

**MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY
AND SUBSIDIARIES**

INTERIM CONSOLIDATED STATUTORY FINANCIAL STATEMENTS

As of June 30, 2025 and December 31, 2024 and
for the six months ended June 30, 2025 and 2024

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

	June 30, 2025	December 31, 2024
	(In Millions)	
Assets:		
Bonds	\$ 169,982	\$ 166,513
Preferred stocks	1,498	1,030
Common stocks – subsidiaries and affiliates	23,574	24,147
Common stocks – unaffiliated	1,189	1,209
Mortgage loans	24,821	24,363
Policy loans	18,470	17,907
Real estate	338	323
Partnerships and limited liability companies	16,440	14,908
Derivatives	22,596	24,889
Cash, cash equivalents and short-term investments	8,655	6,288
Other invested assets	4,566	3,770
Total invested assets	292,129	285,347
Investment income due and accrued	4,514	5,436
Federal income taxes	566	581
Net deferred income taxes	2,094	1,881
Other than invested assets	6,717	6,485
Total assets excluding separate accounts	306,020	299,730
Separate account assets	53,862	55,935
Total assets	<u>\$ 359,882</u>	<u>\$ 355,665</u>
Liabilities and Surplus:		
Policyholders' reserves	\$ 184,209	\$ 181,225
Liabilities for deposit-type contracts	23,155	21,288
Contract claims and other benefits	812	624
Policyholders' dividends	2,605	2,533
General expenses due or accrued	887	921
Asset valuation reserve	6,461	6,038
Repurchase agreements	3,384	3,408
Debt	250	250
Collateral	1,469	1,986
Derivatives	17,045	17,125
Funds held under coinsurance	30,417	29,625
Other liabilities	7,120	6,969
Total liabilities excluding separate accounts	277,814	271,992
Separate account liabilities	53,712	55,791
Total liabilities	331,526	327,783
Surplus	28,356	27,882
Total liabilities and surplus	<u>\$ 359,882</u>	<u>\$ 355,665</u>

See accompanying notes to interim consolidated statutory financial statements

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

	Six Months Ended June 30,	
	2025	2024
	(In Millions)	
Revenue:		
Premium income	\$ 9,396	\$ 9,976
Net investment income	5,951	5,412
Fees and other income	617	628
Total revenue	<u>15,964</u>	<u>16,016</u>
Benefits, expenses and other deductions:		
Policyholders' benefits	9,922	8,370
Change in policyholders' reserves	1,586	3,847
General insurance expenses	1,214	1,204
Commissions	631	686
State taxes, licenses and fees	182	176
Other deductions	775	379
Total benefits and expenses	<u>14,310</u>	<u>14,662</u>
Net gain from operations before dividends and federal income taxes	1,654	1,354
Dividends to policyholders	1,192	1,012
Net gain from operations before federal income taxes	462	342
Federal income tax expense	129	133
Net gain from operations	333	209
Net realized capital losses	(447)	(272)
Net loss	<u>\$ (114)</u>	<u>\$ (63)</u>

See accompanying notes to interim consolidated statutory financial statements

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

	Six Months Ended June 30,	
	2025	2024
	(In Millions)	
Surplus, beginning of year	\$ 27,882	\$ 28,877
Net increase (decrease) due to:		
Net loss	(114)	(63)
Change in net unrealized capital (losses) gains, net of tax	(183)	403
Change in net unrealized foreign exchange capital gains (losses), net of tax	853	(138)
Change in other net deferred income taxes	33	253
Change in nonadmitted assets	454	13
Change in asset valuation reserve	(423)	(557)
Change in surplus notes	—	(50)
Change in minimum pension liability	1	3
Prior period adjustments	(60)	(146)
Other	(87)	(138)
Net increase (decrease)	474	(420)
Surplus, end of period	\$ 28,356	\$ 28,457

See accompanying notes to interim consolidated statutory financial statements

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

	Six Months Ended June 30,	
	2025	2024
	(In Millions)	
Cash from operations:		
Premium and other income collected	\$ 10,581	\$ 10,821
Net investment income	6,940	6,155
Benefit payments	(9,930)	(8,340)
Net transfers from separate accounts	1,323	1,225
Commissions and other expenses	(2,859)	(2,613)
Dividends paid to policyholders	(1,127)	(957)
Federal and foreign income taxes (received) paid	100	19
Net cash from operations	5,028	6,310
Cash from investments:		
Proceeds from investments sold, matured or repaid:		
Bonds	17,770	18,734
Preferred and common stocks – unaffiliated	25	94
Common stocks – affiliated	1,205	111
Mortgage loans	1,812	1,229
Real estate	5	(1)
Partnerships and limited liability companies	1,003	452
Derivatives	(473)	(285)
Other	(805)	(864)
Total investment proceeds	20,542	19,470
Cost of investments acquired:		
Bonds	(19,721)	(32,846)
Preferred and common stocks – unaffiliated	(263)	(426)
Common stocks – affiliated	(100)	(183)
Mortgage loans	(2,396)	(1,822)
Real estate	(3)	(1)
Partnerships and limited liability companies	(1,688)	(1,509)
Derivatives	53	118
Other	517	725
Total investments acquired	(23,601)	(35,944)
Net increase in policy loans	(563)	(772)
Net cash used in investing activities	(3,622)	(17,246)
Cash from financing and miscellaneous sources:		
Net deposits on deposit-type contracts	1,374	395
Change in surplus notes	—	(50)
Change in repurchase agreements	(25)	222
Change in collateral	(535)	(243)
Other cash provided	147	3,724
Net cash from financing and miscellaneous sources	961	4,048
Net change in cash, cash equivalents and short-term investments	2,367	(6,888)
Cash, cash equivalents and short-term investments:		
Beginning of year	6,288	11,941
End of period	\$ 8,655	\$ 5,053

See accompanying notes to interim consolidated statutory financial statements

MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES
NOTES TO INTERIM CONSOLIDATED STATUTORY FINANCIAL STATEMENTS
(UNAUDITED)

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 income insurance (DI), 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 affiliated distribution channel, MassMutual Strategic Distributors (MMSD), Institutional Solutions (IS) and Worksite distribution channels.

The affiliated distribution channel is a sales force of financial professionals that operate in the U.S. The affiliated distribution channel sells life insurance, annuities, hybrid life and long term care insurance (LTC) and DI. The Company's MMSD channel sells life insurance, DI, annuity, and hybrid life and LTC solutions through a network of third-party distribution partners. The Company's IS distribution channel places group annuities, life insurance and GIC primarily through retirement advisory firms, actuarial consulting firms, investment banks, insurance benefit advisors and investment management companies. The Company's Worksite channel works with advisors and employers across the country to provide American workers with voluntary and executive benefits such as group whole life insurance, group critical illness insurance, group accident insurance and DI, through the workplace.

2. *Summary of significant accounting policies*

a. *Basis of presentation*

These interim 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 interim 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 interim consolidated statutory financial statements and notes as of June 30, 2025 and December 31, 2024 and for six months ended June 30, 2025 and 2024 are unaudited. The interim consolidated Statutory Statement of Financial Position as of December 31, 2024 has 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. These interim 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 interim 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 2024 audited yearend financial statements as these interim consolidated statutory financial statements disclose only significant changes from yearend 2024. The results of operations for the interim periods should not be considered indicative of results to be expected for the full year.

