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Putnam Variable Trust

Putnam VT Growth Opportunities Fund

Annual report

12 | 31 | 22

Message from the Trustees

February 8, 2023

Dear Shareholder:

As an investor, you might be happy to see 2022 in the rearview mirror. High inflation and aggressive interest-rate increases from the U.S. Federal Reserve contributed to market volatility and negative returns for stocks and bonds. Fortunately, toward the end of the year, we saw both inflation levels and Fed actions begin to moderate somewhat.

Although we still face high inflation and uncertainty on how much the economy will slow because of higher interest rates, we believe financial market performance might be better in 2023 as compared with 2022. Historically, stocks and bonds have recovered from bear markets like the one we are experiencing. Be assured that our investment teams are actively researching securities with attractive potential and working to keep portfolio risks in check.

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

Performance summary (as of 12/31/22)

Investment objective

Capital appreciation

Net asset value December 31, 2022

Class IA: \$9.83

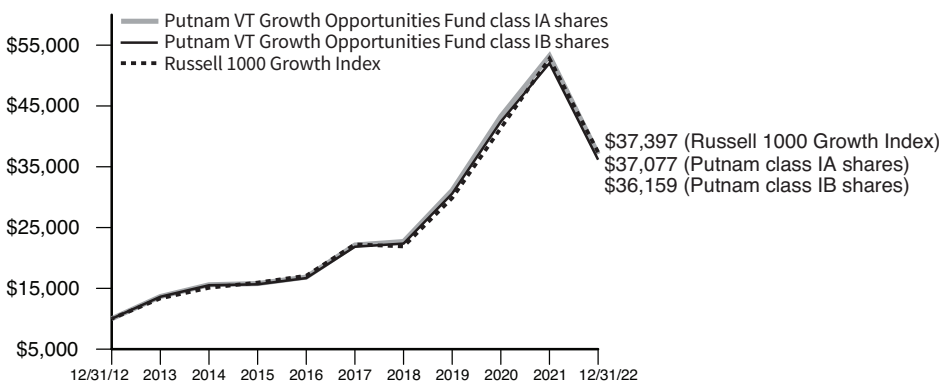
Class IB: \$9.47

Annualized total return at net asset value (as of 12/31/22)

| | Class IA shares (2/1/00) | Class IB shares (2/1/00) | Russell 1000 Growth Index |
|--------------|-----------------------------|-----------------------------|------------------------------|
| 1 year | -30.36% | -30.50% | -29.14% |
| 5 years | 10.88 | 10.60 | 10.96 |
| 10 years | 14.00 | 13.72 | 14.10 |
| Life of fund | 4.02 | 3.77 | 11.35 |

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

Cumulative total returns of a \$10,000 investment in class IA and class IB shares at net asset value — since 12/31/12

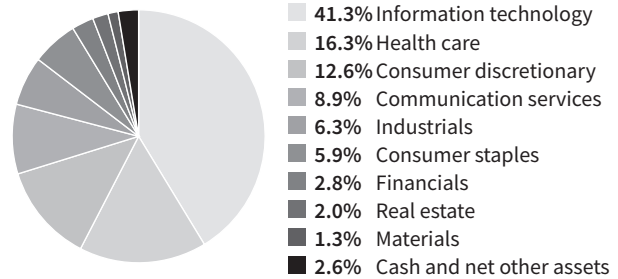


The Russell 1000® Growth Index is an unmanaged index of those companies in the large-cap Russell 1000 Index chosen for their growth orientation.

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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



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 exclusion of as-of-trades, if any, the use of different classifications of securities for presentation purposes, and rounding. Holdings and allocations may vary over time.

Report from your fund's managers

How was the investing environment during the 12-month reporting period ended December 31, 2022?

Stock markets had a very challenging 2022, with all three major U.S. indexes logging their biggest declines since 2008. Conditions were particularly difficult for growth stocks and the technology sector. Throughout the year, financial markets were challenged by multiple, converging risks in the macroeconomy. High inflation, rising interest rates, and the Russia-Ukraine War contributed to a risk-averse investing environment. Combating inflation remained a top priority of the U.S. Federal Reserve as inflation reached 40-year highs. Toward the close of 2022, stocks were lifted by some positive earnings reports as well as data that showed the pace of inflation was easing. However, concerns about a possible recession persisted.

How did Putnam VT Growth Opportunities Fund perform during the reporting period?

For the 12-month period, the fund's IA shares returned -30.36%, underperforming the fund's benchmark, the Russell 1000 Growth Index, which returned -29.14%.

Could you discuss some stocks that helped the fund's performance relative to the fund's benchmark during the reporting period?

In a difficult year for all asset classes, notable contributors to the fund's performance included UnitedHealth Group, Deere, O'Reilly Automotive, and Mastercard.

What were some stocks or strategies that detracted from fund performance relative to the fund's benchmark during the reporting period?

The top detractor from 2022 performance was having no exposure to energy stocks, which advanced significantly but represent only 2% of the Russell 1000 Growth Index. Also detracting was our decision to not hold AbbVie, Coca-Cola, and PepsiCo. These stocks, like those in the energy sector, performed well but did not meet our growth criteria. Our position in Marvell Technology, a semiconductor company that is not in the benchmark, also detracted from the fund's performance. We sold our position in Marvell during the reporting period.

Could you tell us about your growth criteria and process?

We focus on companies we believe can grow at above-market rates across a full economic cycle. This means high-quality companies with strong long-term growth potential and a narrow range of operational and financial outcomes. We believe these are the companies that will distinguish themselves from the competition and the stocks that are most likely to increase in value.

Our process involves digging into individual company fundamentals, their business models, and the structure of their markets. It also requires an element of research that many investors don't consider: looking beyond growth potential to analyze the vulnerabilities of a business and potential downside risks. We analyze each company's vulnerabilities and, when possible, assess how it has performed through difficult times in the past. We also discuss this with management teams of the companies themselves.

In our view, it's not enough to simply identify a business that is associated with a long-term growth theme. We scrutinize businesses in the context of their industries overall, and often we favor the "enablers" of growth themes and trends. Also known as "pick-and-shovel" businesses, these companies, in our view, provide products or services that enable the growth of the overall industry.

As the fund begins a new fiscal year, what is your outlook?

As we head into 2023, our focus remains on companies with higher-quality business models and stronger track records that will likely prove more resilient in a wide array of operating and market scenarios. While we are less certain of the arc of the broader markets this year, we are optimistic that a heightened focus on business fundamentals and stock analysis will support our strategy and fund performance over time.

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.

Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes. Russell® is a trademark of Frank Russell Company.

Consider these risks before investing: Growth stocks may be more susceptible to earnings disappointments, and the market may not favor growth-style investing. 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, industry, or sector. These and other factors may lead to increased volatility and reduced liquidity in the fund's portfolio holdings. From time to time, the fund may invest a significant portion of its assets in companies in one or more related industries or sectors, which would make the fund more vulnerable to adverse developments affecting those industries or sectors.

The fund may invest a significant portion of its assets in companies in the information technology sector. The information technology sector may be significantly affected by technological obsolescence or innovation, short product cycles, falling prices and profits, competitive pressures, and general market conditions. The fund is considered non-diversified and can invest a greater portion of its assets in securities of individual issuers than can a diversified fund. As a result, changes in the market value of a single investment could cause greater fluctuations in share price than would occur in a more diversified fund.

Our investment techniques, analyses, and judgments may not produce the outcome we intend. The investments we select for the fund may not perform as well as other securities that we do not select for the fund. 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.

Your fund's managers



Portfolio Manager **Richard E. Bodzy** joined Putnam in 2009 and has been in the investment industry since 2008.



Portfolio Manager **Gregory D. McCullough, CFA**, joined Putnam in 2019 and has been in the investment industry since 2008.

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

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. 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 7/1/22 to 12/31/22. 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 |
|--|----------|----------|
| Total annual operating expenses for the fiscal year ended 12/31/21 | 0.64% | 0.89% |
| Annualized expense ratio for the six-month period ended 12/31/22* | 0.65% | 0.90% |

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.

*Expense ratios for each class are for the fund's most recent fiscal half year. As a result of this, ratios may differ from expense ratios based on one-year data in the financial highlights.

Expenses per \$1,000

| | Expenses and value for a \$1,000 investment, assuming actual returns for the 6 months ended 12/31/22 | | Expenses and value for a \$1,000 investment, assuming a hypothetical 5% annualized return for the 6 months ended 12/31/22 | |
|-------------------------------|--|----------|---|------------|
| | Class IA | Class IB | Class IA | Class IB |
| Expenses paid per \$1,000*† | \$3.25 | \$4.50 | \$3.31 | \$4.58 |
| Ending value (after expenses) | \$983.00 | \$982.40 | \$1,021.93 | \$1,020.67 |

*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 12/31/22. 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 (184); 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 (184); and then dividing that result by the number of days in the year (365).

Report of Independent Registered Public Accounting Firm

To the Board of Trustees of Putnam Variable Trust and Shareholders of
Putnam VT Growth Opportunities Fund:

Opinion on the Financial Statements

We have audited the accompanying statement of assets and liabilities, including the fund's portfolio, of Putnam VT Growth Opportunities Fund (one of the funds constituting Putnam Variable Trust, referred to hereafter as the "Fund") as of December 31, 2022, the related statement of operations for the year ended December 31, 2022, the statement of changes in net assets for each of the two years in the period ended December 31, 2022, including the related notes, and the financial highlights for each of the five years in the period ended December 31, 2022 (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Fund as of December 31, 2022, the results of its operations for the year then ended, the changes in its net assets for each of the two years in the period ended December 31, 2022 and the financial highlights for each of the five years in the period ended December 31, 2022 in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These financial statements are the responsibility of the Fund's management. Our responsibility is to express an opinion on the Fund's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Fund in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits of these financial statements in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. Our procedures included confirmation of securities owned as of December 31, 2022 by correspondence with the custodian, transfer agent and brokers; when replies were not received from brokers, we performed other auditing procedures. We believe that our audits provide a reasonable basis for our opinion.

PricewaterhouseCoopers LLP
Boston, Massachusetts
February 8, 2023

We have served as the auditor of one or more investment companies in the Putnam Investments family of funds since at least 1957. We have not been able to determine the specific year we began serving as auditor.

The fund's portfolio 12/31/22

| COMMON STOCKS (97.5%)* | Shares | Value |
|--|---------|-------------------|
| Aerospace and defense (0.9%) | | |
| TransDigm Group, Inc. | 11,333 | \$7,135,823 |
| | | 7,135,823 |
| Automobiles (1.4%) | | |
| Tesla, Inc. † | 85,063 | 10,478,060 |
| | | 10,478,060 |
| Building products (1.0%) | | |
| Johnson Controls International PLC | 123,720 | 7,918,080 |
| | | 7,918,080 |
| Capital markets (2.8%) | | |
| Charles Schwab Corp. (The) | 137,815 | 11,474,477 |
| MSCI, Inc. | 21,234 | 9,877,420 |
| | | 21,351,897 |
| Chemicals (1.3%) | | |
| Sherwin-Williams Co. (The) | 42,589 | 10,107,647 |
| | | 10,107,647 |
| Commercial services and supplies (0.9%) | | |
| Waste Connections, Inc. | 50,586 | 6,705,680 |
| | | 6,705,680 |
| Entertainment (2.8%) | | |
| Live Nation Entertainment, Inc. † | 102,310 | 7,135,099 |
| Netflix, Inc. † | 17,794 | 5,247,095 |
| Universal Music Group NV (Netherlands) | 390,962 | 9,420,549 |
| | | 21,802,743 |
| Equity real estate investment trusts (REITs) (2.0%) | | |
| American Tower Corp. ^R | 74,353 | 15,752,427 |
| | | 15,752,427 |
| Food and staples retailing (3.4%) | | |
| Costco Wholesale Corp. | 39,838 | 18,186,047 |
| Walmart, Inc. | 59,048 | 8,372,416 |
| | | 26,558,463 |
| Food products (1.6%) | | |
| Hershey Co. (The) | 53,377 | 12,360,512 |
| | | 12,360,512 |
| Health-care equipment and supplies (2.8%) | | |
| Boston Scientific Corp. † | 149,148 | 6,901,078 |
| Dexcom, Inc. † | 72,482 | 8,207,862 |
| IDEXX Laboratories, Inc. † | 11,225 | 4,579,351 |
| Intuitive Surgical, Inc. † | 8,355 | 2,216,999 |
| | | 21,905,290 |
| Health-care providers and services (6.8%) | | |
| HCA Healthcare, Inc. | 41,201 | 9,886,592 |
| Humana, Inc. | 24,897 | 12,751,994 |
| UnitedHealth Group, Inc. | 56,487 | 29,948,278 |
| | | 52,586,864 |
| Hotels, restaurants, and leisure (2.3%) | | |
| Booking Holdings, Inc. † | 4,574 | 9,217,891 |
| Chipotle Mexican Grill, Inc. † | 6,070 | 8,422,064 |
| | | 17,639,955 |
| Interactive media and services (4.9%) | | |
| Alphabet, Inc. Class C † | 426,566 | 37,849,201 |
| | | 37,849,201 |
| Internet and direct marketing retail (4.1%) | | |
| Amazon.com, Inc. † | 373,579 | 31,380,636 |
| | | 31,380,636 |
| IT Services (8.5%) | | |
| Accenture PLC Class A | 45,674 | 12,187,650 |
| Gartner, Inc. † | 22,375 | 7,521,133 |
| Mastercard, Inc. Class A | 67,334 | 23,414,052 |
| Visa, Inc. Class A | 105,968 | 22,015,912 |
| | | 65,138,747 |

