

# Putnam Variable Trust

## **Putnam VT Research Fund**

### **Semiannual report**

**6 | 30 | 19**

#### **IMPORTANT NOTICE: Delivery of paper fund reports**

In accordance with regulations adopted by the Securities and Exchange Commission, beginning on or after January 1, 2021, at the election of your insurance provider, you may not receive paper reports like this one in the mail from the insurance provider that offers your variable annuity contract or variable life insurance policy unless you specifically request it. Instead, they will be available on a website, and your insurance provider will notify you by mail whenever a new one is available, and provide you with a website link to access the report.

If you wish to continue to receive paper reports free of charge after January 1, 2021, please contact your insurance provider.

If you already receive these reports electronically, no action is required.

# Message from the Trustees

August 5, 2019

Dear Shareholder:

If there is any lesson to be learned from constantly changing financial markets, it is the importance of positioning your investment portfolio for your long-term goals. We believe that one strategy is to diversify across different asset classes and investment approaches.

We also believe your mutual fund investment offers a number of advantages, including constant monitoring by experienced investment professionals who maintain a long-term perspective. Putnam's portfolio managers and analysts take a research-intensive approach that includes risk management strategies designed to serve you through changing conditions.

Another key strategy, in our view, is seeking the counsel of a financial advisor. For over 80 years, Putnam has recognized the importance of professional investment advice. Your financial advisor can help in many ways, including defining and planning for goals such as retirement, evaluating the level of risk appropriate for you, and reviewing your investments on a regular basis and making adjustments as necessary.

As always, your fund's Board of Trustees remains committed to protecting the interests of Putnam shareholders like you, and we 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

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*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.*

**Consider these risks before investing:** Growth stocks may be more susceptible to earnings disappointments, and value stocks may fail to rebound. 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. You can lose money by investing in the fund.

## Performance summary (as of 6/30/19)

### Investment objective

Capital appreciation

**Net asset value** June 30, 2019

Class IA: \$26.91

Class IB: \$26.81

### Total return at net asset value

(as of 6/30/19)*	Class IA shares†	Class IB shares†	S&P 500 Index
6 months	20.03%	19.83%	18.54%
1 year	10.97	10.67	10.42
5 years	63.03	60.96	66.33
Annualized	10.27	9.99	10.71
10 years	295.51	285.27	294.16
Annualized	14.74	14.44	14.70
Life	304.76	285.12	329.13
Annualized	6.97	6.71	7.27

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

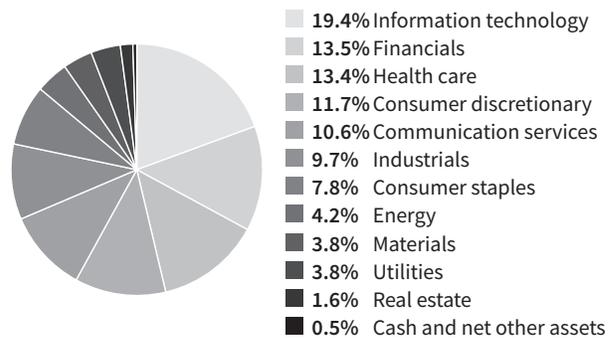
\* Recent performance may have benefited from one or more legal settlements.

† Class inception date: September 30, 1998.

The S&P 500 Index is an unmanaged index of common stock performance.

**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.

## 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 1/1/19 to 6/30/19. 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 12/31/18	0.81%	1.06%
Annualized expense ratio for the six-month period ended 6/30/19	0.77%	1.02%

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.

### Expenses per \$1,000

	Expenses and value for a \$1,000 investment, assuming actual returns for the 6 months ended 6/30/19		Expenses and value for a \$1,000 investment, assuming a hypothetical 5% annualized return for the 6 months ended 6/30/19	
	Class IA	Class IB	Class IA	Class IB
Expenses paid per \$1,000*†	\$4.20	\$5.56	\$3.86	\$5.11
Ending value (after expenses)	\$1,200.30	\$1,198.30	\$1,020.98	\$1,019.74

\*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 6/30/19. 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; and then dividing that result by the number of days in the year. 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; and then dividing that result by the number of days in the year.

## Your fund's managers



Portfolio Manager **Kathryn B. Lakin** is Director of Equity Research. She joined Putnam in 2012 and has been in the investment industry since 2008.

Jacquelyne J. Cavanaugh, Andrew N. O'Brien, CFA, William C. Rives, and Walter D. Scully, CPA, 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 6/30/18 (Unaudited)

<b>COMMON STOCKS (99.6%)*</b>	<b>Shares</b>	<b>Value</b>
<b>Aerospace and defense (2.4%)</b>		
Boeing Co. (The)	706	\$256,991
General Dynamics Corp.	1,225	222,730
Northrop Grumman Corp.	761	245,887
TransDigm Group, Inc. †	323	156,267
United Technologies Corp.	1,636	213,007
		<b>1,094,882</b>
<b>Air freight and logistics (0.2%)</b>		
FedEx Corp.	425	69,781
		<b>69,781</b>
<b>Airlines (0.3%)</b>		
Air Canada (Canada) †	3,889	117,868
		<b>117,868</b>
<b>Automobiles (1.3%)</b>		
General Motors Co.	15,910	613,012
		<b>613,012</b>
<b>Banks (6.0%)</b>		
Bank of America Corp.	32,250	935,250
Citigroup, Inc.	10,803	756,534
JPMorgan Chase & Co.	3,882	434,008
PNC Financial Services Group, Inc. (The)	3,025	415,272
Wells Fargo & Co.	5,173	244,786
		<b>2,785,850</b>
<b>Beverages (2.3%)</b>		
Coca-Cola Co. (The)	16,256	827,756
PepsiCo, Inc.	1,677	219,905
		<b>1,047,661</b>
<b>Biotechnology (1.7%)</b>		
AbbVie, Inc.	3,453	251,102
Amgen, Inc.	1,357	250,068
Gilead Sciences, Inc.	1,834	123,905
Vertex Pharmaceuticals, Inc. †	985	180,629
		<b>805,704</b>
<b>Building products (1.1%)</b>		
Fortune Brands Home & Security, Inc.	5,346	305,417
Johnson Controls International PLC	4,433	183,127
		<b>488,544</b>
<b>Capital markets (4.0%)</b>		
Apollo Global Management, LLC Class A	798	27,371
BlackRock, Inc.	551	258,584
E*Trade Financial Corp.	6,633	295,832
Goldman Sachs Group, Inc. (The)	2,495	510,477
Intercontinental Exchange, Inc.	2,362	202,990
KKR & Co., Inc. Class A <sup>S</sup>	12,275	310,189
Raymond James Financial, Inc.	2,849	240,883
		<b>1,846,326</b>
<b>Chemicals (2.0%)</b>		
Dow, Inc.	2,315	114,153
DuPont de Nemours, Inc.	1,171	87,907
Linde PLC	1,839	369,271
Sherwin-Williams Co. (The)	719	329,511
W.R. Grace & Co.	576	43,839
		<b>944,681</b>
<b>Commercial services and supplies (0.2%)</b>		
Waste Connections, Inc.	935	89,367
		<b>89,367</b>
<b>Communications equipment (0.4%)</b>		
Cisco Systems, Inc.	3,759	205,730
		<b>205,730</b>
<b>Construction materials (0.2%)</b>		
Summit Materials, Inc. Class A †	5,372	103,411
		<b>103,411</b>