For the full description of accounting policies, see Note 2. "*Summary of significant accounting policies*" of Notes to Interim Consolidated Statutory Financial Statements included in the Company's 2024 audited consolidated yearend financial statements.

MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES
NOTES TO INTERIM CONSOLIDATED STATUTORY FINANCIAL STATEMENTS, continued
(UNAUDITED)

b. Corrections of errors and reclassifications

For the six months ended June 30, 2025 corrections of prior years' errors were recorded in surplus, net of tax:

	Increase (Decrease) to:		
	Prior Years' Net Income	Current Year Surplus	Asset or Liability Balances
	(In Millions)		
Bonds	\$ (279)	\$ (279)	\$ (279)
Investment income due and accrued	(187)	(187)	(187)
Other than invested assets	(14)	(14)	(14)
Separate account assets	4	4	4
Other liabilities	420	420	(420)
Separate account liabilities	(4)	(4)	4
Total	<u>\$ (60)</u>	<u>\$ (60)</u>	

c. Bonds

Bonds are generally valued at amortized cost using the constant yield interest method with the exception of NAIC Category 6 bonds, which are in or near default, and certain residential mortgage-backed securities (RMBS) and commercial mortgage-backed securities (CMBS), which are rated by outside modelers, which are carried at the lower of amortized cost or fair value. NAIC ratings are applied to bonds and other investments. Categories 1 and 2 are considered investment grade, while Categories 3 through 6 are considered below investment grade. Bonds are recorded on a trade date basis, except for private placement bonds, which are recorded on the funding date.

For loan-backed and structured securities, such as asset-backed securities (ABS), mortgage-backed securities (MBS), including RMBS and CMBS, and structured securities, including collateralized debt obligations (CDOs), amortization or accretion is revalued quarterly based on the current estimated cash flows, using either the prospective or retrospective adjustment methodologies.

Fixed income securities with the highest ratings from a rating agency follow the retrospective method of accounting.

All other fixed income securities, such as floating rate bonds and interest only securities, including those that have been impaired, follow the prospective method of accounting.

The fair value of bonds is based on quoted market prices when available. If quoted market prices are not available, values provided by other third-party organizations are used. If values provided by other third-party organizations are unavailable, fair value is estimated using internal models by discounting expected future cash flows using observable current market rates applicable to yield, credit quality and maturity of the investment or using quoted market values for comparable investments. Internal inputs used in the determination of fair value include estimated prepayment speeds, default rates, discount rates and collateral values, among others. Structure characteristics and cash flow priority are also considered. Fair values resulting from internal models are those expected to be received in an orderly transaction between willing market participants.

d. Common stocks - subsidiaries and affiliates

Common stocks of unconsolidated subsidiaries, primarily MassMutual Holding LLC (MMHLLC), Glidepath Holdings Inc. (Glidepath) and MM Investment Holding (MMIH), are accounted for using the statutory equity method. The Company accounts for the value of MMHLLC at its underlying U.S. generally accepted accounting principals (GAAP) equity value less adjustments for the limited statutory basis of accounting related to foreign insurance subsidiaries and controlled affiliated entities as well as an adjustment of \$458 million as of June 30, 2025 for a portion of its noncontrolling interests. Glidepath is valued on its underlying GAAP equity with adjustment to recognize its investment in MassMutual Ascend Life Insurance Company and other subsidiaries and affiliated entities (MM Ascend) based on MM Ascend's underlying statutory surplus, adjusted for any unamortized goodwill recognized under the statutory purchase method. Operating results, less dividends declared, for MMHLLC, Glidepath and MMIH are reflected as net unrealized capital gains in the Statutory Statements of Changes in Surplus. Dividends declared from MMHLLC, Glidepath and MMIH are recorded in net investment income when declared and are limited to MMHLLC, Glidepath and MMIH'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.

3. New accounting standards

Adoption of new accounting standards

Effective January 1, 2024, the NAIC adopted revisions to avoid allocating realized gains or losses from bond sales to the Interest Maintenance Reserve (IMR) when sold before a rating downgrade. Revisions were also made to avoid allocating realized gains or losses from mortgage loan sales when there is a credit loss allowance, where payments are not 90 days past due. Revisions were also made to update guidance on changes in credit ratings used to allocate credit or interest rate related gains or losses, requiring identification of realized losses from acute credit events to be allocated to asset valuation reserve. The modifications did not have a material effect on the Company's consolidated financial statements.

In March 2024, the NAIC adopted revisions to the requirements of audit and admissibility in SSAP No. 97 – Investments in Subsidiary, Controlled and Affiliated Entities (SCA), effective March 16, 2024, to better align with the guidance on the look-through methodology. The revisions allow for admitting audited investments in entities owned by unaudited downstream noninsurance holding company SCA entity. The modifications did not have a material effect on the Company's interim consolidated financial statements.

In August 2023, the NAIC adopted revisions to clarify and incorporate a new bond definition within disclosures SSAP No. 26 – Bonds, SSAP No. 43 – Asset-Backed Securities, and other related SSAPs, effective January 1, 2025. The revisions were issued in connection with its principle-based bond definition project, "the Bond Project".

The Bond Project began in October 2020 through the development of a principle-based bond definition to be used for all securities in determining whether they qualify for reporting on the statutory annual statement Schedule D. Within the new bond definition, bonds are classified as an "issuer credit obligation" or an "asset-backed security."

An issuer credit obligation is defined as a bond where repayment is supported by the general creditworthiness of an operating entity, and an asset-backed security is defined as a bond issued by an entity created for the primary purpose of raising capital through debt backed by financial assets. The revisions to SSAP No. 26 reflect the principle-based bond definition, and SSAP No. 43 provides accounting and reporting guidance for investments that qualify as asset-backed securities under the new bond definition. Upon adoption, investments that do not qualify as bonds will not be permitted to be reported as bonds on Schedule D, Part 1 thereafter as there will be no grandfathering for existing investments that do not qualify under the revised SSAPs. The Company has adopted this guidance, resulting in \$504 million for all securities reclassified off Schedule D-1, which includes \$335 million that resulted with a change in measurement basis. The adoption resulted in a decrease in change in Surplus of \$39 million for MassMutual on January 1, 2025. Modifications of disclosures by asset categories are prospectively applied to *Note 5a. "Investments – Bonds"*.

MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES
NOTES TO INTERIM CONSOLIDATED STATUTORY FINANCIAL STATEMENTS, continued
(UNAUDITED)

In March 2024, the NAIC adopted revisions to SSAP No. 21 - Other Admitted Assets, effective January 1, 2025, clarifying that residuals follow the effective yield approach with a cap and providing an election for the cost recovery method. The Company elected the effective yield method using the allowable earned yield, capped by the amount of cash distributions received. The modifications did not have a material effect on the Company's interim consolidated financial statements.

Effective January 1, 2025, revisions were made to short-term investments, which include excluding additional investment types from being reported as cash equivalents or short-term investments regardless of maturity date of the investment at the date of acquisition. Investments will be eliminated from being reported as cash equivalents or short-term investments unless they would qualify under SSAP No. 26 – Bonds as an issuer credit obligation. Such investments will then only qualify as a cash equivalent or short-term investment if they have a maturity date within 3-months (cash equivalents) or 12-months (short-term) from the date of acquisition or meet the specifics requirements for money market mutual funds or cash pooling arrangement. The modifications did not have a material effect on the Company's interim consolidated financial statements.