| COMMON STOCKS (97.5%)* <i>cont.</i> | Shares | Value | | |
|---|--|----------------------------|----------------------------|----------------------|
| Life sciences tools and services (3.0%) | | | | |
| Danaher Corp. | 51,113 | \$13,566,412 | | |
| IQVIA Holdings, Inc. † | 27,410 | 5,616,035 | | |
| Lonza Group AG (Switzerland) | 8,135 | 3,986,339 | | |
| | | 23,168,786 | | |
| Machinery (1.3%) | | | | |
| Deere & Co. | 24,012 | 10,295,385 | | |
| | | 10,295,385 | | |
| Personal products (0.8%) | | | | |
| Estee Lauder Cos., Inc. (The) Class A | 25,222 | 6,257,830 | | |
| | | 6,257,830 | | |
| Pharmaceuticals (3.6%) | | | | |
| AstraZeneca PLC (United Kingdom) | 82,948 | 11,249,410 | | |
| Eli Lilly and Co. | 45,423 | 16,617,550 | | |
| | | 27,866,960 | | |
| Professional services (0.8%) | | | | |
| CoStar Group, Inc. † | 76,726 | 5,929,385 | | |
| | | 5,929,385 | | |
| Road and rail (1.4%) | | | | |
| Union Pacific Corp. | 50,517 | 10,460,555 | | |
| | | 10,460,555 | | |
| Semiconductors and semiconductor equipment (5.2%) | | | | |
| Applied Materials, Inc. | 72,570 | 7,066,867 | | |
| Broadcom, Inc. | 16,368 | 9,151,840 | | |
| NVIDIA Corp. | 162,968 | 23,816,144 | | |
| | | 40,034,851 | | |
| Software (17.5%) | | | | |
| Adobe, Inc. † | 5,861 | 1,972,402 | | |
| Cadence Design Systems, Inc. † | 94,356 | 15,157,348 | | |
| Intuit, Inc. | 25,553 | 9,945,739 | | |
| Microsoft Corp. | 349,582 | 83,836,755 | | |
| Oracle Corp. | 116,287 | 9,505,299 | | |
| Palo Alto Networks, Inc. † | 100,267 | 13,991,257 | | |
| | | 134,408,800 | | |
| Specialty retail (1.5%) | | | | |
| Home Depot, Inc. (The) | 17,946 | 5,668,424 | | |
| O'Reilly Automotive, Inc. † | 6,660 | 5,621,240 | | |
| | | 11,289,664 | | |
| Technology hardware, storage, and peripherals (10.4%) | | | | |
| Apple, Inc. | 615,858 | 80,018,430 | | |
| | | 80,018,430 | | |
| Textiles, apparel, and luxury goods (3.4%) | | | | |
| Lululemon Athletica, Inc. (Canada) † | 37,165 | 11,906,923 | | |
| Nike, Inc. Class B | 123,728 | 14,477,413 | | |
| | | 26,384,336 | | |
| Wireless telecommunication services (1.1%) | | | | |
| T-Mobile US, Inc. † | 62,759 | 8,786,260 | | |
| | | 8,786,260 | | |
| Total common stocks (cost \$445,407,823) | | \$751,573,267 | | |
| PURCHASED OPTIONS OUTSTANDING (0.1%)* | | | | |
| Counterparty | Expiration date/ strike price | Notional amount | Contract amount | Value |
| Citibank, N.A. | | | | |
| Moderna, Inc. (Call) | Jun-23/\$261.50 | \$21,590,683 | \$120,202 | \$1,003,767 |
| Total purchased options outstanding (cost \$2,163,636) | | | | \$1,003,767 |
| SHORT-TERM INVESTMENTS (2.6%)* | | Shares | Value | |
| Putnam Short Term Investment Fund Class P 4.53% ^L | | 19,387,831 | \$19,387,831 | |
| State Street Institutional U.S. Government Money Market Fund, Premier Class 4.12% ^P | | 310,000 | 310,000 | |
| Total short-term investments (cost \$19,697,831) | | | \$19,697,831 | |
| Total investments (cost \$467,269,290) | | | | \$772,274,865 |

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, 2022 through December 31, 2022 (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 \$771,079,243.

† This security is non-income-producing.

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.

R Real Estate Investment Trust.

WRITTEN OPTIONS OUTSTANDING at 12/31/22 (premiums \$1,557,013)

| Counterparty | Expiration date/strike price | Notional amount | Contract amount | Value |
|-----------------------|------------------------------|-----------------|-----------------|------------------|
| Citibank, N.A. | | | | |
| Moderna, Inc. (Call) | Jun-23/\$281.60 | \$21,590,683 | \$120,202 | \$709,775 |
| Total | | | | \$709,775 |

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:

| Investments in securities: | Valuation inputs | | |
|-------------------------------|----------------------|---------------------|------------|
| | Level 1 | Level 2 | Level 3 |
| Common stocks*: | | | |
| Communication services | \$68,438,204 | \$— | \$— |
| Consumer discretionary | 97,172,651 | — | — |
| Consumer staples | 45,176,805 | — | — |
| Financials | 21,351,897 | — | — |
| Health care | 125,527,900 | — | — |
| Industrials | 48,444,908 | — | — |
| Information technology | 319,600,828 | — | — |
| Materials | 10,107,647 | — | — |
| Real estate | 15,752,427 | — | — |
| Total common stocks | 751,573,267 | — | — |
| Purchased options outstanding | — | 1,003,767 | — |
| Short-term investments | 310,000 | 19,387,831 | — |
| Totals by level | \$751,883,267 | \$20,391,598 | \$— |
| | | | |
| Other financial instruments: | Valuation inputs | | |
| | Level 1 | Level 2 | Level 3 |
| Written options outstanding | \$— | \$(709,775) | \$— |
| Totals by level | \$— | \$(709,775) | \$— |

* Common stock classifications are presented at the sector level, which may differ from the fund's portfolio presentation.