<b>COMMON STOCKS (99.6%)* cont.</b>	<b>Shares</b>	<b>Value</b>
<b>Consumer finance (—%)</b>		
Oportun Financial Corp. (acquired 6/23/15, cost \$24,222) (Private) † ΔΔ <sup>F</sup>	8,499	\$19,295
		<b>19,295</b>
<b>Containers and packaging (0.5%)</b>		
AptarGroup, Inc.	289	35,934
Avery Dennison Corp.	535	61,889
Ball Corp.	1,762	123,322
		<b>221,145</b>
<b>Diversified telecommunication services (0.9%)</b>		
AT&T, Inc.	12,739	426,884
		<b>426,884</b>
<b>Electric utilities (3.0%)</b>		
American Electric Power Co., Inc.	4,871	428,697
Edison International	1,373	92,554
Exelon Corp.	8,385	401,977
NextEra Energy, Inc.	1,329	272,259
Southern Co. (The)	3,238	178,997
		<b>1,374,484</b>
<b>Electrical equipment (0.8%)</b>		
Eaton Corp. PLC	4,653	387,502
		<b>387,502</b>
<b>Entertainment (3.6%)</b>		
Activision Blizzard, Inc.	5,718	269,890
Electronic Arts, Inc. †	2,417	244,745
NetEase, Inc. ADR (China)	1,054	269,582
Netflix, Inc. †	1,231	452,171
TWDC Enterprises 18 Corp.	3,013	420,730
		<b>1,657,118</b>
<b>Equity real estate investment trusts (REITs) (1.6%)</b>		
Gaming and Leisure Properties, Inc.	9,429	367,542
SBA Communications Corp. †	1,626	365,590
		<b>733,132</b>
<b>Food and staples retail (1.9%)</b>		
BJ's Wholesale Club Holdings, Inc. †	3,830	101,112
Costco Wholesale Corp.	770	203,480
Walmart, Inc.	5,399	596,536
		<b>901,128</b>
<b>Food products (1.6%)</b>		
Archer-Daniels-Midland Co.	1,597	65,158
Hershey Co. (The)	2,049	274,627
McCormick & Co., Inc. (non-voting shares)	1,414	219,184
Tyson Foods, Inc. Class A	2,308	186,348
		<b>745,317</b>
<b>Health-care equipment and supplies (3.9%)</b>		
Abbott Laboratories	4,074	342,623
Baxter International, Inc.	2,139	175,184
Becton Dickinson and Co.	356	89,716
Boston Scientific Corp. †	5,399	232,049
Cooper Cos., Inc. (The)	405	136,440
Danaher Corp.	2,777	396,889
ICU Medical, Inc. †	161	40,558
IDEXX Laboratories, Inc. †	329	90,584
Medtronic PLC	1,394	135,762
Stryker Corp.	783	160,969
		<b>1,800,774</b>
<b>Health-care providers and services (2.4%)</b>		
Cigna Corp.	3,558	560,563
CVS Health Corp.	3,099	168,865
UnitedHealth Group, Inc.	1,626	396,760
		<b>1,126,188</b>
<b>Hotels, restaurants, and leisure (2.5%)</b>		
Aramark	2,654	95,703
Chipotle Mexican Grill, Inc. †	320	234,522

<b>COMMON STOCKS (99.6%)* cont.</b>	<b>Shares</b>	<b>Value</b>
<b>Hotels, restaurants, and leisure cont.</b>		
Hilton Worldwide Holdings, Inc.	3,075	\$300,551
MGM Resorts International	2,947	84,196
Wynn Resorts, Ltd.	1,843	228,514
Yum China Holdings, Inc. (China)	5,176	239,131
		<b>1,182,617</b>
<b>Household products (2.0%)</b>		
Procter & Gamble Co. (The)	8,462	927,858
		<b>927,858</b>
<b>Independent power and renewable electricity producers (0.5%)</b>		
NRG Energy, Inc.	6,786	238,324
		<b>238,324</b>
<b>Industrial conglomerates (2.1%)</b>		
3M Co.	707	122,551
General Electric Co.	15,103	158,582
Honeywell International, Inc.	3,075	536,864
Roper Technologies, Inc.	425	155,661
		<b>973,658</b>
<b>Insurance (3.4%)</b>		
American International Group, Inc.	9,475	504,828
Assured Guaranty, Ltd.	13,307	559,959
AXA SA (France)	2,311	60,703
Prudential PLC (United Kingdom)	21,696	472,806
		<b>1,598,296</b>
<b>Interactive media and services (5.2%)</b>		
Alphabet, Inc. Class A †	1,318	1,427,130
Facebook, Inc. Class A †	5,013	967,509
		<b>2,394,639</b>
<b>Internet and direct marketing retail (4.2%)</b>		
Amazon.com, Inc. †	836	1,583,075
Booking Holdings, Inc. †	203	380,566
		<b>1,963,641</b>
<b>IT Services (6.0%)</b>		
DXC Technology Co.	10,843	597,991
Fidelity National Information Services, Inc.	4,888	599,660
First Data Corp. Class A †	12,890	348,932
Mastercard, Inc. Class A	2,195	580,643
Visa, Inc. Class A	3,755	651,680
		<b>2,778,906</b>
<b>Life sciences tools and services (1.0%)</b>		
Mettler-Toledo International, Inc. †	156	131,040
Thermo Fisher Scientific, Inc.	1,177	345,661
		<b>476,701</b>
<b>Machinery (0.7%)</b>		
Deere & Co.	834	138,202
Stanley Black & Decker, Inc.	1,178	170,351
		<b>308,553</b>
<b>Media (1.0%)</b>		
Charter Communications, Inc. Class A †	1,140	450,505
		<b>450,505</b>
<b>Metals and mining (1.1%)</b>		
Anglo American PLC (United Kingdom)	6,312	179,917
Freeport-McMoRan, Inc. (Indonesia)	26,810	311,264
		<b>491,181</b>
<b>Multi-utilities (0.3%)</b>		
Ameren Corp.	1,742	130,842
		<b>130,842</b>
<b>Oil, gas, and consumable fuels (4.3%)</b>		
BP PLC (United Kingdom)	85,659	596,781
Brigham Minerals, Inc. Class A †	902	19,357
Cairn Energy PLC (United Kingdom) †	54,463	119,725
Cenovus Energy, Inc. (Canada)	64,144	565,739
Encana Corp. (Canada)	27,105	139,090
Enterprise Products Partners LP	14,946	431,491
Kosmos energy, Ltd.	17,210	107,907
		<b>1,980,090</b>

