

Vanguard Funds

Supplement Dated July 2, 2025, to the Statement of Additional Information

Leadership Announcements

The boards of trustees of the Vanguard funds (the “Boards” of the “Funds”) have elected John Bendl as Finance Director of each of the Funds, effective July 1, 2025. Michael Rollings has resigned from his roles with each of the Funds, effective June 30, 2025.

Also effective July 1, 2025, the Boards have elected Matt Piro as Manager Oversight Officer of each of the Funds.

Statement of Additional Information Text Changes

All references to Michael Rollings are hereby deleted in their entirety.

In the **Management of the Fund(s)** section under *Officers and Trustees*, the following biographical information is added:

Name, Year of Birth	Position(s) Held With Funds	Vanguard Funds’ Trustee/ Officer Since	Principal Occupation(s) During the Past Five Years, Outside Directorships, and Other Experience	Number of Vanguard Funds Overseen by Trustee/Officer
John Bendl (1970)	Finance Director	July 2025	Finance director (July 2025–present) of each of the investment companies served by Vanguard. Managing director (July 2025–present) of Vanguard. Chief financial officer (July 2025–present) of Vanguard. Senior Vice President and Director (July 2025–present) of Vanguard Marketing Corporation. Head of Financial Planning and Analysis and Enterprise Strategic Services (2024–2025) of Vanguard. Divisional chief financial officer of Vanguard’s International division (2021–2024). Chief financial officer (2019–2021) of each of the investment companies served by Vanguard. Chief accounting officer, treasurer, and controller (2017–2019) of Vanguard. Partner (2003–2016) at KPMG (audit, tax, and advisory services).	222
Matt Piro (1980)	Manager Oversight Officer	July 2025	Principal of Vanguard. Manager oversight officer (July 2025–present) of each of the investment companies served by Vanguard. Global head of Oversight & Manager Search (2022–present) of Vanguard. Global head of ESG product (2017–2021) of Vanguard. Head of product – Europe (2017–2021) of Vanguard. Senior investment director of Oversight & Manager Search (2012–2017) of Vanguard.	222

PART B
VANGUARD® INTERNATIONAL EQUITY INDEX FUNDS
STATEMENT OF ADDITIONAL INFORMATION

February 28, 2025

This Statement of Additional Information (SAI) is not a prospectus but should be read in conjunction with a Fund's current prospectus (dated February 28, 2025). To obtain, without charge, a prospectus, the most recent report to shareholders, or a Fund's [financial statements](#) hereby incorporated by reference, please visit <https://vgi.vg/fund-literature> or contact The Vanguard Group, Inc. (Vanguard).

Phone: Investor Information Department at 800-662-7447

Online: vanguard.com

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DESCRIPTION OF THE TRUST

Vanguard International Equity Index Funds (the Trust) currently offers the following funds and share classes (identified by ticker symbol):

Vanguard Fund ²	Share Classes ¹				
	Investor	Admiral	Institutional	Institutional Plus	ETF
Vanguard European Stock Index Fund ³	VEURX	VEUSX	VESIX	VEUPX	VGK ⁶
Vanguard Pacific Stock Index Fund ⁴	VPACX	VPADX	VPKIX	—	VPL ⁶
Vanguard Emerging Markets Stock Index Fund ⁵	VEIEX	VEMAX	VEMIX	VEMRX	VWO ⁶
Vanguard FTSE All-World ex-US Index Fund	—	VFWAX	VFWSX	VFWPX	VEU ⁶
Vanguard Total World Stock Index Fund	—	VTWAX	VTWIX	—	VT ⁶
Vanguard FTSE All-World ex-US Small-Cap Index Fund	—	VFSAX	VFSNX	—	VSS ⁶
Vanguard Global ex-U.S. Real Estate Index Fund	—	VGRLX	VGRNX	—	VNQI ⁶

1 Individually, a class; collectively, the classes.

2 Individually, a Fund; collectively, the Funds.

3 The ETF Share class is known as Vanguard FTSE Europe ETF.

4 The ETF Share class is known as Vanguard FTSE Pacific ETF.

5 The ETF Share class is known as Vanguard FTSE Emerging Markets ETF.

6 Exchange: NYSE Arca.

The Trust has the ability to offer additional funds or classes of shares. There is no limit on the number of full and fractional shares that may be issued for a single fund or class of shares.

Organization

The Trust was organized as a Maryland corporation in 1989, and was reorganized as a Delaware statutory trust in 1998. Prior to its reorganization as a Delaware statutory trust, the Trust was known as Vanguard International Equity Index Fund, Inc. The Trust is registered with the United States Securities and Exchange Commission (SEC) under the Investment Company Act of 1940 (the 1940 Act) as an open-end management investment company. All Funds within the Trust are classified as diversified within the meaning of the 1940 Act.

Service Providers

Custodian. Bank of New York Mellon, 240 Greenwich Street, New York, NY 10286 (for the European Stock Index, Pacific Stock Index, FTSE All-World ex-US Index, and FTSE All-World ex-US Small-Cap Index Funds); JPMorgan Chase Bank, N.A., 383 Madison Avenue, New York, NY 10179 (for the Emerging Markets Stock Index Fund); and State Street Bank and Trust Company, One Congress Street, Suite 1, Boston, MA 02114 (for the Total World Stock Index and Global ex-U.S. Real Estate Index Funds) serve as the Funds' custodians. The custodians are responsible for maintaining the Funds' assets, keeping all necessary accounts and records of Fund assets, and appointing any foreign subcustodians or foreign securities depositories.

Independent Registered Public Accounting Firm. PricewaterhouseCoopers LLP, Two Commerce Square, Suite 1800, 2001 Market Street, Philadelphia, PA 19103-7042, serves as the Funds' independent registered public accounting firm. The independent registered public accounting firm audits the Funds' annual financial statements and provides other related services.

Transfer and Dividend-Paying Agent. The Funds' transfer agent and dividend-paying agent is Vanguard, P.O. Box 2600, Valley Forge, PA 19482.

Characteristics of the Funds' Shares

Restrictions on Holding or Disposing of Shares. There are no restrictions on the right of shareholders to retain or dispose of a Fund's shares, other than those described in the Fund's current prospectus and elsewhere in this Statement of Additional Information. Each Fund or class may be terminated by reorganization into another mutual fund or class or by liquidation and distribution of the assets of the Fund or class. Unless terminated by reorganization or liquidation, each Fund and share class will continue indefinitely.

Shareholder Liability. The Trust is organized under Delaware law, which provides that shareholders of a statutory trust are entitled to the same limitations of personal liability as shareholders of a corporation organized under Delaware law. This means that a shareholder of a Fund generally will not be personally liable for payment of the Fund's debts. Some state courts, however, may not apply Delaware law on this point. We believe that the possibility of such a situation arising is remote.

Dividend Rights. The shareholders of each class of a Fund are entitled to receive any dividends or other distributions declared by the Fund for each such class. No shares of a Fund have priority or preference over any other shares of the Fund with respect to distributions. Distributions will be made from the assets of the Fund and will be paid ratably to all shareholders of a particular class according to the number of shares of the class held by shareholders on the record date. The amount of dividends per share may vary between separate share classes of the Fund based upon differences in the net asset values of the different classes and differences in the way that expenses are allocated between share classes pursuant to a multiple class plan approved by the Fund's board of trustees.

Voting Rights. Shareholders are entitled to vote on a matter if (1) the matter concerns an amendment to the Declaration of Trust that would adversely affect to a material degree the rights and preferences of the shares of a Fund or any class; (2) the trustees determine that it is necessary or desirable to obtain a shareholder vote; (3) a merger or consolidation, share conversion, share exchange, or sale of assets is proposed and a shareholder vote is required by the 1940 Act to approve the transaction; or (4) a shareholder vote is required under the 1940 Act. The 1940 Act requires a shareholder vote under various circumstances, including to elect or remove trustees upon the written request of shareholders representing 10% or more of a Fund's net assets, to change any fundamental policy of a Fund (please see **Fundamental Policies**), and to enter into certain merger transactions. Unless otherwise required by applicable law, shareholders of a Fund receive one vote for each dollar of net asset value owned on the record date and a fractional vote for each fractional dollar of net asset value owned on the record date. However, only the shares of the Fund or the

class affected by a particular matter are entitled to vote on that matter. In addition, each class has exclusive voting rights on any matter submitted to shareholders that relates solely to that class, and each class has separate voting rights on any matter submitted to shareholders in which the interests of one class differ from the interests of another. Voting rights are noncumulative and cannot be modified without a majority vote by the shareholders.

Liquidation Rights. In the event that a Fund is liquidated, shareholders will be entitled to receive a pro rata share of the Fund's net assets. In the event that a class of shares is liquidated, shareholders of that class will be entitled to receive a pro rata share of the Fund's net assets that are allocated to that class. Shareholders may receive cash, securities, or a combination of the two.

Preemptive Rights. There are no preemptive rights associated with the Funds' shares.

Conversion Rights. Fund shareholders may convert their shares to another class of shares of the same Fund upon the satisfaction of any then-applicable eligibility requirements, as described in the Fund's current prospectus. ETF Shares cannot be converted into conventional shares of a fund by a shareholder. For additional information about the conversion rights applicable to ETF Shares, please see Information About the ETF Share Class.

Redemption Provisions. Each Fund's redemption provisions are described in its current prospectus and elsewhere in this Statement of Additional Information.

Sinking Fund Provisions. The Funds have no sinking fund provisions.

Calls or Assessment. Each Fund's shares, when issued, are fully paid and non-assessable.

Shareholder Rights. Any limitations on a shareholder's right to bring an action do not apply to claims arising under the federal securities laws to the extent that any such federal securities laws, rules, or regulations do not permit such limitations. The Trust's bylaws place limitations on the forum in which certain claims against or related to the Trust, a trustee, an officer, or other employee of the Trust may be heard. The bylaws also provide that shareholders waive the right to trial by jury to the fullest extent permitted by law.

Tax Status of the Funds

Each Fund expects to qualify each year for treatment as a "regulated investment company" under Subchapter M of the Internal Revenue Code of 1986, as amended (the IRC). This special tax status means that the Fund will not be liable for federal tax on income and capital gains distributed to shareholders. In order to preserve its tax status, each Fund must comply with certain requirements relating to the source of its income and the diversification of its assets. If a Fund fails to meet these requirements in any taxable year, the Fund will, in some cases, be able to cure such failure, including by paying a fund-level tax, paying interest, making additional distributions, and/or disposing of certain assets. If the Fund is ineligible to or otherwise does not cure such failure for any year, it will be subject to tax on its taxable income at corporate rates, and all distributions from earnings and profits, including any distributions of net tax-exempt income and net long-term capital gains, will be taxable to shareholders as ordinary income. In addition, a Fund could be required to recognize unrealized gains, pay substantial taxes and interest, and make substantial distributions before regaining its tax status as a regulated investment company.

Dividends received and distributed by each Fund on shares of stock of domestic corporations (excluding Real Estate Investment Trusts (REITs)) and certain foreign corporations generally may be eligible to be reported by the Fund, and treated by individual shareholders, as "qualified dividend income" taxed at long-term capital gain rates instead of at higher ordinary income tax rates. Individuals must satisfy holding period and other requirements in order to be eligible for such treatment. Also, distributions attributable to income earned on a Fund's securities lending transactions, including substitute dividend payments received by a Fund with respect to a security out on loan, will not be eligible for treatment as qualified dividend income.

Taxable ordinary dividends received and distributed by each Fund on its REIT holdings may be eligible to be reported by a Fund, and treated by individual shareholders, as "qualified REIT dividends" that are eligible for a 20% deduction on its federal income tax returns. Individuals must satisfy holding period and other requirements in order to be eligible for this deduction. Without further legislation, the deduction would sunset after 2025. Shareholders should consult their own tax professionals concerning their eligibility for this deduction.