The NAIC adopted revisions to various SSAPs for investments in tax credits, acquired tax credits and updated annual statement reporting categories for tax credit investment risk-based capital. These revisions include broad criteria to scope in various tax credit programs, including solar programs and state specific programs. This adoption requires proportional amortization as the measurement approach, as with existing low-income housing tax credits, recording amortization of the investment in the partnership through net investment income and the use of the tax credits in the appropriate tax line. The adopted revisions were effective on January 1, 2025. The modifications were prospectively applied and did not have a material effect on the Company's interim consolidated financial statements.

In, March 2025, the NAIC adopted revisions to clarify how assets held under modified coinsurance (Modco) or funds withheld (FWH) agreements shall be reflected within the restricted asset disclosure in SSAP No. 1 - Accounting Policies, Risks & Uncertainties, and Other Disclosures and in the corresponding disclosures in *Note 5m. "Restricted assets"* of the statutory financial statements. It also proposes enhanced disclosures to fully identify the extent of restricted assets reported on balance sheet within a single disclosure as well as identify differences between the restricted asset annual statement disclosure and the amount reported in the annual statement general interrogatories, which is pulled directly into the risk-based capital formulas. The adopted revisions will be effective December 31, 2025. The modifications did not have a material effect on the Company's interim consolidated financial statements.

Future adoption of new accounting standards

In March 2024, the NAIC proposed expansion of the guidance in SSAP No. 56 - Separate Accounts to further address situations and provide consistent accounting guidelines for when assets are reported at a measurement method other than fair value. This is to address an increase in assets reported at book value within the separate investment account, which have been approved under state prescribed practices and/or interpretations that the reference for fund accumulation contracts captures pension risk transfer or registered indexed-linked annuities and other similar general-account type products. In August 2024, the NAIC exposed further revisions as to treatment of IMR for transfers between general investment account and separate investment account, with the broad concept that such transfers would have offset IMR impacts between the general investment account and the book value separate investment account with a zero net impact to surplus. In February 2025, the NAIC adopted final revisions to SSAP No. 56 - Separate Accounts. The revisions clarify the measurement method guidance as well as prescribe guidance for how transfers to/from the general investment account and separate investment account shall be recognized. The adopted revisions will be effective on January 1, 2026, with early adoption permitted. The Company is assessing the potential impact on the Company's interim consolidated financial statements.

MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES
NOTES TO INTERIM CONSOLIDATED STATUTORY FINANCIAL STATEMENTS, continued
(UNAUDITED)

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, 2025				
	Carrying Value	Fair Value	Level 1	Level 2	Level 3
	(In Millions)				
Financial assets:					
Bonds:					
Issuer credit obligations	\$ 108,876	\$ 100,593	\$ 760	\$ 51,116	\$ 48,717
Asset-backed securities	61,106	60,553	—	31,001	29,552
Preferred stocks	1,498	1,972	493	51	1,428
Common stocks - subsidiaries and affiliates	108	108	63	—	45
Common stocks - unaffiliated	1,189	1,189	311	3	875
Mortgage loans	24,821	23,468	—	—	23,468
Derivatives	22,596	16,258	141	16,117	—
Cash, cash equivalents and short-term investments	8,655	8,655	654	8,001	—
Separate account assets	53,862	53,831	34,940	16,861	2,030
Financial liabilities:					
GICs	19,898	17,661	—	—	17,661
Group annuity contracts and other deposits	1,609	1,477	—	—	1,477
Individual annuity contracts	32,170	33,329	—	—	33,329
Supplementary contracts	876	877	—	—	877
Repurchase agreements	3,384	3,451	—	3,451	—
Debt	250	250	—	250	—
Derivatives	17,045	17,132	71	17,061	—

Common stocks - subsidiaries and affiliates do not include unconsolidated subsidiaries, which had statutory carrying values of \$23,466 million.

MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES
NOTES TO INTERIM CONSOLIDATED STATUTORY FINANCIAL STATEMENTS, continued
(UNAUDITED)

December 31, 2024					
	Carrying Value	Fair Value	Level 1	Level 2	Level 3
	(In Millions)				
Financial assets:					
Bonds	\$ 166,513	\$ 156,522	\$ 756	\$ 80,900	\$ 74,866
Preferred stocks	1,030	1,155	193	3	959
Common stocks - subsidiaries and affiliates	157	157	16	—	141
Common stocks - unaffiliated	1,209	1,209	299	—	910
Mortgage loans	24,363	22,765	—	—	22,765
Derivatives	24,889	18,394	129	18,265	—
Cash, cash equivalents and short-term investments	6,288	6,288	584	5,704	—
Separate account assets	55,935	55,879	36,435	17,621	1,823
Financial liabilities:					
GICs	17,955	17,249	—	—	17,249
Group annuity contracts and other deposits	1,714	1,570	—	—	1,570
Individual annuity contracts	31,439	32,405	—	—	32,405
Supplementary contracts	895	897	—	—	897
Repurchase agreements	3,408	3,420	—	3,420	—
Debt	250	250	—	250	—
Derivatives	17,125	17,592	89	17,503	—

Common stocks - subsidiaries and affiliates do not include unconsolidated subsidiaries, which had statutory carrying values of \$23,990 million.

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

June 30, 2025					
	Level 1	Level 2	Level 3	Total	
	(In Millions)				
Financial assets:					
Bonds:					
Issuer credit obligations	\$ 386	\$ 25	\$ 303	\$ 714	
Asset-backed securities	—	26	—	26	
Preferred stocks	238	49	61	348	
Common stocks - subsidiaries and affiliates	63	—	45	108	
Common stocks - unaffiliated	311	3	875	1,189	
Derivatives:					
Interest rate swaps	—	19,098	—	19,098	
Options	104	519	—	623	
Currency swaps	—	2,799	—	2,799	
Forward contracts	—	26	—	26	
Credit default swaps	—	—	—	—	
Financial Futures	37	—	—	37	
Separate account assets	34,940	15,641	2,023	52,604	
Total financial assets carried at fair value	\$ 36,079	\$ 38,186	\$ 3,307	\$ 77,572	

MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY AND SUBSIDIARIES
NOTES TO INTERIM CONSOLIDATED STATUTORY FINANCIAL STATEMENTS, continued
(UNAUDITED)

June 30, 2025				
	Level 1	Level 2	Level 3	Total
	(In Millions)			
Financial liabilities:				
Derivatives:				
Interest rate swaps	\$ —	\$ 13,927	\$ —	\$ 13,927
Options	59	13	—	72
Currency swaps	—	568	—	568
Forward contracts	—	372	—	372
Credit default swaps	—	174	—	174
Financial futures	12	—	—	12
Total financial liabilities carried at fair value	\$ 71	\$ 15,054	\$ —	\$ 15,125

