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Putnam Variable Trust

Putnam VT Mortgage Securities Fund

Semiannual report

6 | 30 | 23

Message from the Trustees

August 7, 2023

Dear Shareholder:

Stocks have generally advanced through the first half of 2023. Recently, a strong pulse of innovation has been gaining investors' attention, and the technology sector has started to rebound from a difficult 2022. More broadly, international markets are performing well, even though the reopening of China's economy lacked the dynamism many had anticipated.

Bond markets have experienced more ups and downs, but performance has improved compared with 2022. U.S. inflation has been trending downward, while the country's economic growth has remained positive. Against this backdrop, investors are weighing the impact of high borrowing costs, stress in the banking system, and a weaker housing market.

As active managers, your investment team continues to research attractive opportunities for your fund while monitoring risks. This report offers an update on their efforts.

Thank you for investing with Putnam.

Respectfully yours,



Robert L. Reynolds
President and Chief Executive Officer
Putnam Investments



Kenneth R. Leibler
Chair, Board of Trustees

The views expressed in this report are exclusively those of Putnam Management and are subject to change. They are not meant as investment advice. Please note that the holdings discussed in this report may not have been held by the fund for the entire period. Portfolio composition is subject to review in accordance with the fund's investment strategy and may vary in the future. Current and future portfolio holdings are subject to risk.

Consider these risks before investing: Funds that invest in government securities are not guaranteed. Mortgage- and asset-backed securities are subject to prepayment risk, which means that they may increase in value less than other bonds when interest rates decline and decline in value more than other bonds when interest rates rise. The fund may have to invest the proceeds from prepaid investments, including mortgage- and asset-backed investments, in other investments with less attractive terms and yields.

The fund's investments in mortgage-backed securities and asset-backed securities, and in certain other securities and derivatives, may be or become illiquid. The fund's exposure to privately issued mortgage-backed securities and mortgage-backed securities issued or guaranteed by the U.S. government or its agencies or instrumentalities may make the fund's net asset value more susceptible to economic, market, political, and other developments affecting the housing or real estate markets. The fund currently has significant investment exposure to commercial mortgage-backed securities. Bond investments are subject to interest-rate risk (the risk of bond prices falling if interest rates rise) and credit risk (the risk of an issuer defaulting on interest or principal payments). Interest-rate risk is generally greater for longer-term bonds, and credit risk is generally greater for below-investment-grade bonds. Default risk is generally higher for non-qualified mortgages. Risks associated with derivatives include increased investment exposure (which may be considered leverage) and, in the case of over-the-counter instruments, the potential inability to terminate or sell derivatives positions and the potential failure of the other party to the instrument to meet its obligations. Unlike bonds, funds that invest in bonds have fees and expenses. The value of investments in the fund's portfolio may fall or fail to rise over extended periods of time for a variety of reasons, including general economic, political, or financial market conditions; investor sentiment and market perceptions; government actions; geopolitical events or changes; and factors related to a specific issuer, geography (such as a region of the United States), industry, or sector (such as the housing or real estate markets). These and other factors may lead to increased volatility and reduced liquidity in the fund's portfolio holdings or in relevant markets.

Our investment techniques, analyses, and judgments may not produce the outcome we intend. We, or the fund's other service providers, may experience disruptions or operating errors that could have a negative effect on the fund. You can lose money by investing in the fund.

Performance summary (as of 6/30/23)

Investment objective

As high a level of current income as Putnam Investment Management, LLC (Putnam Management) believes is consistent with preservation of capital

Net asset value June 30, 2023

Class IA: \$6.10	Class IB: \$6.08
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Annualized total return at net asset value (as of 6/30/23)

	Class IA shares (2/1/00)	Class IB shares (2/1/00)	Bloomberg U.S. MBS Index	Putnam VT Mortgage Securities Linked Benchmark
6 months	1.11%	0.96%	1.87%	1.87%
1 year	-2.82	-2.98	-1.52	-1.52
5 years	-0.48	-0.73	0.03	0.03
10 years	0.57	0.32	1.13	0.73
Life of fund	3.61	3.36	3.76	3.52

Returns for periods of less than one year are not annualized.

For a portion of the periods, the fund had expense limitations, without which returns would have been lower.

Before April 30, 2018, the fund was managed with a materially different investment strategy and may have achieved materially different performance results under its current investment strategy from that shown for periods before this date.

The Bloomberg U.S. MBS Index is an unmanaged index of agency mortgage-backed pass-through securities (both fixed rate and hybrid ARM) guaranteed by Ginnie Mae (GNMA), Fannie Mae (FNMA), and Freddie Mac (FHLMC).

The Bloomberg Government Bond Index is an unmanaged index of U.S. Treasury and agency securities.

The Putnam VT Mortgage Securities Linked Benchmark represents the performance of the Bloomberg Government Bond Index through April 29, 2018, and the performance of the Bloomberg U.S. MBS Index thereafter.

All Bloomberg indices are provided by Bloomberg Index Services Limited.

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Data represent past performance. Past performance does not guarantee future results. More recent returns may be less or more than those shown. Investment return and principal value will fluctuate, and you may have a gain or a loss when you sell your shares. Performance information does not reflect any deduction for taxes a shareholder may owe on fund distributions or on the redemption of fund shares. All total return figures are at net asset value and exclude contract charges and expenses, which are added to the variable annuity contracts to determine total return at unit value. Had these charges and expenses been reflected, performance would have been lower. For more recent performance, contact your variable annuity provider who can provide you with performance that reflects the charges and expenses at your contract level.

Portfolio composition

Agency pass-throughs	76.2%
Commercial mortgage-backed securities	31.2%
Agency collateralized mortgage obligations	29.0%
Non-agency residential MBS	21.8%
Asset-backed securities	0.3%
Cash and net other assets	17.1%

Allocations are shown as a percentage of the fund's net assets. Cash and net other assets, if any, represent the market value weights of cash, derivatives, short-term securities, and other unclassified assets in the portfolio. Summary information may differ from the portfolio schedule included in the financial statements due to the inclusion of derivative securities, any interest accruals, the use of different classifications of securities for presentation purposes, and rounding. Allocations may not total 100% because the table includes the notional value of certain derivatives (the economic value for purposes of calculating periodic payment obligations), in addition to the market value of securities. Holdings and allocations may vary over time.

Credit quality

AAA	32.4%
AA	2.4%
A	6.0%
BBB	10.3%
BB	7.0%
B	5.1%
CCC and below	3.6%
Not rated	16.1%
Cash and net other assets	17.1%

Credit qualities are shown as a percentage of the fund's net assets. A bond rated BBB or higher (A-3 or higher, for short-term debt) is considered investment grade. This table reflects the highest security rating provided by one or more of Standard & Poor's, Moody's, and Fitch. Ratings and portfolio credit quality will vary over time. Cash and net other assets, if any, represent the market value weights of cash, derivatives, and short-term securities in the portfolio. The fund itself has not been rated by an independent rating agency. Due to rounding, percentages may not equal 100%.

Understanding your fund's expenses

As an investor in a variable annuity product that invests in a registered investment company, you pay ongoing expenses, such as management fees, distribution fees (12b-1 fees), and other expenses. In the most recent six-month period, your fund's expenses were limited; had expenses not been limited, they would have been higher. Using the following information, you can estimate how these expenses affect your investment and compare them with the expenses of other funds. You may also pay one-time transaction expenses, which are not shown in this section and would result in higher total expenses. Charges and expenses at the insurance company separate account level are not reflected. For more information, see your fund's prospectus or talk to your financial representative.

Review your fund's expenses

The two left-hand columns of the Expenses per \$1,000 table show the expenses you would have paid on a \$1,000 investment in your fund from 1/1/23 to 6/30/23. They also show how much a \$1,000 investment would be worth at the close of the period, assuming *actual returns* and expenses. To estimate the ongoing expenses you paid over the period, divide your account value by \$1,000, then multiply the result by the number in the first line for the class of shares you own.

Compare your fund's expenses with those of other funds

The two right-hand columns of the Expenses per \$1,000 table show your fund's expenses based on a \$1,000 investment, assuming a *hypothetical 5% annualized return*. You can use this information to compare the ongoing expenses (but not transaction expenses or total costs) of investing in the fund with those of other funds. All shareholder reports of mutual funds and funds serving as variable annuity vehicles will provide this information to help you make this comparison. Please note that you cannot use this information to estimate your actual ending account balance and expenses paid during the period.

Expense ratios

	Class IA	Class IB
Net expenses for the fiscal year ended 12/31/22*	0.50%	0.75%
Total annual operating expenses for the fiscal year ended 12/31/22	0.92%	1.17%
Annualized expense ratio for the six-month period ended 6/30/23	0.50%	0.75%

Fiscal year expense information in this table is taken from the most recent prospectus, is subject to change, and may differ from that shown for the annualized expense ratio and in the financial highlights of this report.

Expenses are shown as a percentage of average net assets.

*Reflects Putnam Management's contractual obligation to limit certain fund expenses through 4/30/24.

Expenses per \$1,000

	Expenses and value for a \$1,000 investment, assuming actual returns for the 6 months ended 6/30/23		Expenses and value for a \$1,000 investment, assuming a hypothetical 5% annualized return for the 6 months ended 6/30/23	
	Class IA	Class IB	Class IA	Class IB
Expenses paid per \$1,000*†	\$2.49	\$3.74	\$2.51	\$3.76
Ending value (after expenses)	\$1,011.10	\$1,009.60	\$1,022.32	\$1,021.08

*Expenses for each share class are calculated using the fund's annualized expense ratio for each class, which represents the ongoing expenses as a percentage of average net assets for the six months ended 6/30/23. The expense ratio may differ for each share class.

†Expenses based on actual returns are calculated by multiplying the expense ratio by the average account value for the period; then multiplying the result by the number of days in the period (181); and then dividing that result by the number of days in the year (365). Expenses based on a hypothetical 5% return are calculated by multiplying the expense ratio by the average account value for the six-month period; then multiplying the result by the number of days in the six-month period (181); and then dividing that result by the number of days in the year (365).

Your fund's managers



Portfolio Manager **Michael V. Salm** is Chief Investment Officer, Fixed Income. He joined Putnam in 1997 and has been in the investment industry since 1989.

Brett S. Kozlowski, CFA, and Jatin Misra, Ph.D., CFA, are also Portfolio Managers of the fund.

Your fund's managers also manage other accounts advised by Putnam Management or an affiliate, including retail mutual fund counterparts to the funds in Putnam Variable Trust.

The fund's portfolio 6/30/23 (Unaudited)

U.S. GOVERNMENT AND AGENCY MORTGAGE OBLIGATIONS (349.5%)*	Principal amount	Value
U.S. Government Guaranteed Mortgage Obligations (19.6%)		
Government National Mortgage Association Pass-Through Certificates		
6.50%, with due dates from 4/15/28 to 7/20/36	\$15,607	\$16,187
6.00%, with due dates from 4/15/28 to 11/20/38	37,038	38,256
5.50%, 4/20/38	52,684	53,436
5.00%, 3/20/50	13,226	13,083
4.70%, 8/20/67	61,907	60,380
4.50%, TBA, 7/1/53	2,000,000	1,929,729
4.50%, 5/20/48	69,039	67,346
4.00%, TBA, 7/1/53	1,000,000	945,528
3.50%, TBA, 7/1/53	1,000,000	922,729
3.00%, TBA, 7/1/53	1,000,000	893,354
2.00%, TBA, 7/1/53	1,000,000	839,640

5,779,668

U.S. Government Agency Mortgage Obligations (329.9%)	Principal amount	Value
Federal Home Loan Mortgage Corporation Pass-Through Certificates		
7.50%, with due dates from 9/1/30 to 7/1/31	6,433	6,719
7.00%, with due dates from 11/1/26 to 4/1/32	35,658	37,030
Federal National Mortgage Association Pass-Through Certificates		
7.50%, with due dates from 9/1/30 to 11/1/30	3,021	3,126
7.00%, with due dates from 12/1/28 to 12/1/35	129,103	135,600
6.50%, 9/1/36	6,078	6,318

Uniform Mortgage-Backed Securities	Principal amount	Value
2.00%, TBA, 7/1/53	8,000,000	6,523,440
2.50%, TBA, 7/1/53	9,000,000	7,631,019
3.00%, TBA, 7/1/53	5,000,000	4,386,720
3.50%, TBA, 7/1/53	4,000,000	3,644,844
4.00%, TBA, 7/1/53	6,000,000	5,630,388
4.50%, TBA, 7/1/53	6,000,000	5,768,436
5.00%, TBA, 7/1/53	26,000,000	25,472,892
5.50%, TBA, 7/1/53	8,000,000	7,961,248
6.00%, TBA, 7/1/53	1,000,000	1,008,828
6.00%, TBA, 8/1/53	1,000,000	1,008,515
5.50%, TBA, 8/1/53	4,000,000	3,980,934
4.50%, TBA, 8/1/53	2,000,000	1,923,126
4.00%, TBA, 8/1/53	3,000,000	2,817,187
3.50%, TBA, 8/1/53	3,000,000	2,735,625
3.00%, TBA, 8/1/53	4,000,000	3,523,750
2.50%, TBA, 8/1/53	8,000,000	6,789,374
2.00%, TBA, 8/1/53	8,000,000	6,529,091

97,524,210

**Total U.S. government and agency mortgage obligations
(cost \$103,796,172) \$103,303,878**

MORTGAGE-BACKED SECURITIES (80.6%)*	Principal amount	Value
Agency collateralized mortgage obligations (28.7%)		
Federal Home Loan Mortgage Corporation		
REMICs Ser. 5043, IO, 5.00%, 11/25/50	\$432,383	\$98,254
REMICs IFB Ser. 3408, Class EK, ((-4.024 x ICE LIBOR USD 1 Month) + 25.79%), 4.896%, 4/15/37	10,951	12,745
REMICs Ser. 4018, Class DI, IO, 4.50%, 7/15/41	51,797	3,090
REMICs IFB Ser. 3065, Class DC, ((-3 x ICE LIBOR USD 1 Month) + 19.86%), 4.28%, 3/15/35	77,761	77,948

MORTGAGE-BACKED SECURITIES (80.6%)* cont.	Principal amount	Value
Agency collateralized mortgage obligations cont.		
Federal Home Loan Mortgage Corporation		
REMICs Ser. 5119, Class IC, IO, 4.00%, 6/25/51	\$2,728	\$544
REMICs Ser. 4953, Class AI, IO, 4.00%, 2/25/50	742,396	151,575
REMICs Ser. 4425, IO, 4.00%, 1/15/45	108,080	15,752
REMICs Ser. 4452, Class QI, IO, 4.00%, 11/15/44	150,474	29,192
REMICs Ser. 4019, Class JI, IO, 4.00%, 5/15/41	84,196	5,450
REMICs Ser. 5050, Class IM, IO, 3.50%, 10/25/50	581,110	103,939
REMICs Ser. 5080, Class IQ, IO, 3.50%, 4/25/50	721,005	141,916
REMICs Ser. 4165, Class AI, IO, 3.50%, 2/15/43	100,042	14,880
REMICs Ser. 4136, Class IQ, IO, 3.50%, 11/15/42	197,530	26,981
Strips Ser. 304, Class C37, IO, 3.50%, 12/15/27	46,229	1,597
REMICs Ser. 5071, Class IV, IO, 3.00%, 12/25/50	1,091,361	185,526
REMICs Ser. 4141, Class PI, IO, 3.00%, 12/15/42	154,483	18,399
REMICs Ser. 4165, Class TI, IO, 3.00%, 12/15/42	310,003	23,494
REMICs Ser. 4171, Class NI, IO, 3.00%, 6/15/42	146,248	14,196
REMICs Ser. 4201, Class JI, IO, 3.00%, 12/15/41	88,218	3,681
REMICs IFB Ser. 5003, Class DS, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.10%), 0.95%, 8/25/50	662,545	77,780
REMICs IFB Ser. 4915, Class SD, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.05%), 0.90%, 9/25/49	473,695	46,456
REMICs IFB Ser. 4933, Class SA, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.00%), 0.85%, 12/25/49	679,301	80,199
REMICs Ser. 3391, PO, zero %, 4/15/37	2,641	2,174
Federal National Mortgage Association		
REMICs Ser. 15-58, Class KI, IO, 6.00%, 3/25/37	305,107	51,990
REMICs Ser. 15-86, Class MI, IO, 5.50%, 11/25/45	257,261	40,930
REMICs Ser. 18-51, Class BI, IO, 5.50%, 7/25/38	303,739	27,042
Trust FRB Ser. 03-W8, Class 3F2, (ICE LIBOR USD 1 Month + 0.35%), 5.50%, 5/25/42	1,870	1,852
REMICs Ser. 17-19, Class IH, IO, 5.00%, 3/25/47	282,437	39,541
REMICs Ser. 20-31, IO, 4.50%, 5/25/50	1,211,164	240,393
REMICs IFB Ser. 08-24, Class SP, ((-3.667 x ICE LIBOR USD 1 Month) + 23.28%), 4.398%, 2/25/38	29,552	28,615
REMICs Ser. 15-83, IO, 4.00%, 10/25/43	178,773	26,663
REMICs Ser. 12-104, Class HI, IO, 4.00%, 9/25/27	92,005	3,839
REMICs Ser. 21-25, Class IJ, IO, 3.50%, 5/25/51	470,778	84,575
REMICs Ser. 20-62, Class MI, IO, 3.50%, 5/25/49	1,170,195	204,189
REMICs Ser. 16-70, Class QI, IO, 3.50%, 10/25/46	337,465	45,953
REMICs Ser. 13-22, Class PI, IO, 3.50%, 10/25/42	130,513	22,627
REMICs Ser. 12-114, Class NI, IO, 3.50%, 10/25/41	165,415	10,407
REMICs Ser. 20-96, IO, 3.00%, 1/25/51	851,239	132,240
REMICs Ser. 13-55, Class IK, IO, 3.00%, 4/25/43	98,536	12,270
REMICs Ser. 13-6, Class JI, IO, 3.00%, 2/25/43	263,523	33,257
REMICs Ser. 12-151, Class PI, IO, 3.00%, 1/25/43	116,668	14,820
REMICs Ser. 12-145, Class TI, IO, 3.00%, 11/25/42	33,361	1,090
REMICs Ser. 13-55, Class PI, IO, 3.00%, 5/25/42	67,926	2,455
REMICs Ser. 13-30, Class IP, IO, 3.00%, 10/25/41	1,854	—
REMICs Ser. 13-23, Class LI, IO, 3.00%, 6/25/41	4,058	4
REMICs Ser. 21-12, Class NI, IO, 2.50%, 3/25/51	714,575	115,004
REMICs Ser. 21-3, Class IB, IO, 2.50%, 2/25/51	735,867	120,594
REMICs Ser. 21-3, Class NI, IO, 2.50%, 2/25/51	558,820	76,820
REMICs IFB Ser. 11-123, Class KS, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.60%), 1.45%, 10/25/41	17,405	1,325
REMICs IFB Ser. 18-20, Class SB, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.25%), 1.10%, 3/25/48	343,967	27,655

MORTGAGE-BACKED SECURITIES (80.6%)* cont.	Principal amount	Value
Agency collateralized mortgage obligations cont.		
Federal National Mortgage Association		
REMICs IFB Ser. 18-38, Class SP, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.20%), 1.05%, 6/25/48	\$703,579	\$73,389
REMICs IFB Ser. 17-104, Class SL, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.15%), 1.00%, 1/25/48	495,771	50,044
REMICs IFB Ser. 20-41, Class SE, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.10%), 0.95%, 6/25/50	1,317,469	152,913
REMICs IFB Ser. 16-83, Class BS, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.10%), 0.95%, 11/25/46	853,525	62,638
REMICs IFB Ser. 16-85, Class SL, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.10%), 0.95%, 11/25/46	1,162,863	79,764
REMICs IFB Ser. 16-50, Class SM, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.10%), 0.95%, 8/25/46	545,114	34,688
REMICs IFB Ser. 16-8, Class SA, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.05%), 0.90%, 3/25/46	768,732	74,055
REMICs IFB Ser. 19-71, Class CS, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.00%), 0.85%, 11/25/49	65,676	9,394
REMICs Ser. 08-53, Class DO, PO, zero %, 7/25/38	13,045	10,547
Government National Mortgage Association		
Ser. 16-75, Class LI, IO, 6.00%, 1/20/40	175,429	29,873
Ser. 20-167, Class IT, IO, 5.00%, 9/20/47	461,749	92,707
Ser. 15-89, Class LI, IO, 5.00%, 12/20/44	283,590	52,022
Ser. 14-76, IO, 5.00%, 5/20/44	158,089	31,146
Ser. 13-51, Class QI, IO, 5.00%, 2/20/43	115,789	15,048
Ser. 13-6, Class OI, IO, 5.00%, 1/20/43	51,553	9,322
Ser. 10-35, Class UI, IO, 5.00%, 3/20/40	73,706	14,998
Ser. 10-9, Class UI, IO, 5.00%, 1/20/40	239,199	48,438
Ser. 09-121, Class UI, IO, 5.00%, 12/20/39	187,003	36,823
Ser. 18-1, IO, 4.50%, 1/20/48	266,500	51,007
Ser. 13-34, Class HI, IO, 4.50%, 3/20/43	170,797	30,694
Ser. 13-39, Class IJ, IO, 4.50%, 3/20/43	474,188	87,603
Ser. 10-35, Class AI, IO, 4.50%, 3/20/40	162,142	26,280
Ser. 10-35, Class DI, IO, 4.50%, 3/20/40	97,942	17,013
Ser. 10-35, Class QI, IO, 4.50%, 3/20/40	56,619	9,780
Ser. 09-121, Class CI, IO, 4.50%, 12/16/39	229,495	41,979
Ser. 15-53, Class MI, IO, 4.00%, 4/16/45	200,047	36,549
Ser. 14-100, Class NI, IO, 4.00%, 6/20/43	125,924	7,631
Ser. 13-165, Class IL, IO, 4.00%, 3/20/43	51,028	7,810
Ser. 12-56, Class IB, IO, 4.00%, 4/20/42	156,790	26,455
Ser. 12-38, Class MI, IO, 4.00%, 3/20/42	628,832	103,808
Ser. 14-182, Class BI, IO, 4.00%, 1/20/39	273,509	26,840
Ser. 21-177, Class IG, IO, 3.50%, 10/20/51	1,506,791	200,968
Ser. 20-175, Class JI, IO, 3.50%, 11/20/50	1,627,916	273,257
Ser. 15-168, Class IG, IO, 3.50%, 3/20/43	100,043	12,713
Ser. 12-136, IO, 3.50%, 11/20/42	255,543	34,306
Ser. 14-102, Class IG, IO, 3.50%, 3/16/41	36,640	1,602
Ser. 15-52, Class KI, IO, 3.50%, 11/20/40	98,062	7,325
Ser. 21-176, Class GI, IO, 3.00%, 10/20/51	901,255	122,652
Ser. 21-188, Class IU, IO, 3.00%, 10/20/51	598,815	119,153
Ser. 21-188, Class IW, IO, 3.00%, 10/20/51	628,044	101,780
Ser. 21-76, Class NI, IO, 3.00%, 8/20/50	1,299,132	191,622
Ser. 14-174, Class AI, IO, 3.00%, 11/16/29	158,902	8,088
IFB Ser. 23-66, Class PS, ((-2.5 x US 30 Day Average SOFR) + 15.38%), 2.709%, 5/20/53	196,677	194,002
Ser. 16-H13, Class IK, IO, 2.655%, 6/20/66 W	619,721	51,197
Ser. 17-H14, Class LI, IO, 2.501%, 6/20/67 W	439,785	20,688
Ser. 21-7, Class MI, IO, 2.50%, 1/20/51	1,072,205	147,581
Ser. 21-8, Class IP, IO, 2.50%, 1/20/51	1,281,477	174,918
Ser. 20-162, Class UI, IO, 2.50%, 10/20/50	948,372	122,945