At the start and close of the reporting period, Level 3 investments in securities represented less than 1% of the fund's net assets and were not considered a significant portion of the fund's portfolio.

Statement of assets and liabilities

12/31/22

Assets

| | |
|--|--------------------|
| Investment in securities, at value (Notes 1 and 8): | |
| Unaffiliated issuers (identified cost \$447,881,459) | \$752,887,034 |
| Affiliated issuers (identified cost \$19,387,831) (Note 5) | 19,387,831 |
| Cash | 10 |
| Dividends, interest and other receivables | 577,986 |
| Receivable for shares of the fund sold | 177,300 |
| Receivable for investments sold | 848,988 |
| Total assets | 773,879,149 |

Liabilities

| | |
|---|------------------|
| Payable for shares of the fund repurchased | 730,694 |
| Payable for compensation of Manager (Note 2) | 373,504 |
| Payable for custodian fees (Note 2) | 11,104 |
| Payable for investor servicing fees (Note 2) | 93,319 |
| Payable for Trustee compensation and expenses (Note 2) | 389,926 |
| Payable for administrative services (Note 2) | 9,429 |
| Payable for distribution fees (Note 2) | 39,759 |
| Written options outstanding, at value (premiums \$1,557,013) (Note 1) | 709,775 |
| Collateral on certain derivative contracts, at value (Notes 1 and 8) | 310,000 |
| Other accrued expenses | 132,396 |
| Total liabilities | 2,799,906 |

Net assets

\$771,079,243

Represented by

| | |
|---|----------------------|
| Paid-in capital (Unlimited shares authorized) (Notes 1 and 4) | \$457,685,046 |
| Total distributable earnings (Note 1) | 313,394,197 |
| Total — Representing net assets applicable to capital shares outstanding | \$771,079,243 |

Computation of net asset value Class IA

| | |
|---|---------------|
| Net assets | \$589,936,161 |
| Number of shares outstanding | 60,002,959 |
| Net asset value, offering price and redemption price per share (net assets divided by number of shares outstanding) | \$9.83 |

Computation of net asset value Class IB

| | |
|---|---------------|
| Net assets | \$181,143,082 |
| Number of shares outstanding | 19,125,451 |
| Net asset value, offering price and redemption price per share (net assets divided by number of shares outstanding) | \$9.47 |

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

Statement of operations

Year ended 12/31/22

Investment income

| | |
|---|------------------|
| Dividends (net of foreign tax of \$28,524) | \$5,826,211 |
| Interest (including interest income of \$243,136 from investments in affiliated issuers) (Note 5) | 255,241 |
| Securities lending (net of expenses) (Notes 1 and 5) | 6,334 |
| Total investment income | 6,087,786 |

Expenses

| | |
|--|------------------|
| Compensation of Manager (Note 2) | 5,019,811 |
| Investor servicing fees (Note 2) | 641,785 |
| Custodian fees (Note 2) | 23,870 |
| Trustee compensation and expenses (Note 2) | 39,908 |
| Distribution fees (Note 2) | 544,684 |
| Administrative services (Note 2) | 27,709 |
| Other | 303,461 |
| Total expenses | 6,601,228 |
| Expense reduction (Note 2) | (279) |
| Net expenses | 6,600,949 |
| Net investment loss | (513,163) |

Realized and unrealized gain (loss)

Net realized gain (loss) on:

| | |
|--|-------------------|
| Securities from unaffiliated issuers (Notes 1 and 3) | 10,459,230 |
| Foreign currency transactions (Note 1) | (2,461) |
| Written options (Note 1) | 262,119 |
| Total net realized gain | 10,718,888 |

Change in net unrealized appreciation (depreciation) on:

| | |
|---|------------------------|
| Securities from unaffiliated issuers | (371,758,281) |
| Assets and liabilities in foreign currencies | (763) |
| Written options | 847,238 |
| Total change in net unrealized depreciation | (370,911,806) |
| Net loss on investments | (360,192,918) |
| Net decrease in net assets resulting from operations | \$(360,706,081) |

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

Statement of changes in net assets

| | Year ended 12/31/22 | Year ended 12/31/21 |
|--|------------------------|------------------------|
| Increase (decrease) in net assets | | |
| Operations: | | |
| Net investment loss | \$(513,163) | \$(3,017,102) |
| Net realized gain on investments and foreign currency transactions | 10,718,888 | 163,655,486 |
| Change in net unrealized appreciation (depreciation) of investments and assets and liabilities in foreign currencies | (370,911,806) | 79,942,216 |
| Net increase (decrease) in net assets resulting from operations | (360,706,081) | 240,580,600 |
| Distributions to shareholders (Note 1): | | |
| From ordinary income | | |
| Net realized short-term gain on investments | | |
| Class IA | (6,201,817) | (7,343,408) |
| Class IB | (2,006,289) | (2,450,584) |
| From net realized long-term gain on investments | | |
| Class IA | (114,993,138) | (72,995,662) |
| Class IB | (37,200,294) | (24,359,538) |
| Increase (decrease) from capital share transactions (Note 4) | 65,615,896 | (33,064,206) |
| Total increase (decrease) in net assets | (455,491,723) | 100,367,202 |
| Net assets: | | |
| Beginning of year | 1,226,570,966 | 1,126,203,764 |
| End of year | \$771,079,243 | \$1,226,570,966 |

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 | 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} | Ratio of net investment income (loss) to average net assets (%) | Portfolio turnover (%) |
| Class IA | | | | | | | | | | | | | |
| 12/31/22 | \$16.51 | — ^e | (4.47) | (4.47) | — | (2.21) | (2.21) | \$9.83 | (30.36) | \$589,936 | .66 ^f | — ^g | 33 |
| 12/31/21 | 14.91 | (.03) | 3.10 | 3.07 | — | (1.47) | (1.47) | 16.51 | 23.00 | 932,457 | .64 | (.20) | 47 |
| 12/31/20 | 11.54 | — ^e | 4.11 | 4.11 | (.03) | (.71) | (.74) | 14.91 | 39.09 | 841,545 | .65 | (.01) | 48 |
| 12/31/19 | 9.76 | .03 | 3.31 | 3.34 | (.04) | (1.52) | (1.56) | 11.54 | 37.11 | 666,225 | .66 | .31 | 40 |
| 12/31/18 | 10.14 | .02 | .24 | .26 | (.01) | (.63) | (.64) | 9.76 | 2.60 | 558,404 | .67 | .20 | 56 |
| Class IB | | | | | | | | | | | | | |
| 12/31/22 | \$16.02 | (.03) | (4.31) | (4.34) | — | (2.21) | (2.21) | \$9.47 | (30.50) | \$181,143 | .91 ^f | (.25) | 33 |
| 12/31/21 | 14.55 | (.07) | 3.01 | 2.94 | — | (1.47) | (1.47) | 16.02 | 22.65 | 294,114 | .89 | (.45) | 47 |
| 12/31/20 | 11.28 | (.03) | 4.02 | 3.99 | (.01) | (.71) | (.72) | 14.55 | 38.71 | 284,659 | .90 | (.26) | 48 |
| 12/31/19 | 9.57 | .01 | 3.24 | 3.25 | (.02) | (1.52) | (1.54) | 11.28 | 36.74 | 222,155 | .91 | .06 | 40 |
| 12/31/18 | 9.97 | — ^e | .23 | .23 | — | (.63) | (.63) | 9.57 | 2.38 | 178,062 | .92 | (.05) | 56 |