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, 2024				
	Level 1	Level 2	Level 3	Total
	(In Millions)			
Financial assets:				
Bonds:				
Special revenue	\$ —	\$ 1	\$ —	\$ 1
Industrial and miscellaneous	755	113	272	1,140
Preferred stocks	44	—	51	95
Common stocks - subsidiaries and affiliates	16	—	141	157
Common stocks - unaffiliated	299	—	910	1,209
Derivatives:				
Interest rate swaps	—	21,068	—	21,068
Options	114	481	—	595
Currency swaps	—	2,707	—	2,707
Forward contracts	—	417	—	417
Credit default swaps	—	2	—	2
Financial Futures	15	—	—	15
Separate account assets	36,435	16,433	1,817	54,685
Total financial assets carried at fair value	\$ 37,678	\$ 41,222	\$ 3,191	\$ 82,091

Financial liabilities:				
Derivatives:				
Interest rate swaps	\$ —	\$ 15,984	\$ —	\$ 15,984
Options	63	15	—	78
Currency swaps	—	203	—	203
Forward contracts	—	68	—	68
Credit default swaps	—	175	—	175
Financial futures	26	—	—	26
Total financial liabilities carried at fair value	\$ 89	\$ 16,445	\$ —	\$ 16,534

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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 01/01/25	Gains (Losses) in Net Income	Losses (Gains) in Surplus	Purchases	Issuances	Sales	Settlements	Transfers			Other	Balance as of 06/30/25
	(In Millions)											
Financial assets:												
Bonds:												
Issuer credit obligations	\$ 272	\$ 22	\$ (6)	\$ 7	\$ 33	\$ (23)	\$ (41)	\$ —	\$ —	\$ 39	\$ 303	
Preferred stocks	51	—	1	10	1	—	—	—	—	(2)	61	
Common Stocks:												
Subsidiaries and affiliates	141	1	(50)	—	6	(54)	—	—	—	1	45	
Unaffiliated	910	—	(53)	47	(3)	(2)	(24)	—	—	—	875	
Separate account assets	1,817	73	—	223	—	(54)	(13)	—	(23)	—	2,023	
Total financial assets	\$ 3,191	\$ 96	\$ (108)	\$ 287	\$ 37	\$ (133)	\$ (78)	\$ —	\$ (23)	\$ 38	\$ 3,307	

	Balance as of 01/01/24	Gains (Losses) in Net Income	Losses (Gains) in Surplus	Purchases	Issuances	Sales	Settlements	Transfers			Other	Balance as of 12/31/24
	(In Millions)											
Financial assets:												
Bonds:												
Industrial and miscellaneous	\$ 176	\$ (136)	\$ 9	\$ 7	\$ 3	\$ —	\$ (10)	\$ —	\$ —	\$ 223	\$ 272	
Preferred stocks	67	(9)	9	—	—	—	—	—	—	(16)	51	
Common Stocks:												
Subsidiaries and affiliates	183	3	3	415	(258)	66	(346)	—	(156)	231	141	
Unaffiliated	960	(7)	138	259	222	(13)	(674)	25	—	—	910	
Separate account assets	1,914	83	—	22	—	(196)	(6)	—	—	—	1,817	
Total financial assets	\$ 3,300	\$ (66)	\$ 159	\$ 703	\$ (33)	\$ (143)	\$ (1,036)	\$ 25	\$ (156)	\$ 438	\$ 3,191	

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.

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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, 2025			
	Carrying Value	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	(In Millions)			
Issuer credit obligations:				
Corporate bonds	\$ 83,402	\$ 604	\$ 7,754	\$ 76,252
Bank loans	9,860	68	127	9,801
U.S. government obligation	4,883	31	617	4,297
Municipal bonds	2,189	28	147	2,070
Bond issued from SEC registered BDC/CEF/REIT	2,079	25	62	2,042
Single entity backed bonds	1,971	22	58	1,935
Other U.S. government securities	1,747	65	19	1,793
Non-U.S. sovereign jurisdiction securities	1,603	10	324	1,289
SVO - identified bond funds	760	—	—	760
Project finance bonds issued by operating entities	331	4	30	305
Other issuer credit obligations	51	—	2	49
Total issuer credit obligations	108,876	857	9,140	100,593
Asset-back securities:				
Non-agency - CLOs/CBOs/CDOs	17,552	55	10	17,597
Equity-backed securities	10,285	3	152	10,136
Non-agency residential mortgage-backed securities	3,992	76	29	4,039
Non-agency commercial mortgage-backed securities	2,810	15	283	2,542
Lease-backed securities	1,262	12	41	1,233
Agency residential mortgage-backed securities	219	—	3	216
Agency commercial mortgage-backed securities	28	—	2	26
Other financial asset-backed securities	24,958	95	289	24,764
Total asset-backed securities	61,106	256	809	60,553
Total bonds	\$ 169,982	\$ 1,113	\$ 9,949	\$ 161,146

The June 30, 2025 gross unrealized losses exclude \$165 million of losses included in the carrying value. These losses include \$165 million from NAIC Class 6 bonds and less than \$1 million from RMBS and CMBS whose ratings were obtained from third-party modelers. These losses were primarily included in industrial and miscellaneous or parent, subsidiaries and affiliates.

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	December 31, 2024			
	Carrying Value	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	(In Millions)			
U.S. government and agencies	\$ 5,611	\$ 22	\$ 658	\$ 4,975
All other governments	979	6	176	809
States, territories and possessions	164	—	11	153
Political subdivisions	288	5	15	278
Special revenue	3,456	39	119	3,376
Industrial and miscellaneous	141,875	750	9,460	133,165
Hybrid securities	1,027	44	22	1,049
Parent, subsidiaries and affiliates	13,113	29	425	12,717
Total	\$ 166,513	\$ 895	\$ 10,886	\$ 156,522

The December 31, 2024 gross unrealized losses exclude \$188 million of losses included in the carrying value. These losses include \$185 million from NAIC Class 6 bonds and \$3 million from RMBS and CMBS whose ratings were obtained from third-party modelers. These losses were primarily included in industrial and miscellaneous or parent, subsidiaries and affiliates.

As of June 30, 2025, investments in structured and loan-backed securities that had unrealized losses, which were not recognized in earnings, had a fair value of \$11,744 million. Securities in an unrealized loss position for less than 12 months had a fair value of \$5,205 million and unrealized losses of \$46 million. Securities in an unrealized loss position for greater than 12 months had a fair value of \$6,539 million and unrealized losses of \$742 million. These securities were primarily categorized as industrial and miscellaneous or parent, subsidiaries and affiliates.

As of December 31, 2024, investments in structured and loan-backed securities that had unrealized losses, which were not recognized in earnings, had a fair value of \$11,478 million. Securities in an unrealized loss position for less than 12 months had a fair value of \$4,270 million and unrealized losses of \$42 million. Securities in an unrealized loss position for greater than 12 months had a fair value of \$7,207 million and unrealized losses of \$910 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, 2025 or 2024 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.