MORTGAGE-BACKED SECURITIES (80.6%)* cont.	Principal amount	Value
Agency collateralized mortgage obligations cont.		
Government National Mortgage Association		
Ser. 20-138, Class IB, IO, 2.50%, 9/20/50	\$1,179,314	\$151,812
Ser. 16-H04, Class HI, IO, 2.361%, 7/20/65 W	376,156	10,758
Ser. 16-H07, Class PI, IO, 2.292%, 3/20/66 W	1,324,971	91,357
Ser. 16-H24, IO, 2.155%, 9/20/66 W	624,195	48,383
IFB Ser. 23-20, Class SP, IO, ((-1 x US 30 Day Average SOFR) + 7.00%), 1.934%, 2/20/53	2,415,330	138,719
Ser. 15-H23, Class TI, IO, 1.921%, 9/20/65 W	616,291	27,363
Ser. 14-H25, Class BI, IO, 1.65%, 12/20/64 W	624,828	17,744
IFB Ser. 13-182, Class SP, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.70%), 1.554%, 12/20/43	125,308	12,164
IFB Ser. 11-156, Class SK, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.60%), 1.454%, 4/20/38	384,775	40,563
FRB Ser. 11-H07, Class FI, IO, 1.229%, 2/20/61 W	541,673	13,433
IFB Ser. 21-98, Class SK, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.30%), 1.143%, 6/20/51	916,227	104,010
IFB Ser. 20-112, Class MS, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.30%), 1.143%, 8/20/50	1,486,577	182,758
IFB Ser. 13-87, Class SA, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.20%), 1.054%, 6/20/43	588,713	53,860
IFB Ser. 19-56, Class SK, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.15%), 0.993%, 5/20/49	406,723	34,181
IFB Ser. 19-158, Class AS, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.15%), 0.992%, 9/16/43	574,680	53,954
IFB Ser. 19-100, Class JS, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.10%), 0.943%, 8/20/49	284,712	22,717
IFB Ser. 18-148, Class GS, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.10%), 0.942%, 2/16/46	321,411	29,062
IFB Ser. 20-7, Class SK, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.05%), 0.904%, 1/20/50	582,609	53,772
IFB Ser. 19-125, Class SG, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.05%), 0.904%, 10/20/49	634,388	79,793
IFB Ser. 23-56, Class SK, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.05%), 0.893%, 4/20/51	1,166,988	117,166
IFB Ser. 19-110, Class SQ, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.05%), 0.893%, 9/20/49	678,623	66,978
IFB Ser. 19-121, Class SD, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.00%), 0.843%, 10/20/49	258,826	35,493
IFB Ser. 20-47, Class SA, IO, ((-1 x ICE LIBOR USD 1 Month) + 6.00%), 0.843%, 5/20/44	476,922	38,674
IFB Ser. 23-40, Class SP, IO, ((-1 x US 30 Day Average SOFR) + 5.65%), 0.584%, 3/20/53	3,514,139	103,272
IFB Ser. 23-43, Class S, IO, ((-1 x US 30 Day Average SOFR) + 5.60%), 0.534%, 3/20/53	4,570,136	135,707
IFB Ser. 22-209, Class SG, IO, ((-1 x US 30 Day Average SOFR) + 5.60%), 0.534%, 12/20/52	3,750,053	202,843
Ser. 15-H14, Class AI, IO, 0.396%, 6/20/65 W	1,243,624	44,384
Ser. 17-H20, Class AI, IO, 0.273%, 10/20/67 W	1,291,268	68,599
Ser. 17-H08, Class GI, IO, 0.229%, 2/20/67 W	477,050	40,214
Ser. 16-H18, Class QI, IO, 0.193%, 6/20/66 W	690,608	32,001
Ser. 17-H03, Class KI, IO, 0.178%, 1/20/67 W	828,954	64,327
FRB Ser. 15-H16, Class XI, IO, 0.11%, 7/20/65 W	488,331	23,196
Ser. 18-H01, Class XI, IO, 0.107%, 1/20/68 W	734,355	47,151
Ser. 16-H27, Class GI, IO, 0.102%, 12/20/66 W	920,282	44,763
Ser. 17-H25, Class CI, IO, 0.097%, 12/20/67 W	918,214	54,695
Ser. 15-H20, Class CI, IO, 0.088%, 8/20/65 W	871,157	43,209
Ser. 16-H24, Class JI, IO, 0.081%, 11/20/66 W	349,757	16,548
Ser. 15-H22, Class AI, IO, 0.08%, 9/20/65 W	868,742	39,180
Ser. 15-H13, Class AI, IO, 0.079%, 6/20/65 W	630,499	24,566
FRB Ser. 16-H19, Class AI, IO, 0.076%, 9/20/66 W	1,092,127	41,899
Ser. 15-H10, Class HI, IO, 0.075%, 4/20/65 W	1,245,929	47,470

MORTGAGE-BACKED SECURITIES (80.6%)* cont.	Principal amount	Value
Agency collateralized mortgage obligations cont.		
Government National Mortgage Association		
Ser. 17-H06, Class MI, IO, 0.064%, 2/20/67 W	\$844,049	\$28,799
Ser. 18-H02, Class IM, IO, 0.059%, 2/20/68 W	518,808	30,106
Ser. 14-H21, Class AI, IO, 0.047%, 10/20/64 W	850,427	23,838
Ser. 17-H04, Class BI, IO, 0.037%, 2/20/67 W	525,888	21,223
Ser. 16-H03, Class AI, IO, 0.034%, 1/20/66 W	759,868	24,692
Ser. 16-H24, Class BI, IO, 0.031%, 11/20/66 W	1,906,031	65,980
Ser. 17-H25, IO, 0.026%, 11/20/67 W	575,771	25,100
Ser. 16-H23, Class NI, IO, 0.026%, 10/20/66 W	1,009,051	38,344
Ser. 15-H04, Class AI, IO, 0.023%, 12/20/64 W	573,520	15,714
Ser. 17-H10, Class MI, IO, 0.021%, 4/20/67 W	600,900	17,606
Ser. 17-H08, Class NI, IO, 0.019%, 3/20/67 W	524,631	16,946
Ser. 17-H09, IO, 0.014%, 4/20/67 W	529,379	13,690
Ser. 16-H06, Class DI, IO, 0.009%, 7/20/65 W	745,589	14,451
Ser. 16-H10, Class AI, IO, zero %, 4/20/66 W	724,453	11,648
	8,484,848	
Commercial mortgage-backed securities (30.1%)		
BANK 144A Ser. 18-BN11, Class D, 3.00%, 3/15/61	59,000	33,784
Barclays Commercial Mortgage Trust 144A		
Ser. 19-C4, Class E, 3.25%, 8/15/52	111,000	64,793
Ser. 19-C3, Class D, 3.00%, 5/15/52	65,000	40,866
Benchmark Mortgage Trust FRB Ser. 18-B1, Class C, 4.329%, 1/15/51 W	47,000	36,103
Benchmark Mortgage Trust 144A		
FRB Ser. 18-B3, Class D, 3.176%, 4/10/51 W	218,000	134,967
Ser. 19-B11, Class D, 3.00%, 5/15/52	115,000	72,533
Ser. 18-B1, Class E, 3.00%, 1/15/51 W	108,000	55,705
Ser. 19-B13, Class D, 2.50%, 8/15/57	152,000	84,760
BWAY Mortgage Trust 144A FRB Ser. 22-26BW, Class F, 5.029%, 2/10/44 W	138,000	84,773
CD Commercial Mortgage Trust		
FRB Ser. 17-CD3, Class C, 4.697%, 2/10/50 W	134,000	80,358
Ser. 17-CD3, Class B, 3.984%, 2/10/50 W	60,000	43,488
CD Commercial Mortgage Trust 144A		
Ser. 17-CD3, Class D, 3.25%, 2/10/50	140,000	64,063
Ser. 19-CD8, Class D, 3.00%, 8/15/57	84,000	51,954
Citigroup Commercial Mortgage Trust		
FRB Ser. 13-GC15, Class C, 5.419%, 9/10/46 W	104,000	102,587
FRB Ser. 15-GC27, Class C, 4.567%, 2/10/48 W	116,000	99,795
Citigroup Commercial Mortgage Trust 144A		
FRB Ser. 15-GC27, Class D, 4.567%, 2/10/48 W	70,000	55,381
Ser. 15-P1, Class D, 3.225%, 9/15/48	157,000	122,011
Ser. 15-GC27, Class E, 3.00%, 2/10/48	150,000	111,701
COMM Mortgage Trust		
FRB Ser. 12-CR1, Class C, 5.487%, 5/15/45 W	68,000	61,857
FRB Ser. 14-CR16, Class C, 5.08%, 4/10/47 W	166,000	152,060
FRB Ser. 13-CR13, Class C, 5.032%, 11/10/46 W	99,000	90,457
FRB Ser. 18-COR3, Class C, 4.711%, 5/10/51 W	67,000	53,569
FRB Ser. 15-CR23, Class C, 4.443%, 5/10/48 W	72,000	60,417
Ser. 13-CR12, Class AM, 4.30%, 10/10/46	106,000	92,808
Ser. 15-DC1, Class B, 4.035%, 2/10/48 W	85,000	73,457
FRB Ser. 15-CR26, Class D, 3.615%, 10/10/48 W	165,000	106,163
COMM Mortgage Trust 144A		
FRB Ser. 13-LC13, Class D, 5.436%, 8/10/46 W	101,000	95,189
FRB Ser. 14-CR17, Class D, 5.006%, 5/10/47 W	228,000	197,466
FRB Ser. 14-CR17, Class E, 5.006%, 5/10/47 W	124,000	82,944
FRB Ser. 15-LC19, Class E, 4.355%, 2/10/48 W	115,000	87,543
FRB Ser. 13-CR6, Class D, 3.988%, 3/10/46 W	160,000	115,200
Ser. 12-CR4, Class B, 3.703%, 10/15/45	123,000	74,507

MORTGAGE-BACKED SECURITIES (80.6%)* cont.	Principal amount	Value
Commercial mortgage-backed securities cont.		
COMM Mortgage Trust 144A		
Ser. 17-COR2, Class D, 3.00%, 9/10/50	\$113,000	\$76,840
FRB Ser. 18-COR3, Class D, 2.961%, 5/10/51 W	112,000	61,383
Credit Suisse Mortgage Trust 144A FRB		
Ser. 22-NWPT, Class A, 8.29%, 9/9/24	111,000	110,884
CSAIL Commercial Mortgage Trust		
FRB Ser. 15-C3, Class C, 4.50%, 8/15/48 W	56,000	40,865
FRB Ser. 15-C1, Class C, 4.393%, 4/15/50 W	124,000	101,367
FRB Ser. 15-C2, Class C, 4.315%, 6/15/57 W	69,000	56,410
FRB Ser. 15-C2, Class D, 4.315%, 6/15/57 W	199,000	121,550
CSAIL Commercial Mortgage Trust 144A		
FRB Ser. 18-C14, Class D, 5.064%, 11/15/51 W	73,000	47,130
Ser. 19-C17, Class D, 2.50%, 9/15/52	138,000	74,036
DBUBS Mortgage Trust 144A FRB Ser. 11-LC3A, Class D, 5.538%, 8/10/44 W		
	121,879	105,705
Federal Home Loan Mortgage Corporation 144A		
Multifamily Structured Credit Risk FRB		
Ser. 21-MN3, Class M2, 9.067%, 11/25/51	148,000	134,255
Multifamily Structured Agency Credit Risk FRB		
Ser. 21-MN1, Class M2, 8.817%, 1/25/51	123,000	110,782
GS Mortgage Securities Corp., II 144A FRB		
Ser. 13-GC10, Class D, 4.688%, 2/10/46 W	154,000	130,037
GS Mortgage Securities Trust		
FRB Ser. 14-GC18, Class C, 5.223%, 1/10/47 W	155,000	85,250
FRB Ser. 14-GC22, Class C, 4.842%, 6/10/47 W	68,000	54,820
FRB Ser. 15-GC30, Class C, 4.204%, 5/10/50 W	40,000	35,567
GS Mortgage Securities Trust 144A		
FRB Ser. 14-GC24, Class D, 4.657%, 9/10/47 W	292,000	124,495
FRB Ser. 13-GC13, Class D, 4.119%, 7/10/46 W	105,000	43,566
Ser. 17-GS5, Class D, 3.509%, 3/10/50 W	61,000	35,194
JPMBB Commercial Mortgage Securities Trust		
FRB Ser. 14-C22, Class C, 4.698%, 9/15/47 W	125,000	104,380
JPMBB Commercial Mortgage Securities Trust 144A		
FRB Ser. C14, Class D, 4.43%, 8/15/46 W	229,000	120,312
FRB Ser. 14-C25, Class D, 4.082%, 11/15/47 W	139,000	94,489
JPMDB Commercial Mortgage Securities Trust		
FRB Ser. 18-C8, Class C, 4.971%, 6/15/51 W	33,000	26,661
Ser. 17-C5, Class C, 4.512%, 3/15/50 W	88,000	62,084
JPMDB Commercial Mortgage Securities Trust 144A FRB Ser. 16-C2, Class D, 3.482%, 6/15/49 W		
	157,000	92,474
JPMorgan Chase Commercial Mortgage Securities Trust		
Ser. 06-LDP9, Class AMS, 5.337%, 5/15/47	106,806	99,796
FRB Ser. 13-LC11, Class D, 4.307%, 4/15/46 W	168,000	111,992
FRB Ser. 13-C10, Class C, 4.263%, 12/15/47 W	80,715	75,894
Ser. 13-LC11, Class B, 3.499%, 4/15/46	49,000	42,734
JPMorgan Chase Commercial Mortgage Securities Trust 144A FRB Ser. 11-C3, Class D, 5.71%, 2/15/46 W		
	145,000	102,221
Morgan Stanley Bank of America Merrill Lynch Trust		
FRB Ser. 15-C25, Class C, 4.668%, 10/15/48 W	122,000	105,049
FRB Ser. 14-C16, Class B, 4.439%, 6/15/47 W	114,000	104,339
FRB Ser. 15-C22, Class C, 4.341%, 4/15/48 W	98,000	85,610
FRB Ser. 17-C34, Class C, 4.314%, 11/15/52 W	60,000	48,640
Ser. 14-C19, Class C, 4.00%, 12/15/47	69,000	62,243
FRB Ser. 13-C9, Class C, 3.935%, 5/15/46 W	58,000	46,516

MORTGAGE-BACKED SECURITIES (80.6%)* cont.	Principal amount	Value
Commercial mortgage-backed securities cont.		
Morgan Stanley Bank of America Merrill Lynch Trust 144A		
FRB Ser. 14-C15, Class D, 5.021%, 4/15/47 W	\$180,000	\$164,700
FRB Ser. 12-C5, Class E, 4.769%, 8/15/45 W	63,000	56,714
FRB Ser. 12-C6, Class E, 4.673%, 11/15/45 W	124,000	87,296
FRB Ser. 15-C24, Class E, 4.469%, 5/15/48 W	104,000	77,043
FRB Ser. 15-C23, Class D, 4.277%, 7/15/50 W	131,000	107,818
FRB Ser. 13-C10, Class F, 4.20%, 7/15/46 W	141,000	7,086
Morgan Stanley Capital I Trust		
FRB Ser. 18-H3, Class C, 5.013%, 7/15/51 W	125,000	101,348
FRB Ser. 15-MS1, Class C, 4.158%, 5/15/48 W	172,000	150,623
Morgan Stanley Capital I Trust 144A FRB		
Ser. 11-C3, Class E, 5.251%, 7/15/49 W	54,887	48,537
Multifamily Connecticut Avenue Securities Trust		
144A FRB Ser. 19-01, Class M10, 8.40%, 10/25/49	419,958	405,259
PPF, Ltd. 144A FRB Ser. 21-8, Class A, 6.158%, 8/9/37 (Cayman Islands)	60,434	58,739
Ready Capital Mortgage Financing, LLC 144A		
FRB Ser. 22-FL9, Class A, 7.556%, 6/25/37	79,849	79,633
RIAL Issuer, Ltd. 144A FRB Ser. 22-FL8, Class B, 8.341%, 1/19/37		
109,000	105,185	
UBS Commercial Mortgage Trust		
FRB Ser. 18-C13, Class C, 5.09%, 10/15/51 W	54,000	43,398
FRB Ser. 18-C11, Class C, 5.035%, 6/15/51 W	117,000	91,909
FRB Ser. 17-C3, Class C, 4.536%, 8/15/50 W	202,000	161,875
UBS Commercial Mortgage Trust 144A		
FRB Ser. 12-C1, Class E, 5.00%, 5/10/45 W	223,494	148,624
FRB Ser. 18-C11, Class D, 3.00%, 6/15/51 W	216,000	128,219
Wells Fargo Commercial Mortgage Trust		
FRB Ser. 16-NXS5, Class D, 5.144%, 1/15/59 W	51,000	26,483
FRB Ser. 18-C46, Class C, 5.141%, 8/15/51 W	51,000	41,613
FRB Ser. 15-SG1, Class B, 4.601%, 9/15/48 W	138,000	119,713
FRB Ser. 15-C29, Class D, 4.359%, 6/15/48 W	189,000	158,046
FRB Ser. 20-C57, Class C, 4.157%, 8/15/53 W	33,000	25,700
Ser. 15-C31, Class D, 3.852%, 11/15/48	81,000	60,545
Ser. 16-BNK1, Class C, 3.071%, 8/15/49 W	65,000	39,028
Wells Fargo Commercial Mortgage Trust 144A		
FRB Ser. 15-C31, Class E, 4.748%, 11/15/48 W	118,000	73,030
FRB Ser. 15-C30, Class D, 4.648%, 9/15/58 W	98,000	77,076
Ser. 17-RB1, Class D, 3.401%, 3/15/50	107,000	64,378
Ser. 16-C33, Class D, 3.123%, 3/15/59	134,000	104,256
Ser. 20-C55, Class D, 2.50%, 2/15/53	66,000	34,691
WF-RBS Commercial Mortgage Trust Ser. 14-C21, Class C, 4.234%, 8/15/47 W		
167,000	137,582	
WF-RBS Commercial Mortgage Trust 144A		
FRB Ser. 13-UBS1, Class E, 5.195%, 3/15/46 W	128,000	121,371
FRB Ser. 11-C4, Class C, 4.992%, 6/15/44 W	82,778	78,349
FRB Ser. 12-C9, Class D, 4.876%, 11/15/45 W	84,337	77,753
	8,882,449	
Residential mortgage-backed securities (non-agency) (21.8%)		
American Home Mortgage Investment Trust FRB		
Ser. 07-1, Class GA1C, (ICE LIBOR USD 1 Month + 0.19%), 5.34%, 5/25/47	381,071	207,899
Bayview Financial Mortgage Pass-Through Trust		
Ser. 06-C, Class 1A3, 6.528%, 11/28/36	219,698	204,278
Carrington Mortgage Loan Trust FRB		
Ser. 06-NC2, Class A4, (ICE LIBOR USD 1 Month + 0.48%), 5.63%, 6/25/36	412,685	389,297
Chevy Chase Funding, LLC Mortgage-Backed Certificates 144A FRB Ser. 06-4A, Class A2, (ICE LIBOR USD 1 Month + 0.18%), 5.33%, 11/25/47		
135,289	98,620	

