorded an accrued liability of $51 million for this settlement and an insurance recovery of $14 million. In 2009, MassMutual was named as a defendant in a lawsuit filed in North Carolina state court related to certain losses in a bank-owned life insurance (BOLI) policy issued by MassMutual. The plaintiff alleges, among other things, fraud, breach of contract and breach of fiduciary duty claims against MassMutual, and it seeks to recover losses arising from investments pursuant to the BOLI policy. In May 2015, the plaintiff voluntarily dismissed its complaint and refiled the case. MassMutual believes it has substantial defenses and will continue to vigorously defend itself in this action. No reasonable estimate can be made at this time regarding the potential liability, if any, or the amount or range of any loss that may result from this suit.

In 2010, Christina Chavez (Chavez) filed a putative class action complaint in California state court against MassMutual. Chavez alleges that MassMutual breached its obligations to its term life policyholders in California by not paying dividends on those policies. In 2014, the parties participated in a mediation of their dispute, which did not result in a settlement. In July 2015, the judge certified a subclass consisting of one of twenty-six potential term products at issue in this case. All remaining subclasses were dismissed without prejudice. Fact discovery is complete and a trial has been set for October 2017. MassMutual believes it has substantial defenses and will continue to vigorously defend itself in this action. No reasonable estimate can be made at this time regarding the potential liability, if any, or the amount or range of any loss that may result from this claim.

In 2012, Karen Bacchi filed a putative class action complaint against MassMutual in federal court in Massachusetts alleging that MassMutual breached its contracts by allegedly failing to distribute surplus in excess of the statutorily prescribed limit. In January 2017, the parties reached a resolution to settle the lawsuit for $38 million, which was recorded in December 2016 as a combination of policyholders' benefits, dividends to policyholders and general insurance expenses that include legal fees and other costs. The parties are in the process of seeking the court's approval of the settlement, which is expected to occur in 2017.

In 2013, seven participants in the MassMutual Thrift Plan (the Thrift Plan) filed a putative class action complaint in federal court in Massachusetts. The complaint alleged, among other things, that MassMutual, the Investment Fiduciary Committee, the Thrift Plan Administrative Committee and individually named "fiduciaries" breached their duties by allowing the Thrift Plan to pay excessive fees and by engaging in self-dealing. In June 2016, the parties reached an agreement to settle the matter. In November 2016, the court entered a final order and judgment approving the settlement, and payments have been made. The final settlement did not have a significant financial impact on MassMutual.

In January 2016, Deborah Bishop-Bristol filed a putative class action complaint against MassMutual in federal court in Connecticut. The lawsuit alleges that MassMutual breached its fiduciary duty by controlling the crediting rate, and therefore the compensation earned on the stable value products. Further, the complaint alleges that MassMutual failed to adequately disclose the pricing spread and accepted excessive fees for investment, management and administrative services. In April 2016, the court granted MassMutual's motion to transfer the case to federal court in Massachusetts. The court recently dismissed all of the plaintiff's claims and the plaintiff has filed an amended complaint. MassMutual believes that it has substantial defenses and will vigorously defend itself in this action. No reasonable estimate can be made regarding the potential liability, if any, or the amount or range of any loss that may result from this claim.

In 2017, Jason Berube filed a putative class action complaint against MassMutual in Massachusetts state court alleging that that he and other similarly situated individuals were improperly classified as independent contractors and that they were inside sales employees who should have been paid minimum wage, overtime and should not have had expenses offset commissions. MassMutual believes that it has substantial defenses and will vigorously defend itself in this action. No reasonable estimate can be made regarding the potential liability, if any, or the amount or range of any loss that may result from this claim.

c. Regulatory matters

The Company is subject to governmental and administrative proceedings and regulatory inquiries, examinations and investigations in the ordinary course of its business. In connection with regulatory inquiries, examinations and investigations, the Company has been contacted by various regulatory agencies including, among others, the Securities and Exchange Commission, the U.S. Department of Labor and various state insurance departments and state attorneys general. The Company has cooperated fully with these regulatory agencies with regard to their inquiries, examinations and investigations and has responded to information requests and comments.

Market volatility in the financial services industry over the last several years has contributed to increased scrutiny of the entire financial services industry. Therefore, the Company believes that it is reasonable to expect that proceedings, regulatory inquiries, examinations and investigations into the insurance and financial services industries will continue for the foreseeable future. Additionally, new industry-wide legislation, rules and regulations could significantly affect the insurance and financial services industries as a whole. It is the opinion of management that the ultimate resolution of these regulatory inquiries, examinations, investigations, legislative and regulatory changes of which we are aware will not materially impact the Company’s financial position or liquidity. However, the outcome of a particular matter may be material to the Company’s operating results for a particular period depending upon, among other factors, the financial impact of the matter and the level of the Company’s results of operations for the period.

d. Commitments

In the normal course of business, the Company enters into letter of credit arrangements. As of June 30, 2017, the Company had approximately $139 million of outstanding letter of credit arrangements and $144 million as of December 31, 2016. As of June 30, 2017 and December 31, 2016, the Company did not have any funding requests attributable to these letter of credit arrangements.

17. Related party transactions

MassMutual has management and service contracts and cost-sharing arrangements with various subsidiaries and affiliates where MassMutual, for a fee, will furnish a subsidiary or affiliate, as required, operating facilities, human resources, computer software development and managerial services.

In June 2017, MassMutual contributed certain intellectual property, with no carrying value, in an affiliated transaction with Insurance Road LLC (IRLLC), a wholly-owned subsidiary of MassMutual and therefore no gain or loss was recognized on the transaction. In June 2017, MassMutual became party to an agreement with MassMutual Intellectual Property LLC (MMIP) effective June 30, 2017 that gave MassMutual the right to use certain intellectual property in the operation of its business

18. Business combinations and goodwill

No significant changes.

19. Subsequent events

Management of the Company has evaluated subsequent events through August 10, 2017, the date the financial statements were available to be issued.

In July 2017, MassMutual contributed its ownership in certain partnerships and LLCs with a carrying value of approximately $650 million to IRLLC, a wholly-owned subsidiary of MassMutual, in an affiliated transaction and therefore no gain or loss was recognized on the transaction.

In July 2017, IRLLC paid a return of capital to MassMutual of $700 million.

In July 2017, MassMutual contributed $20 million to MMI.

No other events have occurred subsequent to the date of the Statements of Financial Position and before the date of evaluation that would require disclosure.