Dividends received and distributed by each Fund on shares of stock of domestic corporations (excluding REITs) may be eligible for the dividends-received deduction applicable to corporate shareholders. Corporations must satisfy certain requirements in order to claim the deduction. Also, distributions attributable to income earned on a Fund's securities lending transactions, including substitute dividend payments received by a Fund with respect to a security out on a loan, will not be eligible for the dividends-received deduction.

Each Fund may declare a capital gain dividend consisting of the excess (if any) of net realized long-term capital gains over net realized short-term capital losses. Net capital gains for a fiscal year are computed by taking into account any capital loss carryforwards of the Fund. Capital losses may be carried forward indefinitely and retain their character as either short-term or long-term.

FUNDAMENTAL POLICIES

Each Fund is subject to the following fundamental investment policies, which cannot be changed in any material way without the approval of the holders of a majority of the Fund's shares. For these purposes, a "majority" of shares means shares representing the lesser of (1) 67% or more of the Fund's net assets voted, so long as shares representing more than 50% of the Fund's net assets are present or represented by proxy or (2) more than 50% of the Fund's net assets.

Borrowing. Each Fund may borrow money only as permitted by the 1940 Act or other governing statute, by the Rules thereunder, or by the SEC or other regulatory agency with authority over the Fund.

Commodities. Each Fund may invest in commodities only as permitted by the 1940 Act or other governing statute, by the Rules thereunder, or by the SEC or other regulatory agency with authority over the Fund.

Diversification. For Vanguard European Stock Index and Pacific Stock Index, with respect to 75% of its total assets, each Fund may not: (1) purchase more than 10% of the outstanding voting securities of any one issuer; or (2) purchase securities of any issuer if, as a result, more than 5% of the Fund's total assets would be invested in that issuer's securities. This limitation does not apply to obligations of the U.S. government or its agencies or instrumentalities. Additionally, each Fund will limit the aggregate value of holdings of a single issuer (other than U.S. government securities, as defined in the IRC) to a maximum of 25% of the Fund's total assets as of the end of each quarter of the taxable year.

For Vanguard FTSE All-World ex-US Index, Total World Stock Index, FTSE All-World ex-US Small-Cap Index, and Global ex- U.S. Real Estate Index Funds: Each Fund may not change its classification as a "management company" or its subclassifications as an "open-end company" and as a "diversified company," as each such term is defined in the 1940 Act.

For Vanguard Emerging Markets Stock Index Fund, with respect to 75% of its total assets, the Fund may not: (1) purchase more than 10% of the outstanding voting securities of any one issuer or (2) purchase securities of any issuer if, as a result, more than 5% of the Fund's total assets would be invested in that issuer's securities; except as may be necessary to approximate the composition of its target index. This limitation does not apply to obligations of the U.S. government or its agencies or instrumentalities.

Industry Concentration. Each Fund (other than Vanguard Global ex-U.S. Real Estate Index Fund) will not concentrate its investments in the securities of issuers whose principal business activities are in the same industry or group of industries, except as may be necessary to approximate the composition of its target index. Vanguard Global ex-U.S. Real Estate Index Fund will concentrate its investments in the securities of issuers whose principal business activities are in the real estate industry.

Loans. Each Fund may make loans to another person only as permitted by the 1940 Act or other governing statute, by the Rules thereunder, or by the SEC or other regulatory agency with authority over the Fund.

Real Estate. Each Fund may not invest directly in real estate unless it is acquired as a result of ownership of securities or other instruments. This restriction shall not prevent the Fund from investing in securities or other instruments (1) issued by companies that invest, deal, or otherwise engage in transactions in real estate or (2) backed or secured by real estate or interests in real estate.

Senior Securities. Each Fund may not issue senior securities except as permitted by the 1940 Act or other governing statute, by the Rules thereunder, or by the SEC or other regulatory agency with authority over the Fund.

Underwriting. Each Fund may not act as an underwriter of another issuer's securities, except to the extent that the Fund may be deemed to be an underwriter within the meaning of the Securities Act of 1933 (the 1933 Act), in connection with the purchase and sale of portfolio securities.

Compliance with the fundamental policies previously described is generally measured at the time the securities are purchased. Unless otherwise required by the 1940 Act (as is the case with borrowing), if a percentage restriction is adhered to at the time the investment is made, a later change in percentage resulting from a change in the market value of assets will not constitute a violation of such restriction. All fundamental policies must comply with applicable regulatory requirements. For more details, see **Investment Strategies, Risks, and Nonfundamental Policies**.

None of these policies prevents the Funds from having an ownership interest in Vanguard. As a part owner of Vanguard, each Fund may own securities issued by Vanguard, make loans to Vanguard, and contribute to Vanguard's costs or other financial requirements. See **Management of the Funds** for more information.

Shareholder approval will not be sought if Vanguard Emerging Markets Stock Index Fund crosses from diversified to nondiversified status in order to approximate the composition of its target index.

INVESTMENT STRATEGIES, RISKS, AND NONFUNDAMENTAL POLICIES

Some of the investment strategies and policies described on the following pages and in each Fund's prospectus set forth percentage limitations on a Fund's investment in, or holdings of, certain securities or other assets. Unless otherwise required by law, compliance with these strategies and policies will be determined immediately after the acquisition of such securities or assets by the Fund. Subsequent changes in values, net assets, or other circumstances will not be considered when determining whether the investment complies with the Fund's investment strategies and policies.

The following investment strategies, risks, and policies supplement each Fund's investment strategies, risks, and policies set forth in the prospectus. With respect to the different investments discussed as follows, a Fund may acquire such investments to the extent consistent with its investment strategies and policies.

Borrowing. A fund's ability to borrow money is limited by its investment policies and limitations; by the 1940 Act; and by applicable exemptions, no-action letters, interpretations, and other pronouncements issued from time to time by the SEC and its staff or any other regulatory authority with jurisdiction. Under the 1940 Act, a fund is required to maintain continuous asset coverage (i.e., total assets including borrowings, less liabilities exclusive of borrowings) of 300% of the amount borrowed, with an exception for borrowings not in excess of 5% of the fund's total assets (at the time of borrowing) made for temporary or emergency purposes. Any borrowings for temporary purposes in excess of 5% of the fund's total assets must maintain continuous asset coverage. If the 300% asset coverage should decline as a result of market fluctuations or for other reasons, a fund may be required to sell some of its portfolio holdings within three days (excluding Sundays and holidays) to reduce the debt and restore the 300% asset coverage, even though it may be disadvantageous from an investment standpoint to sell securities at that time.

Borrowing will tend to exaggerate the effect on net asset value of any increase or decrease in the market value of a fund's portfolio. Money borrowed will be subject to interest costs that may or may not be recovered by earnings on the securities purchased with the proceeds of such borrowing. A fund also may be required to maintain minimum average balances in connection with a borrowing or to pay a commitment or other fee to maintain a line of credit; either of these requirements would increase the cost of borrowing over the stated interest rate.

A borrowing transaction will not be considered to constitute the issuance, by a fund, of a "senior security," as that term is defined in Section 18(g) of the 1940 Act, and therefore such transaction will not be subject to the 300% asset coverage requirement otherwise applicable to borrowings by a fund, if the fund complies with Rule 18f-4 under the 1940 Act.

Common Stock. Common stock represents an equity or ownership interest in an issuer. Common stock typically entitles the owner to vote on the election of directors and other important matters, as well as to receive dividends on such stock. In the event an issuer is liquidated or declares bankruptcy, the claims of owners of bonds, other debt holders, and owners of preferred stock take precedence over the claims of those who own common stock.

Convertible Securities. Convertible securities are hybrid securities that combine the investment characteristics of bonds and common stocks. Convertible securities typically consist of debt securities or preferred stock that may be converted (on a voluntary or mandatory basis) within a specified period of time (normally for the entire life of the security) into a certain amount of common stock or other equity security of the same or a different issuer at a

predetermined price. Convertible securities also include debt securities with warrants or common stock attached and derivatives combining the features of debt securities and equity securities. Other convertible securities with features and risks not specifically referred to herein may become available in the future. Convertible securities involve risks similar to those of both fixed income and equity securities. In a corporation's capital structure, convertible securities are senior to common stock but are usually subordinated to senior debt obligations of the issuer.

The market value of a convertible security is a function of its "investment value" and its "conversion value." A security's "investment value" represents the value of the security without its conversion feature (i.e., a nonconvertible debt security). The investment value may be determined by reference to its credit quality and the current value of its yield to maturity or probable call date. At any given time, investment value is dependent upon such factors as the general level of interest rates, the yield of similar nonconvertible securities, the financial strength of the issuer, and the seniority of the security in the issuer's capital structure. A security's "conversion value" is determined by multiplying the number of shares the holder is entitled to receive upon conversion or exchange by the current price of the underlying security. If the conversion value of a convertible security is significantly below its investment value, the convertible security will trade like nonconvertible debt or preferred stock and its market value will not be influenced greatly by fluctuations in the market price of the underlying security. In that circumstance, the convertible security takes on the characteristics of a bond, and its price moves in the opposite direction from interest rates. Conversely, if the conversion value of a convertible security is near or above its investment value, the market value of the convertible security will be more heavily influenced by fluctuations in the market price of the underlying security. In that case, the convertible security's price may be as volatile as that of common stock. Because both interest rates and market movements can influence its value, a convertible security generally is not as sensitive to interest rates as a similar debt security, nor is it as sensitive to changes in share price as its underlying equity security. Convertible securities are often rated below investment-grade or are not rated, and they are generally subject to a high degree of credit risk.

Although all markets are prone to change over time, the generally high rate at which convertible securities are retired (through mandatory or scheduled conversions by issuers or through voluntary redemptions by holders) and replaced with newly issued convertible securities may cause the convertible securities market to change more rapidly than other markets. For example, a concentration of available convertible securities in a few economic sectors could elevate the sensitivity of the convertible securities market to the volatility of the equity markets and to the specific risks of those sectors. Moreover, convertible securities with innovative structures, such as mandatory-conversion securities and equity-linked securities, have increased the sensitivity of the convertible securities market to the volatility of the equity markets and to the special risks of those innovations, which may include risks different from, and possibly greater than, those associated with traditional convertible securities. A convertible security may be subject to redemption at the option of the issuer at a price set in the governing instrument of the convertible security. If a convertible security held by a fund is subject to such redemption option and is called for redemption, the fund must allow the issuer to redeem the security, convert it into the underlying common stock, or sell the security to a third party.

Cybersecurity Risks. A cybersecurity incident could subject the Vanguard funds, their advisors, and/or their third-party service providers to operational and financial risks. Cybersecurity incidents typically result from a deliberate attack, which could take multiple forms (e.g., phishing, malware, ransomware, or denial-of-service attacks), or wrongdoing by an authorized individual. In either case, sensitive assets, information, or data could fall into the hands of unauthorized individuals and potentially cause operational disruption. To prevent or reduce the impact of a cybersecurity incident, Vanguard has implemented controls, such as technological safeguards and business continuity plans. Cybersecurity risks are also present for third-party service providers (such as investment advisors, transfer agents, and custodians) that support the Vanguard funds. Vanguard has processes for assessing the cybersecurity programs implemented by a fund's third-party service providers. These processes help reduce the risk of potential incidents that could impact a Vanguard fund and/or its shareholders.

Despite the measures described above, a cybersecurity incident could still disrupt business operations, which could affect a fund and/or its shareholders. Examples of impacts which might occur as a result of a cybersecurity incident include: a fund being unable to calculate its net asset value (NAV) or process transactions, fund shareholders being unable to place transactions or otherwise conduct business with Vanguard, or a fund being unable to safeguard its data or the personal information of its shareholders.