MORTGAGE-BACKED SECURITIES (80.6%)* cont.	Principal amount	Value
Residential mortgage-backed securities (non-agency) cont.		
Countrywide Alternative Loan Trust FRB		
Ser. 06-OA19, Class A1, (ICE LIBOR USD 1 Month + 0.18%), 5.337%, 2/20/47	\$164,570	\$127,544
Countrywide Asset-Backed Certificates FRB		
Ser. 07-10, Class 1A1, (ICE LIBOR USD 1 Month + 0.18%), 5.33%, 6/25/47	215,039	199,822
CSMC Trust 144A FRB Ser. 20-RPL2, Class A12, 3.496%, 2/25/60 W		
117,318	117,095	
Eagle Re, Ltd. 144A FRB Ser. 20-1, Class B1, (ICE LIBOR USD 1 Month + 2.85%), 8.00%, 1/25/30		
182,000	183,926	
Federal Home Loan Mortgage Corporation		
Structured Agency Credit Risk Debt FRN		
Ser. 15-HQA1, Class B, (ICE LIBOR USD 1 Month + 8.80%), 13.95%, 3/25/28	246,690	255,022
Structured Agency Credit Risk Debt FRN		
Ser. 16-DNA3, Class M3, (ICE LIBOR USD 1 Month + 5.00%), 10.15%, 12/25/28	137,962	147,425
Seasoned Credit Risk Transfer Trust Ser. 19-3, Class M, 4.75%, 10/25/58 W		
50,000	44,172	
Federal Home Loan Mortgage Corporation 144A		
Structured Agency Credit Risk Trust FRB		
Ser. 19-HQA1, Class B2, (ICE LIBOR USD 1 Month + 12.25%), 17.40%, 2/25/49	222,000	265,662
Structured Agency Credit Risk Trust REMICs		
FRB Ser. 20-DNA5, Class B2, (US 30 Day Average SOFR + 11.50%), 16.567%, 10/25/50	56,000	69,510
Structured Agency Credit Risk Trust FRB		
Ser. 18-HQA2, Class B2, (ICE LIBOR USD 1 Month + 11.00%), 16.15%, 10/25/48	413,000	493,367
Structured Agency Credit Risk Trust FRB		
Ser. 19-DNA1, Class B2, (ICE LIBOR USD 1 Month + 10.75%), 15.90%, 1/25/49	32,000	37,839
Structured Agency Credit Risk Trust FRB		
Ser. 19-DNA2, Class B2, (ICE LIBOR USD 1 Month + 10.50%), 15.65%, 3/25/49	114,000	131,972
Structured Agency Credit Risk Trust REMICs		
FRB Ser. 20-DNA4, Class B2, (ICE LIBOR USD 1 Month + 10.00%), 15.15%, 8/25/50	65,000	82,347
Structured Agency Credit Risk Trust REMICs		
FRB Ser. 20-HQA3, Class B2, (ICE LIBOR USD 1 Month + 10.00%), 15.15%, 7/25/50	64,000	76,020
Structured Agency Credit Risk Trust FRB		
Ser. 18-DNA3, Class B2, (ICE LIBOR USD 1 Month + 7.75%), 12.90%, 9/25/48	431,000	461,024
Structured Agency Credit Risk Trust REMICs		
FRB Ser. 20-HQA3, Class B1, (ICE LIBOR USD 1 Month + 5.75%), 10.90%, 7/25/50	210,207	227,416
Structured Agency Credit Risk Trust REMICs		
FRB Ser. 20-HQA4, Class B1, (ICE LIBOR USD 1 Month + 5.25%), 10.40%, 9/25/50	44,171	47,079
Structured Agency Credit Risk Trust REMICs		
FRB Ser. 20-DNA5, Class B1, (US 30 Day Average SOFR + 4.80%), 9.867%, 10/25/50	205,000	219,606
Structured Agency Credit Risk Trust FRB		
Ser. 19-DNA1, Class B1, (ICE LIBOR USD 1 Month + 4.65%), 9.80%, 1/25/49	95,000	102,957
Structured Agency Credit Risk Trust REMICs		
FRB Ser. 20-HQA2, Class B1, (ICE LIBOR USD 1 Month + 4.10%), 9.25%, 3/25/50	124,000	128,239
Structured Agency Credit Risk Trust REMICs		
FRB Ser. 20-HQA2, Class M2, (ICE LIBOR USD 1 Month + 3.10%), 8.25%, 3/25/50	24,762	25,393

MORTGAGE-BACKED SECURITIES (80.6%)* cont.	Principal amount	Value
Residential mortgage-backed securities (non-agency) cont.		
Federal Home Loan Mortgage Corporation 144A Seasoned Credit Risk Transfer Trust Ser. 19-2, Class M, 4.75%, 8/25/58 W	\$69,000	\$60,052
Seasoned Credit Risk Transfer Trust FRB Ser. 18-3, Class 3, 4.75%, 8/25/57 W	70,000	59,774
Federal National Mortgage Association Connecticut Avenue Securities FRB Ser. 16-C03, Class 1B, (ICE LIBOR USD 1 Month + 11.75%), 16.90%, 10/25/28	154,746	174,883
Connecticut Avenue Securities FRB Ser. 16-C03, Class 1M2, (ICE LIBOR USD 1 Month + 5.30%), 10.45%, 10/25/28	32,854	34,930
Connecticut Avenue Securities FRB Ser. 17-C07, Class 2B1, (ICE LIBOR USD 1 Month + 4.45%), 9.60%, 5/25/30	158,000	171,298
Connecticut Avenue Securities FRB Ser. 17-C06, Class 1B1, (ICE LIBOR USD 1 Month + 4.15%), 9.30%, 2/25/30	200,000	214,631
Federal National Mortgage Association 144A Connecticut Avenue Securities Trust FRB Ser. 22-R02, Class 2B1, (US 30 Day Average SOFR + 4.50%), 9.567%, 1/25/42	35,000	35,131
Connecticut Avenue Securities Trust FRB Ser. 19-R01, Class 2B1, (ICE LIBOR USD 1 Month + 4.35%), 9.50%, 7/25/31	211,000	222,605
Connecticut Avenue Securities Trust FRB Ser. 19-R05, Class 1B1, (ICE LIBOR USD 1 Month + 4.10%), 9.25%, 7/25/39	78,231	80,540
Connecticut Avenue Securities Trust FRB Ser. 19-R03, Class 1B1, (ICE LIBOR USD 1 Month + 4.10%), 9.25%, 9/25/31	63,000	65,973
Connecticut Avenue Securities Trust FRB Ser. 20-SBT1, Class 1M2, (ICE LIBOR USD 1 Month + 3.65%), 8.80%, 2/25/40	79,000	81,577
Connecticut Avenue Securities Trust FRB Ser. 20-R02, Class 2B1, (ICE LIBOR USD 1 Month + 3.00%), 8.15%, 1/25/40	35,000	33,554
Connecticut Avenue Securities Trust FRB Ser. 22-R02, Class 2M2, (US 30 Day Average SOFR + 3.00%), 8.067%, 1/25/42	292,000	289,354
JPMorgan Alternative Loan Trust FRB Ser. 06-A6, Class 1A1, (ICE LIBOR USD 1 Month + 0.32%), 5.47%, 11/25/36	69,315	57,487
Morgan Stanley ABS Capital I, Inc. Trust FRB Ser. 04-HE9, Class M2, (ICE LIBOR USD 1 Month + 0.93%), 6.08%, 11/25/34	10,283	9,704
Morgan Stanley Re-REMIC Trust 144A FRB Ser. 10-R4, Class 4B, (ICE LIBOR USD 1 Month + 0.23%), 2.702%, 2/26/37	64,474	53,151
Structured Asset Mortgage Investments II Trust FRB Ser. 07-AR7, Class 1A1, (ICE LIBOR USD 1 Month + 0.85%), 6.00%, 5/25/47	365,666	297,860
FRB Ser. 06-AR7, Class A1BG, (ICE LIBOR USD 1 Month + 0.12%), 5.27%, 8/25/36	22,287	18,781
Towd Point Mortgage Trust 144A Ser. 19-2, Class A2, 3.75%, 12/25/58 W	102,000	89,124
WaMu Mortgage Pass-Through Certificates Trust FRB Ser. 05-AR8, Class 2AC2, (ICE LIBOR USD 1 Month + 0.92%), 6.07%, 7/25/45	62,989	56,132
	6,450,072	
Total mortgage-backed securities (cost \$26,518,898)		\$23,817,369

ASSET-BACKED SECURITIES (0.3%)*	Principal amount	Value
Mello Warehouse Securitization Trust 144A FRB Ser. 21-3, Class D, (ICE LIBOR USD 1 Month + 2.00%), 7.15%, 10/22/24	\$94,000	\$91,251
Total asset-backed securities (cost \$89,886)		\$91,251

PURCHASED OPTIONS OUTSTANDING (0.1%)* Counterparty	Expiration date/strike price	Notional amount	Contract amount	Value
JPMorgan Chase Bank N.A.				
Uniform Mortgage-Backed Securities 30 yr 5.00% TBA commitments (Call)	Jul-23/\$98.31	\$19,594,532	\$20,000,000	\$21,620
Total purchased options outstanding (cost \$156,250)				\$21,620

SHORT-TERM INVESTMENTS (18.2%)*		Principal amount/shares	Value
Putnam Short Term Investment Fund Class P 5.23% L	Shares	3,236,574	\$3,236,574
State Street Institutional U.S. Government Money Market Fund, Premier Class 5.03% P	Shares	180,000	180,000
U.S. Treasury Bills 5.327%, 11/16/23 # Δ		\$700,000	686,302
U.S. Treasury Bills 5.453%, 10/26/23 Δ		600,000	590,033
U.S. Treasury Bills 5.329%, 11/2/23 #		600,000	589,420
U.S. Treasury Bills 5.270%, 11/9/23		100,000	98,142
Total short-term investments (cost \$5,380,174)			\$5,380,471

Total investments (cost \$135,941,380) \$132,614,589

Key to holding's abbreviations

FRB	Floating Rate Bonds: The rate shown is the current interest rate at the close of the reporting period. Rates may be subject to a cap or floor. For certain securities, the rate may represent a fixed rate currently in place at the close of the reporting period.
FRN	Floating Rate Notes: The rate shown is the current interest rate or yield at the close of the reporting period. Rates may be subject to a cap or floor. For certain securities, the rate may represent a fixed rate currently in place at the close of the reporting period.
ICE	Intercontinental Exchange
IFB	Inverse Floating Rate Bonds, which are securities that pay interest rates that vary inversely to changes in the market interest rates. As interest rates rise, inverse floaters produce less current income. The rate shown is the current interest rate at the close of the reporting period. Rates may be subject to a cap or floor.
IO	Interest Only
LIBOR	London Interbank Offered Rate
PO	Principal Only
REMICs	Real Estate Mortgage Investment Conduits
SOFR	Secured Overnight Financing Rate
TBA	To Be Announced Commitments

Notes to the fund's portfolio

Unless noted otherwise, the notes to the fund's portfolio are for the close of the fund's reporting period, which ran from January 1, 2023 through June 30, 2023 (the reporting period). Within the following notes to the portfolio, references to "Putnam Management" represent Putnam Investment Management, LLC, the fund's manager, an indirect wholly-owned subsidiary of Putnam Investments, LLC and references to "ASC 820" represent Accounting Standards Codification 820 *Fair Value Measurements and Disclosures*.

* Percentages indicated are based on net assets of \$29,560,547.

This security, in part or in entirety, was pledged and segregated with the broker to cover margin requirements for futures contracts at the close of the reporting period. Collateral at period end totaled \$506,050 and is included in Investments in securities on the Statement of assets and liabilities (Notes 1 and 8).

Δ This security, in part or in entirety, was pledged and segregated with the custodian for collateral on certain derivative contracts at the close of the reporting period. Collateral at period end totaled \$599,093 and is included in Investments in securities on the Statement of assets and liabilities (Notes 1 and 8).

L Affiliated company (Note 5). The rate quoted in the security description is the annualized 7-day yield of the fund at the close of the reporting period.

P This security was pledged, or purchased with cash that was pledged, to the fund for collateral on certain derivative contracts. The rate quoted in the security description is the annualized 7-day yield of the fund at the close of the reporting period.

W The rate shown represents the weighted average coupon associated with the underlying mortgage pools. Rates may be subject to a cap or floor.

Unless otherwise noted, the rates quoted in Short-term investments security descriptions represent the weighted average yield to maturity.

144A after the name of an issuer represents securities exempt from registration under Rule 144A of the Securities Act of 1933, as amended. These securities may be resold in transactions exempt from registration, normally to qualified institutional buyers.

See Note 1 to the financial statements regarding TBA commitments.

The dates shown on debt obligations are the original maturity dates.

FUTURES CONTRACTS OUTSTANDING at 6/30/23 (Unaudited)	Number of contracts	Notional amount	Value	Expiration date	Unrealized appreciation/(depreciation)
U.S. Treasury Note 2 yr (Short)	122	\$24,807,938	\$24,807,938	Sep-23	\$322,507
U.S. Treasury Note Ultra 10 yr (Short)	106	12,554,375	12,554,375	Sep-23	114,042
Unrealized appreciation					436,549
Unrealized (depreciation)					—
Total					\$436,549

WRITTEN OPTIONS OUTSTANDING at 6/30/23 (premiums \$156,250) (Unaudited) Counterparty	Expiration date/strike price	Notional Amount	Contract amount	Value
JPMorgan Chase Bank N.A.				
Uniform Mortgage-Backed Securities 30 yr 5.00% TBA commitments (Put)	Jul-23/\$98.31	\$19,594,532	\$20,000,000	\$83,320
Total				\$83,320

FORWARD PREMIUM SWAP OPTION CONTRACTS OUTSTANDING at 6/30/23 (Unaudited) Counterparty					
Fixed right or obligation % to receive or (pay)/ Floating rate index/Maturity date	Expiration date/strike	Contract amount	Premium receivable/(payable)	Unrealized appreciation/(depreciation)	
Bank of America N.A.					
(0.7988)/US SOFR/Apr-34 (Written)	Apr-24/0.7988	\$6,137,300	\$7,578	\$5,708	
(3.63)/US SOFR/Mar-26 (Written)	Mar-24/3.63	4,239,200	52,778	25,647	
3.63/US SOFR/Mar-26 (Written)	Mar-24/3.63	4,239,200	52,778	(10,895)	
(3.073)/US SOFR/Jun-37 (Written)	Jun-27/3.073	3,734,100	271,656	54,070	
3.073/US SOFR/Jun-37 (Written)	Jun-27/3.073	3,734,100	271,656	18,820	
1.8838/US SOFR/Apr-34 (Purchased)	Apr-24/1.8838	3,068,600	(22,444)	(13,839)	
3.32/US SOFR/Oct-39 (Purchased)	Oct-29/3.32	2,791,800	(221,948)	(11,083)	
(3.32)/US SOFR/Oct-39 (Purchased)	Oct-29/3.32	2,791,800	(221,948)	(25,042)	
3.343/US SOFR/Dec-35 (Purchased)	Dec-25/3.343	2,234,600	(144,914)	(10,883)	
(3.343)/US SOFR/Dec-35 (Purchased)	Dec-25/3.343	2,234,600	(144,914)	(36,424)	
(3.1625)/US SOFR/Mar-37 (Written)	Mar-27/3.1625	2,037,900	140,615	18,198	
3.1625/US SOFR/Mar-37 (Written)	Mar-27/3.1625	2,037,900	140,615	12,920	
(1.0035)/US SOFR/Mar-34 (Written)	Mar-24/1.0035	1,534,300	2,324	1,857	
(3.17)/US SOFR/Dec-35 (Purchased)	Dec-25/3.17	1,533,900	(79,763)	1,242	
2.67/US SOFR/Dec-35 (Purchased)	Dec-25/2.67	1,533,900	(78,229)	(27,012)	
(3.18)/US SOFR/Dec-35 (Purchased)	Dec-25/3.18	1,487,900	(75,139)	2,663	
2.68/US SOFR/Dec-35 (Purchased)	Dec-25/2.68	1,487,900	(75,139)	(25,101)	
(3.101)/US SOFR/Jun-39 (Written)	Jun-29/3.101	1,478,700	115,486	17,301	
3.101/US SOFR/Jun-39 (Written)	Jun-29/3.101	1,478,700	115,486	3,179	
3.49/US SOFR/May-40 (Purchased)	May-30/3.49	1,433,500	(106,796)	11,138	
(3.49)/US SOFR/May-40 (Purchased)	May-30/3.49	1,433,500	(106,796)	(11,024)	
(3.03)/US SOFR/Feb-33 (Written)	Feb-28/3.03	1,289,800	89,935	1,896	
3.03/US SOFR/Feb-33 (Written)	Feb-28/3.03	1,289,800	89,935	(3,250)	
2.0035/US SOFR/Mar-34 (Purchased)	Mar-24/2.0035	1,074,000	(8,341)	(5,510)	
(3.095)/US SOFR/Mar-36 (Written)	Mar-26/3.095	903,300	59,798	13,333	

FORWARD PREMIUM SWAP OPTION CONTRACTS OUTSTANDING at 6/30/23 (Unaudited) cont.

Counterparty	Fixed right or obligation % to receive or (pay)/	Expiration	Contract	Premium	Unrealized
Floating rate index/Maturity date		date/strike	amount	receivable/ (payable)	appreciation/ (depreciation)
Bank of America N.A. cont.					
3.095/US SOFR/Mar-36 (Written)		Mar-26/3.095	\$903,300	\$59,798	\$6,757
(3.03)/US SOFR/Mar-36 (Purchased)		Mar-26/3.03	883,600	(56,506)	(2,677)
3.03/US SOFR/Mar-36 (Purchased)		Mar-26/3.03	883,600	(56,506)	(13,475)
(2.558)/US SOFR/Dec-57 (Purchased)		Dec-27/2.558	679,500	(100,430)	4,118
2.558/US SOFR/Dec-57 (Purchased)		Dec-27/2.558	679,500	(100,430)	(31,121)
(0.9876)/US SOFR/Mar-50 (Purchased)		Mar-30/0.9876	671,400	(216,835)	(1,088)
0.9876/US SOFR/Mar-50 (Purchased)		Mar-30/0.9876	671,400	(14,584)	(1,759)
(2.47)/US SOFR/Dec-57 (Purchased)		Dec-27/2.47	392,200	(58,242)	5,412
2.47/US SOFR/Dec-57 (Purchased)		Dec-27/2.47	392,200	(58,242)	(20,649)
(1.405)/US SOFR/Dec-58 (Purchased)		Dec-28/1.405	153,500	(23,543)	20,448
1.405/US SOFR/Dec-58 (Purchased)		Dec-28/1.405	153,500	(23,543)	(14,802)
Barclays Bank PLC					
1.945/US SOFR/Jun-51 (Purchased)		Jun-31/1.945	2,648,900	(142,776)	(4,450)
(1.945)/US SOFR/Jun-51 (Purchased)		Jun-31/1.945	2,648,900	(561,567)	(11,920)
Citibank, N.A.					
(1.99)/US SOFR/Feb-42 (Purchased)		Feb-32/1.99	1,951,300	(153,665)	87,809
1.99/US SOFR/Feb-42 (Purchased)		Feb-32/1.99	1,951,300	(153,665)	(68,978)
(2.00)/US SOFR/Mar-51 (Purchased)		Mar-41/2.00	1,433,800	(166,894)	(1,104)
2.00/US SOFR/Mar-51 (Purchased)		Mar-41/2.00	1,433,800	(94,057)	(4,015)
2.394/US SOFR/Sep-33 (Purchased)		Sep-23/2.394	1,428,900	(17,290)	(16,075)
(1.826)/US SOFR/Jan-42 (Purchased)		Jan-32/1.826	1,062,800	(78,488)	59,814
1.826/US SOFR/Jan-42 (Purchased)		Jan-32/1.826	1,062,800	(78,488)	(36,805)
(3.20)/US SOFR/Jul-33 (Purchased)		Jul-23/3.20	688,500	(10,913)	9,350
3.58/US SOFR/Jul-33 (Written)		Jul-23/3.58	688,500	3,924	(1,418)
3.39/US SOFR/Jul-33 (Written)		Jul-23/3.39	688,500	6,541	(5,005)
(2.14)/US SOFR/Jun-41 (Purchased)		Jun-31/2.14	229,400	(29,602)	124
2.14/US SOFR/Jun-41 (Purchased)		Jun-31/2.14	229,400	(8,901)	(897)
Deutsche Bank AG					
(2.98)/US SOFR/Mar-35 (Written)		Mar-30/2.98	5,048,800	233,759	36,048
2.98/US SOFR/Mar-35 (Written)		Mar-30/2.98	5,048,800	233,759	(4,544)
(3.19)/US SOFR/Mar-38 (Written)		Mar-28/3.19	332,400	23,152	1,542
3.19/US SOFR/Mar-38 (Written)		Mar-28/3.19	332,400	23,152	834
Goldman Sachs International					
(3.123)/US SOFR/Jul-33 (Purchased)		Jul-23/3.123	2,927,800	(57,970)	44,912
3.123/US SOFR/Jul-33 (Purchased)		Jul-23/3.123	2,927,800	(57,970)	(54,867)
(2.525)/US SOFR/Mar-47 (Purchased)		Mar-27/2.525	233,300	(32,895)	(217)
2.525/US SOFR/Mar-47 (Purchased)		Mar-27/2.525	233,300	(13,730)	(1,174)
JPMorgan Chase Bank N.A.					
(1.70)/US SOFR/Jan-29 (Written)		Jan-24/1.70	1,709,200	36,470	34,252
1.70/US SOFR/Jan-29 (Written)		Jan-24/1.70	1,709,200	36,470	(111,371)
(3.0175)/US SOFR/Dec-42 (Purchased)		Dec-32/3.0175	1,359,100	(114,504)	2,868
3.0175/US SOFR/Dec-42 (Purchased)		Dec-32/3.0175	1,359,100	(114,504)	(17,152)
(3.115)/US SOFR/Mar-43 (Written)		Mar-33/3.115	1,242,200	104,842	11,292
3.115/US SOFR/Mar-43 (Written)		Mar-33/3.115	1,242,200	104,842	907
1.75/US SOFR/Feb-41 (Purchased)		Feb-31/1.75	1,151,200	(28,435)	(380)
(1.75)/US SOFR/Feb-41 (Purchased)		Feb-31/1.75	1,151,200	(179,472)	(2,130)
(3.0925)/US SOFR/Mar-43 (Written)		Mar-33/3.0925	691,100	58,052	6,579
3.0925/US SOFR/Mar-43 (Written)		Mar-33/3.0925	691,100	58,052	(138)
(3.1525)/US SOFR/Mar-40 (Written)		Mar-30/3.1525	339,100	26,874	3,065
3.1525/US SOFR/Mar-40 (Written)		Mar-30/3.1525	339,100	26,874	753
(1.81)/US SOFR/Jan-37 (Written)		Jan-27/1.81	263,500	15,573	9,807
1.81/US SOFR/Jan-37 (Written)		Jan-27/1.81	263,500	15,573	(17,199)

FORWARD PREMIUM SWAP OPTION CONTRACTS OUTSTANDING at 6/30/23 (Unaudited) cont.

