

Section 3 Provide information about your financial advisor

Dealer number	Branch office number	Financial advisor number	CRD number
Financial advisor name(s) exactly as it appears on firm's registration			
Financial advisor's firm		Financial advisor's contact phone number	
Branch office street address			
City	State	ZIP code	

Note: If you do not designate a financial advisor, or if the broker-dealer firm you designate does not have a selling agreement with the distributor, Putnam Retail Management Limited Partnership ("PRM"), PRM will be designated as the default broker-dealer firm of record on your account and PRM will retain all applicable sales charges. You may designate another broker-dealer firm at any time by returning a signed Change of financial advisor form to Putnam Investor Services.

Section 4 Investment instructions

Please indicate how you wish to fund your IRA. Select all that apply. Putnam will invest contributions as current year unless otherwise specified in Section 5.

- A check is enclosed / A check is en route** (make checks payable to Putnam Investments)
 - Invest as a contribution to my IRA (Putnam will invest your contribution as current year unless otherwise specified in Section 5)
 - as a rollover or a transfer of assets from an account that was held at another financial institution (You must indicate the type of plan held with your previous custodian)
 - Traditional IRA Rollover IRA Roth IRA Roth IRA Conversion
 - SEP/SIMPLE IRA Roth 401(k)/403(b) 401(k) 403(b)
 - Other qualified company plan (Government 457, Money Purchase Pension, Profit Sharing)
- A check is not enclosed**
 - Solicit my current trustee (please attach an Asset transfer/direct rollover authorization form, IR771/Form B)
 - Fund my IRA with a purchase from my existing non-retirement account (Investments will be made into the same share class as previously held. Some restrictions may apply.)

Fund number	Account number	\$	Dollar amount
 - Fund my IRA with a purchase from an existing Putnam retirement account due to death or divorce (contact Putnam for additional requirements)
 - Draft a one-time debit from my checking or savings account for:

\$		(indicate investment elections in Section 5 and bank account information in Section 7)
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Note: The one-time debit will be initiated on the date the account is established.

- Draft systematic investments from my checking or savings account (Complete Section 7)

Section 5 Select your funds

Please use the Putnam Fund Guide (<https://www.putnam.com/literature/pdf/FM103.pdf>) to select your investment. You must enter the fund name and number for the corresponding share class you wish to establish. For additional fund elections, please attach a separate sheet of paper with fund number, fund name, dollar amount or percentage, and contribution year.

- For new investments made to Putnam: If no class of shares is indicated, class A shares will be purchased and any unallocated assets will be invested into Money Market A.
- For assets moved from an existing Putnam registration: Fund allocations will remain consistent with the originating Putnam account(s) unless otherwise indicated. In addition, the share class must remain consistent with the originating Putnam account(s).

Only prior year and current year contributions are permitted. If no contribution year is indicated, all contributions will always be coded for the current year in which your paperwork is received at Putnam per IRS regulations. For prior year contributions, the envelope must be postmarked on or before the tax filing deadline.

Fund number	Fund name	Dollar amount	or	Percentage	Contribution year
			or		
			or		
			or		
100%					

Section 6 Designate your beneficiary(ies)

Complete Sections 6A and 6B to designate primary and contingent beneficiaries respectively for assets payable upon your death. For each beneficiary, PFTC requires the full name, tax identification number, and date of birth. If you name multiple primary or contingent beneficiaries, please specify the percentage each is to receive. If no percentage is specified, your account will be divided among your surviving primary beneficiaries in substantially equal amounts. If no primary beneficiaries survive you, your account will be divided among your surviving contingent beneficiaries. If none of your designated beneficiaries survive you, your account will be distributed according to the provisions of the IRA plan and disclosure statement.

Important: PFTC does not accept customized beneficiary designations (for example, designations which involve multiple contingencies within a primary or contingent beneficiary category) or "per stirpes" designations. All beneficiaries must be designated as either primary or contingent and must include all identifying information referenced above. PFTC generally cannot accept beneficiary designations from attorneys-in-fact, conservators, or guardians. If the designated beneficiaries are not accepted by PFTC the provisions of the IRA plan disclosure statement will be in effect.