Depositary Receipts. Depositary receipts (also sold as participatory notes) are securities that evidence ownership interests in a security or a pool of securities that have been deposited with a "depository." Depositary receipts may be sponsored or unsponsored and include American Depositary Receipts (ADRs), European Depositary Receipts (EDRs), and Global Depositary Receipts (GDRs). For ADRs, the depository is typically a U.S. financial institution, and the underlying securities are issued by a foreign issuer. For other depositary receipts, the depository may be a foreign or a

U.S. entity, and the underlying securities may have a foreign or a U.S. issuer. Depositary receipts will not necessarily be denominated in the same currency as their underlying securities. Generally, ADRs are issued in registered form, denominated in U.S. dollars, and designed for use in the U.S. securities markets. Other depositary receipts, such as GDRs and EDRs, may be issued in bearer form and denominated in other currencies, and they are generally designed for use in securities markets outside the United States. Although the two types of depositary receipt facilities (sponsored and unsponsored) are similar, there are differences regarding a holder's rights and obligations and the practices of market participants.

A depository may establish an unsponsored facility without participation by (or acquiescence of) the underlying issuer; typically, however, the depository requests a letter of nonobjection from the underlying issuer prior to establishing the facility. Holders of unsponsored depositary receipts generally bear all the costs of the facility. The depository usually charges fees upon the deposit and withdrawal of the underlying securities, the conversion of dividends into U.S. dollars or other currency, the disposition of noncash distributions, and the performance of other services. The depository of an unsponsored facility frequently is under no obligation to distribute shareholder communications received from the underlying issuer or to pass through voting rights to depositary receipt holders with respect to the underlying securities.

Sponsored depositary receipt facilities are created in generally the same manner as unsponsored facilities, except that sponsored depositary receipts are established jointly by a depository and the underlying issuer through a deposit agreement. The deposit agreement sets out the rights and responsibilities of the underlying issuer, the depository, and the depositary receipt holders. With sponsored facilities, the underlying issuer typically bears some of the costs of the depositary receipts (such as dividend payment fees of the depository), although most sponsored depositary receipt holders may bear costs such as deposit and withdrawal fees. Depositories of most sponsored depositary receipts agree to distribute notices of shareholder meetings, voting instructions, and other shareholder communications and information to the depositary receipt holders at the underlying issuer's request.

For purposes of a fund's investment policies, investments in depositary receipts will be deemed to be investments in the underlying securities. Thus, a depositary receipt representing ownership of common stock will be treated as common stock. Depositary receipts do not eliminate all of the risks associated with directly investing in the securities of foreign issuers.

Derivatives. A derivative is a financial instrument that has a value based on—or “derived from”—the values of other assets, reference rates, or indexes. Derivatives may relate to a wide variety of underlying references, such as commodities, stocks, bonds, interest rates, currency exchange rates, and related indexes. Derivatives include futures contracts and options on futures contracts, certain forward-commitment transactions, options on securities, caps, floors, collars, swap agreements, and certain other financial instruments. Some derivatives, such as futures contracts and certain options, are traded on U.S. commodity and securities exchanges, while other derivatives, such as swap agreements, may be privately negotiated and entered into in the over-the-counter market (OTC Derivatives) or may be cleared through a clearinghouse (Cleared Derivatives) and traded on an exchange or swap execution facility. As a result of the Dodd-Frank Wall Street Reform and Consumer Protection Act (the Dodd-Frank Act), certain swap agreements, such as certain standardized credit default and interest rate swap agreements, must be cleared through a clearinghouse and traded on an exchange or swap execution facility. This could result in an increase in the overall costs of such transactions. While the intent of derivatives regulatory reform is to mitigate risks associated with derivatives markets, the regulations could, among other things, increase liquidity and decrease pricing for more standardized products while decreasing liquidity and increasing pricing for less standardized products. The risks associated with the use of derivatives are different from, and possibly greater than, the risks associated with investing directly in the securities or assets on which the derivatives are based.

Derivatives may be used for a variety of purposes, including—but not limited to—hedging, managing risk, seeking to stay fully invested, seeking to reduce transaction costs, seeking to simulate an investment in equity or debt securities or other investments, and seeking to add value by using derivatives to more efficiently implement portfolio positions when derivatives are favorably priced relative to equity or debt securities or other investments. A fund may use derivatives as an alternate means to obtain economic exposure if the fund is required to limit its investment in a particular issuer or industry. Some investors may use derivatives primarily for speculative purposes while other uses of derivatives may not constitute speculation. There is no assurance that any derivatives strategy used by a fund's advisor will succeed. The other parties to a fund's OTC Derivatives contracts (usually referred to as “counterparties”) will not be considered the issuers thereof for purposes of certain provisions of the 1940 Act and the IRC, although such OTC Derivatives may qualify as securities or investments under such laws. A fund's advisor(s), however, will monitor and adjust, as appropriate, the fund's credit risk exposure to OTC Derivative counterparties.

Derivative products are highly specialized instruments that require investment techniques and risk analyses different from those associated with stocks, bonds, and other traditional investments. The use of a derivative requires an understanding not only of the underlying instrument but also of the derivative itself, without the benefit of observing the performance of the derivative under all possible market conditions.

When a fund enters into a Cleared Derivative, an initial margin deposit with a Futures Commission Merchant (FCM) is required. Initial margin deposits are typically calculated as an amount equal to the volatility in market value of a Cleared Derivative over a fixed period. If the value of the fund's Cleared Derivatives declines, the fund will be required to make additional "variation margin" payments to the FCM to settle the change in value. If the value of the fund's Cleared Derivatives increases, the FCM will be required to make additional "variation margin" payments to the fund to settle the change in value. This process is known as "marking-to-market" and is calculated on a daily basis.

For OTC Derivatives, a fund is subject to the risk that a loss may be sustained as a result of the insolvency or bankruptcy of the counterparty or the failure of the counterparty to make required payments or otherwise comply with the terms of the contract. Additionally, the use of credit derivatives can result in losses if a fund's advisor does not correctly evaluate the creditworthiness of the issuer on which the credit derivative is based.

Derivatives may be subject to liquidity risk, which exists when a particular derivative is difficult to purchase or sell. If a derivative transaction is particularly large or if the relevant market is illiquid (as is the case with certain OTC Derivatives), it may not be possible to initiate a transaction or liquidate a position at an advantageous time or price.

Derivatives may be subject to pricing or "basis" risk, which exists when a particular derivative becomes extraordinarily expensive relative to historical prices or the prices of corresponding cash market instruments. Under certain market conditions, it may not be economically feasible to initiate a transaction or liquidate a position in time to avoid a loss or take advantage of an opportunity.

Because certain derivatives have a leverage component, adverse changes in the value or level of the underlying asset, reference rate, or index can result in a loss substantially greater than the amount invested in the derivative itself. Certain derivatives have the potential for unlimited loss, regardless of the size of the initial investment. A derivative transaction will not be considered to constitute the issuance, by a fund, of a "senior security," as that term is defined in Section 18(g) of the 1940 Act, and therefore such transaction will not be subject to the 300% asset coverage requirement otherwise applicable to borrowings by a fund, if the fund complies with Rule 18f-4.

Like most other investments, derivative instruments are subject to the risk that the market value of the instrument will change in a way detrimental to a fund's interest. A fund bears the risk that its advisor will incorrectly forecast future market trends or the values of assets, reference rates, indexes, or other financial or economic factors in establishing derivative positions for the fund. If the advisor attempts to use a derivative as a hedge against, or as a substitute for, a portfolio investment, the fund will be exposed to the risk that the derivative will have or will develop imperfect or no correlation with the portfolio investment. This could cause substantial losses for the fund. Although hedging strategies involving derivative instruments can reduce the risk of loss, they can also reduce the opportunity for gain or even result in losses by offsetting favorable price movements in other fund investments. Many derivatives (in particular, OTC Derivatives) are complex and often valued subjectively. Improper valuations can result in increased cash payment requirements to counterparties or a loss of value to a fund.

On October 28, 2020, the Securities and Exchange Commission adopted new regulations governing the use of derivatives by registered investment companies ("Rule 18f-4"). Rule 18f-4 imposes limits on the amount of derivatives a fund can enter into, treats derivatives as senior securities, and requires funds whose use of derivatives exceeds a limited specified exposure amount to establish and maintain a comprehensive derivatives risk management program and appoint a derivatives risk manager.

Each Fund intends to comply with Rule 4.5 under the Commodity Exchange Act (CEA), under which a fund and Vanguard may be excluded from the definition of the term Commodity Pool Operator (CPO) if the fund meets certain conditions such as limiting its investments in certain CEA-regulated instruments (e.g., futures, options, or swaps) and complying with certain marketing restrictions. Accordingly, Vanguard is not subject to registration or regulation as a CPO with respect to each Fund under the CEA. Each Fund will only enter into futures contracts and futures options that are traded on a U.S. or foreign exchange, board of trade, or similar entity or that are quoted on an automated quotation system.

Environmental, Social, and Governance (ESG) Considerations. A Vanguard fund's consideration of ESG risk factors is driven first and foremost by the investment objective and principal investment strategies disclosed in the fund's prospectus. For Vanguard funds whose index providers or advisors select securities based on disclosed ESG criteria (ESG funds), the ESG fund's prospectus provides information about the ESG fund's use of ESG criteria and related ESG investing risks.

Unless specifically disclosed in a fund's prospectus, Vanguard funds do not seek to implement specific ESG impacts or strategies. However, except with respect to Vanguard equity index funds, a Vanguard fund's advisor may consider risk factors that could be categorized as "ESG" as a component of the fund's investment process if the advisor deems such risk factors to be financially material, either quantitatively or qualitatively. For example, as determined by the fund's advisor, certain ESG risk factors may be considered as a means to assess long-term risk to shareholder value (e.g., risk analysis, credit analysis, or investment opportunities) as the advisor deems appropriate. Consideration of ESG risk factors will vary depending on a fund's particular investment strategies as disclosed in its prospectus. The weight given to specific risk factors may vary across types of investments, industries, regions, and issuers and may change over time. Consideration of certain ESG risk factors may affect a fund's exposure to certain issuers or industries. For purposes of this disclosure, "ESG risk factors" refers to financially material risk factors that could be viewed as ESG-focused. However, there are significant differences in how such terms are interpreted across funds, advisors, index providers, and individuals. It is possible that an advisor will not identify or evaluate every ESG risk factor that an investor would expect to be identified or evaluated, or that the advisor may not categorize a specific risk factor as "ESG." The advisor's assessment of an issuer may differ from that of other funds or an investor's assessment of such issuer. As a result, securities selected by the advisor may not reflect the beliefs and values of any particular investor.

An advisor may be dependent on the availability of timely, complete, and accurate ESG data being reported by issuers and/or third-party research providers to evaluate ESG risk factors. ESG risk factors are often not uniformly measured or defined, which could impact an advisor's ability to assess an issuer. Where ESG risk factor analysis is used as one part of an overall investment process (as may be the case for some or all of the funds included in this Statement of Additional Information), such funds may still invest in securities of issuers that all market participants may not view as ESG-focused.

Proxy Voting and Engagement. Vanguard's Investment Stewardship Team, on behalf of the Board of Trustees of each Vanguard-advised U.S. fund, administers proxy voting for the equity holdings of the Vanguard-advised funds. The Investment Stewardship Team may engage with issuers to better understand how they are addressing material risks, including material ESG risks. Specifically, the Investment Stewardship Team may engage with company leaders and directors to understand how they oversee, mitigate, and disclose material risks to shareholders. With respect to material human-rights-related risks, where such matters are not addressed by applicable sanctions laws and regulations that restrict specific investments, the Investment Stewardship Team employs procedures to identify and monitor material human-rights-related risks to long-term shareholder returns at portfolio companies held by the Vanguard-advised funds and to understand how portfolio company boards are overseeing any such risks.