Counterparty	Fixed right or obligation % to receive or (pay)/ Floating rate index/Maturity date	Expiration date/strike	Contract amount	Premium receivable/ (payable)	Unrealized appreciation/ (depreciation)
Toronto-Dominion Bank					
2.118/US SOFR/Mar-41 (Purchased)		Mar-31/2.118	\$149,600	\$(4,982)	\$(67)
(2.118)/US SOFR/Mar-41 (Purchased)		Mar-31/2.118	149,600	(19,835)	(225)
Unrealized appreciation					534,663
Unrealized (depreciation)					(625,765)
Total					\$(91,102)

TBA SALE COMMITMENTS OUTSTANDING at 6/30/23 (Unaudited) (proceeds receivable \$81,120,801)	Principal amount	Settlement date	Value
Uniform Mortgage-Backed Securities, 2.00%, 7/1/53	\$8,000,000	7/13/23	\$6,523,440
Uniform Mortgage-Backed Securities, 2.50%, 7/1/53	9,000,000	7/13/23	7,631,019
Uniform Mortgage-Backed Securities, 3.00%, 7/1/53	5,000,000	7/13/23	4,386,720
Uniform Mortgage-Backed Securities, 3.50%, 7/1/53	4,000,000	7/13/23	3,644,844
Uniform Mortgage-Backed Securities, 4.00%, 7/1/53	6,000,000	7/13/23	5,630,388
Uniform Mortgage-Backed Securities, 4.50%, 7/1/53	6,000,000	7/13/23	5,768,436
Uniform Mortgage-Backed Securities, 5.00%, 7/1/53	26,000,000	7/13/23	25,472,892
Uniform Mortgage-Backed Securities, 5.00%, 8/1/53	13,000,000	8/14/23	12,741,017
Uniform Mortgage-Backed Securities, 5.50%, 7/1/53	8,000,000	7/13/23	7,961,248
Uniform Mortgage-Backed Securities, 6.00%, 7/1/53	1,000,000	7/13/23	1,008,828
Total			\$80,768,832

CENTRALLY CLEARED INTEREST RATE SWAP CONTRACTS OUTSTANDING at 6/30/23 (Unaudited)

Notional amount	Value	Upfront premium received (paid)	Termination date	Payments made by fund	Payments received by fund	Unrealized appreciation/ (depreciation)
\$751,000	\$13,188	\$(6)	1/6/28	3.5615% — Annually	US SOFR — Annually	\$17,540
163,000	5,677	(6)	1/25/53	3.007% — Annually	US SOFR — Annually	6,940
306,000	1,723	(4)	2/23/33	US SOFR — Annually	3.6405% — Annually	389
138,000	1,703	(2)	3/3/33	US SOFR — Annually	3.723% — Annually	1,170
447,000	12,082	(6)	3/15/33	3.234% — Annually	US SOFR — Annually	14,320
236,000	5,164	(3)	3/24/33	US SOFR — Annually	3.2975% — Annually	(6,229)
460,000	19,486	(6)	4/6/33	3.45% — Annually	US SOFR — Annually	21,599
424,000	9,748	(6)	4/20/33	US SOFR — Annually	3.283% — Annually	(11,202)
355,000	9,017	(5)	5/3/33	3.253% — Annually	US SOFR — Annually	10,055
377,000	11,023	(3)	5/17/28	US SOFR — Annually	3.261% — Annually	(11,878)
573,000	10,285	(7)	5/23/30	US SOFR — Annually	3.4095% — Annually	(11,321)
24,530,000	92,723 ^E	(37,515)	9/20/25	4.40% — Annually	US SOFR — Annually	55,208
4,949,000	42,858 ^E	(69,153)	9/20/28	US SOFR — Annually	4.00% — Annually	(26,295)
2,900,000	22,881 ^E	(39,703)	9/20/33	US SOFR — Annually	3.60% — Annually	(16,822)
503,000	4,416 ^E	(5,286)	9/20/53	US SOFR — Annually	3.20% — Annually	(870)
12,135,000	41,987	(3,726)	6/23/25	US SOFR — Annually	4.625% — Annually	(46,865)
11,549,000	81,998	6,123	6/23/28	3.753% — Annually	US SOFR — Annually	91,456
1,898,000	13,115	2,979	6/23/33	3.475% — Annually	US SOFR — Annually	16,760
2,720,000	7,181	(12,234)	6/23/53	US SOFR — Annually	3.17% — Annually	(18,913)
685,000	1,925	(3)	6/30/25	4.649% — Annually	US SOFR — Annually	1,930
827,000	5,508	(7)	6/30/28	US SOFR — Annually	3.76% — Annually	(5,544)
828,000	2,310	(3)	6/30/25	US SOFR — Annually	4.65% — Annually	(2,322)
850,000	859	(8)	7/5/28	3.9255% — Annually	US SOFR — Annually	(866)
643,000	167	(2)	7/5/25	US SOFR — Annually	4.7985% — Annually	165
268,000	174	(4)	7/5/33	US SOFR — Annually	3.5625% — Annually	171
Total		\$(158,596)				\$78,576

^E Extended effective date.

OTC CREDIT DEFAULT CONTRACTS OUTSTANDING — PROTECTION SOLD at 6/30/23 (Unaudited)

Swap counterparty/ Referenced debt*	Rating***	Upfront premium received (paid)**	Notional amount	Value	Termination date	Payments received by fund	Unrealized appreciation/ (depreciation)
Citigroup Global Markets, Inc.							
CMBX NAA.6 Index	A/P	\$151	\$380	\$54	5/11/63	200 bp— Monthly	\$97
CMBX NAA.6 Index	A/P	364	1,140	163	5/11/63	200 bp— Monthly	201
CMBX NAA.6 Index	A/P	1,667	5,320	760	5/11/63	200 bp— Monthly	909
CMBX NAA.6 Index	A/P	1,791	5,700	814	5/11/63	200 bp— Monthly	979
CMBX NAA.6 Index	A/P	1,903	5,700	814	5/11/63	200 bp— Monthly	1,091
CMBX NAA.6 Index	A/P	11,341	36,103	5,155	5/11/63	200 bp— Monthly	6,197
CMBX NAA.6 Index	A/P	15,540	42,183	6,024	5/11/63	200 bp— Monthly	9,530
CMBX NA BB.11 Index	BB-/P	12,430	22,000	8,864	11/18/54	500 bp— Monthly	3,585
CMBX NA BB.13 Index	BB-/P	1,276	14,000	6,112	12/16/72	500 bp— Monthly	(4,824)
CMBX NA BB.13 Index	BB-/P	4,899	49,000	21,393	12/16/72	500 bp— Monthly	(16,454)
CMBX NA BB.13 Index	BB-/P	5,103	56,000	24,450	12/16/72	500 bp— Monthly	(19,300)
CMBX NA BB.13 Index	BB-/P	8,871	94,000	41,040	12/16/72	500 bp— Monthly	(32,091)
CMBX NA BB.14 Index	BB/P	10,087	92,000	39,900	12/16/72	500 bp— Monthly	(29,737)
CMBX NA BB.6 Index	B/P	38,463	64,692	25,993	5/11/63	500 bp— Monthly	12,524
CMBX NA BB.9 Index	B/P	1,425	7,000	2,919	9/17/58	500 bp— Monthly	(1,488)
CMBX NA BB.9 Index	B/P	5,611	10,000	4,170	9/17/58	500 bp— Monthly	1,449
CMBX NA BB.9 Index	B/P	13,070	64,000	26,688	9/17/58	500 bp— Monthly	(13,564)
CMBX NA BBB-.10 Index	BB+/P	5,211	42,000	12,755	11/17/59	300 bp— Monthly	(7,523)
CMBX NA BBB-.10 Index	BB+/P	6,982	64,000	19,437	11/17/59	300 bp— Monthly	(12,423)
CMBX NA BBB-.11 Index	BBB-/P	4,385	70,000	16,975	11/18/54	300 bp— Monthly	(12,555)
CMBX NA BBB-.13 Index	BBB-/P	4,413	24,000	7,402	12/16/72	300 bp— Monthly	(2,976)
CMBX NA BBB-.13 Index	BBB-/P	8,094	86,000	26,522	12/16/72	300 bp— Monthly	(18,386)
CMBX NA BBB-.14 Index	BBB-/P	61	2,000	579	12/16/72	300 bp— Monthly	(517)
CMBX NA BBB-.14 Index	BBB-/P	93	3,000	869	12/16/72	300 bp— Monthly	(774)
CMBX NA BBB-.14 Index	BBB-/P	2,353	72,000	20,858	12/16/72	300 bp— Monthly	(18,470)
CMBX NA BBB-.15 Index	BBB-/P	3,029	29,000	8,393	11/18/64	300 bp— Monthly	(5,349)
CMBX NA BBB-.15 Index	BBB-/P	20,299	76,000	21,994	11/18/64	300 bp— Monthly	(1,657)
CMBX NA BBB-.15 Index	BBB-/P	1,529	9,000	2,605	11/18/64	300 bp— Monthly	(1,071)
CMBX NA BBB-.16 Index	BBB-/P	18,640	82,000	23,624	4/17/65	300 bp— Monthly	(4,943)
Credit Suisse International							
CMBX NA BB.7 Index	B-/P	2,541	19,000	7,887	1/17/47	500 bp— Monthly	(5,330)
Goldman Sachs International							
CMBX NAA.14 Index	A-/P	1,668	29,000	3,883	12/16/72	200 bp— Monthly	(2,205)
CMBX NAA.7 Index	BBB/P	(54)	34,305	2,724	1/17/47	200 bp— Monthly	(2,765)
CMBX NA BB.14 Index	BB/P	1,713	11,000	4,771	12/16/72	500 bp— Monthly	(3,049)
CMBX NA BB.14 Index	BB/P	13,001	103,000	44,671	12/16/72	500 bp— Monthly	(31,585)
CMBX NA BB.6 Index	B/P	556	2,695	1,083	5/11/63	500 bp— Monthly	(525)
CMBX NA BB.6 Index	B/P	11,600	22,912	9,206	5/11/63	500 bp— Monthly	2,413
CMBX NA BB.6 Index	B/P	52,374	107,146	43,051	5/11/63	500 bp— Monthly	9,412
CMBX NA BB.7 Index	B-/P	4,751	14,000	5,811	1/17/47	500 bp— Monthly	(1,048)
CMBX NA BB.7 Index	B-/P	6,389	19,000	7,887	1/17/47	500 bp— Monthly	(1,482)
CMBX NA BB.7 Index	B-/P	7,560	24,000	9,962	1/17/47	500 bp— Monthly	(2,382)
CMBX NA BBB-.15 Index	BBB-/P	1,305	21,000	6,077	11/18/64	300 bp— Monthly	(4,762)
CMBX NA BBB-.16 Index	BBB-/P	13,237	55,000	15,846	4/17/65	300 bp— Monthly	(2,581)
CMBX NA BBB-.16 Index	BBB-/P	17,160	66,000	19,015	4/17/65	300 bp— Monthly	(1,822)
JPMorgan Securities LLC							
CMBX NAA.13 Index	A-/P	81	1,000	122	12/16/72	200 bp— Monthly	(41)
CMBX NA BB.10 Index	B/P	2,006	25,000	11,420	5/11/63	500 bp— Monthly	(9,393)
CMBX NA BB.7 Index	B-/P	1,370	4,000	1,660	1/17/47	500 bp— Monthly	(287)
CMBX NA BB.7 Index	B-/P	30,848	63,000	26,151	1/17/47	500 bp— Monthly	4,749
CMBX NA BBB-.8 Index	BB-/P	6,549	42,000	8,404	10/17/57	300 bp— Monthly	(1,834)
Merrill Lynch International							
CMBX NAA.13 Index	A-/P	11,581	87,000	10,605	12/16/72	200 bp— Monthly	1,005

OTC CREDIT DEFAULT CONTRACTS OUTSTANDING — PROTECTION SOLD at 6/30/23 (Unaudited) cont.

Swap counterparty/ Referenced debt*	Rating***	Upfront premium received (paid)**	Notional amount	Value	Termi- nation date	Payments received by fund	Unrealized appreciation/ (depreciation)
Merrill Lynch International cont.							
CMBX NAA.13 Index	A-/P	\$11,339	\$87,000	\$10,605	12/16/72	200 bp — Monthly	\$763
CMBX NAA.15 Index	A-/P	114	7,000	1,006	11/18/64	200 bp — Monthly	(890)
CMBX NAA.15 Index	A-/P	120	9,000	1,293	11/18/64	200 bp — Monthly	(1,170)
CMBX NA BB.6 Index	B/P	335	2,022	812	5/11/63	500 bp — Monthly	(475)
CMBX NA BB.7 Index	B-/P	1,452	12,000	4,981	1/17/47	500 bp — Monthly	(3,519)
Morgan Stanley & Co. International PLC							
CMBX NAA.7 Index	BBB/P	(2)	1,854	147	1/17/47	200 bp — Monthly	(149)
CMBX NAA.7 Index	BBB/P	(5)	10,199	810	1/17/47	200 bp — Monthly	(811)
CMBX NAA.7 Index	BBB/P	656	125,169	9,938	1/17/47	200 bp — Monthly	(9,238)
CMBX NA BB.13 Index	BB-/P	184	2,000	873	12/16/72	500 bp — Monthly	(688)
CMBX NA BB.13 Index	BB-/P	275	3,000	1,310	12/16/72	500 bp — Monthly	(1,032)
CMBX NA BB.13 Index	BB-/P	372	4,000	1,746	12/16/72	500 bp — Monthly	(1,371)
CMBX NA BB.13 Index	BB-/P	1,793	19,000	8,295	12/16/72	500 bp — Monthly	(6,486)
CMBX NA BB.13 Index	BB-/P	4,636	25,000	10,915	12/16/72	500 bp — Monthly	(6,258)
CMBX NA BB.13 Index	BB-/P	4,374	48,000	20,957	12/16/72	500 bp — Monthly	(16,543)
CMBX NA BB.13 Index	BB-/P	5,634	61,000	26,633	12/16/72	500 bp — Monthly	(20,947)
CMBX NA BB.14 Index	BB/P	1,591	13,000	5,638	12/16/72	500 bp — Monthly	(4,037)
CMBX NA BB.6 Index	B/P	11,037	21,564	8,664	5/11/63	500 bp — Monthly	2,391
CMBX NA BB.6 Index	B/P	36,496	57,953	23,285	5/11/63	500 bp — Monthly	13,259
CMBX NA BB.6 Index	B/P	136,920	219,682	88,268	5/11/63	500 bp — Monthly	48,835
CMBX NA BB.7 Index	B-/P	11,747	35,000	14,529	1/17/47	500 bp — Monthly	(2,752)
CMBX NA BBB-.15 Index	BBB-/P	12,771	81,000	23,441	11/18/64	300 bp — Monthly	(10,630)
CMBX NA BBB-.15 Index	BBB-/P	15,289	90,000	26,046	11/18/64	300 bp — Monthly	(10,712)
CMBX NA BBB-.16 Index	BBB-/P	13,639	60,000	17,286	4/17/65	300 bp — Monthly	(3,617)
CMBX NA BBB-.7 Index	BB-/P	74	1,000	200	1/17/47	300 bp — Monthly	(125)
CMBX NA BBB-.7 Index	BB-/P	23,003	338,000	67,566	1/17/47	300 bp — Monthly	(44,395)
CMBX NA BBB-.9 Index	BB+/P	194	2,000	477	9/17/58	300 bp — Monthly	(282)
Upfront premium received		689,416					Unrealized appreciation
Upfront premium (paid)		(61)					Unrealized (depreciation)
Total		\$689,355					Total
							\$(301,931)

* Payments related to the referenced debt are made upon a credit default event.

** Upfront premium is based on the difference between the original spread on issue and the market spread on day of execution.

*** Ratings for an underlying index represent the average of the ratings of all the securities included in that index. The Moody's, Standard & Poor's or Fitch ratings are believed to be the most recent ratings available at June 30, 2023. Securities rated by Putnam are indicated by "P." The Putnam rating categories are comparable to the Standard & Poor's classifications.

OTC CREDIT DEFAULT CONTRACTS OUTSTANDING — PROTECTION PURCHASED at 6/30/23 (Unaudited)

Swap counterparty/ Referenced debt*	Rating***	Upfront premium received (paid)**	Notional amount	Value	Termi- nation date	Payments (paid) by fund	Unrealized appreciation/ (depreciation)
Citigroup Global Markets, Inc.							
CMBX NA BB.10 Index		\$(22,695)	\$89,000	\$40,655	11/17/59	(500 bp) — Monthly	\$17,886
CMBX NA BB.10 Index		(6,028)	25,000	11,420	11/17/59	(500 bp) — Monthly	5,372
CMBX NA BB.10 Index		(1,252)	12,000	5,482	11/17/59	(500 bp) — Monthly	4,219
CMBX NA BB.10 Index		(987)	9,000	4,111	11/17/59	(500 bp) — Monthly	3,117
CMBX NA BB.11 Index		(357)	7,000	2,820	11/18/54	(500 bp) — Monthly	2,457
CMBX NA BB.11 Index		(363)	7,000	2,820	11/18/54	(500 bp) — Monthly	2,451
CMBX NA BB.11 Index		(505)	7,000	2,820	11/18/54	(500 bp) — Monthly	2,309
CMBX NA BB.7 Index		(9,339)	183,000	75,963	1/17/47	(500 bp) — Monthly	66,472
CMBX NA BB.7 Index		(808)	12,000	4,981	1/17/47	(500 bp) — Monthly	4,164
CMBX NA BB.8 Index		(12,059)	33,823	15,630	10/17/57	(500 bp) — Monthly	3,542
CMBX NA BB.8 Index		(2,980)	23,193	10,717	10/17/57	(500 bp) — Monthly	7,718
CMBX NA BBB-.10 Index		(30,261)	176,000	53,451	11/17/59	(300 bp) — Monthly	23,102
CMBX NA BBB-.10 Index		(17,178)	74,000	22,474	11/17/59	(300 bp) — Monthly	5,259

OTC CREDIT DEFAULT CONTRACTS OUTSTANDING — PROTECTION PURCHASED at 6/30/23 (Unaudited) cont.

Swap counterparty/ Referenced debt*	Upfront premium received (paid)**	Notional amount	Value	Termi- nation date	Payments (paid) by fund	Unrealized appreciation/ (depreciation)
Citigroup Global Markets, Inc. cont.						
CMBX NA BBB-.10 Index	\$(6,246)	\$49,000	\$14,881	11/17/59	(300 bp) — Monthly	\$8,610
CMBX NA BBB-.10 Index	(8,077)	37,000	11,237	11/17/59	(300 bp) — Monthly	3,142
CMBX NA BBB-.10 Index	(7,182)	33,000	10,022	11/17/59	(300 bp) — Monthly	2,824
CMBX NA BBB-.10 Index	(1,657)	13,000	3,948	11/17/59	(300 bp) — Monthly	2,284
CMBX NA BBB-.10 Index	(1,101)	9,000	2,733	11/17/59	(300 bp) — Monthly	1,628
CMBX NA BBB-.10 Index	(1,670)	7,000	2,126	11/17/59	(300 bp) — Monthly	452
CMBX NA BBB-.11 Index	(9,616)	30,000	7,275	11/18/54	(300 bp) — Monthly	(2,356)
CMBX NA BBB-.11 Index	(3,680)	25,000	6,063	11/18/54	(300 bp) — Monthly	2,370
CMBX NA BBB-.12 Index	(12,736)	185,000	59,089	8/17/61	(300 bp) — Monthly	46,260
CMBX NA BBB-.12 Index	(21,043)	63,000	20,122	8/17/61	(300 bp) — Monthly	(952)
CMBX NA BBB-.12 Index	(16,684)	48,000	15,331	8/17/61	(300 bp) — Monthly	(1,377)
CMBX NA BBB-.12 Index	(8,800)	39,000	12,457	8/17/61	(300 bp) — Monthly	3,637
CMBX NA BBB-.12 Index	(2,116)	31,000	9,901	8/17/61	(300 bp) — Monthly	7,770
CMBX NA BBB-.12 Index	(4,077)	24,000	7,666	8/17/61	(300 bp) — Monthly	3,577
CMBX NA BBB-.7 Index	(4,375)	20,000	3,998	1/17/47	(300 bp) — Monthly	(387)
CMBX NA BBB-.8 Index	(10,050)	67,000	13,407	10/17/57	(300 bp) — Monthly	3,323
CMBX NA BBB-.8 Index	(6,298)	44,000	8,804	10/17/57	(300 bp) — Monthly	2,485
CMBX NA BBB-.8 Index	(5,828)	42,000	8,404	10/17/57	(300 bp) — Monthly	2,556
CMBX NA BBB-.8 Index	(4,579)	33,000	6,603	10/17/57	(300 bp) — Monthly	2,008
CMBX NA BBB-.8 Index	(3,728)	28,000	5,603	10/17/57	(300 bp) — Monthly	1,861
CMBX NA BBB-.8 Index	(2,188)	14,000	2,801	10/17/57	(300 bp) — Monthly	607
CMBX NA BBB-.8 Index	(317)	2,000	400	10/17/57	(300 bp) — Monthly	82
CMBX NA BBB-.9 Index	(1,183)	5,000	1,194	9/17/58	(300 bp) — Monthly	8
Credit Suisse International						
CMBX NA BB.10 Index	(3,202)	24,000	10,963	11/17/59	(500 bp) — Monthly	7,741
CMBX NA BB.10 Index	(2,854)	24,000	10,963	11/17/59	(500 bp) — Monthly	8,089
CMBX NA BB.10 Index	(1,616)	13,000	5,938	11/17/59	(500 bp) — Monthly	4,312
Goldman Sachs International						
CMBX NAA.6 Index	(4,583)	17,861	2,551	5/11/63	(200 bp) — Monthly	(2,038)
CMBX NAA.6 Index	(1,482)	6,460	923	5/11/63	(200 bp) — Monthly	(562)
CMBX NAA.6 Index	(1,031)	4,560	651	5/11/63	(200 bp) — Monthly	(382)
CMBX NAA.6 Index	(629)	3,040	434	5/11/63	(200 bp) — Monthly	(196)
CMBX NAA.6 Index	(333)	1,520	217	5/11/63	(200 bp) — Monthly	(117)
CMBX NAA.6 Index	(248)	1,140	163	5/11/63	(200 bp) — Monthly	(85)
CMBX NAA.6 Index	(244)	1,140	163	5/11/63	(200 bp) — Monthly	(82)
CMBX NAA.6 Index	(193)	760	109	5/11/63	(200 bp) — Monthly	(84)
CMBX NAA.6 Index	(163)	760	109	5/11/63	(200 bp) — Monthly	(55)
CMBX NAA.6 Index	(165)	760	109	5/11/63	(200 bp) — Monthly	(57)
CMBX NAA.6 Index	(66)	380	54	5/11/63	(200 bp) — Monthly	(12)
CMBX NA BB.8 Index	(3,862)	10,630	4,912	10/17/57	(500 bp) — Monthly	1,041
CMBX NA BB.8 Index	(227)	1,933	893	10/17/57	(500 bp) — Monthly	665
CMBX NA BBB-.12 Index	(11,430)	64,000	20,442	8/17/61	(300 bp) — Monthly	8,980
JPMorgan Securities LLC						
CMBX NAA.15 Index	(364)	4,000	575	11/18/64	(200 bp) — Monthly	209
CMBX NAA.6 Index	(162)	760	109	5/11/63	(200 bp) — Monthly	(53)
CMBX NAA.6 Index	(81)	380	54	5/11/63	(200 bp) — Monthly	(27)
CMBX NA BB.11 Index	(5,148)	6,739	2,708	5/11/63	(500 bp) — Monthly	(2,446)
CMBX NA BB.11 Index	(545)	1,000	403	11/18/54	(500 bp) — Monthly	(143)
CMBX NA BBB-.14 Index	(10,479)	62,000	17,961	12/16/72	(300 bp) — Monthly	7,452
CMBX NA BBB-.7 Index	(56,108)	239,000	47,776	1/17/47	(300 bp) — Monthly	(8,452)
Merrill Lynch International						
CMBX NA BB.10 Index	(455)	8,000	3,654	11/17/59	(500 bp) — Monthly	3,193

OTC CREDIT DEFAULT CONTRACTS OUTSTANDING — PROTECTION PURCHASED at 6/30/23 (Unaudited) cont.