6A: Primary beneficiary(ies):

Percentages for **primary** beneficiaries **must equal 100%**. For any additional **primary** beneficiary designations, attach a separate page which contains all required information for each beneficiary.

Name of individual (First, MI, Last)/Full name of entity/trust

Tax identification number (required)

Date of birth (mm/dd/yyyy; required)

Residential address (Street, City, State, ZIP Code)

Relationship

Spouse Non-spouse Entity/Trust

Percentage

 . %

Name of individual (First, MI, Last)/Full name of entity/trust

Tax identification number (required)

Date of birth (mm/dd/yyyy; required)

Residential address (Street, City, State, ZIP Code)

Relationship

Spouse Non-spouse Entity/Trust

Percentage

 . %

Name of individual (First, MI, Last)/Full name of entity/trust

Tax identification number (required)

Date of birth (mm/dd/yyyy; required)

Residential address (Street, City, State, ZIP Code)

Relationship

Spouse Non-spouse Entity/Trust

Percentage

 . %

Name of individual (First, MI, Last)/Full name of entity/trust

Tax identification number (required)

Date of birth (mm/dd/yyyy; required)

Residential address (Street, City, State, ZIP Code)

Relationship

Spouse Non-spouse Entity/Trust

Percentage

 . %

100%

Section 7 Select your account features (optional)

Section 7A — Bank account information (You must provide a voided check or deposit slip; please do not staple)

Note: Starter checks, brokerage checks, and checkwriting checks will not be accepted.

Please provide your bank information to allow subsequent purchases to be sent from your bank account. If the Putnam account owner's name is listed in the bank account registration, you will then be eligible for ACH on-demand purchasing via phone or web.

Attach a preprinted or web-generated voided check/deposit slip or a signed letter from the bank on bank letterhead below. Each of these documents must include: bank name, name(s) as registered on the bank account, routing number and account number.

Check the bank account you would like to use: Checking account Savings account

Please use my enclosed investment check to establish bank account options on my account in lieu of other acceptable documents named above.

tape your document here

Name		DATE _____
Address		
City, State, ZIP		
PAY TO THE		
ORDER OF _____	\$	<input type="text"/>
		DOLLARS
memo: _____		
: 123456789	: 000123456789	: 101

ABA routing number of financial institution

Bank account number

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Section 7B — Systematic investment plan

Complete this section to establish a new systematic investment plan using the bank account information provided above. Please indicate the fund number, fund name, dollar amount, frequency and date for your investments below. Investments will be made into the same share class selected in Section 5 unless otherwise indicated (systematic investments will always be coded for the current contribution year). Putnam requests the draft from your bank account on the business day prior to the investment date. **If no date is selected, Putnam will default to the 15th.** If the investment date falls on a weekend or a holiday, the investment will be made the next business day. If the investment date falls on a date that does not occur within a particular month (29th-31st), the investment will be made the prior day, unless this day falls on a weekend or holiday then the investment will be made the next business day.

Step 1: Investment allocation

Fund number	Fund name	Dollar amount
<input type="text"/>	<input type="text"/>	\$ <input type="text"/>
<input type="text"/>	<input type="text"/>	\$ <input type="text"/>
<input type="text"/>	<input type="text"/>	\$ <input type="text"/>
<input type="text"/>	<input type="text"/>	\$ <input type="text"/>

Step 2: Option frequency

Choose a frequency below. Putnam will default to once per month if no option is selected:

Frequency: Invest every month (enter investment date(s) below) **or** Invest only in the month(s) chosen below:

Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec

Indicate draft date(s) below:

Investment date: Additional investment date: (use if you wish to invest multiple times within a month)

(MM/DD)	(DD)
<input type="text"/>	<input type="text"/>

Note: Contributions cannot be made into a Traditional IRA for the year in which the shareholder reaches the age of 70½ or for any year thereafter. Putnam will automatically stop the systematic investment plan for all Traditional IRA accounts upon the start of the year that the client will attain the age of 70½.

Section 7 Select your account features (optional)(continued)

Section 7C — Reduced sales charge

If you already own shares of another Putnam fund, or if you agree to invest a certain amount, you may be able to reduce the sales charge you pay.