For funds advised by third-party advisory firms independent of Vanguard, such third-party advisory firms are responsible for administration of proxy voting and engagement with respect to the equity holdings they manage on behalf of the fund. A fund's third-party advisor may consider various ESG risks to be material to companies and may have their own practices and policies related to engagement. For example, the advisor may consider environmental risks such as climate change to be a material risk to many companies and their shareholders' long-term financial success. As a result, certain third-party advisors engage with particular issuers held by the fund(s) they manage to advocate for science-based targets to address long-term risk to shareholder value resulting from climate change as long as such targets are not contrary to the investment objective and strategy of such fund(s).

Regulatory Environment. The regulatory landscape for ESG investing is still developing, both within the United States and globally. As society's focus on particular ESG issues, such as climate change, continues to evolve, the emphasis and direction of governmental policies are subject to change.

Exchange-Traded Funds. A fund may purchase shares of exchange-traded funds (ETFs). Typically, a fund would purchase ETF shares for the same reason it would purchase (and as an alternative to purchasing) futures contracts: to obtain exposure to all or a portion of the stock or bond market. ETF shares enjoy several advantages over futures. Depending on the market, the holding period, and other factors, ETF shares can be less costly and more tax-efficient than futures. In addition, ETF shares can be purchased for smaller sums, offer exposure to market sectors and styles for which there is no suitable or liquid futures contract, and do not involve leverage.

An investment in an ETF generally presents the same principal risks as an investment in a conventional fund (i.e., one that is not exchange-traded) that has the same investment objective, strategies, and policies. The price of an ETF can fluctuate within a wide range, and a fund could lose money investing in an ETF if the prices of the securities owned by the ETF go down. In addition, ETFs are subject to the following risks that do not apply to conventional funds: (1) the market price of an ETF's shares may trade at a discount or a premium to their net asset value; (2) an active trading market for an ETF's shares may not develop or be maintained; and (3) trading of an ETF's shares may be halted by the activation of individual or marketwide trading halts (which halt trading for a specific period of time when the price of a particular security or overall market prices decline by a specified percentage). Trading of an ETF's shares may also be halted if the shares are delisted from the exchange without first being listed on another exchange or if the listing exchange's officials determine that such action is appropriate in the interest of a fair and orderly market or for the protection of investors.

Most ETFs are investment companies. Therefore, a fund's purchases of ETF shares generally are subject to the limitations on, and the risks of, a fund's investments in other investment companies, which are described under the heading "*Other Investment Companies.*"

Foreign Securities. Typically, foreign securities are considered to be equity or debt securities issued by entities organized, domiciled, or with a principal executive office outside the United States, such as foreign corporations and governments. Securities issued by certain companies organized outside the United States may not be deemed to be foreign securities if the company's principal operations are conducted from the United States or when the company's equity securities trade principally on a U.S. stock exchange. Foreign securities may trade in U.S. or foreign securities markets. A fund may make foreign investments either directly by purchasing foreign securities or indirectly by purchasing depositary receipts or depositary shares of similar instruments (depositary receipts) for foreign securities. Direct investments in foreign securities may be made either on foreign securities exchanges or in the over-the-counter (OTC) markets. Investing in foreign securities involves certain special risk considerations that are not typically associated with investing in securities of U.S. companies or governments.

Because foreign issuers are not generally subject to uniform accounting, auditing, and financial reporting standards and practices comparable to those applicable to U.S. issuers, there may be less publicly available information about certain foreign issuers than about U.S. issuers. Evidence of securities ownership may be uncertain in many foreign countries. As a result, there are risks that could result in a loss to the fund, including, but not limited to, the risk that a fund's trade details could be incorrectly or fraudulently entered at the time of a transaction. Securities of foreign issuers are generally more volatile and less liquid than securities of comparable U.S. issuers, and foreign investments may be effected through structures that may be complex or confusing. In certain countries, there is less government supervision and regulation of stock exchanges, brokers, and listed companies than in the United States. The risk that securities traded on foreign exchanges may be suspended, either by the issuers themselves, by an exchange, or by government authorities, is also heightened. In addition, with respect to certain foreign countries, there is the possibility of expropriation or confiscatory taxation, political or social instability, war, terrorism, nationalization, limitations on the removal of funds or other assets, or diplomatic developments that could affect U.S. investments in those countries. Additionally, the imposition of economic or other sanctions on the United States by a foreign country, or on a foreign country or issuer by the United States, could impair a fund's ability to buy, sell, hold, receive, deliver, or otherwise transact in certain investment securities or obtain exposure to foreign securities and assets. This may negatively impact the value and/or liquidity of a fund's investments and could impair a fund's ability to meet its investment objective or invest in accordance with its investment strategy. Sanctions could also result in the devaluation of a country's currency, a downgrade in the credit ratings of a country or issuers in a country, or a decline in the value and/or liquidity of securities of issuers in that country.

Although an advisor will endeavor to achieve the most favorable execution costs for a fund's portfolio transactions in foreign securities under the circumstances, commissions and other transaction costs are generally higher than those on U.S. securities. In addition, it is expected that the custodian arrangement expenses for a fund that invests primarily in foreign securities will be somewhat greater than the expenses for a fund that invests primarily in domestic securities. Additionally, bankruptcy laws vary by jurisdiction and cash deposits may be subject to a custodian's creditors. Certain foreign governments levy withholding or other taxes against dividend and interest income from, capital gains on the sale of, or transactions in foreign securities. Although in some countries a portion of these taxes is recoverable by the fund, the nonrecovered portion of foreign withholding taxes will reduce the income received from such securities.

The value of the foreign securities held by a fund that are not U.S. dollar-denominated may be significantly affected by changes in currency exchange rates. The U.S. dollar value of a foreign security generally decreases when the value of the U.S. dollar rises against the foreign currency in which the security is denominated, and it tends to increase when the

value of the U.S. dollar falls against such currency (as discussed under the heading “*Foreign Securities—Foreign Currency Transactions*,” a fund may attempt to hedge its currency risks). In addition, the value of fund assets may be affected by losses and other expenses incurred from converting between various currencies in order to purchase and sell foreign securities, as well as by currency restrictions, exchange control regulations, currency devaluations, and political and economic developments.

Foreign Securities—Special Risks of Investing in China. Investing in companies or issuers economically tied to China involves a high degree of risk and special considerations not typically associated with investing in more developed economies or markets. Such risks may include but are not limited to: Chinese Government Risk, Sanctions/Geopolitical Risk, Emerging Market Risk, Chinese Renminbi Risk, Regulatory and Legal Framework Risk, and risks with accessing and investing in their equity and bond markets.

Chinese Government Risk. In China, there are no freely elected government officials and political opposition is largely suppressed. As a result, the Chinese government has an outsized impact on the Chinese market which is uncharacteristic when compared with developed nations. For example, the Chinese government has exercised authority over publicly traded Chinese companies in the past and may continue to do so. This authority can include, but is not limited to, dictating what types of products Chinese companies should produce and to whom such products can be sold, nationalizing assets, and pursuing regulatory enforcement in an unpredictable manner. The Chinese government could use this authority for a variety of reasons including targeting Chinese companies deemed to have violated Chinese interests or trying to reduce market volatility.

The nationalist focus of the Chinese government also can lead to the government making broad policy changes that deviate from what they have historically supported. The Chinese government has implemented several economic reforms since 1978. It is possible that these reforms may not be supported in the future and the government could return to a more centrally planned economy. Additional support to surrounding economies such as Hong Kong could be revoked, and foreign investment in China could be limited if not banned outright.

Sanctions/Geopolitical Risk. Investing in companies economically tied to China is subject to certain political risks. Following the establishment of the People’s Republic of China (PRC) by the Communist Party in 1949, the Chinese government renounced various debt obligations incurred by China’s predecessor governments, which obligations remain in default, and seized assets without compensation. There can be no assurance that the Chinese government will not take similar action in the future, resulting in a full or partial loss of Chinese holdings.

China has many ongoing disputes with Hong Kong, Taiwan, the Xinjiang region and the Uyghur population, and other neighboring areas. These disputes continue to escalate due to ongoing Chinese military exercises (such as land reclamation efforts in the South China Sea), Chinese policymaking, human rights violations assertions by the UN and other developed nations, and statements from high-ranking Chinese government officials. In addition, the Chinese government has been accused of participating in state-sponsored cyberattacks against other foreign countries and foreign companies.

The resulting political tensions, including with the United States, have had and may continue to have impacts on the Chinese economy and its ability to sell certain goods. Other countries, including the U.S., have imposed and may continue to impose sanctions, tariffs, and embargoes or blocking of certain goods produced in China to affect the Chinese economy. Countries have also raised concerns about Chinese companies’ compliance with their own laws which could result in the delisting of securities. Compliance with sanctions could lead to a large market selloff, which could result in significant losses to investments. While tariffs and embargoes are not direct sanctions, they can still negatively affect the Chinese economy and individual Chinese companies. Lastly, because of the economic and financial market dependence between China and the surrounding regions, any decrease in demand for goods from China or an economic downturn in China, could negatively affect the economies and financial markets of the surrounding regions.

Emerging Market Risk. China’s economy is classified as an emerging market. However, China’s economy is considered to be more reliant on exports than other emerging markets and therefore could be negatively affected by a downturn in its export business. Chinese exports could be negatively affected by the aforementioned sanctions and geopolitical risk or other restrictions such as trade tariffs, embargoes, or capital controls. Chinese exports could also be affected by increasing competition across Asia’s other emerging economies, higher rates of inflation, and/or the erratic nature of economic growth in China.

Regulatory and Legal Framework Risk. China’s ability to develop and sustain its legal, tax, regulatory, financial reporting, accounting, and recordkeeping systems could influence the course of foreign investment. Chinese companies

are not subject to the same degree of regulation as those in the United States with respect to matters such as tender offer regulation, stockholder proxy requirements, and the requirements mandating timely and accurate disclosure of information. China lacks accounting, auditing, and financial reporting standards, and U.S. public accounting oversight boards are unable to inspect audit work papers and practices of registered accounting firms in China. Further complicating matters, some of China's laws prohibit certain key information about their companies from being disclosed. As a result, obtaining the full financial picture of a publicly traded Chinese company may be more difficult than obtaining the full financial picture of a publicly traded U.S. company, making it harder to determine the true health of a company.

China's legal framework may make it more difficult, if not impossible, to obtain or enforce a judgment compared to other countries. The Chinese regulatory framework is also less extensive and still developing regarding business entities and commercial transactions, which can make it challenging to navigate China's markets. Chinese securities may be taxed differently than U.S. securities depending on the type of investment and the issuer.

Accessing and Investing in the Chinese Equity Market. China's investment and banking systems are still developing, which subjects the settlement, clearing, and registration of securities transactions to additional risks and costs. Chinese companies can list their shares in a variety of ways, such as A shares, B shares, or H shares. These shares are traded on various exchanges, such as the Shanghai or Shenzhen exchange.

A-shares are generally bought through the Qualified Foreign Investor (QFI) program or Stock Connect. Trading through a license granted under the QFI regime is subject to policies and rules that are unique and evolving. In addition, QFI licenses can be revoked or restricted, preventing a fund from any future trading through the QFI regime. There are QFI custodial arrangements that can limit a fund's ability to recover deposited cash if the QFI custodian becomes insolvent. Chinese regulators may impose fines or pursue other negative actions towards a QFI custodian if that custodian does not perform its required reporting obligations. Trades do not cross between the Shanghai and Shenzhen stock exchanges and a separate broker is assigned for each exchange. As a result, trades must be placed with separate brokers for different transaction sides, increasing complexity, potential for error, and costs.

Trading on Stock Connect is also subject to limitations such as daily quota limitations on purchases, limitations on transferability of shares, pre-delivery or pre-validation of cash or securities to or by a broker which may impact a fund's ability to trade portfolio securities in a timely manner and can negatively affect a fund's returns. Only certain A-shares are eligible to be accessed through Stock Connect and these securities could lose their eligibility at any time. Stock Connect utilizes an omnibus clearing structure, and a fund's shares will be registered in the custodian's name on the Hong Kong Central Clearing and Settlement System. This may reduce a manager's ability to effectively manage a fund's holdings, including the potential enforcement of equity owner rights. B shares can only be traded by non-residents of the PRC or residents with an appropriate foreign currency account that meets certain requirements.