^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 and/or brokerage/service arrangements, if any (Note 2). Also excludes acquired fund fees and expenses, if any.

^e Amount represents less than \$0.01 per share.

^f Includes one-time proxy cost of 0.01%.

^g Amount represents less than 0.01%.

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

Notes to financial statements 12/31/22

Within the following Notes to financial statements, references to “State Street” represent State Street Bank and Trust Company, references to “the SEC” represent the Securities and Exchange Commission, 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 “OTC”, if any, represent over-the-counter. Unless otherwise noted, the “reporting period” represents the period from January 1, 2022 through December 31, 2022.

Putnam VT Growth Opportunities Fund (the fund) is a non-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. Prior to July 1, 2022, the fund was a diversified series of the Trust. The goal of the fund is to seek capital appreciation. The fund invests mainly in common stocks of large U.S. companies, with a focus on growth stocks. Growth stocks are stocks of companies whose earnings are expected to grow faster than those of similar firms, and whose business growth and other characteristics may lead to an increase in stock price. Putnam Management may consider, among other factors, a company’s valuation, financial strength, growth potential, competitive position in its industry, projected future earnings, cash flows and dividends when deciding whether to buy or sell 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 for which market quotations are readily available are valued at the last reported sales price on their principal exchange, or official closing price for certain markets, and are classified as Level 1 securities under Accounting Standards Codification 820 *Fair Value Measurements and Disclosures* (ASC 820). If no sales are reported, as in the case of some securities that are traded OTC, a security is valued at its last reported bid price and is generally categorized as a Level 2 security.

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.

Many securities markets and exchanges outside the U.S. close prior to the scheduled close of the New York Stock Exchange and therefore the closing prices for securities in such markets or on such exchanges may not fully reflect events that occur after such close but before the scheduled close of the New York Stock Exchange. Accordingly, on certain days, the fund will fair value certain foreign equity securities taking into account multiple factors including movements in the U.S. securities markets, currency valuations and comparisons to the valuation of American Depository Receipts, exchange-traded funds and futures contracts. The foreign equity securities, which would generally be classified as Level 1 securities, will be transferred to Level 2 of the fair value hierarchy when they are valued at fair value. The number of days on which fair value prices will be used will depend on market activity and it is possible that fair value prices will be used by the fund to a significant extent. Securities quoted in foreign currencies, if any, are translated into U.S. dollars at the current exchange rate. Short-term securities with remaining maturities of 60 days or less are valued using an independent pricing service approved by the Trustees, and are classified as Level 2 securities.

To the extent a pricing service or dealer is unable to value a security or provides a valuation that Putnam Management does not believe accurately reflects the security’s fair value, the security will be valued at fair value by Putnam Management in accordance with policies and procedures approved by the Trustees. 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. 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.

Joint trading account Pursuant to an exemptive order from the SEC, the fund may transfer uninvested cash balances into a joint trading account along with the cash of other registered investment companies and certain other accounts managed by Putnam Management. These balances may be invested in issues of short-term investments having maturities of up to 90 days.

Repurchase agreements The fund, or any joint trading account, through its custodian, receives delivery of the underlying securities, the fair value of which at the time of purchase is required to be in an amount at least equal to the resale price, including accrued interest. Collateral for certain tri-party repurchase agreements, is held at the counterparty’s custodian in a segregated account for the benefit of the fund and the counterparty. Putnam Management is responsible for determining that the value of these underlying securities is at all times at least equal to the resale price, including accrued interest. In the event of default or bankruptcy by the other party to the agreement, retention of the collateral may be subject to legal proceedings.

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.

Dividend income, net of any applicable withholding taxes, is recognized on the ex-dividend date except that certain dividends from foreign securities, if any, are recognized as soon as the fund is informed of the ex-dividend date. Non-cash dividends, if any, are recorded at the fair value of the securities received. Dividends representing a return of capital or capital gains, if any, are reflected as a reduction of cost and/or as a realized gain.

Foreign currency translation The accounting records of the fund are maintained in U.S. dollars. The fair value of foreign securities, currency holdings, and other assets and liabilities is recorded in the books and records of the fund after translation to U.S. dollars based on the exchange rates on that day. The cost of each security is determined using historical exchange rates. Income and withholding taxes are translated at prevailing exchange rates when earned or incurred. The fund does not isolate that portion of realized or unrealized gains or losses resulting from changes in the foreign exchange rate on investments from fluctuations arising from changes in the market prices of the securities. Such gains and losses are included with the net realized and unrealized gain or loss on investments. Net realized gains and losses on foreign currency transactions represent net realized exchange gains or losses on disposition of foreign currencies, currency gains and losses realized between the trade and settlement dates on securities transactions and the difference between the amount of investment income and foreign withholding taxes recorded on the fund's books and the U.S. dollar equivalent amounts actually received or paid. Net unrealized appreciation and depreciation of assets and liabilities in foreign currencies arise from changes in the value of assets and liabilities other than investments at the period end, resulting from changes in the exchange rate.

Options contracts The fund uses options contracts to gain exposure to securities.

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.

Master agreements The fund is a party to ISDA (International Swaps and Derivatives Association, Inc.) Master Agreements (Master Agreements) with certain counterparties that govern OTC derivative and foreign exchange contracts 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, is 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.

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 and 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 did not have a net liability position on open derivative contracts subject to the Master Agreements.