Swap counterparty/ Referenced debt*	Upfront premium received (paid)**	Notional amount	Value	Termi- nation date	Payments (paid) by fund	Unrealized appreciation/ (depreciation)
Morgan Stanley & Co. International PLC						
CMBX NAA.6 Index	\$(5,038)	\$19,761	\$2,822	5/11/63	(200 bp) — Monthly	\$(2,222)
CMBX NAA.6 Index	(3,218)	12,541	1,791	5/11/63	(200 bp) — Monthly	(1,431)
CMBX NAA.6 Index	(2,124)	8,361	1,194	5/11/63	(200 bp) — Monthly	(933)
CMBX NAA.6 Index	(1,626)	6,460	923	5/11/63	(200 bp) — Monthly	(705)
CMBX NAA.6 Index	(1,199)	5,320	760	5/11/63	(200 bp) — Monthly	(441)
CMBX NAA.6 Index	(490)	2,280	326	5/11/63	(200 bp) — Monthly	(165)
CMBX NAA.6 Index	(503)	2,280	326	5/11/63	(200 bp) — Monthly	(178)
CMBX NA BB.10 Index	(10,024)	33,000	15,074	11/17/59	(500 bp) — Monthly	5,023
CMBX NA BB.8 Index	(2,174)	5,798	2,679	10/17/57	(500 bp) — Monthly	500
CMBX NA BB.9 Index	(4,754)	33,000	13,761	9/17/58	(500 bp) — Monthly	8,979
CMBX NA BB.9 Index	(2,309)	27,000	11,259	9/17/58	(500 bp) — Monthly	8,927
CMBX NA BB.9 Index	(2,188)	16,000	6,672	9/17/58	(500 bp) — Monthly	4,471
CMBX NA BB.9 Index	(757)	5,000	2,085	9/17/58	(500 bp) — Monthly	1,324
CMBX NA BBB-.10 Index	(19,618)	159,000	48,288	11/17/59	(300 bp) — Monthly	28,591
CMBX NA BBB-.10 Index	(3,464)	40,000	12,148	11/17/59	(300 bp) — Monthly	8,664
CMBX NA BBB-.10 Index	(7,801)	32,000	9,718	11/17/59	(300 bp) — Monthly	1,901
CMBX NA BBB-.10 Index	(3,171)	25,000	7,593	11/17/59	(300 bp) — Monthly	4,409
CMBX NA BBB-.10 Index	(4,005)	23,000	6,985	11/17/59	(300 bp) — Monthly	2,968
CMBX NA BBB-.10 Index	(1,993)	19,000	5,770	11/17/59	(300 bp) — Monthly	3,768
CMBX NA BBB-.10 Index	(2,168)	10,000	3,037	11/17/59	(300 bp) — Monthly	864
CMBX NA BBB-.11 Index	(2,361)	15,000	3,638	11/18/54	(300 bp) — Monthly	1,269
CMBX NA BBB-.12 Index	(5,797)	28,000	8,943	8/17/61	(300 bp) — Monthly	3,132
CMBX NA BBB-.12 Index	(835)	4,000	1,278	8/17/61	(300 bp) — Monthly	441
CMBX NA BBB-.13 Index	(1,233)	20,000	6,168	12/16/72	(300 bp) — Monthly	4,925
CMBX NA BBB-.7 Index	(4,063)	64,000	12,794	1/17/47	(300 bp) — Monthly	8,698
CMBX NA BBB-.8 Index	(4,688)	30,000	6,003	10/17/57	(300 bp) — Monthly	1,301
CMBX NA BBB-.8 Index	(3,951)	29,000	5,803	10/17/57	(300 bp) — Monthly	1,837
CMBX NA BBB-.8 Index	(2,713)	20,000	4,002	10/17/57	(300 bp) — Monthly	1,280
CMBX NA BBB-.8 Index	(2,660)	19,000	3,802	10/17/57	(300 bp) — Monthly	1,132
CMBX NA BBB-.8 Index	(2,576)	18,000	3,602	10/17/57	(300 bp) — Monthly	853
CMBX NA BBB-.8 Index	(1,015)	8,000	1,601	10/17/57	(300 bp) — Monthly	579
Upfront premium received	—					Unrealized appreciation
Upfront premium (paid)	(464,229)					Unrealized (depreciation)
Total	\$(464,229)					Total
						391,070
						(25,938)
						\$365,132

* Payments related to the referenced debt are made upon a credit default event.

** Upfront premium is based on the difference between the original spread on issue and the market spread on day of execution.

ASC 820 establishes a three-level hierarchy for disclosure of fair value measurements. The valuation hierarchy is based upon the transparency of inputs to the valuation of the fund's investments. The three levels are defined as follows:

Level 1: Valuations based on quoted prices for identical securities in active markets.

Level 2: Valuations based on quoted prices in markets that are not active or for which all significant inputs are observable, either directly or indirectly.

Level 3: Valuations based on inputs that are unobservable and significant to the fair value measurement.

The following is a summary of the inputs used to value the fund's net assets as of the close of the reporting period:

	Valuation inputs		
	Level 1	Level 2	Level 3
Investments in securities:			
Asset-backed securities	\$—	\$91,251	\$—
Mortgage-backed securities	—	23,817,369	—
Purchased options outstanding	—	21,620	—
U.S. government and agency mortgage obligations	—	103,303,878	—
Short-term investments	180,000	5,200,471	—
Totals by level	\$180,000	\$132,434,589	\$—

	Valuation inputs		
	Level 1	Level 2	Level 3
Other financial instruments:			
Futures contracts	\$436,549	\$—	\$—
Written options outstanding	—	(83,320)	—
Forward premium swap option contracts	—	(91,102)	—
TBA sale commitments	—	(80,768,832)	—
Interest rate swap contracts	—	237,172	—
Credit default contracts	—	(161,925)	—
Totals by level	\$436,549	\$(80,868,007)	\$—

Statement of assets and liabilities

6/30/23 (Unaudited)

Assets

Investment in securities, at value (Notes 1 and 8):	
Unaffiliated issuers (identified cost \$132,704,806)	\$129,378,015
Affiliated issuers (identified cost \$3,236,574) (Notes 1 and 5)	3,236,574
Interest and other receivables	230,220
Receivable for shares of the fund sold	8,683
Receivable for investments sold	139,703
Receivable for sales of TBA securities (Note 1)	53,064,847
Receivable from Manager (Note 2)	22,068
Receivable for variation margin on futures contracts (Note 1)	3,812
Receivable for variation margin on centrally cleared swap contracts (Note 1)	44,712
Unrealized appreciation on forward premium swap option contracts (Note 1)	534,663
Unrealized appreciation on OTC swap contracts (Note 1)	510,459
Premium paid on OTC swap contracts (Note 1)	464,290
Deposits with broker (Note 1)	329,436
Total assets	187,967,482

Liabilities

Payable for investments purchased	110,932
Payable for purchases of TBA securities (Note 1)	75,312,147
Payable for shares of the fund repurchased	21,250
Payable for custodian fees (Note 2)	25,203
Payable for investor servicing fees (Note 2)	3,451
Payable for Trustee compensation and expenses (Note 2)	44,358
Payable for administrative services (Note 2)	118
Payable for distribution fees (Note 2)	2,902
Payable for variation margin on futures contracts (Note 1)	31,447
Payable for variation margin on centrally cleared swap contracts (Note 1)	10,639
Payable to Broker (Note 1)	1,261
Unrealized depreciation on OTC swap contracts (Note 1)	447,258
Premium received on OTC swap contracts (Note 1)	689,416
Unrealized depreciation on forward premium swap option contracts (Note 1)	625,765
Written options outstanding, at value (premiums \$156,250) (Note 1)	83,320
TBA sale commitments, at value (proceeds receivable \$81,120,801) (Note 1)	80,768,832
Collateral on certain derivative contracts, at value (Notes 1 and 8)	180,000
Other accrued expenses	48,636
Total liabilities	158,406,935
Net assets	\$29,560,547

Represented by

Paid-in capital (Unlimited shares authorized) (Notes 1 and 4)	\$58,596,522
Total distributable earnings (Note 1)	(29,035,975)
Total — Representing net assets applicable to capital shares outstanding	\$29,560,547

Computation of net asset value Class IA

Net assets	\$15,397,424
Number of shares outstanding	2,525,467
Net asset value, offering price and redemption price per share (net assets divided by number of shares outstanding)	\$6.10

Computation of net asset value Class IB

Net assets	\$14,163,123
Number of shares outstanding	2,331,183
Net asset value, offering price and redemption price per share (net assets divided by number of shares outstanding)	\$6.08

The accompanying notes are an integral part of these financial statements.

Statement of operations

Six months ended 6/30/23 (Unaudited)

Investment income

Interest (including interest income of \$67,020 from investments in affiliated issuers) (Note 5)	\$1,108,925
Total investment income	1,108,925

Expenses

Compensation of Manager (Note 2)	59,025
Investor servicing fees (Note 2)	10,654
Custodian fees (Note 2)	27,491
Trustee compensation and expenses (Note 2)	715
Distribution fees (Note 2)	18,254
Administrative services (Note 2)	365
Auditing and tax fees	43,486
Other	9,725
Fees waived and reimbursed by Manager (Note 2)	(75,902)
Total expenses	93,813
Expense reduction (Note 2)	(806)
Net expenses	93,007
Net investment income	1,015,918

Realized and unrealized gain (loss)

Net realized gain (loss) on:

Securities from unaffiliated issuers (Notes 1 and 3)	(608,607)
Futures contracts (Note 1)	338,666
Swap contracts (Note 1)	936,153
Written options (Note 1)	(194,608)
Total net realized gain	471,604

Change in net unrealized appreciation (depreciation) on:

Securities from unaffiliated issuers and TBA sale commitments	(1,057,114)
Futures contracts	472,539
Swap contracts	(903,238)
Written options	302,537
Total change in net unrealized depreciation	(1,185,276)
Net loss on investments	(713,672)
Net increase in net assets resulting from operations	\$302,246

The accompanying notes are an integral part of these financial statements.

Statement of changes in net assets

	Six months ended 6/30/23*	Year ended 12/31/22
Decrease in net assets		
Operations:		
Net investment income	\$1,015,918	\$1,832,936
Net realized gain (loss) on investments	471,604	(10,234,743)
Change in net unrealized appreciation (depreciation) of investments	(1,185,276)	4,754,234
Net increase (decrease) in net assets resulting from operations	302,246	(3,647,573)
Distributions to shareholders (Note 1):		
From ordinary income		
Net investment income		
Class IA	(2,466,239)	(1,724,359)
Class IB	(2,261,936)	(1,487,430)
Increase (decrease) from capital share transactions (Note 4)	3,305,037	(3,270,620)
Total decrease in net assets	(1,120,892)	(10,129,982)
Net assets:		
Beginning of period	30,681,439	40,811,421
End of period	\$29,560,547	\$30,681,439

* Unaudited.

The accompanying notes are an integral part of these financial statements.

Financial highlights

(For a common share outstanding throughout the period)

Period ended	INVESTMENT OPERATIONS:				LESS DISTRIBUTIONS:				RATIOS AND SUPPLEMENTAL DATA:					
	Net asset value, beginning of period	Net investment income (loss) ^a	Net realized and unrealized gain (loss) on investments	Total from investment operations	From net investment income	From net realized gain on investments	From return of capital	Total distributions	Net asset value, end of period	Total return at net asset value (%) ^{b,c}	Net assets, end of period (in thousands)	Ratio of expenses to average net assets (%) ^{b,d,e}	Ratio of net investment income (loss) to average net assets (%) ^e	Portfolio turnover (%) ^f
Class IA														
6/30/23 †	\$7.17	.22	(.15)	.07	(1.14)	—	—	(1.14)	\$6.10	1.11*	\$15,397	.25*	3.40*	943*
12/31/22	8.74	.42	(1.23)	(.81)	(.76)	—	—	(.76)	7.17	(9.95)	16,054	.50	5.41	1,110
12/31/21	9.05	.40	(.71)	(.31)	—	—	—	—	8.74	(3.43)	20,386	.50	4.44	904
12/31/20	10.18	.35	(.57)	(.22)	(.87)	(.02)	(.02)	(.91)	9.05	(1.29)	26,269	.50	3.89	895
12/31/19	9.21	.36	.85	1.21	(.24)	—	—	(.24)	10.18	13.36	31,822	.50	3.68	1,171
12/31/18	9.55	.35	(.41)	(.06)	(.28)	—	—	(.28)	9.21	(.62)	31,249	.56	3.80	1,142
Class IB														
6/30/23 †	\$7.14	.22	(.16)	.06	(1.12)	—	—	(1.12)	\$6.08	.96*	\$14,163	.37*	3.28*	943*
12/31/22	8.69	.40	(1.21)	(.81)	(.74)	—	—	(.74)	7.14	(10.07)	14,627	.75	5.16	1,110
12/31/21	9.02	.38	(.71)	(.33)	—	—	—	—	8.69	(3.66)	20,425	.75	4.19	904
12/31/20	10.16	.33	(.58)	(.25)	(.85)	(.02)	(.02)	(.89)	9.02	(1.68)	20,478	.75	3.64	895
12/31/19	9.18	.33	.86	1.19	(.21)	—	—	(.21)	10.16	13.20	26,965	.75	3.44	1,171
12/31/18	9.52	.33	(.41)	(.08)	(.26)	—	—	(.26)	9.18	(.90)	23,232	.81	3.54	1,142

Before April 30, 2018, the fund was managed with a materially different investment strategy and may have achieved materially different performance results under its current investment strategy from that shown for periods before this date.

* Not annualized.

† Unaudited.

^a Per share net investment income (loss) has been determined on the basis of the weighted average number of shares outstanding during the period.

^b The charges and expenses at the insurance company separate account level are not reflected.

^c Total return assumes dividend reinvestment.

^d Includes amounts paid through expense offset arrangements, if any (Note 2). Also excludes acquired fund fees and expenses, if any.

^e Reflects an involuntary contractual expense limitation in effect during the period. As a result of such limitation, the expenses of each class reflect the following reductions as a percentage of average net assets.

	% of average net assets
June 30, 2023	0.25%
December 30, 2022	0.43
December 31, 2021	0.28
December 31, 2020	0.24
December 31, 2019	0.22
December 31, 2018	0.25

^f Portfolio turnover includes TBA purchase and sale commitments.

The accompanying notes are an integral part of these financial statements.

Notes to financial statements 6/30/23 (Unaudited)

Unless otherwise noted, the “reporting period” represents the period from January 1, 2023 through June 30, 2023. The following table defines commonly used references within the Notes to financial statements:

References to	Represent
Putnam Management	Putnam Investment Management, LLC, the fund’s manager, an indirect wholly-owned subsidiary of Putnam Investments, LLC
State Street	State Street Bank and Trust Company
JPMorgan	JPMorgan Chase Bank, N.A.
the SEC	the Securities and Exchange Commission
OTC	over-the-counter
PIL	Putnam Investments Limited, an affiliate of Putnam Management

Putnam VT Mortgage Securities Fund (the fund) is a diversified series of Putnam Variable Trust (the Trust), a Massachusetts business trust registered under the Investment Company Act of 1940, as amended, as an open-end management investment company. The goal of the fund is to seek as high a level of current income as Putnam Management believes is consistent with preservation of capital. The fund invests mainly in mortgages, mortgage-related fixed income securities and related derivatives that are either investment-grade or below-investment-grade in quality (sometimes referred to as “junk bonds”). Under normal circumstances, the fund invests at least 80% of its net assets (plus any borrowings for investment purposes) in mortgages, mortgage-related fixed income securities and related derivatives (i.e., derivatives used to acquire exposure to, or whose underlying securities are, mortgages or mortgage-related securities). The fund generally uses the net unrealized gain or loss, or market value, of mortgage-related derivatives for purposes of this policy, but may use the notional value of a derivative if that is determined to be a more appropriate measure of the fund’s investment exposure. This policy may be changed only after 60 days’ notice to shareholders.

The fund expects to invest in mortgage-backed investments that are obligations of U.S. government agencies and instrumentalities and accordingly are backed by the full faith and credit of the United States (e.g., Ginnie Mae mortgage-backed bonds) as well as in mortgage-backed investments that are backed by only the credit of a federal agency or government-sponsored entity (e.g., Fannie Mae and Freddie Mac mortgage-backed bonds), and that have short- to long-term maturities. The fund currently has significant investment exposure to commercial mortgage-backed securities.

The fund also expects to invest in lower-rated, higher-yielding mortgage-backed securities, including non-agency residential mortgage-backed securities (which may be backed by non-qualified or “sub-prime” mortgages), commercial mortgage-backed securities, and collateralized mortgage obligations (including interest only, principal only, and other prepayment derivatives). Non-agency (i.e., privately issued) securities typically are lower-rated and higher yielding than securities issued or backed by agencies such as Ginnie Mae, Fannie Mae or Freddie Mac. While the fund’s emphasis will be on mortgage-backed securities, it may also invest to a lesser extent in other types of asset-backed securities.

Putnam Management may consider, among other factors, credit, interest rate, prepayment and liquidity risks, as well as general market conditions, when deciding whether to buy or sell investments. The fund typically uses to a significant extent derivatives, including credit default swaps, interest rate swaps, total return swaps, to-be-announced (TBA) commitments, futures, options and swaptions, including on mortgage-backed securities and indices, for both hedging and non-hedging purposes, including to obtain or adjust exposure to mortgage-backed investments.

The fund offers class IA and class IB shares of beneficial interest. Class IA shares are offered at net asset value and are not subject to a distribution fee. Class IB shares are offered at net asset value and pay an ongoing distribution fee, which is identified in Note 2.

In the normal course of business, the fund enters into contracts that may include agreements to indemnify another party under given circumstances. The fund’s maximum exposure under these arrangements is unknown as this would involve future claims that may be, but have not yet been, made against the fund. However, the fund’s management team expects the risk of material loss to be remote.

The fund has entered into contractual arrangements with an investment adviser, administrator, distributor, shareholder servicing agent and custodian, who each provide services to the fund. Unless expressly stated otherwise, shareholders are

not parties to, or intended beneficiaries of these contractual arrangements, and these contractual arrangements are not intended to create any shareholder right to enforce them against the service providers or to seek any remedy under them against the service providers, either directly or on behalf of the fund.

Under the fund’s Amended and Restated Agreement and Declaration of Trust, any claims asserted against or on behalf of the Putnam Funds, including claims against Trustees and Officers, must be brought in state and federal courts located within the Commonwealth of Massachusetts.

Note 1 — Significant accounting policies

The following is a summary of significant accounting policies consistently followed by the fund in the preparation of its financial statements. The preparation of financial statements is in conformity with accounting principles generally accepted in the United States of America and requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities in the financial statements and the reported amounts of increases and decreases in net assets from operations. Actual results could differ from those estimates. Subsequent events after the Statement of assets and liabilities date through the date that the financial statements were issued have been evaluated in the preparation of the financial statements.