China's foreign ownership limitations may result in limitations on investment or the return of profits if a fund purchases and sells shares of an issuer in which it owns 5% or more of the shares issued within a six-month period. It is unclear whether China will aggregate a fund's holdings with other affiliated funds in determining the 5% ownership level. The restrictions on ownership and ability of Chinese regulatory authorities and Chinese issuers to suspend trading, their willingness to exercise this option in response to market volatility and other events, can negatively affect liquidity and volatility of the Chinese markets.

It is also possible to gain exposure to certain Chinese companies through legal structures known as Variable Interest Entities (VIEs). The VIE structure is designed to provide foreign investors with exposure to Chinese companies that operate in certain sectors in which China restricts and/or prohibits foreign investments, such as internet, media, education, and telecommunications. VIEs seek to establish claims to a China-based company's profits and control of its assets through contractual arrangements. While VIEs are a longstanding industry practice, they are not formally recognized under Chinese law or approved by Chinese regulators. It is also uncertain whether Chinese officials or regulators will prohibit Chinese companies from accessing foreign investment through VIEs or remove VIEs' ability to pass through economic and governance rights to foreign individuals and entities. The contractual arrangements with the VIE also may not be as effective in providing operational control as direct equity ownership. The Chinese equity owner(s) of a VIE could decide to breach the contractual arrangements and may have conflicting interests and fiduciary duties as compared to foreign investors in the shell company. Further, any breach or dispute under these contracts will likely fall under Chinese jurisdiction and law. Prohibitions of these structures by the Chinese government, or the inability to enforce such contracts through Chinese courts and/or arbitration bodies, would likely cause the VIE-structured holding(s) to suffer significant, detrimental, and possibly permanent loss, and in turn, adversely affect a fund's returns and net asset value. Additionally, an investor's rights may be limited with respect to the underlying Chinese operating company.

Accessing and Investing in the Chinese Bond Market. The People's Bank of China has established a program that permits eligible foreign investors to invest directly in bonds traded on the Chinese Interbank Bond Market (CIBM). While the CIBM is relatively large and trading volumes are generally high, the market has similar risks as bond markets in other emerging market countries. A fund may invest in the bonds available on the CIBM through Bond Connect, which was established with the Hong Kong Monetary Authority as a way to permit overseas investors to trade in each other's respective markets. Bond Connect provides a connection between mainland China- and Hong Kong-based financial institutions, permitting securities trading between the mainland China and Hong Kong markets electronically, thus eliminating the stricter restrictions that were present under previous access models.

Investing in securities traded on the CIBM through Bond Connect is subject to regulatory risks. The relevant rules, regulations, structure, terms, and a fund's ability to access Bond Connect may be subject to change with minimal notice and any changes have the potential to be applied retroactively. For example, if Bond Connect is not operating or trading is otherwise suspended, a fund's ability to trade bonds in a timely manner may be affected and there may be negative impacts on the fund. Additionally, market volatility and possible lack of liquidity due to low trading volume on the CIBM may result in significant fluctuations in the prices of certain bonds traded on the CIBM. The bid-ask spreads of the prices of such securities may be large, and a fund may therefore incur significant costs and may suffer losses when selling such investments. Further, the bonds traded on the CIBM may be difficult or impossible to sell, which may impact a fund's ability to acquire or dispose of such securities at their expected prices.

Bonds issued by Chinese companies or the Chinese government may be dollar denominated. These dollar-denominated bonds carry some of the same risks as RMB-denominated bonds traded through Bond Connect, but generally benefit from reduced currency risk since a fund does not need to engage in currency trading to settle the trade.

Foreign Securities—Emerging Market Risk. Investing in emerging market countries involves certain risks not typically associated with investing in the United States, and it imposes risks greater than, or in addition to, risks of investing in more developed foreign countries. These risks may significantly affect the value of emerging market investments and include: (i) nationalization or expropriation of assets or confiscatory taxation; (ii) currency devaluations and other currency exchange rate fluctuations; (iii) greater social, economic, and political uncertainty and instability (including amplified risk of war and terrorism); (iv) more substantial government involvement in and control over the economy; (v) less government supervision and regulation of the securities markets and participants in those markets and possible arbitrary and unpredictable enforcement of securities regulations and other laws, which may increase the risk of market manipulation; (vi) controls on foreign investment and limitations on repatriation of invested capital and on a fund's ability to exchange local currencies for U.S. dollars; (vii) unavailability of currency-hedging techniques in certain emerging market countries; (viii) generally smaller, less seasoned, or newly organized companies; (ix) differences in, or lack of, corporate governance, accounting, auditing, record keeping and financial reporting standards, which may result in unavailability of material information about issuers and impede evaluation of such issuers; (x) difficulty in obtaining and/or enforcing a judgment in a court outside the United States; and (xi) greater price volatility, substantially less liquidity, and significantly smaller market capitalization of securities markets. Also, any change in the leadership or politics of emerging market countries, or the countries that exercise a significant influence over those countries, may halt the expansion of or reverse the liberalization of foreign investment policies now occurring and adversely affect existing investment opportunities. Furthermore, high rates of inflation and rapid fluctuations in inflation rates have had, and may continue to have, negative effects on the economies and securities markets of certain emerging market countries. Custodial expenses and other investment-related costs are often more expensive in emerging market countries, which can reduce a fund's income from investments in securities or debt instruments of emerging market country issuers. Additionally, information regarding companies located in emerging markets may be less available and less reliable, which can impede the ability to evaluate such companies. There may also be limited regulatory oversight of certain foreign sub-custodians that hold foreign securities subject to the supervision of a fund's primary U.S.-based custodian. A fund may be limited in its ability to recover assets if a foreign sub-custodian becomes bankrupt or otherwise unable or unwilling to return assets to a fund, which may expose the fund to risk, especially in circumstances where the fund's primary custodian may not be contractually obligated to make the fund whole for the particular loss. Emerging market investments also carry the risk that strained international relations may give rise to retaliatory actions, including actions through financial markets such as purchase and ownership restrictions, sanctions, tariffs, seizure of assets, cyberattacks, and unpredictable enforcement of securities regulations and other laws. Such actual and/or threatened retaliatory actions may impact emerging market economies and issuers in which a fund invests. For example, in China, ownership of companies in certain sectors by foreign individuals and entities is prohibited.

Foreign Securities—Foreign Currency Transactions. The value in U.S. dollars of a fund's non-dollar-denominated foreign securities may be affected favorably or unfavorably by changes in foreign currency exchange rates and

exchange control regulations, and the fund may incur costs in connection with conversions between various currencies. In an index fund, the intent is to maintain exposure to foreign currencies to the same extent that the fund's assets are held in securities denominated in those currencies. A fund may enter into foreign currency contracts when it trades foreign stocks in order to avoid any gain or loss on the currency during the settlement period. A fund also may enter into foreign currency transactions to provide the appropriate currency exposure to offset an amount related to an open futures contract. A fund will not speculate in foreign currency exchange.

Currency exchange transactions may be conducted either on a spot (i.e., cash) basis at the rate prevailing in the currency exchange market or through forward contracts to purchase or sell foreign currencies. A forward currency contract involves an obligation to purchase or sell a specific currency at a future date, which may be any fixed number of days from the date of the contract agreed upon by the parties, at a price set at the time of the contract. These contracts are entered into with large commercial banks or other currency traders who are participants in the interbank market. Currency exchange transactions also may be effected through the use of swap agreements or other derivatives.

Currency exchange transactions may be considered borrowings. A currency exchange transaction will not be considered to constitute the issuance, by a fund, of a "senior security," as that term is defined in Section 18(g) of the 1940 Act, and therefore such transaction will not be subject to the 300% asset coverage requirement otherwise applicable to borrowings by a fund, if the fund complies with Rule 18f-4.

By entering into a forward contract for the purchase or sale of foreign currency involved in underlying security transactions, a fund may be able to protect itself against part or all of the possible loss between trade and settlement dates for that purchase or sale resulting from an adverse change in the relationship between the U.S. dollar and such foreign currency. This practice is sometimes referred to as "transaction hedging." In addition, when the advisor reasonably believes that a particular foreign currency may suffer a substantial decline against the U.S. dollar, a fund may enter into a forward contract to sell an amount of foreign currency approximating the value of some or all of its portfolio securities denominated in such foreign currency. This practice is sometimes referred to as "portfolio hedging." Similarly, when the advisor reasonably believes that the U.S. dollar may suffer a substantial decline against a foreign currency, a fund may enter into a forward contract to buy that foreign currency for a fixed dollar amount.

A fund may also attempt to hedge its foreign currency exchange rate risk by engaging in currency futures, options, and "cross-hedge" transactions. In cross-hedge transactions, a fund holding securities denominated in one foreign currency will enter into a forward currency contract to buy or sell a different foreign currency (one that the advisor reasonably believes generally tracks the currency being hedged with regard to price movements). The advisor may select the tracking (or substitute) currency rather than the currency in which the security is denominated for various reasons, including in order to take advantage of pricing or other opportunities presented by the tracking currency or to take advantage of a more liquid or more efficient market for the tracking currency. Such cross-hedges are expected to help protect a fund against an increase or decrease in the value of the U.S. dollar against certain foreign currencies.

A fund may hold a portion of its assets in bank deposits denominated in foreign currencies, so as to facilitate investment in foreign securities as well as protect against currency fluctuations and the need to convert such assets into U.S. dollars (thereby also reducing transaction costs). To the extent these assets are converted back into U.S. dollars, the value of the assets so maintained will be affected favorably or unfavorably by changes in foreign currency exchange rates and exchange control regulations.

Forecasting the movement of the currency market is extremely difficult. Whether any hedging strategy will be successful is highly uncertain. Moreover, it is impossible to forecast with precision the market value of portfolio securities at the expiration of a foreign currency forward contract. Accordingly, a fund may be required to buy or sell additional currency on the spot market (and bear the expense of such transaction) if its advisor's predictions regarding the movement of foreign currency or securities markets prove inaccurate. In addition, the use of cross-hedging transactions may involve special risks and may leave a fund in a less advantageous position than if such a hedge had not been established. Because foreign currency forward contracts are privately negotiated transactions, there can be no assurance that a fund will have flexibility to roll over a foreign currency forward contract upon its expiration if it desires to do so. Additionally, there can be no assurance that the other party to the contract will perform its services thereunder.

Foreign Securities—Foreign Investment Companies. Some of the countries in which a fund may invest may not permit, or may place economic restrictions on, direct investment by outside investors. Fund investments in such countries may be permitted only through foreign government-approved or authorized investment vehicles, which may

include other investment companies. Such investments may be made through registered or unregistered closed-end investment companies that invest in foreign securities. Investing through such vehicles may involve layered fees or expenses and may also be subject to the limitations on, and the risks of, a fund's investments in other investment companies, which are described under the heading "*Other Investment Companies.*"

Foreign Securities—Russian Market Risk. There are significant risks inherent in investing in Russian securities. The underdeveloped state of Russia's banking system subjects the settlement, clearing, and registration of securities transactions to significant risks. In March of 2013, the National Settlement Depository (NSD) began acting as a central depository for the majority of Russian equity securities; the NSD is now recognized as the Central Securities Depository in Russia.