<b>COMMON STOCKS (99.6%)* cont.</b>	<b>Shares</b>	<b>Value</b>
<b>Pharmaceuticals (4.3%)</b>		
Allergan PLC	857	\$143,488
Bristol-Myers Squibb Co.	3,728	169,065
Eli Lilly & Co.	1,951	216,151
Johnson & Johnson	3,965	552,245
Merck & Co., Inc.	6,624	555,422
Pfizer, Inc.	8,686	376,278
		<b>2,012,649</b>
<b>Professional services (0.2%)</b>		
CoStar Group, Inc. †	168	93,082
		<b>93,082</b>
<b>Road and rail (1.3%)</b>		
Norfolk Southern Corp.	1,143	227,834
Union Pacific Corp.	2,245	379,652
		<b>607,486</b>
<b>Semiconductors and semiconductor equipment (3.0%)</b>		
NXP Semiconductors NV	5,696	555,987
ON Semiconductor Corp. †	17,836	360,466
Texas Instruments, Inc.	4,198	481,762
		<b>1,398,215</b>
<b>Software (7.2%)</b>		
Adobe, Inc. †	1,782	525,066
Dassault Systemes SA (France)	1,669	266,264
Microsoft Corp.	15,957	2,137,600
Salesforce.com, Inc. †	2,808	426,058
		<b>3,354,988</b>
<b>Specialty retail (2.8%)</b>		
Advance Auto Parts, Inc.	530	81,694
Burlington Stores, Inc. †	701	119,275
CarMax, Inc. †	1,275	110,708
Home Depot, Inc. (The)	4,038	839,783
TJX Cos., Inc. (The)	2,918	154,304
		<b>1,305,764</b>
<b>Technology hardware, storage, and peripherals (2.8%)</b>		
Apple, Inc.	6,567	1,299,741
		<b>1,299,741</b>
<b>Textiles, apparel, and luxury goods (0.8%)</b>		
Levi Strauss & Co. Class A †	4,150	86,652
NIKE, Inc. Class B	3,292	276,363
		<b>363,015</b>
<b>Trading companies and distributors (0.6%)</b>		
United Rentals, Inc. †	1,216	161,278
Yellow Cake PLC 144A (United Kingdom) †	46,737	121,378
		<b>282,656</b>
<b>Total common stocks (cost \$39,877,785)</b>		<b>\$46,219,191</b>
<b>CONVERTIBLE PREFERRED STOCKS (0.2%)*</b>		
Oportun Financial Corp. Ser. A-1, 8.00% cv. pfd. (acquired 6/23/15, cost \$66) (Private) † ΔΔ F	23	\$52
Oportun Financial Corp. Ser. B-1, 8.00% cv. pfd. (acquired 6/23/15, cost \$1,266) (Private) † ΔΔ F	402	1,009
Oportun Financial Corp. Ser. C-1, 8.00% cv. pfd. (acquired 6/23/15, cost \$2,973) (Private) † ΔΔ F	584	2,368
Oportun Financial Corp. Ser. D-1, 8.00% cv. pfd. (acquired 6/23/15, cost \$4,311) (Private) † ΔΔ F	847	3,434
Oportun Financial Corp. Ser. E-1, 8.00% cv. pfd. (acquired 6/23/15, cost \$2,416) (Private) † ΔΔ F	440	1,924
Oportun Financial Corp. Ser. F, 8.00% cv. pfd. (acquired 6/23/15, cost \$7,296) (Private) † ΔΔ F	950	5,812
Oportun Financial Corp. Ser. F-1, 8.00% cv. pfd. (acquired 6/23/15, cost \$20,463) (Private) † ΔΔ F	7,180	16,301

<b>CONVERTIBLE PREFERRED STOCKS (0.2%)* cont.</b>	<b>Shares</b>	<b>Value</b>
Oportun Financial Corp. Ser. G, 8.00% cv. pfd. (acquired 6/23/15, cost \$25,875) (Private) † Δ Δ F	9,079	\$20,612
Oportun Financial Corp. Ser. H, 8.00% cv. pfd. (acquired 2/6/15, cost \$39,489) (Private) † Δ Δ F	13,869	31,455
<b>Total convertible preferred stocks (cost \$104,155)</b>		<b>\$82,967</b>
<b>SHORT-TERM INVESTMENTS (1.2%)*</b>	<b>Principal amount/ shares</b>	<b>Value</b>
Putnam Cash Collateral Pool, LLC 2.51% <sup>d</sup>	Shares 280,500	\$280,500
Putnam Short Term Investment Fund 2.46% <sup>L</sup>	Shares 229,900	229,900
U.S. Treasury Bills 2.422%, 8/1/19	\$32,000	31,944
U.S. Treasury Bills 2.369%, 8/15/19	7,000	6,982
<b>Total short-term investments (cost \$549,314)</b>		<b>\$549,326</b>
<b>Total investments (cost \$40,531,254)</b>		<b>\$46,851,484</b>

#### Key to holding's abbreviations

ADR American Depository Receipts: represents ownership of foreign securities on deposit with a custodian bank

#### 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, 2019 through June 30, 2019 (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*.