CUMULATIVE DISCOUNT

To qualify for sales charge discounts on class A and M shares, list the account number(s) of other Putnam fund(s) that you or your family (spouse and/or children under age 21) own.

Fund number	Account number
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

LETTER OF INTENT

By checking an amount below, I agree to the terms and conditions for a Letter of Intent as set forth in the Statement of Additional Information (including the escrowing of shares). Although I am not obligated to complete a Letter of Intent, I plan to invest in one or more Putnam funds over a 13-month period an aggregate amount equal to at least the amount of the box checked below. I am aware that if I do not invest at least this amount over a 13-month period any purchases made pursuant to this Letter of Intent will be adjusted to the commission rate that otherwise would apply.

- \$50,000 \$100,000 \$250,000
 \$500,000 \$1,000,000

Section 8 Traditional or Roth IRA agreement

I do not authorize telephone redemptions. Accept only written instructions signed by me.

Unless I have checked the box above, Putnam Investor Services, Inc. is authorized to act upon redemption instructions received by telephone from me or any other person claiming to act as my representative who can provide Putnam with my account registration and address as it appears on Putnam's records. Redemption proceeds of up to \$100,000 will be sent to me at an address on record with Putnam for at least 15 days. Putnam will not be liable for unauthorized transactions if it employs reasonable procedures to confirm that instructions received by telephone are genuine. I agree to indemnify and hold harmless Putnam Investor Services, Inc. and any Putnam funds that may be involved in transactions authorized by telephone against any claim or loss in connection with any telephone transaction effected on my account.

I do not authorize the mailing of only one shareholder report, one prospectus, or one set of proxy materials if there are multiple accounts in a Putnam fund at my address. Send a separate copy for every account.

Unless I have checked the box above, Putnam Investor Services, Inc. is authorized to send only one shareholder report, one prospectus, or one set of proxy materials for **all** accounts in any Putnam fund at my address.

Important notice regarding Putnam's privacy policy: By signing this application, I acknowledge that Putnam's privacy policy is available for viewing and printing via Putnam's website at <https://www.putnam.com/policies/>

If I/we have completed the bank account information in Section 7, I/we authorize my/our bank/credit union to accept debit/credit entries initiated by Putnam Investor Services to my/our account and to debit/credit, as requested, the same to my/our account, without responsibility for correctness thereof or for the existence of any further authorization relating thereto. I/we hereby acknowledge that the initiation of an ACH transaction through Putnam is to purchase securities, and accordingly any transaction requested by me/us through the ACH system is irrevocable. I/we authorize Putnam to make a follow-up attempt in retrieving those monies which are denied due to insufficient funds (i.e. systematic purchase bounce). I/we agree to indemnify and hold harmless my/our bank/credit union, the Putnam funds, and Putnam Investor Services for any loss, liability, or expense incurred from acting on these instructions. I/we also agree to waive any right under the NACHA Rules to rescind any instruction for ACH transactions which have already occurred at the time of the attempt to rescind. This waiver of the rescission right applies to both ACH investments in and ACH redemptions from the Putnam Funds. This authorization may be terminated by me/us at any time by written notification to Putnam Investor Services, with reasonable time given to implement my/our request. Putnam Investor Services may amend or terminate this agreement at any time. You will be notified before any such changes go into effect. For bank account information (Section 7), Putnam does not assess a fee for federal bank wire and/or ACH transactions on your account(s). Some banks/credit unions may not offer ACH transactions or may charge a fee to conduct such transactions. Please check with your financial institution for information regarding eligibility, fees and applicable routing number(s) for federal bank wire and/or ACH transactions.

If I have completed a Letter of Intent (LOI) in Section 7, I agree that the minimum initial investment, which will be held in escrow until the full LOI amount is purchased, is 5% of the amount checked. If I invest less than the LOI amount, shares may be redeemed from my account to cover the higher sales charge. If I invest more, the sales charge will only be adjusted when and if my dealer refunds Putnam its portion of the adjustment. I will not receive LOI credit for shares purchased by dividend reinvestment.