For Russian issuers with fewer than 50 shareholders, ownership records are maintained only by registrars who are under contract with the issuers and are currently not settled with the NSD. Although a Russian subcustodian will maintain copies of the registrar's records (Share Extracts) on its premises, such Share Extracts are not recorded with the NSD and may not be legally sufficient to establish ownership of securities. The registrars may not be independent from the issuer, are not necessarily subject to effective state supervision, and may not be licensed with any governmental entity. A fund will endeavor to ensure by itself or through a custodian or other agent that the fund's interest continues to be appropriately recorded for Russian issuers with fewer than 50 shareholders by inspecting the share register and by obtaining extracts of share registers through regular confirmations. However, these extracts have no legal enforceability, and the possibility exists that a subsequent illegal amendment or other fraudulent act may deprive the fund of its ownership rights or may improperly dilute its interest. In addition, although applicable Russian regulations impose liability on registrars for losses resulting from their errors, a fund may find it difficult to enforce any rights it may have against the registrar or issuer of the securities in the event of loss of share registration.

Russia's invasion of Ukraine has resulted in sanctions against Russian governmental institutions, Russian entities, and Russian individuals that may result in the devaluation of Russian currency; a downgrade in the country's credit rating; a freeze of Russian foreign assets; a decline in the value and liquidity of Russian securities, properties, or interests; and other adverse consequences to the Russian economy and Russian assets. In addition, a fund's ability to price, buy, sell, receive, or deliver Russian investments has been and may continue to be impaired. These sanctions, and the resulting disruption of the Russian economy, may cause volatility in other regional and global markets and may negatively impact the performance of various sectors and industries, as well as companies in other countries, which could have a negative effect on the performance of a fund, even if the fund does not have direct exposure to securities of Russian issuers.

Futures Contracts and Options on Futures Contracts. Futures contracts and options on futures contracts are derivatives. A futures contract is a standardized agreement between two parties to buy or sell at a specific time in the future a specific quantity of a commodity at a specific price. The commodity may consist of an asset, a reference rate, or an index. A security futures contract relates to the sale of a specific quantity of shares of a single equity security or a narrow-based securities index. The value of a futures contract tends to increase and decrease in tandem with the value of the underlying commodity. The buyer of a futures contract enters into an agreement to purchase the underlying commodity on the settlement date and is said to be "long" the contract. The seller of a futures contract enters into an agreement to sell the underlying commodity on the settlement date and is said to be "short" the contract. The price at which a futures contract is entered into is established either in the electronic marketplace or by open outcry on the floor of an exchange between exchange members acting as traders or brokers. Open futures contracts can be liquidated or closed out by physical delivery of the underlying commodity or payment of the cash settlement amount on the settlement date, depending on the terms of the particular contract. Some financial futures contracts (such as security futures) provide for physical settlement at maturity. Other financial futures contracts (such as those relating to interest rates, foreign currencies, and broad-based securities indexes) generally provide for cash settlement at maturity. In the case of cash-settled futures contracts, the cash settlement amount is equal to the difference between the final settlement or market price for the relevant commodity on the last trading day of the contract and the price for the relevant commodity agreed upon at the outset of the contract. Most futures contracts, however, are not held until maturity but instead are "offset" before the settlement date through the establishment of an opposite and equal futures position.

The purchaser or seller of a futures contract is not required to deliver or pay for the underlying commodity unless the contract is held until the settlement date. However, both the purchaser and seller are required to deposit "initial margin" with a futures commission merchant (FCM) when the futures contract is entered into. Initial margin deposits are typically calculated as an amount equal to the volatility in market value of a contract over a fixed period. If the value of the fund's position declines, the fund will be required to make additional "variation margin" payments to the FCM to settle the change in value. If the value of the fund's position increases, the FCM will be required to make additional "variation

margin” payments to the fund to settle the change in value. This process is known as “marking-to-market” and is calculated on a daily basis. A futures transaction will not be considered to constitute the issuance, by a fund, of a “senior security,” as that term is defined in Section 18(g) of the 1940 Act, and therefore such transaction will not be subject to the 300% asset coverage requirement otherwise applicable to borrowings by a fund, if the fund complies with Rule 18f-4.

An option on a futures contract (or futures option) conveys the right, but not the obligation, to purchase (in the case of a call option) or sell (in the case of a put option) a specific futures contract at a specific price (called the “exercise” or “strike” price) any time before the option expires. The seller of an option is called an option writer. The purchase price of an option is called the premium. The potential loss to an option buyer is limited to the amount of the premium plus transaction costs. This will be the case, for example, if the option is held and not exercised prior to its expiration date. Generally, an option writer sells options with the goal of obtaining the premium paid by the option buyer. If an option sold by an option writer expires without being exercised, the writer retains the full amount of the premium. The option writer, however, has unlimited economic risk because its potential loss, except to the extent offset by the premium received when the option was written, is equal to the amount the option is “in-the-money” at the expiration date. A call option is in-the-money if the value of the underlying futures contract exceeds the exercise price of the option. A put option is in-the-money if the exercise price of the option exceeds the value of the underlying futures contract. Generally, any profit realized by an option buyer represents a loss for the option writer.

A fund that takes the position of a writer of a futures option is required to deposit and maintain initial and variation margin with respect to the option, as previously described in the case of futures contracts. A futures option transaction will not be considered to constitute the issuance, by a fund, of a “senior security,” as that term is defined in Section 18(g) of the 1940 Act, and therefore such transaction will not be subject to the 300% asset coverage requirement otherwise applicable to borrowings by a fund, if the fund complies with Rule 18f-4.

Futures Contracts and Options on Futures Contracts—Risks. The risk of loss in trading futures contracts and in writing futures options can be substantial because of the low margin deposits required, the extremely high degree of leverage involved in futures and options pricing, and the potential high volatility of the futures markets. As a result, a relatively small price movement in a futures position may result in immediate and substantial loss (or gain) for the investor. For example, if at the time of purchase, 10% of the value of the futures contract is deposited as margin, a subsequent 10% decrease in the value of the futures contract would result in a total loss of the margin deposit, before any deduction for the transaction costs, if the account were then closed out. A 15% decrease would result in a loss equal to 150% of the original margin deposit if the contract were closed out. Thus, a purchase or sale of a futures contract, and the writing of a futures option, may result in losses in excess of the amount invested in the position. In the event of adverse price movements, a fund would continue to be required to make daily cash payments to maintain its required margin. In such situations, if the fund has insufficient cash, it may have to sell portfolio securities to meet daily margin requirements at a time when it may be disadvantageous to do so. In addition, on the settlement date, a fund may be required to make delivery of the instruments underlying the futures positions it holds.

A fund could suffer losses if it is unable to close out a futures contract or a futures option because of an illiquid secondary market. Futures contracts and futures options may be closed out only on an exchange that provides a secondary market for such products. However, there can be no assurance that a liquid secondary market will exist for any particular futures product at any specific time. Thus, it may not be possible to close a futures or option position. Moreover, most futures exchanges limit the amount of fluctuation permitted in futures contract prices during a single trading day. The daily limit establishes the maximum amount that the price of a futures contract may vary either up or down from the previous day’s settlement price at the end of a trading session. Once the daily limit has been reached in a particular type of contract, no trades may be made on that day at a price beyond that limit. The daily limit governs only price movement during a particular trading day, and therefore does not limit potential losses because the limit may prevent the liquidation of unfavorable positions. Futures contract prices have occasionally moved to the daily limit for several consecutive trading days with little or no trading, thereby preventing prompt liquidation of future positions and subjecting some futures traders to substantial losses. The inability to close futures and options positions also could have an adverse impact on the ability to hedge a portfolio investment or to establish a substitute for a portfolio investment. U.S. Treasury futures are generally not subject to such daily limits.

A fund bears the risk that its advisor will incorrectly predict future market trends. If the advisor attempts to use a futures contract or a futures option as a hedge against, or as a substitute for, a portfolio investment, the fund will be exposed to

the risk that the futures position will have or will develop imperfect or no correlation with the portfolio investment. This could cause substantial losses for the fund. Although hedging strategies involving futures products can reduce the risk of loss, they can also reduce the opportunity for gain or even result in losses by offsetting favorable price movements in other fund investments.

A fund could lose margin payments it has deposited with its FCM if, for example, the FCM breaches its agreement with the fund or becomes insolvent or goes into bankruptcy. In that event, the fund may be entitled to return of margin owed to it only in proportion to the amount received by the FCM's other customers, potentially resulting in losses to the fund.

Interfund Borrowing and Lending. The SEC has granted an exemption permitting registered open-end Vanguard funds to participate in Vanguard's interfund lending program. This program allows the Vanguard funds to borrow money from and lend money to each other for temporary or emergency purposes. The program is subject to a number of conditions, including, among other things, the requirements that (1) no fund may borrow or lend money through the program unless it receives a more favorable interest rate than is typically available from a bank for a comparable transaction, (2) no fund may lend money if the loan would cause its aggregate outstanding loans through the program to exceed 15% of its net assets at the time of the loan, and (3) a fund's interfund loans to any one fund shall not exceed 5% of the lending fund's net assets. In addition, a Vanguard fund may participate in the program only if and to the extent that such participation is consistent with the fund's investment objective and investment policies. The boards of trustees of the Vanguard funds are responsible for overseeing the interfund lending program. Any delay in repayment to a lending fund could result in a lost investment opportunity or additional borrowing costs.

Investing for Control. Each Vanguard fund invests in securities and other instruments for the sole purpose of achieving a specific investment objective. As such, a Vanguard fund does not seek to acquire, individually or collectively with any other Vanguard fund, enough of a company's outstanding voting stock to have control over management decisions. A Vanguard fund does not invest for the purpose of controlling a company's management.

Legal and Regulatory Risk. Vanguard funds and their advisors are subject to an extensive and complex set of laws and regulations. These laws and regulations have evolved rapidly in recent years and likely will continue to evolve. Changes and additions to laws and regulations can result in unintended or unexpected impacts, including impacts to the value of a fund's investments, a fund's investment strategy, and/or a fund's ability to manage tax consequences. In addition, complying with new or changing laws or regulations generally can be expected to increase operational costs, which can have a negative impact on fund performance.

Market Disruption. Significant market disruptions, such as those caused by pandemics, natural or environmental disasters, war, acts of terrorism, or other events, can adversely affect local and global markets and normal market operations. Market disruptions may exacerbate political, social, and economic risks discussed above and in a fund's prospectus. Additionally, market disruptions may result in increased market volatility; regulatory trading halts; closure of domestic or foreign exchanges, markets, or governments; or market participants operating pursuant to business continuity plans for indeterminate periods of time. Such events can be highly disruptive to economies and markets and significantly impact individual companies, sectors, industries, markets, currencies, interest and inflation rates, credit ratings, investor sentiment, and other factors affecting the value of a fund's investments and operation of a fund. These events could also result in the closure of businesses that are integral to a fund's operations or otherwise disrupt the ability of employees of fund service providers to perform essential tasks on behalf of a fund.

Options. An option is a derivative. An option on a security (or index) is a contract that gives the holder of the option, in return for the payment of a "premium," the right, but not the obligation, to buy from (in the case of a call option) or sell to (in the case of a put option) the writer of the option the security underlying the option (or the cash value of the index) at a specified exercise price prior to the expiration date of the option. The writer of an option on a security has the obligation upon exercise of the option to deliver the underlying security upon payment of the exercise price (in the case of a call option) or to pay the exercise price upon delivery of the underlying security (in the case of a put option). The writer of an option on an index has the obligation upon exercise of the option to pay an amount equal to the cash value of the index minus the exercise price, multiplied by the specified multiplier for the index option. The multiplier for an index option determines the size of the investment position the option represents. Unlike exchange-traded options, which are standardized with respect to the underlying instrument, expiration date, contract size, and strike price, the terms of over-the-counter (OTC) options (options not traded on exchanges) generally are established through negotiation with the other party to the option contract. Although this type of arrangement allows the purchaser or writer greater flexibility to tailor an option to its needs, OTC options generally involve credit risk to the counterparty, whereas for exchange-traded, centrally cleared options, credit risk is mutualized through the involvement of the applicable clearing house.