#### FORWARD CURRENCY CONTRACTS at 6/30/19 (aggregate face value \$2,803,772) (Unaudited)

Counterparty	Currency	Contract type*	Delivery date	Value	Aggregate face value	Unrealized appreciation/ (depreciation)
<b>Bank of America N.A.</b>						
	British Pound	Sell	9/18/19	\$142,345	\$141,899	\$(446)
	Canadian Dollar	Sell	7/17/19	130,244	127,068	(3,176)
<b>Barclays Bank PLC</b>						
	British Pound	Sell	9/18/19	329,675	328,647	(1,028)
<b>Citibank, N.A.</b>						
	Euro	Sell	9/18/19	233,043	229,918	(3,125)
<b>Goldman Sachs International</b>						
	British Pound	Sell	9/18/19	399,892	398,627	(1,265)
	Canadian Dollar	Sell	7/17/19	1,757	1,727	(30)
<b>HSBC Bank USA, National Association</b>						
	Chinese Yuan (Offshore)	Sell	8/21/19	468,156	481,911	13,755
<b>JPMorgan Chase Bank N.A.</b>						
	British Pound	Sell	9/18/19	398,108	396,842	(1,266)
	Canadian Dollar	Sell	7/17/19	707,522	695,609	(11,913)
	Norwegian Krone	Buy	9/18/19	1,187	1,162	25
<b>State Street Bank and Trust Co.</b>						
	Israeli Shekel	Buy	7/17/19	365	362	3
<b>Unrealized appreciation</b>						<b>13,783</b>
<b>Unrealized (depreciation)</b>						<b>(22,249)</b>
<b>Total</b>						<b>\$(8,466)</b>

\* The exchange currency for all contracts listed is the United States Dollar.

\* Percentages indicated are based on net assets of \$46,406,720.

† This security is non-income-producing.

ΔΔ This security is restricted with regard to public resale. The total fair value of this security and any other restricted securities (excluding 144A securities), if any, held at the close of the reporting period was \$102,262, or 0.2% of net assets.

<sup>d</sup> Affiliated company. See Notes 1 and 5 to the financial statements regarding securities lending. The rate quoted in the security description is the annualized 7-day yield of the fund at the close of the reporting period.

<sup>F</sup> This security is valued by Putnam Management at fair value following procedures approved by the Trustees. Securities are classified as Level 3 for ASC 820 based on the securities' valuation inputs (Note 1).

<sup>L</sup> 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.

<sup>S</sup> Security on loan, in part or in entirety, at the close of the reporting period (Note 1).

At the close of the reporting period, the fund maintained liquid assets totaling \$40,793 to cover certain derivative contracts.

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.

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

OTC TOTAL RETURN SWAP CONTRACTS OUTSTANDING at 6/30/19 (Unaudited)

Swap counterparty/ Notional amount	Value	Upfront premium received (paid)	Termination date	Payments received (paid) by fund	Total return received by or paid by fund	Unrealized appreciation/ (depreciation)
<b>Goldman Sachs International</b>						
\$599,670	\$613,382	\$—	12/15/20	1 month USD-LIBOR- BBA minus 0.58% — Monthly	Russell 2000 Total Return Index — Monthly	\$(13,380)
<b>Upfront premium received</b>		—		<b>Unrealized appreciation</b>		—
<b>Upfront premium (paid)</b>		—		<b>Unrealized (depreciation)</b>		<b>(13,380)</b>
<b>Total</b>		<b>\$—</b>		<b>Total</b>		<b>\$(13,380)</b>

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	\$4,929,146	\$—	\$—
Consumer discretionary	5,428,049	—	—
Consumer staples	3,621,964	—	—
Energy	1,980,090	—	—
Financials	6,230,472	—	19,295
Health care	6,222,016	—	—
Industrials	4,513,379	—	—
Information technology	9,037,580	—	—
Materials	1,760,418	—	—
Real estate	733,132	—	—
Utilities	1,743,650	—	—
<b>Total common stocks</b>	<b>46,199,896</b>	<b>—</b>	<b>19,295</b>
Convertible preferred stocks	—	—	82,967
Short-term investments	229,900	319,426	—
<b>Totals by level</b>	<b>\$46,429,796</b>	<b>\$319,426</b>	<b>\$102,262</b>

Other financial instruments:	Valuation inputs		
	Level 1	Level 2	Level 3
Forward currency contracts	\$—	\$(8,466)	\$—
Total return swap contracts	—	(13,380)	—
<b>Totals by level</b>	<b>\$—</b>	<b>\$(21,846)</b>	<b>\$—</b>

\* 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.

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

# Statement of assets and liabilities

6/30/19 (Unaudited)