If applicable, the Parent/Guardian named in Section 2 represents that he or she is the parent or legal guardian of the property of the Owner/Minor indicated above. Notwithstanding any provision of the Adoption Agreement or Plan, PFTC may rely on instructions of the Parent/Guardian with respect to the administration, investment and distribution of the Account until the Owner/Minor reaches the age of majority in his or her State of residence. The Parent/Guardian agrees that he or she shall cease to have any authority or control with respect to the Account upon attainment of the age of majority by the Owner/Minor. Thereafter, the Owner/Minor shall be treated as the Owner for all purposes under the Adoption Agreement and Plan. Notwithstanding the foregoing, the Parent/Guardian agrees that Putnam Fiduciary Trust Company ("PFTC") shall have no responsibility or obligation to determine whether the Owner/Minor has attained the age of majority. Prior to executing any direction or request made by the Parent/Guardian or the Owner/Minor, PFTC may require the Parent/Guardian or the Owner/Minor to demonstrate in a manner satisfactory to PFTC whether the Owner/Minor has attained the age of majority. The Parent/Guardian hereby agrees to indemnify and hold harmless Putnam Fiduciary Trust Company, Putnam Investor Services, and their respective affiliates, agents, directors, officers, and employees (collectively, "Putnam"), from and against any loss, damage, liability, claim, cost or expense, including legal fees, which Putnam incurs as a result of, or in connection with, any actual or attempted disaffirmance, voiding, reversal, unenforceability, cancellation or limitation of any purchase, exchange, transfer or redemption of assets held in the Account by reason of, or in connection with, the Owner/Minor's status as a minor or the Parent/Guardian's status as a person other than the Owner/Minor's parent or legal guardian. This agreement is binding on the Parent/Guardian and his or her executors, beneficiaries, heirs, administrators, legal representatives and assigns, and will inure to the benefit of Putnam and its successors and assigns. This agreement shall survive termination of the Adoption Agreement.

Section 8 Traditional or Roth IRA agreement (continued)

I hereby (I) adopt The Putnam Traditional IRA Plan or The Putnam Roth IRA Plan (the "Plans"), as indicated in Section 1 of this form, as an individual retirement account under Section 408(a) or 408A of the Internal Revenue Code of 1986, as amended; (II) acknowledge receipt of the Plan and Disclosure Statement; (III) have received and have read a current prospectus of any fund; (IV) appoint **Putnam Fiduciary Trust Company** as Trustee; (V) acknowledge that the terms in this agreement mean the same as in the Plan; and (VI) agree that an annual maintenance fee of \$25 will automatically be deducted from the account in accordance with Putnam's annual maintenance fee policy for all accounts with a balance below \$50,000 on the day the fee is scheduled to be taken. I also acknowledge that Putnam's annual maintenance fee policy is subject to change. I also certify under the penalties of perjury that the taxpayer identification number (Social Security number) set forth in Section 2 is true, correct, and complete.

In accordance with federal law, the Putnam funds are required to obtain the name, residential or business address, Social Security or tax identification number, and date of birth for each registered owner in order to verify their identities. For certain entities such as trusts, estates, corporations, partnerships, or other organizations, additional documentation may be required (see the following terms and conditions or call Putnam at 1-800-225-1581). The funds are unable to accept new accounts if any required information is not provided. If the funds are unable to verify your identity, your account will be closed at the then-current NAV, which may be more or less than your original investment, and the proceeds will be sent to you, net of any applicable sales charges. With respect to any such distribution, I elect that no amount be withheld for federal income taxes due on the taxable part of any such distribution, and I acknowledge that I can incur penalties if my withholding or estimated tax payments for the year are not sufficient. I further understand that under federal tax law I will have 60 days from date of receipt by me to roll over such distribution to another IRA or eligible plan that will accept it. I will consult my professional tax advisor if I have any questions about the tax consequences of any such distribution.

The information you provide may be shared with third parties for the purpose of verification subject to the terms of Putnam's privacy policy.