Securities lending The fund may lend securities, through its agent, to qualified borrowers in order to earn additional income. The loans are collateralized by cash in an amount at least equal to the fair value of the securities loaned. The fair value of securities loaned is determined daily and any additional required collateral is allocated to the fund on the next business day. The remaining maturities of the securities lending transactions are considered overnight and continuous. The risk of borrower default will be borne by the fund's agent; the fund will bear the risk of loss with respect to the investment of the cash collateral. Income from securities lending, net of expenses, is included in investment income on the Statement of operations. Cash collateral is invested in Putnam Cash Collateral Pool, LLC, a limited liability company managed by an affiliate of Putnam Management. Investments in Putnam Cash Collateral Pool, LLC are valued at its closing net asset value each business day. There are no management fees charged to Putnam Cash Collateral Pool, LLC. At the close of the reporting period, the fund had no securities out on loan.

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 \$100 million (\$317.5 million prior to October 14, 2022) 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. 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.

The fund may also be subject to taxes imposed by governments of countries in which it invests. Such taxes are generally based on either income or gains earned or repatriated. The fund accrues and applies such taxes to net investment income, net realized gains and net unrealized gains as income and/or capital gains are earned. In some cases, the fund may be entitled to reclaim all or a portion of such taxes, and such reclaim amounts, if any, are reflected as an asset on the fund's books. In many cases, however, the fund may not receive such amounts for an extended period of time, depending on the country of investment.

Distributions to shareholders Distributions to shareholders from net investment income 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. These differences include temporary and/or permanent differences from losses on wash sale transactions and net operating loss. 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. At the close of the reporting period, the fund reclassified \$513,163 to decrease accumulated net investment loss, \$500,934 to decrease paid-in capital and \$12,229 to decrease accumulated net realized gain.

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 tax basis components of distributable earnings and the federal tax cost as of the close of the reporting period were as follows:

| | |
|--------------------------------------|---------------|
| Unrealized appreciation | \$321,708,062 |
| Unrealized depreciation | (20,340,279) |
| Net unrealized appreciation | 301,367,783 |
| Undistributed long-term gains | 12,026,947 |
| Cost for federal income tax purposes | \$470,197,307 |

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 40.8% 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:

| | |
|--------|-------------------------------|
| 0.710% | of the first \$5 billion, |
| 0.660% | of the next \$5 billion, |
| 0.610% | of the next \$10 billion, |
| 0.560% | of the next \$10 billion, |
| 0.510% | of the next \$50 billion, |
| 0.490% | of the next \$50 billion, |
| 0.480% | of the next \$100 billion and |
| 0.475% | 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 0.548% of the fund's average net assets.

Putnam Management has contractually agreed, through April 30, 2024, 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 plan, 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 not reduced as a result of this limit.

Putnam Investments Limited (PIL), an affiliate of Putnam Management, 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 0.25% (prior to July 1, 2022, the annual rate was 0.35%) 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 | \$489,142 |
| Class IB | 152,643 |
| Total | \$641,785 |

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 \$279 under the expense offset arrangements.

Each Independent Trustee of the fund receives an annual Trustee fee, of which \$687, 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 (Long-term) | \$298,230,057 | \$400,658,771 |
| U.S. government securities (Long-term) | — | — |
| Total | \$298,230,057 | \$400,658,771 |

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 | | | |
|--|---------------------|---------------------|---------------------|-----------------------|---------------------|---------------------|---------------------|-----------------------|
| | Year ended 12/31/22 | | Year ended 12/31/21 | | Year ended 12/31/22 | | Year ended 12/31/21 | |
| | Shares | Amount | Shares | Amount | Shares | Amount | Shares | Amount |
| Shares sold | 743,508 | \$8,467,215 | 536,403 | \$8,223,853 | 1,311,601 | \$14,601,683 | 620,562 | \$9,176,962 |
| Shares issued in connection with reinvestment of distributions | 9,267,224 | 120,659,253 | 6,042,153 | 79,937,678 | 3,119,060 | 39,206,583 | 2,084,768 | 26,810,122 |
| | 10,010,732 | 129,126,468 | 6,578,556 | 88,161,531 | 4,430,661 | 53,808,266 | 2,705,330 | 35,987,084 |
| Shares repurchased | (6,496,917) | (75,941,294) | (6,525,278) | (99,531,812) | (3,659,612) | (41,377,544) | (3,910,515) | (57,681,009) |
| Net increase (decrease) | 3,513,815 | \$53,185,174 | 53,278 | \$(11,370,281) | 771,049 | \$12,430,722 | (1,205,185) | \$(21,693,925) |

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 12/31/21 | Purchase cost | Sale proceeds | Investment income | Shares outstanding and fair value as of 12/31/22 |
|-------------------------------------|---------------------------|----------------------|----------------------|-------------------|--|
| Short-term investments | | | | | |
| Putnam Cash Collateral Pool, LLC* | \$3,164,850 | \$100,892,217 | \$104,057,067 | \$73,250 | \$— |
| Putnam Short Term Investment Fund** | 12,033,506 | 105,166,301 | 97,811,976 | 243,136 | 19,387,831 |
| Total Short-term investments | \$15,198,356 | \$206,058,518 | \$201,869,043 | \$316,386 | \$19,387,831 |

*No management fees are charged to Putnam Cash Collateral Pool, LLC (Note 1). Investment income shown is included in securities lending income on the Statement of operations. There were no realized or unrealized gains or losses during the period.

**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. Investments in foreign securities involve certain risks, including those related to economic instability, unfavorable political developments, and currency fluctuations.

The Covid-19 pandemic and efforts to contain its spread have resulted in, among other effects, significant market volatility, exchange trading suspensions and closures, declines in global financial markets, higher default rates, significant changes in fiscal and monetary policies, and economic downturns and recessions. The effects of the Covid-19 pandemic have negatively affected, and may continue to negatively affect, the global economy, the economies of the United States and other individual countries, the financial performance of individual issuers, sectors, industries, asset classes, and markets, and the value, volatility, and liquidity of particular securities and other assets. The effects of the Covid-19 pandemic also are likely to exacerbate other risks that apply to the fund, which could negatively impact the fund's performance and lead to losses on your investment in the fund. The duration of the Covid-19 pandemic and its effects cannot be determined with certainty.