<b>Assets</b>	
Investment in securities, at value, including \$277,970 of securities on loan (Note 1):	
Unaffiliated issuers (identified cost \$40,020,854)	\$46,341,084
Affiliated issuers (identified cost \$510,400) (Notes 1 and 5)	510,400
Foreign currency (cost \$552) (Note 1)	552
Dividends, interest and other receivables	48,846
Receivable for shares of the fund sold	29,075
Receivable for investments sold	173,373
Receivable for sales of delayed delivery securities (Note 1)	50,935
Unrealized appreciation on forward currency contracts (Note 1)	13,783
<b>Total assets</b>	<b>47,168,048</b>
<b>Liabilities</b>	
Payable for investments purchased	197,510
Payable for shares of the fund repurchased	115,484
Payable for compensation of Manager (Note 2)	21,218
Payable for custodian fees (Note 2)	18,347
Payable for investor servicing fees (Note 2)	3,783
Payable for Trustee compensation and expenses (Note 2)	52,605
Payable for administrative services (Note 2)	185
Payable for distribution fees (Note 2)	5,228
Unrealized depreciation on OTC swap contracts (Note 1)	13,380
Unrealized depreciation on forward currency contracts (Note 1)	22,249
Collateral on securities loaned, at value (Note 1)	280,500
Other accrued expenses	30,839
<b>Total liabilities</b>	<b>761,328</b>
<b>Net assets</b>	<b>\$46,406,720</b>
<b>Represented by</b>	
Paid-in capital (Unlimited shares authorized) (Notes 1 and 4)	\$37,384,847
Total distributable earnings (Note 1)	9,021,873
<b>Total — Representing net assets applicable to capital shares outstanding</b>	<b>\$46,406,720</b>
<b>Computation of net asset value Class IA</b>	
Net assets	\$20,563,001
Number of shares outstanding	764,181
Net asset value, offering price and redemption price per share (net assets divided by number of shares outstanding)	\$26.91
<b>Computation of net asset value Class IB</b>	
Net assets	\$25,843,719
Number of shares outstanding	963,904
Net asset value, offering price and redemption price per share (net assets divided by number of shares outstanding)	\$26.81

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

## Statement of operations

Six months ended 6/30/19 (Unaudited)

### Investment income

Dividends (net of foreign tax of \$1,513)	\$400,438
Interest (including interest income of \$5,279 from investments in affiliated issuers) (Note 5)	6,560
Securities lending (net of expenses) (Notes 1 and 5)	2,408
<b>Total investment income</b>	<b>409,406</b>

### Expenses

Compensation of Manager (Note 2)	123,461
Investor servicing fees (Note 2)	15,811
Custodian fees (Note 2)	3,450
Trustee compensation and expenses (Note 2)	1,072
Distribution fees (Note 2)	31,801
Administrative services (Note 2)	589
Auditing and tax fees	16,471
Other	10,760
<b>Total expenses</b>	<b>203,415</b>
Expense reduction (Note 2)	(1,314)
<b>Net expenses</b>	<b>202,101</b>
<b>Net investment income</b>	<b>207,305</b>

### Realized and unrealized gain (loss)

#### Net realized gain (loss) on:

Securities from unaffiliated issuers (Notes 1 and 3)	2,730,628
Foreign currency transactions (Note 1)	(600)
Forward currency contracts (Note 1)	43,073
Futures contracts (Note 1)	12,069
Swap contracts (Note 1)	(58,742)
Written options (Note 1)	(135)
<b>Total net realized gain</b>	<b>2,726,293</b>

#### Change in net unrealized appreciation (depreciation) on:

Securities from unaffiliated issuers	5,160,972
Assets and liabilities in foreign currencies	74
Forward currency contracts	(42,557)
Futures contracts	21,921
Swap contracts	(24,676)
<b>Total change in net unrealized appreciation</b>	<b>5,115,734</b>
<b>Net gain on investments</b>	<b>7,842,027</b>
<b>Net increase in net assets resulting from operations</b>	<b>\$8,049,332</b>

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

## Statement of changes in net assets

	Six months ended 6/30/19*	Year ended 12/31/18
<b>Increase (decrease) in net assets</b>		
<b>Operations:</b>		
Net investment income	\$207,305	\$353,722
Net realized gain on investments and foreign currency transactions	2,726,293	5,025,190
Change in net unrealized appreciation (depreciation) of investments and assets and liabilities in foreign currencies	5,115,734	(7,144,935)
<b>Net increase (decrease) in net assets resulting from operations</b>	<b>8,049,332</b>	<b>(1,766,023)</b>
Distributions to shareholders (Note 1):		
From ordinary income		
Net investment income		
Class IA	(283,891)	—
Class IB	(291,315)	—
Net realized short-term gain on investments		
Class IA	(365,597)	—
Class IB	(460,522)	—
From net realized long-term gain on investments		
Class IA	(1,831,446)	—
Class IB	(2,306,968)	—
Increase (decrease) from capital share transactions (Note 4)	2,595,198	(6,971,746)
<b>Total increase (decrease) in net assets</b>	<b>5,104,791</b>	<b>(8,737,769)</b>
<b>Net assets:</b>		
Beginning of period	41,301,929	50,039,698
<b>End of period</b>	<b>\$46,406,720</b>	<b>\$41,301,929</b>

\* Unaudited.

## 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) <sup>a</sup>	Net realized and unrealized gain (loss) on investments	Total from investment operations	From net investment income	From net realized gain on investments	Total distributions	Non-recurring reimbursements	Net asset value, end of period	Total return at net asset value (%) <sup>b,c</sup>	Net assets, end of period (in thousands)	Ratio of expenses to average net assets (%) <sup>b,d</sup>	Ratio of net investment income (loss) to average net assets (%)	Portfolio turnover (%)
<b>Class IA</b>														
6/30/19†	\$25.60	.14	4.75	4.89	(.41)	(3.17)	(3.58)	—	\$26.91	20.03*	\$20,563	.38*	.53*	48*
12/31/18	26.81	.24	(1.45)	(1.21)	—	—	—	—	25.60	(4.51)	18,198	.81	.88	76
12/31/17	21.87	.20	4.95 <sup>e</sup>	5.15	(.21)	—	(.21)	— <sup>f,g</sup>	26.81	23.70 <sup>e</sup>	22,460	.81	.83	94
12/31/16	20.19	.22	1.83	2.05	(.37)	—	(.37)	—	21.87	10.32	20,597	.82 <sup>h</sup>	1.10 <sup>h</sup>	80
12/31/15	20.76	.20	(.45)	(.25)	(.32)	—	(.32)	—	20.19	(1.29)	20,684	.81	.98	90
12/31/14	18.22	.21	2.53	2.74	(.20)	—	(.20)	—	20.76	15.17	24,359	.83	1.11	94
<b>Class IB</b>														
6/30/19†	\$25.49	.11	4.71	4.82	(.33)	(3.17)	(3.50)	—	\$26.81	19.83*	\$25,844	.50*	.40*	48*
12/31/18	26.75	.17	(1.43)	(1.26)	—	—	—	—	25.49	(4.71)	23,104	1.06	.63	76
12/31/17	21.83	.14	4.93 <sup>e</sup>	5.07	(.15)	—	(.15)	— <sup>f,g</sup>	26.75	23.34 <sup>e</sup>	27,580	1.06	.58	94
12/31/16	20.15	.17	1.82	1.99	(.31)	—	(.31)	—	21.83	10.03	25,802	1.07 <sup>h</sup>	.85 <sup>h</sup>	80
12/31/15	20.71	.15	(.45)	(.30)	(.26)	—	(.26)	—	20.15	(1.50)	26,949	1.06	.73	90
12/31/14	18.18	.17	2.51	2.68	(.15)	—	(.15)	—	20.71	14.86	31,372	1.08	.87	94

\* Not annualized.