Investment income, realized and unrealized gains and losses and expenses of the fund are borne pro-rata based on the relative net assets of each class to the total net assets of the fund, except that each class bears expenses unique to that class (including the distribution fees applicable to such classes). Each class votes as a class only with respect to its own distribution plan or other matters on which a class vote is required by law or determined by the Trustees. If the fund were liquidated, shares of each class would receive their pro-rata share of the net assets of the fund. In addition, the Trustees declare separate dividends on each class of shares.

Security valuation Portfolio securities and other investments are valued using policies and procedures adopted by the Board of Trustees. The Trustees have formed a Pricing Committee to oversee the implementation of these procedures and have delegated responsibility for valuing the fund’s assets in accordance with these procedures to Putnam Management. Putnam Management has established an internal Valuation Committee that is responsible for making fair value determinations, evaluating the effectiveness of the pricing policies of the fund and reporting to the Pricing Committee.

Investments, including mortgage backed securities and short-term investments with remaining maturities of 60 days or less, are valued on the basis of valuations provided by an independent pricing service approved by the Trustees or dealers selected by Putnam Management. Such service providers use information with respect to transactions in bonds, quotations from bond dealers, market transactions in comparable securities and various relationships between securities in determining value. These securities will generally be categorized as Level 2.

Investments in open-end investment companies (excluding exchange-traded funds), if any, which can be classified as Level 1 or Level 2 securities, are valued based on their net asset value. The net asset value of such investment companies equals the total value of their assets less their liabilities and divided by the number of their outstanding shares.

Certain investments, including certain restricted and illiquid securities and derivatives, are also valued at fair value following procedures approved by the Trustees. These valuations consider such factors as significant market or specific security events such as interest rate or credit quality changes, various relationships with other securities, discount rates, U.S. Treasury, U.S. swap and credit yields, index levels, convexity exposures, recovery rates, sales and other multiples and resale restrictions. These securities are classified as Level 2 or as Level 3 depending on the priority of the significant inputs.

To assess the continuing appropriateness of fair valuations, the Valuation Committee reviews and affirms the reasonableness of such valuations on a regular basis after considering all relevant information that is reasonably available. Such valuations and procedures are reviewed periodically by the Trustees. Certain securities may be valued on the basis of a price provided by a single source. The fair value of securities is generally determined as the amount that the fund could reasonably expect to realize from an orderly disposition of such securities over a reasonable period of time. By its nature, a fair value price is a good faith estimate of the value of a security in a current sale and does not reflect an actual market price, which may be different by a material amount.

Security transactions and related investment income Security transactions are recorded on the trade date (the date the order to buy or sell is executed). Gains or losses on securities sold are determined on the identified cost basis.

Interest income, net of any applicable withholding taxes, if any, is recorded on the accrual basis. Amortization and accretion of premiums and discounts on debt securities, if any, is recorded on the accrual basis.

Securities purchased or sold on a delayed delivery basis may be settled at a future date beyond customary settlement time; interest income is accrued based on the terms of the securities. Losses may arise due to changes in the fair value of the underlying securities or if the counterparty does not perform under the contract.

Stripped securities The fund may invest in stripped securities which represent a participation in securities that may be structured in classes with rights to receive different portions of the interest and principal. Interest-only securities receive all of the interest and principal-only securities receive all of the principal. If the interest-only securities experience greater than anticipated prepayments of principal, the fund may fail to recoup fully its initial investment in these securities. Conversely, principal-only securities increase in value if prepayments are greater than anticipated and decline if prepayments are slower than anticipated. The fair value of these securities is highly sensitive to changes in interest rates.

Options contracts The fund uses options contracts to hedge duration and convexity, to isolate prepayment risk and to manage downside risks.

The potential risk to the fund is that the change in value of options contracts may not correspond to the change in value of the hedged instruments. In addition, losses may arise from changes in the value of the underlying instruments if there is an illiquid secondary market for the contracts, if interest or exchange rates move unexpectedly or if the counterparty to the contract is unable to perform. Realized gains and losses on purchased options are included in realized gains and losses on investment securities. If a written call option is exercised, the premium originally received is recorded as an addition to sales proceeds. If a written put option is exercised, the premium originally received is recorded as a reduction to the cost of investments.

Exchange-traded options are valued at the last sale price or, if no sales are reported, the last bid price for purchased options and the last ask price for written options. OTC traded options are valued using prices supplied by dealers.

Options on swaps are similar to options on securities except that the premium paid or received is to buy or grant the right to enter into a previously agreed upon interest rate or credit default contract. Forward premium swap option contracts include premiums that have extended settlement dates. The delayed settlement of the premiums is factored into the daily valuation of the option contracts. In the case of interest rate cap and floor contracts, in return for a premium, ongoing payments between two parties are based on interest rates exceeding a specified rate, in the case of a cap contract, or falling below a specified rate in the case of a floor contract.

Written option contracts outstanding at period end, if any, are listed after the fund's portfolio.

Futures contracts The fund uses futures contracts for hedging treasury term structure risk and for yield curve positioning.

The potential risk to the fund is that the change in value of futures contracts may not correspond to the change in value of the hedged instruments. In addition, losses may arise from changes in the value of the underlying instruments, if there is an illiquid secondary market for the contracts, if interest or exchange rates move unexpectedly or if the counterparty to the contract is unable to perform. With futures, there is minimal counterparty credit risk to the fund since futures are exchange traded and the exchange's clearinghouse, as counterparty to all exchange traded futures, guarantees the futures against default. Risks may exceed amounts recognized on the Statement of assets and liabilities. When the contract is closed, the fund records a realized gain or loss equal to the difference between the value of the contract at the time it was opened and the value at the time it was closed.

Futures contracts are valued at the quoted daily settlement prices established by the exchange on which they trade. The fund and the broker agree to exchange an amount of cash equal to the daily fluctuation in the value of the futures contract. Such receipts or payments are known as "variation margin."

Futures contracts outstanding at period end, if any, are listed after the fund's portfolio.

Interest rate swap contracts The fund entered into OTC and/or centrally cleared interest rate swap contracts, which are arrangements between two parties to exchange cash flows based on a notional principal amount, for hedging term structure risk and for yield curve positioning.

An OTC and centrally cleared interest rate swap can be purchased or sold with an upfront premium. For OTC interest rate swap contracts, an upfront payment received by the fund is recorded as a liability on the fund's books. An upfront payment made by the fund is recorded as an asset on the fund's books. OTC and centrally cleared interest rate swap contracts are marked to market daily based upon quotations from an independent pricing service or market makers. Any change is recorded as an unrealized gain or loss on OTC interest rate swaps. Daily fluctuations in the value of centrally cleared interest rate swaps are settled through a central clearing agent and are recorded in variation margin on the Statement of assets and liabilities and recorded as unrealized gain or loss. Payments, including upfront premiums, received or made are recorded as realized gains or losses at the reset date or the closing of the contract. Certain OTC and centrally cleared interest rate swap contracts may include extended effective dates. Payments related to these swap contracts are accrued based on the terms of the contract.

The fund could be exposed to credit or market risk due to unfavorable changes in the fluctuation of interest rates or if the counterparty defaults, in the case of OTC interest rate contracts, or the central clearing agency or a clearing member defaults, in the case of centrally cleared interest rate swap contracts, on its respective obligation to perform under the contract. The fund's maximum risk of loss from counterparty risk or central clearing risk is the fair value of the contract. This risk may be mitigated for OTC interest rate swap contracts by having a master netting arrangement between the fund and the counterparty and for centrally cleared interest rate swap contracts through the daily exchange of variation margin. There is minimal counterparty risk with respect to centrally cleared interest rate swap contracts due to the clearinghouse guarantee fund and other resources that are available in the event of a clearing member default. Risk of loss may exceed amounts recognized on the Statement of assets and liabilities.

OTC and centrally cleared interest rate swap contracts outstanding, including their respective notional amounts at period end, if any, are listed after the fund's portfolio.

At close of the reporting period, the fund has deposited cash valued at \$329,436 in a segregated account to cover margin requirements on open centrally cleared interest rate swap contracts.

Credit default contracts The fund entered into OTC and/or centrally cleared credit default contracts to hedge credit risk, to hedge market risk and for gaining exposure to specific sectors.

In OTC and centrally cleared credit default contracts, the protection buyer typically makes a periodic stream of payments to a counterparty, the protection seller, in exchange for the right to receive a contingent payment upon the occurrence of a credit event on the reference obligation or all other equally ranked obligations of the reference entity. Credit events are contract specific but may include bankruptcy, failure to pay, restructuring and obligation acceleration. For OTC credit default contracts, an upfront payment received by the fund is recorded as a liability on the fund's books. An upfront payment made by the fund is recorded as an asset on the fund's books. Centrally cleared credit default contracts provide the same rights to the protection buyer and seller except the payments between parties, including upfront premiums, are settled through a central clearing agent through variation margin payments. Upfront and periodic payments received or paid by the fund for OTC and centrally cleared credit default contracts are recorded as realized gains or losses at the reset date or close of the contract. The OTC and centrally cleared credit default contracts are marked to market daily based upon quotations from an independent pricing service or market makers. Any change in value of OTC credit default contracts is recorded as an unrealized gain or loss. Daily fluctuations in the value of centrally cleared credit default contracts are recorded in variation margin on the Statement of assets and liabilities and recorded as unrealized gain or loss. Upon the occurrence of a credit event, the difference between the par value and fair value of the reference obligation, net of any proportional amount of the upfront payment, is recorded as a realized gain or loss.

In addition to bearing the risk that the credit event will occur, the fund could be exposed to market risk due to unfavorable changes in interest rates or in the price of the underlying security or index or the possibility that the fund may be unable to close out its position at the same time or at the same price as if it had purchased the underlying reference obligations. In certain circumstances, the fund may enter into offsetting OTC and centrally cleared credit default contracts which would mitigate its risk of loss. Risks of loss may exceed amounts recognized on the Statement of assets and liabilities. The fund's maximum risk of loss from counterparty risk, either as the protection seller or as the protection buyer, is the fair value of the contract. This risk may be mitigated for OTC credit default contracts by having a master netting arrangement between the fund and the counterparty and for centrally cleared credit default contracts through the daily exchange of

variation margin. Counterparty risk is further mitigated with respect to centrally cleared credit default swap contracts due to the clearinghouse guarantee fund and other resources that are available in the event of a clearing member default. Where the fund is a seller of protection, the maximum potential amount of future payments the fund may be required to make is equal to the notional amount.

OTC and centrally cleared credit default contracts outstanding, including their respective notional amounts at period end, if any, are listed after the fund's portfolio.

TBA commitments The fund may enter into TBA (to be announced) commitments to purchase securities for a fixed unit price at a future date beyond customary settlement time. Although the unit price and par amount have been established, the actual securities have not been specified. However, it is anticipated that the amount of the commitments will not significantly differ from the principal amount. The fund holds, and maintains until settlement date, cash or high-grade debt obligations in an amount sufficient to meet the purchase price, or the fund may enter into offsetting contracts for the forward sale of other securities it owns. Income on the securities will not be earned until settlement date.

The fund may also enter into TBA sale commitments to hedge its portfolio positions, to sell mortgage-backed securities it owns under delayed delivery arrangements or to take a short position in mortgage-backed securities. Proceeds of TBA sale commitments are not received until the contractual settlement date. During the time a TBA sale commitment is outstanding, either equivalent deliverable securities or an offsetting TBA purchase commitment deliverable on or before the sale commitment date are held as "cover" for the transaction, or other liquid assets in an amount equal to the notional value of the TBA sale commitment are segregated. If the TBA sale commitment is closed through the acquisition of an offsetting TBA purchase commitment, the fund realizes a gain or loss. If the fund delivers securities under the commitment, the fund realizes a gain or a loss from the sale of the securities based upon the unit price established at the date the commitment was entered into.

TBA commitments, which are accounted for as purchase and sale transactions, may be considered securities themselves, and involve a risk of loss due to changes in the value of the security prior to the settlement date as well as the risk that the counterparty to the transaction will not perform its obligations. Counterparty risk is mitigated by having a master agreement between the fund and the counterparty.

Unsettled TBA commitments are valued at their fair value according to the procedures described under "Security valuation" above. The contract is marked to market daily and the change in fair value is recorded by the fund as an unrealized gain or loss. Based on market circumstances, Putnam Management will determine whether to take delivery of the underlying securities or to dispose of the TBA commitments prior to settlement.

TBA purchase commitments outstanding at period end, if any, are listed within the fund's portfolio and TBA sale commitments outstanding at period end, if any, are listed after the fund's portfolio.

Master agreements The fund is a party to ISDA (International Swaps and Derivatives Association, Inc.) Master Agreements that govern OTC derivative and foreign exchange contracts and Master Securities Forward Transaction Agreements that govern transactions involving mortgage-backed and other asset-backed securities that may result in delayed delivery (Master Agreements) with certain counterparties entered into from time to time. The Master Agreements may contain provisions regarding, among other things, the parties' general obligations, representations, agreements, collateral requirements, events of default and early termination. With respect to certain counterparties, in accordance with the terms of the Master Agreements, collateral pledged to the fund is held in a segregated account by the fund's custodian and, with respect to those amounts which can be sold or repledged, are presented in the fund's portfolio.

Collateral pledged by the fund is segregated by the fund's custodian and identified in the fund's portfolio. Collateral can be in the form of cash or debt securities issued by the U.S. Government or related agencies or other securities as agreed to by the fund and the applicable counterparty. Collateral requirements are determined based on the fund's net position with each counterparty.

With respect to ISDA Master Agreements, termination events applicable to the fund may occur upon a decline in the fund's net assets below a specified threshold over a certain period of time. Termination events applicable to counterparties may occur upon a decline in the counterparty's long-term or short-term credit ratings below a specified level. In each case, upon occurrence, the other party may elect to terminate early and cause settlement of all derivative and foreign exchange contracts outstanding, including the payment of any losses and costs resulting from such early termination, as reasonably determined by the terminating party.

Any decision by one or more of the fund's counterparties to elect early termination could impact the fund's future derivative activity.

At the close of the reporting period, the fund had a net liability position of \$523,019 on open derivative contracts subject to the Master Agreements. Collateral pledged by the fund at period end for these agreements totaled \$599,093 and may include amounts related to unsettled agreements.

Interfund lending The fund, along with other Putnam funds, may participate in an interfund lending program pursuant to an exemptive order issued by the SEC. This program allows the fund to borrow from or lend to other Putnam funds that permit such transactions. Interfund lending transactions are subject to each fund's investment policies and borrowing and lending limits. Interest earned or paid on the interfund lending transaction will be based on the average of certain current market rates. During the reporting period, the fund did not utilize the program.

Lines of credit The fund participates, along with other Putnam funds, in a \$320 million syndicated unsecured committed line of credit, provided by State Street (\$160 million) and JPMorgan (\$160 million), and a \$235.5 million unsecured uncommitted line of credit, provided by State Street. Prior to May 2, 2023, the fund participated, along with other Putnam funds, in a \$100 million unsecured committed line of credit and a \$235.5 million unsecured uncommitted line of credit, both provided by State Street. Borrowings may be made for temporary or emergency purposes, including the funding of shareholder redemption requests and trade settlements. Interest is charged to the fund based on the fund's borrowing at a rate equal to 1.25% plus the higher of (1) the Federal Funds rate and (2) the Overnight Bank Funding Rate for the committed line of credit and 1.30% plus the higher of (1) the Federal Funds rate and (2) the Overnight Bank Funding Rate for the uncommitted line of credit. A closing fee equal to 0.04% of the committed line of credit and 0.04% of the uncommitted line of credit has been paid by the participating funds and a \$75,000 fee has been paid by the participating funds to State Street as agent of the syndicated committed line of credit. In addition, a commitment fee of 0.21% per annum on any unutilized portion of the committed line of credit is allocated to the participating funds based on their relative net assets and paid quarterly. During the reporting period, the fund had no borrowings against these arrangements.

Federal taxes It is the policy of the fund to distribute all of its taxable income within the prescribed time period and otherwise comply with the provisions of the Internal Revenue Code of 1986, as amended (the Code), applicable to regulated investment companies.

The fund is subject to the provisions of Accounting Standards Codification 740 *Income Taxes* (ASC 740). ASC 740 sets forth a minimum threshold for financial statement recognition of the benefit of a tax position taken or expected to be taken in a tax return. The fund did not have a liability to record for any unrecognized tax benefits in the accompanying financial statements. No provision has been made for federal taxes on income, capital gains or unrealized appreciation on securities held nor for excise tax on income and capital gains. Each of the fund's federal tax returns for the prior three fiscal years remains subject to examination by the Internal Revenue Service.

Under the Regulated Investment Company Modernization Act of 2010, the fund will be permitted to carry forward capital losses incurred for an unlimited period and the carry forwards will retain their character as either short-term or long-term capital losses. At December 31, 2022, the fund had the following capital loss carryovers available, to the extent allowed by the Code, to offset future net capital gain, if any:

Loss carryover		
Short-term	Long-term	Total
\$19,136,637	\$3,159,758	\$22,296,395

Tax cost of investments includes adjustments to net unrealized appreciation (depreciation) which may not necessarily be final tax cost basis adjustments, but closely approximate the tax basis unrealized gains and losses that may be realized and distributed to shareholders. The aggregate identified cost on a tax basis is \$55,368,185, resulting in gross unrealized appreciation and depreciation of \$2,132,930 and \$5,317,984, respectively, or net unrealized depreciation of \$3,185,054.

Distributions to shareholders Distributions to shareholders from net investment income, if any, are recorded by the fund on the ex-dividend date. Distributions from capital gains, if any, are recorded on the ex-dividend date and paid at least annually. The amount and character of income and gains to be distributed are determined in accordance with income tax regulations, which may differ from generally accepted accounting principles. Dividend sources are estimated at

the time of declaration. Actual results may vary. Any non-taxable return of capital cannot be determined until final tax calculations are completed after the end of the fund's fiscal year. Reclassifications are made to the fund's capital accounts to reflect income and gains available for distribution (or available capital loss carryovers) under income tax regulations.

Expenses of the Trust Expenses directly charged or attributable to any fund will be paid from the assets of that fund. Generally, expenses of the Trust will be allocated among and charged to the assets of each fund on a basis that the Trustees deem fair and equitable, which may be based on the relative assets of each fund or the nature of the services performed and relative applicability to each fund.

Beneficial interest At the close of the reporting period, insurance companies or their separate accounts were record owners of all but a de minimis number of the shares of the fund. Approximately 31.6% of the fund is owned by accounts of one insurance company.

Note 2 — Management fee, administrative services and other transactions

The fund pays Putnam Management a management fee (based on the fund's average net assets and computed and paid monthly) at annual rates that may vary based on the average of the aggregate net assets of all open-end mutual funds sponsored by Putnam Management (excluding net assets of funds that are invested in, or that are invested in by, other Putnam funds to the extent necessary to avoid "double counting" of those assets). Such annual rates may vary as follows:

0.550%	of the first \$5 billion,
0.500%	of the next \$5 billion,
0.450%	of the next \$10 billion,
0.400%	of the next \$10 billion,
0.350%	of the next \$50 billion,
0.330%	of the next \$50 billion,
0.320%	of the next \$100 billion and
0.315%	of any excess thereafter.

For the reporting period, the management fee represented an effective rate (excluding the impact from any expense waivers in effect) of 0.194% of the fund's average net assets.

Putnam Management has contractually agreed, through April 30, 2025, to waive fees and/or reimburse the fund's expenses to the extent necessary to limit the cumulative expenses of the fund, exclusive of brokerage, interest, taxes, investment-related expenses, extraordinary expenses, acquired fund fees and expenses and payments under the fund's investor servicing contract, investment management contract and distribution plans, on a fiscal year-to-date basis to an annual rate of 0.20% of the fund's average net assets over such fiscal year-to-date period. During the reporting period, the fund's expenses were reduced by \$51,465 as a result of this limit.

Putnam Management has also contractually agreed to waive fees (and, to the extent necessary, bear other expenses) of the fund through April 30, 2025, to the extent that total expenses of the fund (excluding brokerage, interest, taxes, investment-related expenses, payments under distribution plans, extraordinary expenses and acquired fund fees and expenses) would exceed an annual rate of 0.50% of the fund's average net assets. During the reporting period, the fund's expenses were reduced by \$24,437 as a result of this limit.

PIL is authorized by the Trustees to manage a separate portion of the assets of the fund as determined by Putnam Management from time to time. PIL did not manage any portion of the assets of the fund during the reporting period. If Putnam Management were to engage the services of PIL, Putnam Management would pay a quarterly sub-management fee to PIL for its services at an annual rate of 0.20% of the average net assets of the portion of the fund managed by PIL.

The fund reimburses Putnam Management an allocated amount for the compensation and related expenses of certain officers of the fund and their staff who provide administrative services to the fund. The aggregate amount of all such reimbursements is determined annually by the Trustees.

Custodial functions for the fund's assets are provided by State Street. Custody fees are based on the fund's asset level, the number of its security holdings and transaction volumes.

Putnam Investor Services, Inc., an affiliate of Putnam Management, provides investor servicing agent functions to the fund. Putnam Investor Services, Inc. was paid a monthly fee for investor servicing at an annual rate of 0.07% of the fund's average daily net assets. During the reporting period, the expenses for each class of shares related to investor servicing fees were as follows:

Class IA	\$5,501
Class IB	5,153
Total	\$10,654

The fund has entered into expense offset arrangements with Putnam Investor Services, Inc. and State Street whereby Putnam Investor Services, Inc.'s and State Street's fees are reduced by credits allowed on cash balances. For the reporting period, the fund's expenses were reduced by \$806 under the expense offset arrangements.

Each Independent Trustee of the fund receives an annual Trustee fee, of which \$27, as a quarterly retainer, has been allocated to the fund, and an additional fee for each Trustees meeting attended. Trustees also are reimbursed for expenses they incur relating to their services as Trustees.