The buyer (or holder) of an option is said to be “long” the option, while the seller (or writer) of an option is said to be “short” the option. A call option grants to the holder the right to buy (and obligates the writer to sell) the underlying security at the strike price, which is the predetermined price at which the option may be exercised. A put option grants to the holder the right to sell (and obligates the writer to buy) the underlying security at the strike price. The purchase price of an option is called the “premium.” The potential loss to an option buyer is limited to the amount of the premium plus transaction costs. This will be the case if the option is held and not exercised prior to its expiration date. Generally, an option writer sells options with the goal of obtaining the premium paid by the option buyer, but that person could also seek to profit from an anticipated rise or decline in option prices. If an option sold by an option writer expires without being exercised, the writer retains the full amount of the premium. The option writer, however, has unlimited economic risk because its potential loss, except to the extent offset by the premium received when the option was written, is equal to the amount the option is “in-the-money” at the expiration date. A call option is in-the-money if the value of the underlying position exceeds the exercise price of the option. A put option is in-the-money if the exercise price of the option exceeds the value of the underlying position. Generally, any profit realized by an option buyer represents a loss for the option writer. The writing of an option will not be considered to constitute the issuance, by a fund, of a “senior security,” as that term is defined in Section 18(g) of the 1940 Act, and therefore such transaction will not be subject to the 300% asset coverage requirement otherwise applicable to borrowings by a fund, if the fund complies with Rule 18f-4.

If a trading market, in particular options, were to become unavailable, investors in those options (such as the funds) would be unable to close out their positions until trading resumes, and they may be faced with substantial losses if the value of the underlying instrument moves adversely during that time. Even if the market were to remain available, there may be times when options prices will not maintain their customary or anticipated relationships to the prices of the underlying instruments and related instruments. Lack of investor interest, changes in volatility, or other factors or conditions might adversely affect the liquidity, efficiency, continuity, or even the orderliness of the market for particular options.

A fund bears the risk that its advisor will not accurately predict future market trends. If the advisor attempts to use an option as a hedge against, or as a substitute for, a portfolio investment, the fund will be exposed to the risk that the option will have or will develop imperfect or no correlation with the portfolio investment, which could cause substantial losses for the fund. Although hedging strategies involving options can reduce the risk of loss, they can also reduce the opportunity for gain or even result in losses by offsetting favorable price movements in other fund investments. Many options, in particular OTC options, are complex and often valued based on subjective factors. Improper valuations can result in increased cash payment requirements to counterparties or a loss of value to a fund.

OTC Swap Agreements. An over-the-counter (OTC) swap agreement, which is a type of derivative, is an agreement between two parties (counterparties) to exchange payments at specified dates (periodic payment dates) on the basis of a specified amount (notional amount) with the payments calculated with reference to a specified asset, reference rate, or index.

Examples of OTC swap agreements include, but are not limited to, interest rate swaps, credit default swaps, equity swaps, commodity swaps, foreign currency swaps, index swaps, excess return swaps, and total return swaps. Most OTC swap agreements provide that when the periodic payment dates for both parties are the same, payments are netted and only the net amount is paid to the counterparty entitled to receive the net payment. Consequently, a fund's current obligations (or rights) under an OTC swap agreement will generally be equal only to the net amount to be paid or received under the agreement, based on the relative values of the positions held by each counterparty. OTC swap agreements allow for a wide variety of transactions. For example, fixed rate payments may be exchanged for floating rate payments; U.S. dollar-denominated payments may be exchanged for payments denominated in a different currency; and payments tied to the price of one asset, reference rate, or index may be exchanged for payments tied to the price of another asset, reference rate, or index.

An OTC option on an OTC swap agreement, also called a “swaption,” is an option that gives the buyer the right, but not the obligation, to enter into a swap on a future date in exchange for paying a market-based “premium.” A receiver swaption gives the owner the right to receive the total return of a specified asset, reference rate, or index. A payer swaption gives the owner the right to pay the total return of a specified asset, reference rate, or index. Swaptions also include options that allow an existing swap to be terminated or extended by one of the counterparties.

The use of OTC swap agreements by a fund entails certain risks, which may be different from, or possibly greater than, the risks associated with investing directly in the securities and other investments that are the referenced asset for the

swap agreement. OTC swaps are highly specialized instruments that require investment techniques, risk analyses, and tax planning different from those associated with stocks, bonds, and other traditional investments. The use of an OTC swap requires an understanding not only of the referenced asset, reference rate, or index but also of the swap itself, without the benefit of observing the performance of the swap under all possible market conditions.

OTC swap agreements may be subject to liquidity risk, which exists when a particular swap is difficult to purchase or sell. If an OTC swap transaction is particularly large or if the relevant market is illiquid (as is the case with many OTC swaps), it may not be possible to initiate a transaction or liquidate a position at an advantageous time or price, which may result in significant losses. In addition, OTC swap transactions may be subject to a fund's limitation on investments in illiquid securities.

OTC swap agreements may be subject to pricing risk, which exists when a particular swap becomes extraordinarily expensive or inexpensive relative to historical prices or the prices of corresponding cash market instruments. Under certain market conditions, it may not be economically feasible to initiate a transaction or liquidate a position in time to avoid a loss or take advantage of an opportunity or to realize the intrinsic value of the OTC swap agreement.

Because certain OTC swap agreements have a leverage component, adverse changes in the value or level of the underlying asset, reference rate, or index can result in a loss substantially greater than the amount invested in the swap itself. Certain OTC swaps have the potential for unlimited loss, regardless of the size of the initial investment. A leveraged OTC swap transaction will not be considered to constitute the issuance, by a fund, of a "senior security," as that term is defined in Section 18(g) of the 1940 Act, and therefore such transaction will not be subject to the 300% asset coverage requirement otherwise applicable to borrowings by a fund, if the fund complies with Rule 18f-4.

Like most other investments, OTC swap agreements are subject to the risk that the market value of the instrument will change in a way detrimental to a fund's interest. A fund bears the risk that its advisor will not accurately forecast future market trends or the values of assets, reference rates, indexes, or other economic factors in establishing OTC swap positions for the fund. If the advisor attempts to use an OTC swap as a hedge against, or as a substitute for, a portfolio investment, the fund will be exposed to the risk that the OTC swap will have or will develop imperfect or no correlation with the portfolio investment. This could cause substantial losses for the fund. Although hedging strategies involving OTC swap instruments can reduce the risk of loss, they can also reduce the opportunity for gain or even result in losses by offsetting favorable price movements in other fund investments. Many OTC swaps are complex and often valued subjectively. Improper valuations can result in increased cash payment requirements to counterparties or a loss of value to a fund.

The use of an OTC swap agreement also involves the risk that a loss may be sustained as a result of the insolvency or bankruptcy of the counterparty or the failure of the counterparty to make required payments or otherwise comply with the terms of the agreement. Additionally, the use of credit default swaps can result in losses if a fund's advisor does not correctly evaluate the creditworthiness of the issuer on which the credit swap is based.

Other Investment Companies. A fund may invest in other investment companies, including ETFs, non-exchange traded U.S. registered open-end investment companies (mutual funds), and closed-end investment companies, to the extent permitted by applicable law or SEC exemption. Under Section 12(d)(1) of the 1940 Act, a fund may invest up to 10% of its assets in shares of investment companies generally and up to 5% of its assets in any one investment company, as long as no investment represents more than 3% of the voting stock of an acquired investment company. In addition, no funds for which Vanguard acts as an advisor may, in the aggregate, own more than 10% of the voting stock of a closed-end investment company. SEC Rule 12d1-4 under the 1940 Act permits registered investment companies to invest in other registered investment companies beyond the limits in Section 12(d)(1), subject to certain conditions, including that funds with different investment advisors must enter into a funds of funds investment agreement. Rule 12d1-4 is also designed to limit the use of complex fund structures. Under Rule 12d1-4, an acquired fund is prohibited from purchasing or otherwise acquiring the securities of another investment company or private fund if, immediately after the purchase, the securities of investment companies and private funds owned by the acquired fund have an aggregate value in excess of 10% of the value of the acquired fund's total assets, subject to certain limited exceptions. Accordingly, to the extent a fund's shares are sold to other investment companies in reliance on Rule 12d1-4, the acquired fund will be limited in the amount it could invest in other investment companies and private funds. If a fund invests in other investment companies, shareholders will bear not only their proportionate share of the fund's expenses (including operating expenses and the fees of the advisor), but they also may indirectly bear similar expenses of the underlying investment companies. Certain investment companies, such as business development companies (BDCs), are more akin to operating companies and, as such, their expenses are not direct expenses paid by fund shareholders and are not used to calculate the fund's net asset value. SEC rules nevertheless require that any expenses incurred by a BDC be included in a fund's expense ratio as "Acquired Fund Fees and Expenses." The

expense ratio of a fund that holds a BDC will thus overstate what the fund actually spends on portfolio management, administrative services, and other shareholder services by an amount equal to these Acquired Fund Fees and Expenses. The Acquired Fund Fees and Expenses are not included in a fund's financial statements, which provide a clearer picture of a fund's actual operating expenses. Shareholders would also be exposed to the risks associated not only with the investments of the fund but also with the portfolio investments of the underlying investment companies. Certain types of investment companies, such as closed-end investment companies, issue a fixed number of shares that typically trade on a stock exchange or over-the-counter at a premium or discount to their net asset value. Others are continuously offered at net asset value but also may be traded on the secondary market.

A fund may be limited to purchasing a particular share class of other investment companies (underlying funds). In certain cases, an investor may be able to purchase lower-cost shares of such underlying funds separately, and therefore be able to construct, and maintain over time, a similar portfolio of investments while incurring lower overall expenses.

Ownership Limitations and Regulatory Relief. The more assets that Vanguard, its affiliates, and its external advisors manage, the more the Vanguard funds are or may be negatively impacted by ownership restrictions and limitations imposed by law, by regulation or regulators, or by issuers. Ownership restrictions and limitations can apply to certain industries (for example, banking, insurance, and utilities), certain issuers (who may, for example, have mechanisms such as poison pills in place to prevent takeovers), or certain transactions, and will also vary significantly in different contexts. A fund can be subject to more than one ownership limitation depending on its holdings, and each ownership limitation can impact multiple securities held by the fund.

Ownership limitations can restrict or impair a fund's investment activities in a variety of ways. To meet the requirements of a limitation or restriction, a fund may be unable to purchase or directly hold a security the fund would otherwise purchase or hold if the limitation did not apply. For index funds, this means a fund may not be able to track its index as closely as it would if it was not subject to an ownership limitation because the fund cannot buy its desired amount of an impacted security. For actively managed funds, this means a fund may miss an opportunity to invest in an impacted security that the fund's investment advisor otherwise would invest in if the fund were not subject to an ownership limitation. These types of restrictions could negatively impact a fund's performance.

When a Vanguard fund is subject to an ownership limitation, Vanguard or the fund typically will seek permission to exceed the limitation. However, there is no guarantee that permission will be granted, or that, once granted, it will not be modified or revoked at a later date. If this happens, the fund could be required to sell or otherwise dispose of holdings in one or more issuers to comply with limitations. In order to obtain permission to exceed an ownership limitation, Vanguard may have to agree to certain conditions that will impact its ability to exercise rights on behalf of funds. For example, Vanguard may be required to agree to vote proxies in a certain way for any securities Vanguard funds hold that exceed a particular ownership limitation.

For situations in which Vanguard does not have or is unable to obtain permission to exceed ownership limitations, Vanguard, its affiliates, and its external advisors have adopted a policy designed to allocate ownership of impacted securities across Vanguard products in a way that Vanguard deems fair and equitable over time. This allocation policy could result in certain Vanguard products obtaining zero or reduced direct exposure to one or more impacted securities and/or indirect exposure to impacted securities. In order to obtain indirect exposure, funds may use derivatives (such as total return swaps) or invest in totally held subsidiaries that hold the impacted securities. Both of these ways of obtaining indirect exposure may be more costly than owning securities of the issuer directly. Depending on the circumstances, certain Vanguard funds may incur and bear the costs associated with transactions entered into for these purposes that other Vanguard funds do not incur and bear. In addition, Vanguard, its affiliates, and its external advisors are not able to guarantee that they will be able to obtain some or all of the derivatives that funds want in order to gain indirect exposure to an impacted security. This limited availability of derivatives may impact the ability of a fund to meet its investment objective or invest in accordance with its investment strategy, and/or have additional impacts to fund performance. Additionally, funds that use derivatives for indirect exposure are subject to derivatives-related risks.