† Unaudited.

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

<sup>b</sup> The charges and expenses at the insurance company separate account level are not reflected.

<sup>c</sup> Total return assumes dividend reinvestment.

<sup>d</sup> Includes amounts paid through expense offset and/or brokerage/service arrangements, if any (Note 2). Also excludes acquired fund fees and expenses, if any.

<sup>e</sup> Reflects a non-recurring litigation payment received by the fund from Household International which amounted to the following amounts per share outstanding on May 8, 2017:

	Per share
Class IA	\$0.33
Class IB	0.33

This payment resulted in an increase to total returns of 1.52% for the period ended December 31, 2017.

<sup>f</sup> Amount represents less than \$0.01 per share.

<sup>g</sup> Reflects a non-recurring reimbursement pursuant to a settlement between the Securities and Exchange Commission (the SEC) and Countrywide Financial which amounted to less than \$0.01 per share outstanding on November 29, 2017.

<sup>h</sup> Reflects a voluntary waiver of certain fund expenses in effect during the period. As a result of such waiver, the expenses of each class reflect a reduction of less than 0.01% as a percentage of average net assets.

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

## Notes to financial statements 6/30/19 (Unaudited)

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, 2019 through June 30, 2019.

Putnam VT Research 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 capital appreciation. The fund invests mainly in common stocks (growth or value stocks or both) of large U.S. companies that Putnam Management believes have favorable investment potential. For example, the fund may purchase stocks of companies with stock prices that reflect a value lower than that which Putnam Management places on the company. Putnam Management may also consider other factors that Putnam Management believes will cause the stock price to rise and 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.

Market quotations are not considered to be readily available for certain debt obligations (including short-term investments with remaining maturities of 60 days or less) and other investments; such investments are valued on the basis of valuations furnished by an independent pricing service approved by the Trustees or dealers selected by Putnam Management. Such services or dealers determine valuations for normal institutional-size trading units of such securities using methods based on market transactions for comparable securities and various relationships, generally recognized by institutional traders, between securities (which consider such factors as security prices, yields, maturities and ratings). These securities will generally be categorized as Level 2.

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.

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.

**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 and including amortization and accretion of premiums and discounts on debt securities, 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.

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.

**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 hedge against changes in values of securities it owns, owned or expects to own.

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 to equitize cash.

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.

**Forward currency contracts** The fund buys and sells forward currency contracts, which are agreements between two parties to buy and sell currencies at a set price on a future date. These contracts are used to hedge foreign exchange risk.

The U.S. dollar value of forward currency contracts is determined using current forward currency exchange rates supplied by a quotation service. The fair value of the contract will fluctuate with changes in currency exchange rates. The contract is marked to market daily and the change in fair value is recorded as an unrealized gain or loss. 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 when the contract matures or by delivery of the currency. The fund could be exposed to risk if the value of the currency changes unfavorably, if the counterparties to the contracts are unable to meet the terms of their contracts or if the fund is unable to enter into a closing position. Risks may exceed amounts recognized on the Statement of assets and liabilities.

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

**Total return swap contracts** The fund entered into OTC and/or centrally cleared total return swap contracts, which are arrangements to exchange a market-linked return for a periodic payment, both based on a notional principal amount, to gain exposure to a basket of securities.

To the extent that the total return of the security, index or other financial measure underlying the transaction exceeds or falls short of the offsetting interest rate obligation, the fund will receive a payment from or make a payment to the counterparty. OTC and/or centrally cleared total return swap contracts are marked to market daily based upon quotations from an independent pricing service or market maker. Any change is recorded as an unrealized gain or loss on OTC total return swaps. Daily fluctuations in the value of centrally cleared total return 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 received or made are recorded as realized gains or losses. Certain OTC and/or centrally cleared total return 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 in the price of the underlying security or index, the possibility that there is no liquid market for these agreements or that the counterparty may default on its obligation to perform. 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 total return swap contracts by having a master netting arrangement between the fund and the counterparty and for centrally cleared total return swap contracts through the daily exchange of variation margin. There is minimal counterparty risk with respect to centrally cleared total return 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/or centrally cleared total return swap contracts outstanding, including their respective notional amounts 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 posted 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 had a net liability position of \$35,604 on open derivative contracts subject to the Master Agreements. There was no collateral posted by the fund at period end for these 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 received cash collateral of \$280,500 and the value of securities loaned amounted to \$277,970.

**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 \$317.5 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 LIBOR for the committed line of credit and the Federal Funds rate plus 1.30% 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.

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 \$40,628,888, resulting in gross unrealized appreciation and depreciation

of \$7,253,659 and \$1,052,909, respectively, or net unrealized appreciation of \$6,200,750.

**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. 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 42.9% 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 0.273% of the fund's average net assets.

Putnam Management has contractually agreed, through April 30, 2021, 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 0.35% of the average net assets of the portion of the fund managed by PIL.

The Putnam Advisory Company, LLC (PAC), an affiliate of Putnam Management, is authorized by the Trustees to manage a separate portion of the assets of the fund, as designated from time to time by Putnam Management or PIL. PAC did not manage any portion of the assets of the fund during the reporting period. If Putnam Management or PIL were to engage the services of PAC, Putnam Management or PIL, as applicable, would pay a quarterly sub-advisory fee to PAC for its services at the annual rate of 0.35% of the average net assets of the portion of the fund's assets for which PAC is engaged as sub-adviser.

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	\$7,011
Class IB	8,800
Total	\$15,811

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. The fund also reduced expenses through brokerage/service arrangements. For the reporting period, the fund's expenses were reduced by \$13 under the expense offset arrangements and by \$1,301 under the brokerage/service arrangements.