The fund has adopted a Trustee Fee Deferral Plan (the Deferral Plan) which allows the Trustees to defer the receipt of all or a portion of Trustees fees payable on or after July 1, 1995. The deferred fees remain invested in certain Putnam funds until distribution in accordance with the Deferral Plan.

The fund has adopted an unfunded noncontributory defined benefit pension plan (the Pension Plan) covering all Trustees of the fund who have served as a Trustee for at least five years and were first elected prior to 2004. Benefits under the Pension Plan are equal to 50% of the Trustee's average annual attendance and retainer fees for the three years ended December 31, 2005. The retirement benefit is payable during a Trustee's lifetime, beginning the year following retirement, for the number of years of service through December 31, 2006. Pension expense for the fund is included in Trustee compensation and expenses in the Statement of operations. Accrued pension liability is included in Payable for Trustee compensation and expenses in the Statement of assets and liabilities. The Trustees have terminated the Pension Plan with respect to any Trustee first elected after 2003.

The fund has adopted a distribution plan (the Plan) with respect to its class IB shares pursuant to Rule 12b-1 under the Investment Company Act of 1940. The purpose of the Plan is to compensate Putnam Retail Management Limited Partnership, an indirect wholly-owned subsidiary of Putnam Investments, LLC, for services provided and expenses incurred in distributing shares of the fund. The Plan provides for payment by the fund to Putnam Retail Management Limited Partnership at an annual rate of up to 0.35% of the average net assets attributable to the fund's class IB shares. The Trustees have approved payment by the fund at an annual rate of 0.25% of the average net assets attributable to the fund's class IB shares. The expenses related to distribution fees during the reporting period are included in Distribution fees in the Statement of operations.

Note 3 — Purchases and sales of securities

During the reporting period, the cost of purchases and the proceeds from sales, excluding short-term investments, were as follows:

	Cost of purchases	Proceeds from sales
Investments in securities, including TBA commitments (Long-term)	\$576,952,334	\$610,735,394
U.S. government securities (Long-term)	—	—
Total	\$576,952,334	\$610,735,394

The fund may purchase or sell investments from or to other Putnam funds in the ordinary course of business, which can reduce the fund's transaction costs, at prices determined in accordance with SEC requirements and policies approved by the Trustees. During the reporting period, purchases or sales of long-term securities from or to other Putnam funds, if any, did not represent more than 5% of the fund's total cost of purchases and/or total proceeds from sales.

Note 4 — Capital shares

At the close of the reporting period, there were an unlimited number of shares of beneficial interest authorized. Subscriptions and redemptions are presented at the omnibus level. Transactions in capital shares were as follows:

	Class IA shares				Class IB shares			
	Six months ended 6/30/23		Year ended 12/31/22		Six months ended 6/30/23		Year ended 12/31/22	
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount
Shares sold	20,522	\$135,572	33,247	\$260,595	212,948	\$1,492,691	517,060	\$3,955,533
Shares issued in connection with reinvestment of distributions	407,643	2,466,239	220,789	1,724,359	375,114	2,261,936	190,941	1,487,430
	428,165	2,601,811	254,036	1,984,954	588,062	3,754,627	708,001	5,442,963
Shares repurchased	(141,100)	(962,886)	(349,410)	(2,708,108)	(305,822)	(2,088,515)	(1,009,021)	(7,990,429)
Net increase (decrease)	287,065	\$1,638,925	(95,374)	\$(723,154)	282,240	\$1,666,112	(301,020)	\$(2,547,466)

Note 5 — Affiliated transactions

Transactions during the reporting period with any company which is under common ownership or control were as follows:

Name of affiliate	Fair value as of 12/31/22	Purchase cost	Sale proceeds	Investment income	Shares outstanding and fair value as of 6/30/23
Short-term investments					
Putnam Short Term Investment Fund*	\$4,038,650	\$14,464,181	\$15,266,257	\$67,020	\$3,236,574
Total Short-term investments	\$4,038,650	\$14,464,181	\$15,266,257	\$67,020	\$3,236,574

*Management fees charged to Putnam Short Term Investment Fund have been waived by Putnam Management. There were no realized or unrealized gains or losses during the period.

Note 6 — Market, credit and other risks

In the normal course of business, the fund trades financial instruments and enters into financial transactions where risk of potential loss exists due to changes in the market (market risk) or failure of the contracting party to the transaction to perform (credit risk). The fund may be exposed to additional credit risk that an institution or other entity with which the fund has unsettled or open transactions will default. The fund may invest in higher-yielding, lower-rated bonds that may have a higher rate of default. The fund may invest a significant portion of its assets in securitized debt instruments, including mortgage-backed and asset-backed investments. The yields and values of these investments are sensitive to changes in interest rates, the rate of principal payments on the underlying assets and the market's perception of the issuers. The market for these investments may be volatile and limited, which may make them difficult to buy or sell.

On July 27, 2017, the United Kingdom's Financial Conduct Authority ("FCA"), which regulates LIBOR, announced its intention to cease compelling banks to provide the quotations needed to sustain LIBOR after 2021. ICE Benchmark Administration, the administrator of LIBOR, ceased publication of most LIBOR settings on a representative basis at the end of 2021 and is expected to cease publication of a majority of U.S. dollar LIBOR settings on a representative basis after June 30, 2023. In addition, global regulators have announced that, with limited exceptions, no new LIBOR-based contracts should be entered into after 2021. LIBOR has historically been a common benchmark interest rate index used to make adjustments to variable-rate loans. It is used throughout global banking and financial industries to determine interest rates for a variety of financial instruments and borrowing arrangements. Actions by regulators have resulted in the establishment of alternative reference rates to LIBOR in most major currencies. Various financial industry groups have been planning for the transition away from LIBOR, but there are obstacles to converting certain longer-term securities and transactions to new reference rates. Markets are developing slowly and questions around liquidity in these rates and how to appropriately adjust these rates to mitigate any economic value transfer at the time of transition remain a significant concern. Neither the effect of the transition process nor its ultimate success can yet be known. The transition process might lead to increased volatility and illiquidity in markets that rely on LIBOR to determine interest rates. It could also lead to a reduction in the value of some LIBOR-based investments and reduce the effectiveness of related transactions, such as hedges. While some LIBOR-based instruments may contemplate a scenario where LIBOR is no longer available by providing for an alternative rate-setting methodology, not all may have such provisions and there may be significant uncertainty regarding the effectiveness of any such alternative methodologies. Since the usefulness of LIBOR as a benchmark could deteriorate during the transition period, these effects could occur at any time.

Note 7 — Summary of derivative activity

The volume of activity for the reporting period for any derivative type that was held during the period is listed below and was based on an average of the holdings at the end of each fiscal quarter:

Purchased TBA commitment option contracts (contract amount)	\$21,400,000
Purchased swap option contracts (contract amount)	\$79,800,000
Written TBA commitment option contracts (contract amount)	\$21,400,000
Written swap option contracts (contract amount)	\$52,800,000
Futures contracts (number of contracts)	200
Centrally cleared interest rate swap contracts (notional)	\$156,200,000
OTC credit default contracts (notional)	\$6,500,000

The following is a summary of the fair value of derivative instruments as of the close of the reporting period:

Fair value of derivative instruments as of the close of the reporting period

Derivatives not accounted for as hedging instruments under ASC 815	Asset derivatives		Liability derivatives	
	Statement of assets and liabilities location	Fair value	Statement of assets and liabilities location	Fair value
Credit contracts	Receivables	\$829,361	Payables	\$991,286
Interest rate contracts	Investments, Receivables, Net assets — Unrealized appreciation	1,329,147*	Payables, Net assets — Unrealized depreciation	808,228*
Total		\$2,158,508		\$1,799,514

*Includes cumulative appreciation/depreciation of futures contracts and/or centrally cleared swaps as reported in the fund's portfolio. Only current day's variation margin is reported within the Statement of assets and liabilities.

The following is a summary of realized and change in unrealized gains or losses of derivative instruments in the Statement of operations for the reporting period (see Note 1):

Amount of realized gain or (loss) on derivatives recognized in net gain or (loss) on investments

Derivatives not accounted for as hedging instruments under ASC 815	Options	Futures	Swaps	Total
Credit contracts	\$—	\$—	\$(79,591)	\$(79,591)
Interest rate contracts	(12,855)	338,666	1,015,744	\$1,341,555
Total	\$(12,855)	\$338,666	\$936,153	\$1,261,964

Change in unrealized appreciation or (depreciation) on derivatives recognized in net gain or (loss) on investments

Derivatives not accounted for as hedging instruments under ASC 815	Options	Futures	Swaps	Total
Credit contracts	\$—	\$—	\$111,741	\$111,741
Interest rate contracts	(754,956)	472,539	(1,014,979)	\$(1,297,396)
Total	\$(754,956)	\$472,539	\$(903,238)	\$(1,185,655)

Note 8 — Offsetting of financial and derivative assets and liabilities

The following table summarizes any derivatives, repurchase agreements and reverse repurchase agreements, at the end of the reporting period, that are subject to an enforceable master netting agreement or similar agreement. For securities lending transactions or borrowing transactions associated with securities sold short, if any, see Note 1. For financial reporting purposes, the fund does not offset financial assets and financial liabilities that are subject to the master netting agreements in the Statement of assets and liabilities.

	Bank of America N.A.	Barclays Bank PLC	Barclays Capital, Inc. (clearing broker)	Citibank, N.A.	Citigroup Global Markets, Inc.	Credit Suisse International
Assets:						
Centrally cleared interest rate swap contracts [§]	\$—	\$—	\$44,712	\$—	\$—	\$—
OTC Credit default contracts — protection sold [#]	—	—	—	—	—	—
OTC Credit default contracts — protection purchased [#]	—	—	—	—	486,523	27,814
Futures contracts [§]	—	—	—	—	—	—
Forward premium swap option contracts [#]	224,707	—	—	157,097	—	—
Purchased options ^{**}	—	—	—	—	—	—
Total Assets	\$224,707	\$—	\$44,712	\$157,097	\$486,523	\$27,814
Liabilities:						
Centrally cleared interest rate swap contracts [§]	—	—	10,639	—	—	—
OTC Credit default contracts — protection sold [#]	—	—	—	—	376,621	7,871
OTC Credit default contracts — protection purchased [#]	—	—	—	—	—	—
Futures contracts [§]	—	—	—	—	—	—
Forward premium swap option contracts [#]	265,634	16,370	—	134,297	—	—
Written options [#]	—	—	—	—	—	—
Total Liabilities	\$265,634	\$16,370	\$10,639	\$134,297	\$376,621	\$7,871
Total Financial and Derivative Net Assets	\$(40,927)	\$(16,370)	\$34,073	\$22,800	\$109,902	\$19,943
Total collateral received (pledged) ^{†##}	\$—	\$—	\$—	\$—	\$109,902	\$—
Net amount	\$(40,927)	\$(16,370)	\$34,073	\$22,800	\$—	\$19,943
<i>Controlled collateral received (including TBA commitments)**</i>	\$—	\$—	\$—	\$—	\$130,000	\$—
<i>Uncontrolled collateral received</i>	\$—	\$—	\$—	\$—	\$—	\$—
<i>Collateral (pledged) (including TBA commitments)**</i>	\$—	\$—	\$—	\$—	\$—	\$—

* Excludes premiums, if any. Included in unrealized appreciation and depreciation on OTC swap contracts on the Statement of assets and liabilities.

** Included with Investments in securities on the Statement of assets and liabilities.

† Additional collateral may be required from certain brokers based on individual agreements.

Covered by master netting agreement (Note 1).

Any over-collateralization of total financial and derivative net assets is not shown. Collateral may include amounts related to unsettled agreements.

§ Includes current day's variation margin only as reported on the Statement of assets and liabilities, which is not collateralized. Cumulative appreciation/(depreciation) for futures contracts and centrally cleared swap contracts is represented in the tables listed after the fund's portfolio. Collateral pledged for initial margin on futures contracts and centrally cleared swap contracts, which is not included in the table above, amounted to \$506,050 and \$329,436, respectively.

Deutsche Bank AG	Goldman Sachs International	JPMorgan Chase Bank N.A.	JPMorgan Securities LLC	Merrill Lynch International	Morgan Stanley & Co. International PLC	Toronto-Dominion Bank	Total
\$—	\$—	\$—	\$—	\$—	\$—	\$—	\$44,712
—	—	—	—	—	—	—	—
—	31,672	—	69,427	3,648	210,277	—	829,361
—	—	—	3,812	—	—	—	3,812
38,424	44,912	69,523	—	—	—	—	534,663
—	—	21,620	—	—	—	—	21,620
\$38,424	\$76,584	\$91,143	\$73,239	\$3,648	\$210,277	\$—	\$1,434,168
—	—	—	—	—	—	—	10,639
—	173,641	—	47,660	29,227	356,266	—	991,286
—	—	—	—	—	—	—	—
—	—	—	31,447	—	—	—	31,447
4,544	56,258	148,370	—	—	—	292	625,765
—	—	83,320	—	—	—	—	83,320
\$4,544	\$229,899	\$231,690	\$79,107	\$29,227	\$356,266	\$292	\$1,742,457
\$33,880	\$(153,315)	\$(140,547)	\$(5,868)	\$(25,579)	\$(145,989)	\$(292)	\$(308,289)
\$—	\$(153,315)	\$(140,547)	\$50,000	\$—	\$(145,989)	\$—	
\$33,880	\$—	\$—	\$(55,868)	\$(25,579)	\$—	\$(292)	
\$—	\$—	\$—	\$50,000	\$—	\$—	\$—	\$180,000
\$—	\$—	\$—	\$—	\$—	\$—	\$—	\$—
\$—	\$(209,358)	\$(193,174)	\$—	\$—	\$(196,561)	\$—	\$(599,093)

Note 9 — Of special note

On May 31, 2023, Franklin Resources, Inc. (“Franklin Resources”) and Great-West Lifeco Inc., the parent company of Putnam U.S. Holdings I, LLC (“Putnam Holdings”), announced that they have entered into a definitive agreement for a subsidiary of Franklin Resources to acquire Putnam Holdings in a stock and cash transaction.

As part of this transaction, Putnam Management, a wholly-owned subsidiary of Putnam Holdings and investment manager to the Putnam family of funds (the “Putnam Funds”), would become an indirect wholly-owned subsidiary of Franklin Resources.

The transaction is subject to customary closing conditions, including receipt of applicable regulatory approvals. Subject to such approvals and the satisfaction of these conditions, the transaction is currently expected to be consummated in the fourth quarter of 2023.

Under the Investment Company Act of 1940, as amended, consummation of the transaction will result in the automatic termination of the investment management contract between each Putnam Fund and Putnam Management and any related sub-management and sub-advisory contracts, where applicable. In anticipation of this automatic termination, on June 23, 2023, the Board of Trustees of the Putnam Funds approved a new investment management contract between each Putnam Fund and Putnam Management (and new sub-management and sub-advisory contracts, if applicable), which will be presented to the shareholders of each Putnam Fund for their approval at shareholder meetings currently expected to occur in October 2023. Putnam solicitation materials related to these meetings have been made available to shareholders that held shares of the fund at the close of business on July 24, 2023.

Trustee approval of management contract

Consideration of your fund's new and interim management and sub-management contracts

At their meeting on June 23, 2023, the Board of Trustees of your fund, including all of the Trustees who are not "interested persons" (as this term is defined in the Investment Company Act of 1940, as amended (the "1940 Act")) of the Putnam mutual funds, closed-end funds and exchange-traded funds (collectively, the "funds") (the "Independent Trustees") approved, subject to approval by your fund's shareholders, a new management contract with Putnam Investment Management ("Putnam Management") and a new sub-management contract between Putnam Management and its affiliate, Putnam Investments Limited ("PIL") (collectively, the "New Management Contracts"). The Trustees considered the proposed New Management Contracts in connection with the planned acquisition of Putnam U.S. Holdings I, LLC ("Putnam Holdings") by a subsidiary of Franklin Resources, Inc. ("Franklin Templeton"). The Trustees considered that, on May 31, 2023, Franklin Templeton and Great-West Lifeco Inc., the parent company of Putnam Holdings, announced that they had entered into a definitive agreement for a subsidiary of Franklin Templeton to acquire Putnam Holdings in a stock and cash transaction (the "Transaction"). The Trustees noted that Putnam Holdings was the parent company of Putnam Management and PIL. The Trustees were advised that the Transaction would result in a "change of control" of Putnam Management and PIL and would cause your fund's current Management Contract with Putnam Management and Sub-Management Contract with PIL (collectively, the "Current Management Contracts") to terminate in accordance with the 1940 Act. The Trustees considered that the New Management Contracts would take effect upon the closing of the Transaction, which was expected to occur in the fourth quarter of 2023.

In addition to the New Management Contracts, the Trustees also approved interim management and sub-management contracts with Putnam Management and PIL, respectively (the "Interim Management Contracts"), which would take effect in the event that for any reason shareholder approval of a New Management Contract was not received by the time of the Transaction closing. The Trustees considered that each Interim Management Contract that became effective would remain in effect until shareholders approved the proposed New Management Contract, or until 150 days elapse after the closing of the Transaction, whichever occurred first. The considerations and conclusions discussed in connection with the Trustees' consideration of the New Management Contracts and the continuance of your fund's Current Management Contracts also apply to the Trustees' consideration of the Interim Management Contracts, supplemented by consideration of the terms, nature and reason for any Interim Management Contract.

The Independent Trustees met with their independent legal counsel, as defined in Rule 0-1(a)(6) under the 1940 Act (the Board's "independent legal counsel"), and representatives of Putnam Management and its parent company, Power Corporation of Canada, to discuss the potential Transaction, including the timing and structure of the Transaction and its implications for Putnam Management and the funds, during their regular meeting on November 18, 2022, and the full Board of Trustees further discussed these matters with representatives of Putnam Management at its regular meeting on December 15, 2022. At a special meeting on December 20, 2022, the full Board of Trustees met with representatives of Putnam Management, Power Corporation of Canada and Franklin Templeton to further discuss the potential Transaction, including Franklin Templeton's strategic plans for Putnam Management's asset

management business and the funds, potential sources of synergy between Franklin Templeton and Putnam Management, potential areas of partnership between Power Corporation of Canada and Franklin Templeton, Franklin Templeton's distribution capabilities, Franklin Templeton's existing service provider relationships and Franklin Templeton's recent acquisitions of other asset management firms.

In order to assist the Independent Trustees in their consideration of the New Management Contracts and other anticipated impacts of the Transaction on the funds and their shareholders, independent legal counsel for the Independent Trustees furnished an initial information request to Franklin Templeton (the "Initial Franklin Request"). At a special meeting of the full Board of Trustees held on January 25, 2023, representatives of Franklin Templeton addressed the firm's responses to the Initial Franklin Request. At the meeting, representatives of Franklin Templeton discussed, among other things, the business and financial condition of Franklin Templeton and its affiliates, Franklin Templeton's U.S. registered fund operations, its recent acquisition history, Franklin Templeton's intentions regarding the operation of Putnam Management and the funds following the completion of the potential Transaction and expected benefits to the funds and Putnam Management that might result from the Transaction.

The Board of Trustees actively monitored developments with respect to the potential Transaction throughout the period leading up to the public announcement of a final sale agreement on May 31, 2023. The Independent Trustees met to discuss these matters at their regular meetings on January 27, April 20 and May 19, 2023. The full Board of Trustees also discussed developments at their regular meeting on February 23, 2023. Following the public announcement of the Transaction on May 31, 2023, independent legal counsel for the Independent Trustees furnished a supplemental information request (the "Supplemental Franklin Request") to Franklin Templeton. At the Board of Trustees' regular in-person meeting held on June 22-23, 2023, representatives of Putnam Management and Power Corporation of Canada provided further information regarding, among other matters, the final terms of the Transaction and efforts undertaken to retain Putnam employees. The Contract Committee of the Board of Trustees also met on June 22, 2023 to discuss Franklin Templeton's responses to the Supplemental Franklin Request. Mr. Reynolds, the only Trustee affiliated with Putnam Management, participated in portions of these meetings to provide the perspective of the Putnam organization, but did not otherwise participate in the deliberations of the Independent Trustees or the Contract Committee regarding the potential Transaction.

After the presentations and after reviewing the written materials provided, the Independent Trustees met at their in-person meeting on June 23, 2023 to consider the New Management Contracts for each fund, proposed to become effective upon the closing of the Transaction, and the filing of a preliminary proxy statement. At this meeting and throughout the process, the Independent Trustees also received advice from their independent legal counsel regarding their responsibilities in evaluating the potential Transaction and the New Management Contracts. The Independent Trustees reviewed the terms of the proposed New Management Contracts and the differences between the New Management Contracts and the Current Management Contracts. They noted that the terms of the proposed New Management Contracts were substantially identical to the Current Management Contracts, except for

certain changes designed largely to address differences among various of the existing contracts, which had been developed and implemented at different times in the past.