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 equity option contracts (contract amount) | \$28,000 |
| Written equity option contracts (contract amount) | \$28,000 |

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 |
| Equity contracts | Investments | \$1,003,767 | Payables | \$709,775 |
| Total | | \$1,003,767 | | \$709,775 |

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 (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 | Total |
|--|--------------------|--------------------|
| Equity contracts | \$(681,064) | \$(681,064) |
| Total | \$(681,064) | \$(681,064) |

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 | Total |
|--|--------------------|--------------------|
| Equity contracts | \$(312,631) | \$(312,631) |
| Total | \$(312,631) | \$(312,631) |

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.

| | Citibank, N.A. | Total |
|---|--------------------|--------------------|
| Assets: | | |
| Purchased options** | \$1,003,767 | \$1,003,767 |
| Total Assets | \$1,003,767 | \$1,003,767 |
| Liabilities: | | |
| Written options# | 709,775 | 709,775 |
| Total Liabilities | \$709,775 | \$709,775 |
| Total Financial and Derivative Net Assets | \$293,992 | \$293,992 |
| Total collateral received (pledged)†## | \$293,992 | |
| Net amount | \$— | |
| <i>Controlled collateral received (including TBA commitments)**</i> | \$310,000 | \$310,000 |
| <i>Uncontrolled collateral received</i> | \$— | \$— |
| <i>Collateral (pledged) (including TBA commitments)**</i> | \$— | \$— |

**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.

Note 9 — Name change and adoption of non-fundamental investment policy









On January 27, 2023, the fund's Board of Trustees approved a change in name for the fund to Putnam VT Large Cap Growth Fund and the adoption of a new non-fundamental investment policy, both of which are anticipated to be effective on April 30, 2023 (the "Effective Date"). As of the Effective Date, the fund will invest, under normal circumstances, at least 80% of its net assets (plus the amount of any borrowings for investment purposes) in companies of a size similar to those in the Russell 1000 Growth Index. This policy may be changed only after 60 days' notice to shareholders.

Federal tax information (Unaudited)

Pursuant to §852 of the Internal Revenue Code, as amended, the fund hereby designates \$13,926,189 as a capital gain dividend with respect to the taxable year ended December 31, 2022, or, if subsequently determined to be different, the net capital gain of such year.

The fund designated 54.01% of ordinary income distributions as qualifying for the dividends received deduction for corporations.

About the Trustees

| Name | Year of birth | Position held | Principal occupations during past five years | Other directorships | |
|---------------------------------|---------------|--|--|---|---|
| Independent Trustees | | | | | |
| Liaquat Ahmed | Born 1952 | Trustee since 2012 | Author; won Pulitzer Prize for <i>Lords of Finance: The Bankers Who Broke the World</i> . | Chair of the Sun Valley Writers Conference, a literary not-for-profit organization, and a Trustee of the Journal of Philosophy. |  |
| Barbara M. Baumann | Born 1955 | Trustee since 2010 Vice Chair since 2022 | President of Cross Creek Energy Corporation, a strategic consultant to domestic energy firms and direct investor in energy projects. | Director of Devon Energy Corporation, a publicly traded independent natural gas and oil exploration and production company; Director of National Fuel Gas Company, a publicly traded energy company that engages in the production, gathering, transportation, distribution, and marketing of natural gas; Senior Advisor to the energy private equity firm First Reserve; member of the Finance Committee of the Children's Hospital of Colorado; member of the Investment Committee of the Board of The Denver Foundation; and previously a Director of publicly traded companies Buckeye Partners LP, UNS Energy Corporation, CVR Energy Company, and SM Energy Corporation. |  |
| Katinka Domotorffy | Born 1975 | Trustee since 2012 | Voting member of the Investment Committees of the Anne Ray Foundation and Margaret A. Cargill Foundation, part of the Margaret A. Cargill Philanthropies. | Director of the Great Lakes Science Center and of College Now Greater Cleveland. |  |
| Catharine Bond Hill | Born 1954 | Trustee since 2017 | Managing Director of Ithaca S+R, a not-for-profit service that helps the academic community navigate economic and technological change. From 2006 to 2016, Dr. Hill served as the 10th president of Vassar College. | Director of Yale-NUS College and Trustee of Yale University. |  |
| Kenneth R. Leibler | Born 1949 | Trustee since 2006 Vice Chair from 2016 to 2018, Chair since 2018 | Vice Chair Emeritus of the Board of Trustees of Beth Israel Deaconess Hospital in Boston. Member of the Investment Committee of the Boston Arts Academy Foundation. | Director of Eversource Corporation, which operates New England's largest energy delivery system; previously the Chairman of the Boston Options Exchange, an electronic marketplace for the trading of listed derivatives securities; previously the Chairman and Chief Executive Officer of the Boston Stock Exchange; and previously the President and Chief Operating Officer of the American Stock Exchange. |  |
| Jennifer Williams Murphy | Born 1964 | Trustee since 2022 | Chief Executive Officer and Founder of Runa Digital Assets, LLC, an institutional investment advisory firm specializing in active management of digital assets. Until 2021, Chief Operating Officer of Western Asset Management, LLC, a global investment adviser, and Chief Executive Officer and President of Western Asset Mortgage Capital Corporation, a mortgage finance real estate investment trust. | Previously, a Director of Western Asset Capital Corporation. |  |
| Marie Pillai | Born 1954 | Trustee since 2022 | Senior Advisor, Hunter Street Partners, LP, an asset-oriented private investment firm; Specialty Leader and Member of the Curriculum Committee of the Center for Board Certified Fiduciaries, a public benefit corporation providing coursework for developing fiduciaries. Until 2019, Vice President, Chief Investment Officer, and Treasurer of General Mills, Inc., a global food company. | Director of the Catholic Community Foundation of Minnesota; Investment Advisory Board Member of the University of Minnesota; Member of the Investment Committee of the Bush Foundation, a nonprofit organization supporting community problem-solving in Minnesota, North Dakota, and South Dakota; Member of the Finance Council and Corporate Board of the Archdiocese of Saint Paul and Minneapolis; and previously a Board Member of Catholic Charities of St. Paul and Minneapolis. |  |
| George Putnam III | Born 1951 | Trustee since 1984 | Chairman of New Generation Research, Inc., a publisher of financial advisory and other research services, and President of New Generation Advisors, LLC, a registered investment adviser to private funds. | Director of The Boston Family Office, LLC, a registered investment adviser; a Director of the Gloucester Marine Genomics Institute; a Trustee of the Lowell Observatory Foundation; and previously a Trustee of the Marine Biological Laboratory. |  |