Each Independent Trustee of the fund receives an annual Trustee fee, of which \$32, 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)	\$21,081,896	\$23,474,110
U.S. government securities (Long-term)	—	—
<b>Total</b>	<b>\$21,081,896</b>	<b>\$23,474,110</b>

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 6/30/19		Year ended 12/31/18		Six months ended 6/30/19		Year ended 12/31/18	
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount
Shares sold	14,333	\$390,452	16,702	\$468,638	18,431	\$490,300	47,202	\$1,307,311
Shares issued in connection with reinvestment of distributions	98,255	2,480,934	—	—	121,478	3,058,805	—	—
	112,588	2,871,386	16,702	468,638	139,909	3,549,105	47,202	1,307,311
Shares repurchased	(59,273)	(1,608,809)	(143,720)	(3,988,171)	(82,543)	(2,216,484)	(171,577)	(4,759,524)
<b>Net increase (decrease)</b>	<b>53,315</b>	<b>\$1,262,577</b>	<b>(127,018)</b>	<b>\$(3,519,533)</b>	<b>57,366</b>	<b>\$1,332,621</b>	<b>(124,375)</b>	<b>\$(3,452,213)</b>

### 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 12/31/18	Purchase cost	Sale proceeds	Investment income	Shares outstanding and fair value as of 6/30/19
<b>Short-term investments</b>					
Putnam Cash Collateral Pool, LLC*	\$1,366,675	\$3,146,120	\$4,232,295	\$10,077	\$280,500
Putnam Short Term Investment Fund**	601,065	3,913,298	4,284,463	5,279	229,900
<b>Total Short-term investments</b>	<b>\$1,967,740</b>	<b>\$7,059,418</b>	<b>\$8,516,758</b>	<b>\$15,356</b>	<b>\$510,400</b>

\*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.

**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)	\$—*
Written equity option contracts (contract amount)	\$—*
Futures contracts (number of contracts)	1
Forward currency contracts (contract amount)	\$3,300,000
OTC total return swap contracts (notional)	\$590,000

\*For the reporting period, there were no holdings at the end of each fiscal quarter and the transactions were considered minimal.

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
Foreign exchange contracts	Receivables	\$13,783	Payables	\$22,249
Equity contracts	Receivables	—	Payables	13,380
<b>Total</b>		<b>\$13,783</b>		<b>\$35,629</b>

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	Futures	Forward currency contracts	Swaps	Total
Foreign exchange contracts	\$—	\$—	\$43,073	\$—	\$43,073
Equity contracts	255	12,069	—	(58,742)	\$(46,418)
<b>Total</b>	<b>\$255</b>	<b>\$12,069</b>	<b>\$43,073</b>	<b>\$(58,742)</b>	<b>\$(3,345)</b>

**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	Futures	Forward currency contracts	Swaps	Total
Foreign exchange contracts	\$—	\$(42,557)	\$—	\$(42,557)
Equity contracts	21,921	—	(24,676)	\$(2,755)
<b>Total</b>	<b>\$21,921</b>	<b>\$(42,557)</b>	<b>\$(24,676)</b>	<b>\$(45,312)</b>

**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	Citibank, N.A.	Goldman Sachs International	HSBC Bank USA, National Association	JPMorgan Chase Bank N.A.	State Street Bank and Trust Co.	Total
<b>Assets:</b>								
OTC Total return swap contracts*#	\$—	\$—	\$—	\$—	\$—	\$—	\$—	\$—
Forward currency contracts#	—	—	—	—	13,755	25	3	13,783
<b>Total Assets</b>	<b>\$—</b>	<b>\$—</b>	<b>\$—</b>	<b>\$—</b>	<b>\$13,755</b>	<b>\$25</b>	<b>\$3</b>	<b>\$13,783</b>
<b>Liabilities:</b>								
OTC Total return swap contracts*#	\$—	\$—	\$—	\$13,380	\$—	\$—	\$—	\$13,380
Forward currency contracts#	3,622	1,028	3,125	1,295	—	13,179	—	22,249
<b>Total Liabilities</b>	<b>\$3,622</b>	<b>\$1,028</b>	<b>\$3,125</b>	<b>\$14,675</b>	<b>\$—</b>	<b>\$13,179</b>	<b>\$—</b>	<b>\$35,629</b>
<b>Total Financial and Derivative Net Assets</b>	<b>\$(3,622)</b>	<b>\$(1,028)</b>	<b>\$(3,125)</b>	<b>\$(14,675)</b>	<b>\$13,755</b>	<b>\$(13,154)</b>	<b>\$3</b>	<b>\$(21,846)</b>
Total collateral received (pledged)†##	\$—	\$—	\$—	\$—	\$—	\$—	\$—	
Net amount	\$(3,622)	\$(1,028)	\$(3,125)	\$(14,675)	\$13,755	\$(13,154)	\$3	
<i>Controlled collateral received (including TBA commitments)**</i>	\$—	\$—	\$—	\$—	\$—	\$—	\$—	\$—
<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.

## Trustee approval of management contract

### General conclusions

The Board of Trustees of The Putnam Funds 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 Investment Management, LLC ("Putnam Management"), the sub-management contract with respect to your fund between Putnam Management and its affiliate, Putnam Investments Limited ("PIL"), and the sub-advisory contract among Putnam Management, PIL, and another affiliate, The Putnam Advisory Company ("PAC"). The Board, 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 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 Funds ("Independent Trustees").

At the outset of the review process, members of the Board's independent staff and independent legal counsel discussed with representatives of Putnam Management the annual contract review materials furnished to the Contract Committee during the course of the previous year's review, identifying possible changes in these materials that might be necessary or desirable for the coming year. 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 2019, 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's independent staff and by independent legal counsel for The Putnam Funds and the Independent Trustees.