In considering the approval of the proposed New Management Contracts, the Board of Trustees took into account a number of factors, including:¹

- (i) Franklin Templeton's and Putnam Management's belief that the Transaction would not adversely affect the funds or their shareholders and their belief that the Transaction was likely to result in certain benefits (described below) for the funds and their shareholders;
- (ii) That Franklin Templeton did not intend to make any material change in Putnam Management's senior investment professionals (other than certain changes related to reporting structure and organization of personnel discussed below), including the portfolio managers of the funds, or to the firm's operating locations as a result of the Transaction;
- (iii) That Franklin Templeton intended for Putnam Management's equity investment professionals to continue to operate largely independently from Franklin Templeton, reporting to Franklin Templeton's Head of Public Markets following the Transaction;
- (iv) That, while Putnam Management's organizational structure was not expected to change immediately following the Transaction, Franklin Templeton intended to revise Putnam Management's reporting structure in order to include Putnam Management's fixed income investment professionals in Franklin Templeton's fixed income group and to include Putnam Management's Global Asset Allocation ("GAA") investment professionals in Franklin Templeton's investment solutions group, with both Franklin Templeton groups reporting to Franklin Templeton's Head of Public Markets;
- (v) Franklin Templeton's expectation that there would not be any changes in the investment objectives, strategies or portfolio holdings of the funds as a result of the Transaction;
- (vi) That neither Franklin Templeton nor Putnam Management had any current plans to propose changes to the funds' existing management fees or expense limitations, or current plans to make changes to the funds' existing distribution arrangements;
- (vii) Franklin Templeton's and Putnam Management's representations that, following the Transaction, there was not expected to be any diminution in the nature, quality and extent of services provided to the funds and their shareholders by Putnam Management and PIL, including compliance and other non-advisory services;
- (viii) That Franklin Templeton did not currently plan to change the branding of the funds or to change the lineup of funds in connection with the Transaction but would continue to evaluate how best to position the funds in the market;
- (ix) The possible benefits accruing to the funds and their shareholders as a result of the Transaction, including:
 - a. That the scale of Franklin Templeton's investment operations platform would increase the investment and operational resources available to the funds;
 - b. That the Putnam open-end funds would benefit from Franklin Templeton's large retail and institutional global distribution capabilities and significant network of intermediary

relationships, which may provide additional opportunities for the funds to increase assets and reduce expenses by spreading expenses over a larger asset base; and

- c. Potential benefits to shareholders of the Putnam open-end funds that could result from the alignment of certain fund features and shareholder benefits with those of other funds sponsored by Franklin Templeton and its affiliates and access to a broader array of investment opportunities;
- (x) The financial strength, reputation, experience and resources of Franklin Templeton and its investment advisory subsidiaries;
- (xi) Franklin Templeton's expectation that the Transaction would not impact the capabilities or responsibilities of Putnam Management's Investment Division (other than any impact related to reporting structure changes for Putnam Management's equity, fixed income and GAA investment groups and to including Putnam Management's fixed income and GAA investment professionals in existing Franklin Templeton investment groups, as discussed above) and that any changes to the Investment Division over the longer term would be made in order to achieve perceived operational efficiencies or improvements to the portfolio management process;
- (xii) Franklin Templeton's commitment to maintaining competitive compensation arrangements to allow Putnam Management to continue to attract and retain highly qualified personnel and Putnam Management's and Franklin Templeton's efforts to retain personnel, including efforts implemented since the Transaction was announced;
- (xiii) That the current senior management teams at Putnam Management and Power Corporation of Canada had indicated their strong support of the Transaction and that Putnam Management had recommended that the Board of Trustees approve the New Management Contracts; and
- (xiv) Putnam Management's and Great-West Lifeco Inc.'s commitment to bear all expenses incurred by the funds in connection with the Transaction, including all costs associated with the proxy solicitation in connection with seeking shareholder approval of the New Management Contracts.

Finally, in considering the proposed New Management Contracts, the Board of Trustees also took into account their concurrent deliberations and conclusions, as described below, in connection with their annual review of the funds' Current Management Contracts and the approval of their continuance, effective July 1, 2023, and the extensive materials that they had reviewed in connection with that review process.

Based upon the foregoing considerations, on June 23, 2023, the Board of Trustees, including all of the Independent Trustees, unanimously approved the proposed New Management Contracts and determined to recommend their approval to the shareholders of the funds.

General conclusions — Current Management Contracts

The Board of Trustees oversees the management of each fund and, as required by law, determines annually whether to approve the continuance of your fund's management contract with Putnam Management and the sub-management contract with respect to your fund between Putnam Management and PIL. (Because PIL is an affiliate of Putnam

¹All subsequent references to Putnam Management describing the Board of Trustees' considerations should be deemed to include references to PIL as necessary or appropriate in the context.

Management and Putnam Management remains fully responsible for all services provided by PIL, the Trustees have not attempted to evaluate PIL as a separate entity.) The Board of Trustees, with the assistance of its Contract Committee, requests and evaluates all information it deems reasonably necessary under the circumstances in connection with its annual contract review. The Contract Committee consists solely of Independent Trustees.

At the outset of the review process, members of the Board of Trustees' independent staff and independent legal counsel considered any possible changes to the annual contract review materials furnished to the Contract Committee during the course of the previous year's review and, as applicable, identified those changes to Putnam Management. Following these discussions and in consultation with the Contract Committee, the Independent Trustees' independent legal counsel requested that Putnam Management and its affiliates furnish specified information, together with any additional information that Putnam Management considered relevant, to the Contract Committee. Over the course of several months ending in June 2023, the Contract Committee met on a number of occasions with representatives of Putnam Management, and separately in executive session, to consider the information that Putnam Management provided. Throughout this process, the Contract Committee was assisted by the members of the Board of Trustees' independent staff and by independent legal counsel for the funds and the Independent Trustees.

At the Board of Trustees' June 2023 meeting, the Contract Committee met in executive session to discuss and consider its recommendations with respect to the continuance of the contracts. At that meeting, the Contract Committee also met in executive session with the other Independent Trustees to review a summary of the key financial, performance and other data that the Contract Committee considered in the course of its review. The Contract Committee recommended, and the Independent Trustees approved, the continuance of your fund's Current Management Contracts, effective July 1, 2023, and the approval of your fund's New Management Contracts and Interim Management Contracts, as discussed above.

The Independent Trustees' approvals were based on the following conclusions:

- That the fee schedule in effect for your fund represented reasonable compensation in light of the nature and quality of the services being provided to the fund, the fees paid by competitive funds, the costs incurred by Putnam Management in providing services to the fund and the application of certain reductions and waivers noted below; and
- That the fee schedule in effect for your fund represented an appropriate sharing between fund shareholders and Putnam Management of any economies of scale as may exist in the management of the fund at current asset levels.

These conclusions were based on a comprehensive consideration of all information provided to the Trustees and were not the result of any single factor. Some of the factors that figured particularly in the Trustees' deliberations and how the Trustees considered these factors are described below, although individual Trustees may have evaluated the information presented differently, giving different weights to various factors. It is also important to recognize that the management arrangements for your fund and the other Putnam mutual funds and closed-end funds are the result of many years of review and discussion between the Independent Trustees and Putnam Management, that some aspects of the arrangements may receive greater scrutiny in some years than others and that the Trustees' conclusions may be based, in part, on their consideration of

fee arrangements in previous years. For example, with certain exceptions primarily involving newer funds (including the exchange-traded funds) or repositioned funds, the current fee arrangements under the vast majority of the funds' management contracts were first implemented at the beginning of 2010 following extensive review by the Contract Committee and discussions with representatives of Putnam Management, as well as approval by shareholders. The Trustees also took into account their concurrent deliberations and conclusions, and the materials that they had reviewed, in connection with their approval on June 23, 2023 of the Interim Management Contracts and the New Management Contracts, which had been proposed in light of the Transaction (which would cause the fund's Current Management Contracts to terminate in accordance with applicable law or the terms of each contract).

Management fee schedules and total expenses

The Trustees reviewed the management fee schedules in effect for all funds, including fee levels and breakpoints. Under its management contract, your fund has the benefit of breakpoints in its management fee schedule that provide shareholders with reduced fee levels as assets under management in the Putnam family of funds increase. The Trustees also reviewed the total expenses of each Putnam fund, recognizing that in most cases management fees represented the major, but not the sole, determinant of total costs to fund shareholders. (Two mutual funds and each of the exchange-traded funds have implemented so-called "all-in" or unitary management fees covering substantially all routine fund operating costs.)

In reviewing fees and expenses, the Trustees generally focus their attention on material changes in circumstances — for example, changes in assets under management, changes in a fund's investment strategy, changes in Putnam Management's operating costs or profitability, or changes in competitive practices in the fund industry — that suggest that consideration of fee changes might be warranted. The Trustees concluded that the circumstances did not indicate that changes to the management fee schedule for your fund would be appropriate at this time.

As in the past, the Trustees also focused on the competitiveness of each fund's total expense ratio. The Trustees, Putnam Management and the funds' investor servicing agent, Putnam Investor Services, Inc. ("PSERV"), have implemented expense limitations that were in effect during your fund's fiscal year ending in 2022. These expense limitations were: (i) a contractual expense limitation applicable to specified mutual funds, including your fund, of 25 basis points on investor servicing fees and expenses and (ii) a contractual expense limitation applicable to specified mutual funds, including your fund, of 20 basis points on so-called "other expenses" (i.e., all expenses exclusive of management fees, distribution fees, investor servicing fees, investment-related expenses, interest, taxes, brokerage commissions, acquired fund fees and expenses and extraordinary expenses). These expense limitations attempt to maintain competitive expense levels for the funds. Most funds had sufficiently low expenses that these expense limitations were not operative during their fiscal years ending in 2022. However, in the case of your fund, the second expense limitation applied during its fiscal year ending in 2022. Putnam Management and PSERV have agreed to maintain these expense limitations until at least April 30, 2025. In addition, Putnam Management contractually agreed to waive fees and/or reimburse expenses of your fund to the extent that expenses of the fund (excluding payments under the fund's distribution plans, brokerage, interest, taxes, investment-related expenses, extraordinary expenses, and acquired fund fees and expenses) would exceed an annual rate of 0.50% of its average net assets

through at least April 30, 2025. During its fiscal year ending in 2022, your fund's expenses were reduced as a result of this expense limitation. Putnam Management and PSERV's commitment to these expense limitation arrangements, which were intended to support an effort to have the mutual fund expenses meet competitive standards, was an important factor in the Trustees' decision to approve your fund's New Management Contracts and Interim Management Contracts and the continuance of your fund's Current Management Contracts.

The Trustees reviewed comparative fee and expense information for a custom group of competitive funds selected by Broadridge Financial Solutions, Inc. ("Broadridge"). This comparative information included your fund's percentile ranking for effective management fees and total expenses (excluding any applicable 12b-1 fees), which provides a general indication of your fund's relative standing. In the custom peer group, your fund ranked in the first quintile in effective management fees (determined for your fund and the other funds in the custom peer group based on fund asset size and the applicable contractual management fee schedule) and in the second quintile in total expenses (excluding any applicable 12b-1 fees) as of December 31, 2022. The first quintile represents the least expensive funds and the fifth quintile the most expensive funds. The fee and expense data reported by Broadridge as of December 31, 2022 reflected the most recent fiscal year-end data available in Broadridge's database at that time.

In connection with their review of fund management fees and total expenses, the Trustees also reviewed the costs of the services provided and the profits realized by Putnam Management and its affiliates from their contractual relationships with the funds. This information included trends in revenues, expenses and profitability of Putnam Management and its affiliates relating to the investment management, investor servicing and distribution services provided to the funds, as applicable. In this regard, the Trustees also reviewed an analysis of the revenues, expenses and profitability of Putnam Management and its affiliates, allocated on a fund-by-fund basis (as applicable), with respect to the funds' management, distribution and investor servicing contracts. For each fund, the analysis presented information about revenues, expenses and profitability in 2022 for each of the applicable agreements separately and for the agreements taken together on a combined basis. The Trustees concluded that, at current asset levels, the fee schedules in place for each of the funds, including the fee schedule for your fund, represented reasonable compensation for the services being provided and represented an appropriate sharing between fund shareholders and Putnam Management of any economies of scale as may exist in the management of the funds at that time.

The information examined by the Trustees in connection with their annual contract review for the funds included information regarding services provided and fees charged by Putnam Management and its affiliates to other clients, including collective investment trusts offered in the defined contribution and defined benefit retirement plan markets, sub-advised mutual funds, private funds sponsored by affiliates of Putnam Management, model-only separately managed accounts and Putnam Management's manager-traded separately managed account programs. This information included, in cases where a product's investment strategy corresponds with a fund's strategy, comparisons of those fees with fees charged to the funds, as well as an assessment of the differences in the services provided to these clients as compared to the services provided to the funds. The Trustees observed that the differences in fee rates between these clients and the funds are by no means uniform when examined by individual asset sectors, suggesting that differences in the pricing of

investment management services to these types of clients may reflect, among other things, historical competitive forces operating in separate marketplaces. The Trustees considered the fact that in many cases fee rates across different asset classes are higher on average for 1940 Act-registered funds than for other clients, and the Trustees also considered the differences between the services that Putnam Management provides to the funds and those that it provides to its other clients. The Trustees did not rely on these comparisons to any significant extent in concluding that the management fees paid by your fund are reasonable.

Investment performance

The quality of the investment process provided by Putnam Management represented a major factor in the Trustees' evaluation of the quality of services provided by Putnam Management under your fund's management contract. The Trustees were assisted in their review of Putnam Management's investment process and performance by the work of the investment oversight committees of the Trustees and the full Board of Trustees, which meet on a regular basis with individual portfolio managers and with senior management of Putnam Management's Investment Division throughout the year. The Trustees concluded that Putnam Management generally provides a high-quality investment process — based on the experience and skills of the individuals assigned to the management of fund portfolios, the resources made available to them and in general Putnam Management's ability to attract and retain high-quality personnel — but also recognized that this does not guarantee favorable investment results for every fund in every time period.

The Trustees considered that, in the aggregate, peer-relative and benchmark-relative Putnam fund performance was generally encouraging in 2022 against a backdrop of volatile equity and fixed income markets, driven by factors such as Russia's invasion of Ukraine, increased tensions with China, disruptions in energy markets and broader supply chains, rising inflation and the significant tightening of monetary policy by the Board of Governors of the Federal Reserve in an effort to combat inflation. The Trustees further noted that, in the face of these numerous economic headwinds, corporate earnings and employment data had been generally robust throughout 2022. For the one-year period ended December 31, 2022, the Trustees noted that the Putnam funds, on an asset-weighted basis, ranked in the 41st percentile of their peers as determined by Lipper Inc. ("Lipper") and, on an asset-weighted-basis, outperformed their benchmarks by 1.3% gross of fees over the one-year period. The Committee also noted that the funds' aggregate performance over longer-term periods continued to be strong, with the funds, on an asset-weighted basis, ranking in the 34th, 27th and 22nd percentiles of their Lipper peers over the three-year, five-year and ten-year periods ended December 31, 2022, respectively. The Trustees further noted that the funds, in the aggregate, outperformed their benchmarks on a gross basis for each of the three-year, five-year and ten-year periods. The Trustees also considered the Morningstar Inc. ratings assigned to the funds and that 40 funds were rated four or five stars at the end of 2022, which represented an increase of 15 funds year-over-year. The Trustees also considered that seven funds were five-star rated at the end of 2022, which was a year-over-year decrease of two funds, and that 83% of the funds' aggregate assets were in four- or five-star rated funds at year end.

In addition to the performance of the individual Putnam funds, the Trustees considered, as they had in prior years, the performance of The Putnam Fund complex versus competitor fund complexes, as reported in the Barron's/Lipper Fund Families survey (the "Survey"). The Trustees noted that the Survey ranks mutual fund companies based on their

performance across a variety of asset types, and that The Putnam Fund complex had performed exceptionally well in 2022. In this regard, the Trustees considered that the funds had ranked 9th out of 49 fund companies, 3rd out of 49 fund companies and 2nd out of 47 fund companies for the one-year, five-year and ten-year periods, respectively. The Trustees also noted that The Putnam Fund complex had been the only fund family to rank in the top ten in all three time periods. They also noted, however, the disappointing investment performance of some Putnam funds for periods ended December 31, 2022 and considered information provided by Putnam Management regarding the factors contributing to the underperformance and, where relevant, actions being taken to improve the performance of these particular funds. The Trustees indicated their intention to continue to monitor the performance of those funds.

For purposes of the Trustees' evaluation of the Putnam funds' investment performance, the Trustees generally focus on a competitive industry ranking of each fund's total net return over a one-year, three-year and five-year period. For a number of Putnam funds with relatively unique investment mandates for which Putnam Management informed the Trustees that meaningful competitive performance rankings are not considered to be available, the Trustees evaluated performance based on their total gross and net returns and comparisons of those returns to the returns of selected investment benchmarks. In the case of your fund, the Trustees considered that its class IA share cumulative total return performance at net asset value was in the following quartiles of its Lipper peer group (Lipper VP (Underlying Funds) — U.S. Mortgage Funds) for the one-year, three-year and five-year periods ended December 31, 2022 (the first quartile representing the best-performing funds and the fourth quartile the worst-performing funds):

One-year period	Three-year period	Five-year period
1st	4th	2nd

Over each of the one-year, three-year and five-year periods ended December 31, 2022, there were 13 funds in your fund's Lipper peer group. (When considering performance information, shareholders should be mindful that past performance is not a guarantee of future results.)

The Trustees expressed concern about your fund's fourth quartile performance over the three-year period ended December 31, 2022 (the fund was repositioned on April 30, 2018 and, therefore, the fund's performance prior to that date occurred when the fund was managed with a materially different investment strategy) and considered the circumstances that may have contributed to this disappointing performance. The Trustees considered Putnam Management's observation that significant underperformance in both the commercial mortgage sector and the prepayment-sensitive residential mortgage sector contributed to the fund's disappointing results, noting that prepayment strategies had suffered in 2021 as a result of significantly elevated refinancing (given strong home price appreciation and low interest rates) relative to expectations. The Trustees considered that the fund's underperformance was also driven by significant underperformance in the securitized products sector in 2020, which resulted from the outsized impact of the COVID-19 pandemic on the commercial mortgage sector. In addition, the Trustees considered the negative impact that the fund's term structure strategies had on performance in 2021.

The Trustees considered Putnam Management's observation regarding the portfolio managers' focus on diversification and on adding to the number of the fund's investment themes going forward. The Trustees also considered that the fund had strong performance relative to its peers in 2022, partly due to the solid performance of the commercial mortgage sector. The Trustees noted that Putnam Management remained confident

in the fund's portfolio managers. The Trustees also considered Putnam Management's continued efforts to support fund performance through certain initiatives, including structuring compensation for portfolio managers to enhance accountability for fund performance, emphasizing accountability in the portfolio management process and affirming its commitment to a fundamental-driven approach to investing.

As a general matter, the Trustees believe that cooperative efforts between the Trustees and Putnam Management represent the most effective way to address investment performance concerns that may arise from time to time. The Trustees noted that investors in the Putnam funds have, in effect, placed their trust in the Putnam organization, under the oversight of the funds' Trustees, to make appropriate decisions regarding the management of the funds. The Trustees also considered that Putnam Management has made changes in light of subpar investment performance when warranted. Based on Putnam Management's willingness to take appropriate measures to address fund performance issues, the Trustees concluded that it continued to be advisable to seek change within Putnam Management to address performance shortcomings. In the Trustees' view, the alternative of engaging a new investment adviser for an underperforming fund, with all the attendant risks and disruptions, would not likely provide any greater assurance of improved investment performance.

Brokerage and soft-dollar allocations; distribution and investor servicing

The Trustees considered various potential benefits that Putnam Management may receive in connection with the services it provides under the management contract with your fund. These include benefits related to brokerage allocation and the use of soft dollars, whereby a portion of the commissions paid by a fund for brokerage may be used to acquire research services that are expected to be useful to Putnam Management in managing the assets of the fund and of other clients. Subject to policies established by the Trustees, soft dollars generated by these means are used predominantly to acquire brokerage and research services (including third-party research and market data) that enhance Putnam Management's investment capabilities and supplement Putnam Management's internal research efforts. The Trustees indicated their continued intent to monitor regulatory and industry developments in this area with the assistance of their Brokerage Committee. In addition, with the assistance of their Brokerage Committee, the Trustees indicated their continued intent to monitor the allocation of the funds' brokerage in order to ensure that the principle of seeking best price and execution remains paramount in the portfolio trading process.

Putnam Management may also receive benefits from payments made to Putnam Management's affiliates by the mutual funds for distribution services and for investor services. In conjunction with the review of your fund's management and sub-management contracts, the Trustees reviewed your fund's investor servicing agreement with PSERV and its distributor's contract and distribution plans with Putnam Retail Management Limited Partnership ("PRM"), both of which are affiliates of Putnam Management. The Trustees concluded that the fees payable by the mutual funds to PSERV and PRM for such services were fair and reasonable in relation to the nature and quality of such services, the fees paid by competitive funds and the costs incurred by PSERV and PRM in providing such services. Furthermore, the Trustees were of the view that the investor services provided by PSERV were required for the operation of the mutual funds, and that they were of a quality at least equal to those provided by other providers.

Other important information

Proxy voting

Putnam is committed to managing our mutual funds in the best interests of our shareholders. The Putnam funds' proxy voting guidelines and procedures, as well as information regarding how your fund voted proxies relating to portfolio securities during the 12-month period ended June 30, 2022, are available in the Individual Investors section of putnam.com and on the Securities and Exchange Commission's (SEC) website at www.sec.gov. If you have questions about finding forms on the SEC's website, you may call the SEC at 1-800-SEC-0330. You may also obtain the Putnam funds' proxy voting guidelines and procedures at no charge by calling Putnam's Shareholder Services at 1-800-225-1581.

Fund portfolio holdings

The fund will file a complete schedule of its portfolio holdings with the SEC for the first and third quarters of each fiscal year on Form N-PORT within 60 days of the end of such fiscal quarter. Shareholders may obtain the fund's Form N-PORT from the SEC's website at www.sec.gov.

Liquidity risk management program

Putnam, as the administrator of the fund's liquidity risk management program (appointed by the Board of Trustees), presented the most recent annual report on the program to the Trustees in May 2023. The report covered the structure of the program, including the program documents and related policies and procedures adopted to comply with Rule 22e-4 under the Investment Company Act of 1940, and reviewed the operation of the program from January 2022 through December 2022. The report included a description of the annual liquidity assessment of the fund that Putnam performed in November 2022. The report noted that there were no material compliance exceptions identified under Rule 22e-4 during the period. The report included a review of the governance of the program and the methodology for classification of the fund's investments. Putnam concluded that the program has been operating effectively and adequately to ensure compliance with Rule 22e-4.

Fund information

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Catharine Bond Hill
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Marie Pillai
George Putnam III
Robert L. Reynolds
Manoj P. Singh
Mona K. Sutphen

The fund's Statement of Additional Information contains additional information about the fund's Trustees and is available without charge upon request by calling 1-800-225-1581.