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As of June 30, 2025, RMBS had a total carrying value of \$3,614 million and a fair value of \$3,652 million of which approximately 2%, based on carrying value, was classified as Alt-A. Alt-A and subprime RMBS had a total carrying value of \$2,080 million and a fair value of \$2,111 million. As of December 31, 2024, RMBS had a total carrying value of \$3,917 million and a fair value of \$3,937 million of which approximately 2%, based on carrying value, was classified as Alt-A. Alt-A and subprime RMBS had a total carrying value of \$2,270 million and a fair value of \$2,291 million.

b. 5GI Securities

Securities owned by the Company with an NAIC designation of 5GI securities:

	June 30, 2025			December 31, 2024		
	Number of 5GI Securities	Carrying Value	Fair Value	Number of 5GI Securities	Carrying Value	Fair Value
	(In Millions)					
Investments:						
Bonds - amortized cost	270	\$ 1,186	\$ 1,165	258	\$ 1,004	\$ 990
Preferred stock - amortized cost	3	3	8	—	—	—
Preferred stock - fair value	4	1	1	3	1	1
Total	277	\$ 1,190	\$ 1,174	261	\$ 1,005	\$ 991

c. Preferred stocks

No significant changes.

d. Common stocks – subsidiaries and affiliates

MMHLLC paid \$770 million in dividends to MassMutual for the six months ended June 30, 2025, \$570 million of which were declared in 2024, and paid \$785 million in dividends to MassMutual for the six months ended June 30, 2024, \$630 million which was declared in 2023.

In May 2025, MMHLLC distributed a return of capital of \$1,150 million to MassMutual as a result of Invesco repurchasing a portion of its outstanding MassMutual preferred shares. This transaction is expected to enhance MassMutual's financial flexibility and be earnings accretive for Invesco. MassMutual will retain approximately 18.2% ownership of Invesco's common shares.

MassMutual contributed capital of \$36 million to MMHLLC through the period ended June 30, 2025.

On March 14, 2025, Barings LLC, a downstream wholly-owned subsidiary of MMHLLC, acquired Artemis Real Estate Partners, a U.S.-based real estate debt and equity investment manager with gross assets under management of approximately \$11 billion. The total purchase price included an upfront payment of \$396 million and a final payment of \$255 million to be paid in 2030. The acquisition is expected to bolster Barings LLC's position as a key player in the real estate asset management sector.

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 Interim 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.

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e. Common stocks – unaffiliated

No significant changes.

f. Mortgage loans

Mortgage loans are comprised of 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, some of which are backed by Federal Housing Administration (FHA) and Veterans Administration (VA) guarantee.

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

	June 30, 2025		December 31, 2024	
	Carrying Value	Fair Value	Carrying Value	Fair Value
	(In Millions)			
Commercial mortgage loans:				
Primary lender	\$ 16,697	\$ 15,431	\$ 17,379	\$ 15,962
Mezzanine loans	112	109	113	104
Total commercial mortgage loans	16,809	15,540	17,492	16,066
Residential mortgage loans:				
FHA insured and VA guaranteed	1,695	1,602	1,711	1,590
Other residential loans	6,317	6,326	5,160	5,109
Total residential mortgage loans	8,012	7,928	6,871	6,699
Total mortgage loans	\$ 24,821	\$ 23,468	\$ 24,363	\$ 22,765

The following presents a summary of the Company's impaired mortgage loans as of June 30, 2025 and December 31, 2024:

	June 30, 2025				
	Carrying Value	Average Carrying Value	Unpaid Principal Balance	Valuation Allowance	Interest Income
	(In Millions)				
With allowance recorded:					
Commercial mortgage loans:					
Primary lender	\$ 106	\$ 101	\$ 108	\$ (9)	\$ 3
Total	106	101	108	(9)	3
With no allowance recorded:					
Commercial mortgage loans:					
Primary lender	264	249	372	—	1
Total	264	249	372	—	1
Total impaired commercial mortgage loans	\$ 370	\$ 350	\$ 480	\$ (9)	\$ 4

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December 31, 2024					
	Carrying Value	Average Carrying Value	Unpaid Principal Balance	Valuation Allowance	Interest Income
(In Millions)					
With allowance recorded:					
Commercial mortgage loans:					
Primary lender	\$ 97	\$ 112	\$ 138	\$ (39)	\$ 4
Total	97	112	138	(39)	4
With no allowance recorded:					
Commercial mortgage loans:					
Primary lender	407	411	562	—	3
Total	407	411	562	—	3
Total impaired commercial mortgage loans	<u>\$ 504</u>	<u>\$ 523</u>	<u>\$ 700</u>	<u>\$ (39)</u>	<u>\$ 7</u>

Allowance for credit losses:

	June 30, 2025	December 31, 2024
Balance at the beginning of year	\$ (39)	\$ (161)
Additions charged to operations	(14)	(97)
Direct write-downs charged against the allowances	42	—
Recoveries of amounts previously charged off	2	219
Balance at the end of the period	<u>\$ (9)</u>	<u>\$ (39)</u>

g. Real estate

No significant changes.

h. Partnerships and limited liability companies

No significant changes.

i. 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 replicated synthetic investments. These replicated synthetic investments are created when they are economically more attractive than the actual instrument or when similar instruments are unavailable. Replicated 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 replicated synthetic investments with a notional amount of \$36,059 million as of June 30, 2025 and \$34,282 million as of December 31, 2024, as defined under statutory accounting practices as the result of pairing of a long derivative contract with cash instruments.

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The Company's derivative strategy employs a variety of derivative financial instruments, including: interest rate, currency, equity, bond, and credit default swaps; options; forward contracts and financial futures. Investment risk is assessed on a portfolio basis and individual derivative financial instruments are not generally designated in hedging relationships; therefore, as allowed by statutory accounting practices, the Company intentionally has not applied hedge accounting.

Interest rate swaps are primarily used to more closely match the cash flows of assets and liabilities. Interest rate swaps are also used to mitigate changes in the value of assets anticipated to be purchased and other anticipated transactions and commitments. The Company uses currency swaps for the purpose of managing currency exchange risks in its assets and liabilities.

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 to the counterparties was \$2,434 million as of June 30, 2025, and net collateral pledged by the counterparties was \$548 million as of December 31, 2024. In the event of default, the full market value exposure at risk, net of offsets and collateral, was \$140 million and \$161 million as of June 30, 2025 and December 31, 2024, respectively. The statutory net amount at risk, defined as net collateral pledged and statement values excluding accrued interest, was \$4,847 million and \$5,484 million as of June 30, 2025 and December 31, 2024, respectively.

As of June 30, 2025, the company had the right to rehypothecate or repledge securities totaling \$868 million, pledged by the counterparties, of the \$2,434 million of the net collateral pledged to counterparties. As of December 31, 2024, the company had the right to rehypothecate or repledge securities totaling \$1,523 million, pledged by the counterparties, of the \$548 million of the net collateral pledged to counterparties. There were no securities rehypothecated to other counterparties as of June 30, 2025 or December 31, 2024.