In May 2019, the Contract Committee met in executive session to discuss and consider its recommendations with respect to the continuance of the contracts. At the Trustees' June 2019 meeting, the Contract Committee 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 then presented its written report, which summarized the key factors that the Committee had considered and set forth its recommendations. The Contract Committee recommended, and the Independent Trustees approved, the continuance of your fund's management, sub-management and sub-advisory contracts, effective July 1, 2019. (Because PIL and PAC are affiliates of Putnam Management and Putnam Management remains fully responsible for all services provided by PIL and PAC, the Trustees have not attempted to evaluate PIL or PAC as separate entities, and all subsequent references to Putnam Management below should be deemed to include reference to PIL and PAC as necessary or appropriate in the context.)

The Independent Trustees' approval was 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 such 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 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 some minor exceptions, the funds' current fee arrangements under the 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.

### Management fee schedules and total expenses

The Trustees reviewed the management fee schedules in effect for all Putnam funds, including fee levels and breakpoints. 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 funds have implemented so-called "all-in" 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 mutual 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 structure for your fund would be appropriate at this time.

Under its management contract, your fund has the benefit of breakpoints in its management fee schedule that provide shareholders with economies of scale in the form of reduced fee rates as assets under management in the Putnam family of funds increase. The Trustees concluded that the fee schedule in effect for your fund represented an appropriate sharing of economies of scale between fund shareholders and Putnam Management.

As in the past, the Trustees also focused on the competitiveness of each fund's total expense ratio. In order to support the effort to have fund expenses meet competitive standards, the Trustees and 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 2018. These expense limitations were: (i) a contractual expense limitation applicable to all open-end funds of 25 basis points on investor servicing fees and expenses and (ii) a contractual expense limitation applicable to specified open-end 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, including your fund, had sufficiently low expenses that these expense limitations were not operative during their fiscal years ending in 2018. Putnam Management and PSERV have agreed to maintain these expense limitations until at least April 30, 2021. The support of Putnam Management and PSERV for these expense limitation arrangements was an important factor in the Trustees' decision to approve the continuance of your fund's management, sub-management and sub-advisory 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 second 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, 2018. 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, 2018 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. In this regard, the Trustees also reviewed an analysis of Putnam Management's revenues, expenses and profitability, allocated on a fund-by-fund basis, with respect to the funds' management, distribution, and investor servicing contracts. For each fund, the analysis presented information about revenues, expenses and profitability for each of the 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 represented reasonable compensation for the services being provided and represented an appropriate sharing between fund shareholders and Putnam Management of such economies of scale as may exist in the management of the Putnam funds at that time.

The information examined by the Trustees in connection with their annual contract review for the Putnam funds included information regarding fees charged by Putnam Management and its affiliates to institutional clients, including defined benefit pension and profit-sharing plans and sub-advised mutual funds. This information included, in cases where an institutional product's investment strategy corresponds with a fund's strategy, comparisons of those fees with fees charged to the Putnam funds, as well as an assessment of the differences in the services provided to these different types of clients as compared to the services provided to the Putnam funds. The Trustees observed that the differences in fee rates between these clients and the Putnam 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 markets. The Trustees considered the fact that in many cases fee rates across different asset classes are higher on average for mutual funds than for institutional clients, and the Trustees also considered the differences between the services that Putnam Management provides to the Putnam 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 the Putnam funds' 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 the funds' portfolio teams and with the Chief Investment Officers and other senior members 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, after a strong start to the year, 2018 was a mixed year for the Putnam funds, with the Putnam open-end Funds' performance, on an asset-weighted basis, ranking in the 54th percentile of their Lipper Inc. ("Lipper") peers (excluding those Putnam funds that are evaluated based on their total returns versus selected investment benchmarks). The Trustees also noted that The Putnam Funds were ranked by the Barron's/Lipper Fund Families survey as the 41st-best performing mutual fund complex out of 57 complexes for the one-year period ended December 31, 2018 and the 29th-best performing mutual fund complex out of 55 complexes for the five-year period ended December 31, 2018. The Trustees observed that The Putnam Funds' performance over the longer-term continued to be strong, ranking 6th out of 49 mutual fund complexes in the survey over the ten-year period ended 2018. In addition, the Trustees noted that 22 of the Funds were four- or five-star rated by Morningstar Inc. at the end of 2018. They also noted, however, the disappointing investment performance of some funds for periods ended December 31, 2018 and considered information provided by Putnam Management regarding the factors contributing to the underperformance and actions being taken to improve the performance of these particular funds. The Trustees indicated their intention to continue to monitor closely the performance of those funds, including the effectiveness of any efforts Putnam Management has undertaken to address underperformance and whether additional actions to address areas of underperformance are warranted.

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 with 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) — Large-Cap Core Funds) for the one-year, three-year and five-year periods ended December 31, 2018 (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
2nd	1st	1st

Over the one-year, three-year and five-year periods ended December 31, 2018, there were 161, 153 and 145 funds, respectively, 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 considered Putnam Management's continued efforts to support fund performance through initiatives including structuring compensation for portfolio managers and research analysts to enhance accountability for fund performance, emphasizing accountability in the portfolio management process, and affirming its commitment to a fundamental-driven approach to investing. The Trustees noted further that Putnam Management had made selective hires in 2018 to strengthen its investment team.

**Brokerage and soft-dollar allocations; 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. However, the Trustees noted that a portion of available soft dollars continues to be used to pay fund expenses. The Trustees indicated their continued intent to monitor regulatory and industry developments in this area with the assistance of their Brokerage Committee. The Trustees also indicated their continued intent to monitor the allocation of the Putnam 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 that the funds make to Putnam Management's affiliates for investor or distribution services. In conjunction with the annual review of your fund's management, sub-management and sub-advisory contracts, the Trustees reviewed your fund's investor servicing agreement with PSERV and its distributor's contracts 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 funds to PSERV and PRM, as applicable, for such services are 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, as applicable, in providing such services. Furthermore, the Trustees were of the view that the services provided were required for the operation of the funds, and that they were of a quality at least equal to those provided by other providers.

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## 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, 2019, 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-Advisors

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

The Putnam Advisory Company, LLC  
100 Federal Street  
Boston, MA 02110

### Marketing Services

Putnam Retail Management  
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

### Trustees

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Barbara M. Baumann  
Katinka Domotorffy  
Catharine Bond Hill  
Paul L. Joskow  
Robert E. Patterson  
George Putnam, III  
Robert L. Reynolds  
Manoj P. Singh

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.