Signature of owner/parent/guardian/authorized signer

Date (mm/dd/yyyy)

Print name of signature above

SIGNATURE OF CONTRIBUTOR OR BANK ACCOUNT OWNER

If the checking or savings account indicated in Section 7 is not that of the Putnam account owner, an individual whose name appears on the bank account registration must sign below (only one bank account owner must sign).

Signature of bank account owner (if different from the Putnam account owner)

Date (mm/dd/yyyy)

Print name of signature above

Roth IRA conversion authorization for existing Putnam IRAs C



Return by mail:
Putnam Investor Services, Inc.
P. O. Box 8383
Boston, MA 02266-8383

Return by express delivery:
Putnam Investor Services, Inc.
30 Dan Road
Canton, MA 02021-2809

For more information:
Putnam Investments
1-800-662-0019
www.putnam.com



Use this form to convert from a Putnam Traditional IRA, SIMPLE IRA, SEP IRA or SARSEP to a Putnam Roth IRA. A conversion from an IRA to a Roth IRA will trigger a taxable event that will be reported to the Internal Revenue Service. If you are establishing a new Putnam Roth IRA, you must also attach a completed Putnam Traditional or Roth IRA adoption agreement. **If you already maintain a contributory Putnam Roth IRA, you do not need to complete a new Traditional or Roth IRA adoption agreement; however, Roth IRA conversion accounts will be established.**

Section 1 Complete your IRA account owner information

Name of account owner

First	MI	Last	Suffix	Social security number (required)	Date of birth (mm/dd/yyyy; required)

Contact phone number

Note: Providing a phone number above will replace the current contact information on file with Putnam (if applicable). If this field is left blank, no changes will be made.

Section 2 Convert from

Convert **100%** of the assets in each of my retirement plan type(s) which I have indicated below (please see your statement for plan type):

- IRA Rollover IRA SIMPLE IRA SEP IRA SARSEP IRA

Convert the indicated dollar amount, share amount, or percentage allocation listed below.

Fund number	Account number	Dollar amount	Share amount	Percentage
		\$	or	or %
		\$	or	%
		\$	or	%
		\$	or	%

Please stop the existing systematic investment on the account(s) listed above.

Section 3 Convert to

Indicate the fund(s) into which the amount(s) listed in Section 2 should be transferred upon conversion by selecting from the options below. If no option is selected Putnam will default to transferring the assets in kind. Please note that a **Roth IRA Adoption Agreement is required** if a Roth IRA or Roth Conversion registration does not already exist.

- Please convert the indicated amount(s) from the IRA into the same fund(s) of the Roth Conversion (transfer in kind).
- Please convert the indicated amount(s) from the IRA into the Roth Conversion based on the allocations below. If you are establishing a new fund please indicate the fund name and number which can be found in the Putnam Fund Guide (<https://www.putnam.com/literature/pdf/FM103.pdf>). The share class of the Roth Conversion must remain consistent with the share class of the IRA.

Fund name	Fund number	Account number	Amount	Percentage
			\$	or %
			\$	or %
			\$	or %
			\$	or %

Section 4 Federal income tax withholding

By submitting this form I am electing that no amount converted from my existing Putnam IRA to a Putnam Roth IRA be withheld for federal income tax, except as provided below:

Please withhold _____ % of the distribution(s) from my Putnam IRA account(s) for federal income tax.

I understand that I am still liable for any federal income taxes due on the taxable part of my conversion distribution, and I could incur penalties if my withholding or estimated tax payments for the year are not enough.

Section 5 Authorization

This authorization instructs Putnam Fiduciary Trust Company to convert the indicated amounts of my Putnam IRA to a Putnam Roth IRA, which I have adopted. I acknowledge that this transaction will trigger a taxable event that will be reported to the Internal Revenue Service. I also acknowledge that any contingent deferred sales charge (CDSC) associated with any shares transferred will be transferred pro rata to the new Putnam Roth IRA. I understand that converting from a Putnam IRA to a Putnam Roth IRA will create an account called a Roth IRA Conversion, even if a Roth IRA account already exists for the fund chosen.

My signature below indicates that if I am designating an investment in a fund that I do not already own I have read the fund prospectus(es) and agree to the terms therein.

Signature of Owner

Date (mm/dd/yyyy)

Print name of signature above