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

	June 30, 2025				December 31, 2024			
	Assets		Liabilities		Assets		Liabilities	
	Carrying Value	Notional Amount	Carrying Value	Notional Amount	Carrying Value	Notional Amount	Carrying Value	Notional Amount
(In Millions)								
Interest rate swaps	\$ 19,103	\$198,692	\$ 13,927	\$157,833	\$ 21,073	\$178,171	\$ 15,984	\$170,306
Options	623	22,194	72	11,562	595	11,399	78	626
Currency swaps	2,806	26,730	2,487	20,963	2,787	31,652	794	15,483
Forward contracts	26	2,273	372	16,758	417	12,679	68	5,561
Credit default swaps	1	140	175	7,924	2	162	175	7,903
Financial futures	37	971	12	524	15	567	26	956
Total	<u>\$ 22,596</u>	<u>\$251,000</u>	<u>\$ 17,045</u>	<u>\$215,564</u>	<u>\$ 24,889</u>	<u>\$234,630</u>	<u>\$ 17,125</u>	<u>\$200,835</u>

The average fair value of outstanding derivative assets was \$23,167 and \$24,056 million for the six months ended June 30, 2025 and 2024, respectively. The average fair value of outstanding derivative liabilities was \$16,551 and \$16,683 million for the six months ended June 30, 2025 and 2024, respectively.

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

	June 30, 2025	December 31, 2024
	(In Millions)	
Due after one year through five years	\$ 8,064	\$ 8,065
Total	<u>\$ 8,064</u>	<u>\$ 8,065</u>

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

	Six Months Ended June 30,			
	2025		2024	
	Net Realized (Losses) Gains on Closed Contracts	Change in Net Unrealized (Losses) Gains on Open Contracts	Net Realized (Losses) Gains on Closed Contracts	Change in Net Unrealized (Losses) Gains on Open Contracts
(In Millions)				
Interest rate swaps	\$ (24)	\$ 88	\$ (125)	\$ (430)
Currency swaps	(18)	(267)	28	(75)
Options	3	19	3	1
Credit default swaps	27	(34)	(64)	54
Forward contracts	(357)	(695)	(60)	281
Financial futures	(42)	35	(20)	(67)
Total	<u>\$ (411)</u>	<u>\$ (854)</u>	<u>\$ (238)</u>	<u>\$ (236)</u>

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j. Repurchase agreements

The Company has entered into repurchase agreements whereby the Company sells securities and simultaneously agrees to repurchase the same or substantially the same securities. These repurchase agreements are accounted for as collateralized borrowings with the proceeds from the sale of the securities recorded as a liability and the underlying securities continue to be recorded as an investment by the Company. Earnings on these investments are recorded as investment income and the difference between the proceeds and the amount at which the securities will be subsequently reacquired is amortized as interest expense. Repurchase agreements are used as a tool for overall portfolio management to help ensure the Company maintains adequate assets in order to provide yield, spread and duration to support liabilities and other corporate needs.

The Company provides collateral, as dictated by the repurchase agreements, to the counterparty in exchange for a loan. If the fair value of the securities sold becomes less than the loan, the counterparty may require additional collateral.

The carrying value, which is at cost, reported in the Company's liabilities as repurchase agreements approximates the fair value.

The following table provides contractual maturity, maximum balance during the year, and ending balance for bilateral repurchase agreements:

	June 30,			
	2025		2024	
	Maximum Balance	Ending Balance	Maximum Balance	Ending Balance
	(In Millions)			
From 1 Week to 1 Month	\$ —	\$ —	\$ 178	\$ 178
Greater than 1 Month to 3 Months	6,461	3,384	2,711	2,537
Greater than 3 Months to 1 Year	—	—	2,712	722
Total	\$ 6,461	\$ 3,384	\$ 5,601	\$ 3,437

The company did not have any repurchase agreements where securities sold and/or acquired resulted in default as of June 30, 2025 and December 31, 2024.

The following table presents the fair value and amortized cost of securities sold under bilateral repurchase agreement transactions, which were all NAIC rating of 1, for the six months ended June 30, 2025 and 2024:

	Maximum Balance	Ending Balance
	(In Millions)	
March 31, 2025		
Fair Value	\$ (3,524)	\$ (3,497)
Carrying Value	\$ —	\$ (3,838)
June 30, 2025		
Fair Value	\$ (3,559)	\$ (3,451)
Carrying Value	\$ —	\$ (3,466)

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	Maximum Balance	Ending Balance
	(In Millions)	
March 31, 2024		
Fair Value	\$ 4,473	\$ 3,466
Carrying Value	\$ —	\$ 3,466
June 30, 2024		
Fair Value	\$ 3,532	\$ 3,449
Carrying Value	\$ —	\$ 3,799

The following table presents the cash collateral and the fair value of security collateral, which were all NAIC rating of 1, received in the bilateral repurchase agreement transactions for the six months ended June 30, 2025 and 2024:

	Maximum Balance		Ending Balance	
	Cash	Securities	Cash	Securities
	(In Millions)			
March 31, 2025	\$ 3,358	\$ 10	\$ 3,426	\$ 5
June 30, 2025	\$ 6,388	\$ 4	\$ 3,391	\$ 3
March 31, 2024	\$ 96	\$ 3,530	\$ 16	\$ 3,487
June 30, 2024	\$ 3,741	\$ 14	\$ 3,431	\$ —

The following table presents collateral received, aggregate allocation of the collateral by the remaining contractual maturity of the repurchase agreements for the six months ended June 30, 2025 and 2024:

	Overnight and Continuous	30 Days or Less	31 to 90 Days	> 90days
	(In Millions)			
Maximum Balance				
March 31, 2025	\$ —	\$ —	\$ 3,252	\$ 145
June 30, 2025	\$ —	\$ —	\$ 3,639	\$ —
March 31, 2024	\$ —	\$ —	\$ 1,626	\$ 1,880
June 30, 2024	\$ —	\$ 14	\$ 1,551	\$ 1,927
Ending Balance				
March 31, 2025	\$ —	\$ —	\$ 3,252	\$ 145
June 30, 2025	\$ —	\$ —	\$ 3,639	\$ —
March 31, 2024	\$ —	\$ —	\$ 1,626	\$ 1,880
June 30, 2024	\$ —	\$ 14	\$ 1,551	\$ 1,927

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The following table presents cash collateral received that has been reinvested, the total reinvested cash and the aggregate amortized cost and fair value of the invest asset acquired with the cash collateral for the six months ended June 30, 2025 and 2024:

	1 to 2 Years		2 to 3 Years		> 3 Years	
	Amortized Cost	Fair Value	Amortized Cost	Fair Value	Amortized Cost	Fair Value
Maximum Balance						
March 31, 2025	\$ —	\$ —	\$ 1,163	\$ 1,192	\$ 2,260	\$ 1,947
June 30, 2025	\$ —	\$ —	\$ 1,177	\$ 1,206	\$ 1,629	\$ 1,422
March 31, 2024	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —
June 30, 2024	\$ —	\$ —	\$ 1,125	\$ 1,139	\$ 2,674	\$ 2,310
Ending Balance						
March 31, 2025	\$ —	\$ —	\$ 1,163	\$ 1,192	\$ 2,260	\$ 1,947
June 30, 2025	\$ —	\$ —	\$ 1,177	\$ 1,206	\$ 1,629	\$ 1,422
March 31, 2024	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —
June 30, 2024	\$ —	\$ —	\$ 1,125	\$ 1,139	\$ 2,674	\$ 2,310

To help manage the mismatch of maturity dates between the security lending transactions and the related reinvestment of the collateral received, the Company invests in highly liquid assets.