| Name Year of birth Position held | Principal occupations during past five years | Other directorships | |
|---|--|---|---|
| Manoj P. Singh Born 1952 Trustee since 2017 | Until 2015, Chief Operating Officer and Global Managing Director at Deloitte Touche Tohmatsu, Ltd., a global professional services organization, serving on the Deloitte U.S. Board of Directors and the boards of Deloitte member firms in China, Mexico, and Southeast Asia. | Director of ReNew Energy Global plc, a publicly traded renewable energy company; Director of Abt Associates, a global research firm working in the fields of health, social and environmental policy, and international development; Trustee of Carnegie Mellon University; Director of Pratham USA, an organization dedicated to children's education in India; member of the advisory board of Altimetrik, a business transformation and technology solutions firm; and Director of DXC Technology, a global IT services and consulting company. |  |
| Mona K. Sutphen Born 1967 Trustee since 2020 | Partner, Investment Strategies, at The Vistria Group, a private investment firm focused on middle-market companies in the health care, education, and financial services industries. From 2014 to 2018, Partner at Macro Advisory Partners, a global consulting firm. | Director of Spotify Technology S.A., a publicly traded audio content streaming service; Director of Unitek Learning, a private nursing and medical services education provider in the United States; Board Member, International Rescue Committee; Co-Chair of the Board of Human Rights First; Trustee of Mount Holyoke College; member of the Advisory Board for the Center on Global Energy Policy at Columbia University's School of International and Public Affairs; previously Director of Pattern Energy and Pioneer Natural Resources, publicly traded energy companies; and previously Managing Director of UBS AG. |  |

Interested Trustee

| | | | |
|--|---|--|---|
| Robert L. Reynolds* Born 1952 Trustee since 2008, President and Chief Executive Officer of Putnam Investments since 2008 | President and Chief Executive Officer of Putnam Investments; member of Putnam Investments' Board of Directors; and Chair of Great-West Lifeco U.S. LLC. Prior to 2019, also President and Chief Executive Officer of Great-West Financial, a financial services company that provides retirement savings plans, life insurance, and annuity and executive benefits products, and of Great-West Lifeco U.S. LLC, a holding company that owns Putnam Investments and Great-West Financial, and a member of Great-West Financial's Board of Directors. | Director of the Concord Museum; Director of Dana-Farber Cancer Institute; Director of the U.S. Ski & Snowboard Foundation; Chair of the Boston Advisory Board of the American Ireland Fund; Council Co-Chair of the American Enterprise Institute; Member of U.S. Chamber of Commerce, Center for Capital Markets Competitiveness; Chair of Massachusetts High Technology Council; Member of the Chief Executives Club of Boston; Member of the Massachusetts General Hospital President's Council; Chairman of the Board of Directors of the Ron Burton Training Village; Director and former Chair of the Massachusetts Competitive Partnership; former Chair of the West Virginia University Foundation; and former Executive Committee Member of the Greater Boston Chamber of Commerce. |  |
|--|---|--|---|

*Mr. Reynolds is an "interested person" (as defined in the Investment Company Act of 1940) of the fund and Putnam Investments. He is President and Chief Executive Officer of Putnam Investments, as well as the President of your fund and each of the other Putnam funds.

The address of each Trustee is 100 Federal Street, Boston, MA 02110.

As of December 31, 2022, there were 92 mutual funds, 4 closed-end funds, and 7 exchange-traded funds in the Putnam funds complex. Each Trustee serves as Trustee of all funds in the Putnam funds complex.

Each Trustee serves for an indefinite term, until his or her resignation, retirement at age 75, removal, or death.

Officers

In addition to Robert L. Reynolds, the other officers of the fund are shown below:

James F. Clark *(Born 1974)*

Vice President and Chief Compliance Officer
Since 2016
Chief Compliance Officer and Chief Risk Officer,
Putnam Investments, and Chief Compliance
Officer, Putnam Management

Nancy E. Florek *(Born 1957)*

Vice President, Director of Proxy Voting
and Corporate Governance, Assistant Clerk,
and Assistant Treasurer
Since 2000

Michael J. Higgins *(Born 1976)*

Vice President, Treasurer, and Clerk
Since 2010

Jonathan S. Horwitz *(Born 1955)*

Executive Vice President, Principal Executive
Officer, and Compliance Liaison
Since 2004

Richard T. Kircher *(Born 1962)*

Vice President and BSA Compliance Officer
Since 2019
Assistant Director, Operational Compliance,
Putnam Investments and Putnam
Retail Management

Martin Lemaire *(Born 1984)*

Vice President and Derivatives Risk Manager
Since 2022
Risk Manager and Risk Analyst,
Putnam Investments

Susan G. Malloy *(Born 1957)*

Vice President and Assistant Treasurer
Since 2007
Head of Accounting and Middle Office Services,
Putnam Investments and Putnam Management

Alan G. McCormack *(Born 1964)*

Vice President and Derivatives Risk Manager
Since 2022
Head of Quantitative Equities and Risk,
Putnam Investments

Denere P. Poulack *(Born 1968)*

Assistant Vice President, Assistant Clerk,
and Assistant Treasurer
Since 2004

Janet C. Smith *(Born 1965)*

Vice President, Principal Financial
Officer, Principal Accounting Officer,
and Assistant Treasurer
Since 2007
Head of Fund Administration Services, Putnam
Investments and Putnam Management

Stephen J. Tate *(Born 1974)*

Vice President and Chief Legal Officer
Since 2021
General Counsel, Putnam Investments, Putnam
Management, and Putnam Retail Management

Mark C. Trenchard *(Born 1962)*

Vice President
Since 2002
Director of Operational Compliance, Putnam
Investments and Putnam Retail Management

The principal occupations of the officers for the past five years have been with the employers as shown above, although in some cases they have held different positions with such employers. The address of each officer is 100 Federal Street, Boston, MA 02110.

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.

Prior to its use of Form N-PORT, the fund filed its complete schedule of its portfolio holdings with the SEC on Form N-Q, which is available online at www.sec.gov.

Fund information

Investment Manager

Putnam Investment Management, LLC
100 Federal Street
Boston, MA 02110

Investment Sub-Advisor

Putnam Investments Limited
16 St James's Street
London, England SW1A 1ER

Marketing Services

Putnam Retail Management
Limited Partnership
100 Federal Street
Boston, MA 02110

Investor Servicing Agent

Putnam Investments
Mailing address:
P.O. Box 219697
Kansas City, MO 64121-9697
1-800-225-1581

Custodian

State Street Bank and Trust Company

Legal Counsel

Ropes & Gray LLP

Independent Registered Public Accounting Firm

PricewaterhouseCoopers LLP

Trustees

Kenneth R. Leibler, *Chair*
Barbara M. Baumann, *Vice Chair*
Liaquat Ahamed
Katinka Domotorffy
Catharine Bond Hill
Jennifer Williams Murphy
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.