The following table presents liability recognized to return cash collateral, and the liability recognized to return securities received as collateral as required pursuant to the terms of the secured borrowing transactions for the six months ended June 30, 2025 and 2024:

	Maximum Balance		Ending Balance	
	Cash	Securities	Cash	Securities
	(In Millions)			
March 31, 2025	\$ 3,358	\$ 10	\$ 3,426	\$ 5
June 30, 2025	\$ 6,388	\$ 4	\$ 3,391	\$ 3
March 31, 2024	\$ 96	\$ 3,530	\$ 16	\$ 3,487
June 30, 2024	\$ 3,741	\$ 14	\$ 3,431	\$ —

The company did not have any reverse repurchase transactions accounted for as secured borrowings as of June 30, 2025 and December 31, 2024.

The Company did not have any repurchase agreements or reverse repurchase agreements transactions accounted for as a sale as of June 30, 2025 and December 31, 2024.

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k. Net investment income

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

	Six Months Ended June 30,	
	2025	2024
	(In Millions)	
Bonds	\$ 4,432	\$ 4,047
Preferred stocks	20	12
Common stocks - subsidiaries and affiliates	201	155
Common stocks - unaffiliated	30	57
Mortgage loans	629	588
Policy loans	569	506
Real estate	39	39
Partnerships and limited liability companies	393	477
Derivatives	(44)	(258)
Cash, cash equivalents and short-term investments	137	214
Other	128	170
Subtotal investment income	6,534	6,007
Amortization of the IMR	(60)	(58)
Net gains from separate accounts	4	—
Investment expenses	(527)	(537)
Net investment income	<u>\$ 5,951</u>	<u>\$ 5,412</u>

l. Net realized capital losses

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

	Six Months Ended June 30,	
	2025	2024
	(In Millions)	
Bonds	\$ (59)	\$ (253)
Preferred stocks	(44)	(7)
Common stocks - subsidiaries and affiliates	—	21
Common stocks - unaffiliated	(8)	20
Mortgage loans	(126)	(40)
Real estate	3	—
Partnerships and limited liability companies	(174)	(49)
Derivatives	(411)	(238)
Other	40	6
Net realized capital losses before federal and state taxes and deferral to the IMR	(779)	(540)
Net federal and state tax benefit	216	46
Net realized capital losses before deferral to the IMR	(563)	(494)
Net after tax capital losses deferred to the IMR	116	222
Net realized capital losses	<u>\$ (447)</u>	<u>\$ (272)</u>

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

	Six Months Ended June 30,	
	2025	2024
	(In Millions)	
Bonds	\$ (77)	\$ (103)
Common stocks - subsidiaries and affiliates	(4)	—
Preferred stock	(11)	—
Mortgage loans	(76)	—
Partnerships and limited liability companies	(106)	(46)
Total OTTI	<u>\$ (274)</u>	<u>\$ (149)</u>

The Company recognized OTTI of \$13 million and \$9 million for the six months ended June 30, 2025 and 2024, respectively, 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.

The Company utilized internally-developed models to determine less than 1% of the \$77 million of bond OTTI for the six months ended June 30, 2025 and 1% of the \$103 million of bond OTTI for the six months ended June 30, 2024. The remaining OTTI amounts were determined using external inputs such as publicly observable fair values and credit ratings. Refer to *Note 2dd. "Net realized capital losses including other-than-temporary impairments and unrealized capital gains (losses)"* for more information on assumptions and inputs used in the Company's OTTI models.

m. Restricted assets

No significant changes.

6. Federal income taxes

No significant changes.

7. Other than invested assets

a. Admitted negative (disallowed) IMR

As of June 30, 2025, the Company had \$1,625 million of disallowed IMR in aggregate and in the general account.

As of June 30, 2025, the calculated adjusted general capital and surplus was \$25,941 million.

As of June 30, 2025, the percentage of adjusted general capital and surplus for which the admitted disallowed IMR represents was 6%.

The following represents allocated gains (losses) to IMR from derivatives:

	June 30, 2025 (In Millions)
Unamortized fair value derivative gain	\$ 3,061
Unamortized fair value derivative losses	(4,442)
Total allocated net losses to IMR from derivatives	<u>\$ (1,381)</u>

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When the Company sells bonds and recognizes losses due to interest-rate related factors, and the realized losses are transferred to the IMR, the sales proceeds are generally used for reinvestment as governed by prudent asset liability management (ALM) policies and procedures. Such sales of bonds are intermittently used to meet liquidity needs and managed within the ALM framework.

IMR losses for fixed income related derivatives were in accordance with documented risk management procedures, as well as the Company's derivative use plans, and reflect the same historical treatment of derivative gains reversed to IMR and amortized rather than immediately recognized as realized gain upon termination.

As of June 30, 2025, the IMR asset admitted under the currently adopted statutory accounting interpretation includes approximately \$119 million, net of tax, related to various FWH reinsurance treaties. Included in the FWH assets are reimbursements of capital losses on the invested assets to back the ceded reinsurance liabilities and are recorded as an adjustment to the income statement. Both the IMR and FWH assets are admitted under statutory accounting guidance.

8. *Policyholders' liabilities*

a. *Liabilities for deposit-type contracts*

Note program

Funding agreements are investment contracts sold to domestic and international institutional investors. Funding agreement liabilities are equal to the account value and are established by contract deposits, increased by interest credited and decreased by contract coupon payments and maturities. Contract holders do not have the right to terminate the contract prior to the contractually stated maturity date. The Company may retire funding agreements prior to the contractually-stated maturity date by repurchasing the agreement in the market or, in some cases, by calling the agreement. If this occurs, the difference in value is an adjustment to interest credited to liabilities for deposit-type contracts in the Consolidated Statutory Statements of Operations. Credited interest rates vary by contract and can be fixed or floating. Agreements do not have put provisions or ratings-based triggers. The liability of non-U.S. dollar denominated funding agreements may increase or decrease due to changes in foreign exchange rates. Currency swaps are employed to eliminate foreign exchange risk from all funding agreements issued to back non-U.S. dollar denominated notes.

Under the note program, MassMutual creates special purpose entities (SPEs), which are investment vehicles or trusts, for the purpose of issuing medium-term notes to investors. Proceeds from the sale of the medium-term notes issued by these SPEs are used to purchase funding agreements from MassMutual. The payment terms of any particular series of notes are matched by the payment terms of the funding agreement securing the series. Notes are currently issued from MassMutual's \$22.0 billion Global Medium-Term Note Program, which increased from \$16.0 billion in 2025.

On January 10, 2025, MassMutual issued a \$600 million funding agreement with a 4.95% fixed rate and a 5-year maturity.

On March 27, 2025, MassMutual issued a \$600 million funding agreement with a 4.45% fixed rate and a 3-year maturity.

On May 7, 2025, MassMutual issued a \$800 million funding agreement with a 4.55% fixed rate and a 5-year maturity.

On June 11, 2025, MassMutual issued a €700 million funding agreement with a 3.25% fixed rate and a 7-year maturity.

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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 lifetime withdrawal benefits (GLWB). 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 GLWB (in millions):

Liability as of January 1, 2024	\$ 74
Incurred guarantee benefits	2
Paid guarantee benefits	(9)
Liability as of December 31, 2024	67
Incurred guarantee benefits	(8)
Paid guarantee benefits	(5)
Liability as of June 30, 2025	<u>\$ 54</u>

The following summarizes the account values, net amount at risk and weighted average attained age for variable annuity contracts with GMDB, GMIB, GMAB and GLWB 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, 2025			December 31, 2024		
	Account Value	Net Amount at Risk	Weighted Average Attained Age	Account Value	Net Amount at Risk	Weighted Average Attained Age
	(\$ In Millions)					
GMDB	\$ 9,336	\$ 92	68	\$ 9,496	\$ 94	68
GMIB Basic	386	2	74	412	3	73
GMIB Plus	1,196	404	70	1,200	429	69
GMAB	1,001	1	64	1,089	4	64
GLWB	74	11	77	82	13	76

As of June 30, 2025, the GMDB account value above consists of \$999 million within the general account and \$8,337 million within separate accounts that includes \$3,866 million of Modco assumed. As of December 31, 2024, the GMDB account value above consists of \$1,039 million within the general account and \$8,457 million within separate accounts that includes \$3,807 million of Modco assumed.

9. Reinsurance

No significant changes.

10. Withdrawal characteristics

No significant changes.

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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.

a-f. No significant changes.

g. 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 Interim Consolidated Statutory Statements of Operations. The net periodic cost recognized is as follows:

	Six Months Ended June 30,			
	2025	2024	2025	2024
	Pension Benefits		Other Postretirement Benefits	
	(In Millions)			
Service cost	\$ 4	\$ 49	\$ 4	\$ 4
Interest cost	68	61	8	7
Expected return on plan assets	(84)	(85)	—	—
Amortization of unrecognized losses (gains)	7	10	(5)	(4)
Amortization of unrecognized prior service benefit	—	—	(2)	(2)
Total net periodic (benefit) expense	\$ (5)	\$ 35	\$ 5	\$ 5

13. Employee compensation plans

No significant changes.

14. Surplus notes

No significant changes.

15. Presentation of the Interim 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, 2025 and 2024. Accordingly, the Company has excluded these non-cash activities from the Consolidated Statutory Statements of Cash Flows for the six months ended June 30, 2025 and 2024.

	Six Months Ended June 30,	
	2025	2024
	(In Millions)	
Transfer of bonds to partnerships and limited liability companies	\$ 621	\$ —
Bond conversions and refinancing	353	392
Transfer of mortgage loans to partnerships and limited liability companies	291	140
Transfer of bonds to preferred stock	286	—
Change in market value of corporate owned life insurance asset	122	111
Transfer of mortgage loans to real estate	28	—
Stock conversions	26	4,099
Net investment income payment-in-kind bonds	24	16
Transfer of partnerships and limited liability companies to partnerships and limited liability companies	6	76
Transfer of mortgage loans to bonds	1	85
Transfer of mortgage loans to mortgage loans	—	17

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 interim risks and uncertainties disclosure should be read in conjunction with the statutory disclosure in the Company's 2024 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 LTC insurance policies to mitigate the impact of its underwriting risk.

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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.

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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, domestically or internationally, may directly or indirectly trigger or exacerbate risks related to product offerings, profitability, or any of the risk factors described above. Whether those underlying risk factors are driven by geopolitics or not, the Company's dynamic approach to managing risks enables management to identify risks, internally and externally, develop mitigation plans, and respond to risks in an attempt to proactively reduce the potential impact of each underlying risk factor on the Company.

b. Leases

MassMutual engaged in a sale-leaseback transaction with Bank of America, PNC, and US Bank (collectively the Banks) on May 22, 2025. The sale-leaseback transaction covered \$152 million of software assets (capitalized costs, primarily consisting of software externally purchased and internally developed and/or customized), which were non-admitted under statutory accounting guidance. In return for the assets, the Banks provided \$172 million of cash to MassMutual. The initial portion of the transaction is treated as sale and resulted in a deferred gain of \$19 million. The second portion of the agreement is treated as an operating lease, which has a five-year term.

c. 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 interim consolidated results of operations for the period in which such matter is resolved, or an accrual is determined to be required, on the interim 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 offset by related insurance recoveries or other contributions, if any. An accrual may be 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.

17. Related party transactions

Capital Contributions from MassMutual

- \$76 million to Counterpointe MM Mortgage Lending in the period ending June 2025
- \$140 million to DPI Acres in the period ending June 2025
- \$28 million to Counterpointe MM Mortgage Lending in the period ending March 2025
- \$26 million to ITPS Holding LLC in the period ending March 2025

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Return of Capital to MassMutual

- DPI Ares paid \$300 million in the period ending June 2025
- ITPS Holding LLC paid \$25 million (non-cash) in the period ending March 2025

Dividends paid to MassMutual

- MMLIA paid \$10 million in the period ending March 2025

Invesco and Barings LLC, MassMutual's subsidiary, have formed a strategic partnership for U.S. Wealth channels. MassMutual plans to invest up to \$650 million in seed capital to support new private credit products. This partnership aims to expand Barings' product and distribution opportunities.

18. Subsequent events

Management of the Company has evaluated subsequent events through August 13, 2025, 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 4th, 2025, "An Act to Provide for Reconciliation Pursuant to Title II of the H. Con. Res. 14" (the Act) was enacted. The Act provides for corporate tax changes including, but not limited to, restoring full expensing of domestic research and development costs, restoring immediate deductibility of certain capital expenditures, and changes in the computations of U.S. taxation on international earnings. At this time, the Company does not anticipate that the new provisions of the Act will have a significant impact on the 2025 consolidated statutory financial statements.

On July 8, 2025, MassMutual issued a CAD\$750 million funding agreement with a 4.127% fixed rate and a 7-year maturity.

On August 1, 2025, MassMutual issued a \$300 million funding agreement with a floating rate based on the Secured Overnight Financing Rate and a 3-year maturity.

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Glossary of Terms

<u>Term</u>	<u>Description</u>
ALM	Asset liability management
BDC	Business development corporations
CBO	Collateralized bond obligations
CDO	Collateralized debt obligations
CEF	Closed ends funds
CLO	Collateralized loan obligation
CMBS	Commercial mortgage-backed securities
C.M. Life	C.M. Life Insurance Company
DI	Disability Income Insurance
FHA	Federal Housing Administration
FWH	Funding Withheld
GIC	Guaranteed interest contracts
GMAB	Guaranteed minimum accumulation benefits
GMDB	Guaranteed minimum death benefits
GMIB	Guaranteed minimum income benefits
Glidepath	Glidepath Holdings Inc.
GLWB	Guaranteed lifetime withdrawal benefits
Invesco	Invesco Ltd
IMR	Interest maintenance reserve
IS	Institutional Solutions
LLC	Limited liability companies
LTC	Long-term Care
MassMutual	Massachusetts Mutual Life Insurance Company
MMHLLC	MassMutual Holding LLC
MMIH	MM Investment Holding
MMSD	MassMutual Strategic Distributors
Modco	Modified coinsurance
NAIC	National Association of Insurance Commissioners
OTTI	Other-than-temporary impairment(s)
REITS	Real estate investment trusts
RMBS	Residential mortgage-backed securities
SCA	Subsidiary, Controlled and Affiliated Entities
SEC	Securities and Exchange Commission
SSAP	Statements of Statutory Accounting Principles
SVO	Securities valuation office
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.	United States of America
U.S. GAAP	U.S. Generally Accepted Accounting Principles
VA	Veterans Administration