Ownership limitations and the use of derivatives to address ownership limitations could result in unanticipated tax consequences to a fund that may affect the amount, timing, and character of distributions to shareholders. The taxation of derivatives can be complex and, depending upon the type and amount of derivatives employed by a fund, the tax consequences of using derivatives could be worse than the tax consequences that result from direct exposure to impacted securities.

Ownership limitations are highly complex. It is possible that, despite a fund's intent to either comply with or be granted permission to exceed ownership limitations, it may inadvertently breach a limit.

Preferred Stock. Preferred stock represents an equity or ownership interest in an issuer. Preferred stock normally pays dividends at a specified rate and has precedence over common stock in the event the issuer is liquidated or declares bankruptcy. However, in the event an issuer is liquidated or declares bankruptcy, the claims of owners of bonds take precedence over the claims of those who own preferred and common stock. Preferred stock, unlike common stock, often has a stated dividend rate payable from the corporation's earnings. Preferred stock dividends may be cumulative or noncumulative, participating, or auction rate. "Cumulative" dividend provisions require all or a portion of prior unpaid dividends to be paid before dividends can be paid to the issuer's common stock. "Participating" preferred stock may be entitled to a dividend exceeding the stated dividend in certain cases. If interest rates rise, the fixed dividend on preferred stocks may be less attractive, causing the price of such stocks to decline. Preferred stock may have mandatory sinking fund provisions, as well as provisions allowing the stock to be called or redeemed, which can limit the benefit of a decline in interest rates. Preferred stock is subject to many of the risks to which common stock and debt securities are subject. In addition, preferred stock may be subject to more abrupt or erratic price movements than common stock or debt securities because preferred stock may trade with less frequency and in more limited volume.

Real Estate Investment Trusts (REITs). An equity REIT owns real estate properties directly and generates income from rental and lease payments. Equity REITs also have the potential to generate capital gains as properties are sold at a profit. A mortgage REIT makes construction, development, and long-term mortgage loans to commercial real estate developers and earns interest income on these loans. A hybrid REIT holds both properties and mortgages. To avoid taxation at the corporate level, REITs must distribute most of their earnings to shareholders.

Investments in REITs are subject to many of the same risks as direct investments in real estate. In general, real estate values can be affected by a variety of factors, including, but not limited to, supply and demand for properties, general or local economic conditions, and the strength of specific industries that rent properties. Ultimately, a REIT's performance depends on the types and locations of the properties it owns and on how well the REIT manages its properties. For example, rental income could decline because of extended vacancies, increased competition from nearby properties, tenants' failure to pay rent, regulatory limitations on rents, fluctuations in rental income, variations in market rental rates, or incompetent management. Property values could decrease because of overbuilding in the area, environmental liabilities, uninsured damages caused by natural disasters, a general decline in the neighborhood, losses because of casualty or condemnation, increases in property taxes, or changes in zoning laws.

The value of a REIT may also be affected by changes in interest rates. Rising interest rates generally increase the cost of financing for real estate projects, which could cause the value of an equity REIT to decline. During periods of declining interest rates, mortgagors may elect to prepay mortgages held by mortgage REITs, which could lower or diminish the yield on the REIT. REITs are also subject to heavy cash-flow dependency, default by borrowers, and changes in tax and regulatory requirements. In addition, a REIT may fail to meet the requirements for qualification and taxation as a REIT under the IRC and/or fail to maintain exemption from the 1940 Act.

Reliance on Service Providers, Data Providers, and Other Technology. Vanguard funds rely upon the performance of service providers to execute several key functions, which may include functions integral to a fund's operations. Failure by any service provider to carry out its obligations to a fund could disrupt the business of the fund and could have an adverse effect on the fund's performance. A fund's service providers' reliance on certain technology or information vendors (e.g., trading systems, investment analysis tools, benchmark analytics, and tax and accounting tools) could also adversely affect a fund and its shareholders. For example, a fund's investment advisor may use models and/or data with respect to potential investments for the fund. When models or data prove to be incorrect or incomplete, any decisions made in reliance upon such models or data expose a fund to potential risks.

Repurchase Agreements. A repurchase agreement is an agreement under which a fund acquires a debt security (generally a security issued by the U.S. government or an agency thereof, a banker's acceptance, or a certificate of deposit) from a bank, a broker, a dealer, or another counterparty that meets minimum credit requirements and simultaneously agrees to resell such security to the seller at an agreed-upon price and date (normally, the next business day). Because the security purchased constitutes collateral for the repurchase obligation, a repurchase agreement may be considered a loan that is collateralized by the security purchased. The resale price reflects an agreed-upon interest rate effective for the period the instrument is held by a fund and is unrelated to the interest rate on the underlying instrument. In these transactions, the securities acquired by a fund (including accrued interest earned thereon) must have a total value in excess of the value of the repurchase agreement and be held by a custodian bank until repurchased. In addition, the investment advisor will monitor a fund's repurchase agreement transactions generally and will evaluate the creditworthiness of any bank, broker, dealer, or other counterparty that meets minimum credit requirements to a repurchase agreement relating to a fund. The aggregate amount of any such agreements is not limited, except to the extent required by law.

The use of repurchase agreements involves certain risks. One risk is the seller's ability to pay the agreed-upon repurchase price on the repurchase date. If the seller defaults, the fund may incur costs in disposing of the collateral, which would reduce the amount realized thereon. If the seller seeks relief under bankruptcy laws, the disposition of the collateral may be delayed or limited. For example, if the other party to the agreement becomes insolvent and subject to liquidation or reorganization under bankruptcy or other laws, a court may determine that the underlying security is collateral for a loan by the fund not within its control, and therefore the realization by the fund on such collateral may be automatically stayed. Finally, it is possible that the fund may not be able to substantiate its interest in the underlying security and may be deemed an unsecured creditor of the other party to the agreement.

Restricted and Illiquid Securities/Investments (including Private Placements). Illiquid securities/investments are investments that a fund reasonably expects cannot be sold or disposed of in current market conditions in seven calendar days or less without the sale or disposition significantly changing the market value of the investment. The SEC generally limits aggregate holdings of illiquid securities/investments by a mutual fund to 15% of its net assets (5% for money market funds). A fund may experience difficulty valuing and selling illiquid securities/investments and, in some cases, may be unable to value or sell certain illiquid securities for an indefinite period of time. Illiquid securities may include a wide variety of investments, such as (1) repurchase agreements maturing in more than seven days (unless the agreements have demand/redemption features), (2) OTC options contracts and certain other derivatives (including certain swap agreements), (3) fixed time deposits that are not subject to prepayment or do not provide for withdrawal penalties upon prepayment (other than overnight deposits), (4) certain loan interests and other direct debt instruments, (5) certain municipal lease obligations, (6) private equity investments, (7) commercial paper issued pursuant to Section 4(a)(2) of the 1933 Act, and (8) securities whose disposition is restricted under the federal securities laws. Illiquid securities/investments may include restricted, privately placed securities (such as private investments in public equity (PIPEs) or special purpose acquisition companies (SPACs)) that, under the federal securities laws, generally may be resold only to qualified institutional buyers. If a market develops for a restricted security held by a fund, it may be treated as a liquid security in accordance with guidelines approved by the board of trustees.

Reverse Repurchase Agreements. In a reverse repurchase agreement, a fund sells a security to another party, such as a bank or broker-dealer, in return for cash and agrees to repurchase that security at an agreed-upon price and time. Under a reverse repurchase agreement, the fund continues to receive any principal and interest payments on the underlying security during the term of the agreement. Reverse repurchase agreements involve the risk that the market value of securities retained by the fund may decline below the repurchase price of the securities sold by the fund that it is obligated to repurchase. In addition to the risk of such a loss, fees charged to the fund may exceed the return the fund earns from investing the proceeds received from the reverse repurchase agreement transaction. A reverse repurchase agreement may be considered a borrowing transaction for purposes of the 1940 Act. A reverse repurchase agreement transaction will not be considered to constitute the issuance, by a fund, of a "senior security," as that term is defined in Section 18(g) of the 1940 Act, and therefore such transaction will not be subject to the 300% asset coverage requirement otherwise applicable to borrowings by a fund, if the fund complies with Rule 18f-4. A fund will enter into reverse repurchase agreements only with parties whose creditworthiness has been reviewed and found satisfactory by the advisor. If the buyer in a reverse repurchase agreement becomes insolvent or files for bankruptcy, a fund's use of proceeds from the sale may be restricted while the other party or its trustee or receiver determines if it will honor the fund's right to repurchase the securities. If the fund is unable to recover the securities it sold in a reverse repurchase agreement, it would realize a loss equal to the difference between the value of the securities and the payment it received for them.

Securities Lending. A fund may lend its securities to financial institutions (typically brokers, dealers, and banks) to generate income for the fund. There are certain risks associated with lending securities, including counterparty, credit, market, regulatory, and operational risks. Vanguard considers the creditworthiness of the borrower, among other factors, in making decisions with respect to the lending of securities, subject to oversight by the board of trustees. If the borrower defaults on its obligation to return the securities lent because of insolvency or other reasons, a fund could experience delays and costs in recovering the securities lent or in gaining access to the collateral. These delays and costs could be greater for certain types of foreign securities, as well as certain types of borrowers that are subject to global regulatory regimes. If a fund is not able to recover the securities lent, the fund may sell the collateral and purchase a replacement security in the market. Collateral investments are subject to market appreciation or depreciation. The value of the collateral could decrease below the value of the replacement investment by the time the replacement investment is purchased. Currently, a fund invests cash collateral into Vanguard Market Liquidity Fund, an affiliated money market fund that invests primarily in high-quality, short-term money market instruments.

The terms and the structure of the loan arrangements, as well as the aggregate amount of securities loans, must be consistent with the 1940 Act and the rules or interpretations of the SEC thereunder. These provisions limit the amount of

securities a fund may lend to 33⅓% of the fund's total assets and require that (1) the borrower pledge and maintain with the fund collateral consisting of cash, an irrevocable letter of credit, or securities issued or guaranteed by the U.S. government having at all times not less than 100% of the value of the securities lent; (2) the borrower add to such collateral whenever the price of the securities lent rises (i.e., the borrower "marks to market" on a daily basis); (3) the loan be made subject to termination by the fund at any time; and (4) the fund receives reasonable interest on the loan (which may include the fund investing any cash collateral in interest-bearing short-term investments), any distribution on the lent securities, and any increase in their market value. Loan arrangements made by a fund will comply with any other applicable regulatory requirements. At the present time, the SEC does not object if an investment company pays reasonable negotiated fees in connection with lent securities, so long as such fees are set forth in a written contract and approved by the investment company's trustees. In addition, voting rights pass with the lent securities, but if a fund has knowledge that a material event will occur affecting securities on loan, and in respect to which the holder of the securities will be entitled to vote or consent, the lender must be entitled to call the loaned securities in time to vote or consent. A fund bears the risk that there may be a delay in the return of the securities, which may impair the fund's ability to vote on such a matter. See *Tax Status of the Funds* for information about certain tax consequences related to a fund's securities lending activities.

Pursuant to Vanguard's securities lending policy, Vanguard's fixed income and money market funds are not permitted to, and do not, lend their investment securities.

Tax Matters—Federal Tax Discussion. Discussion herein of U.S. federal income tax matters summarizes some of the important, generally applicable U.S. federal tax considerations relevant to investment in a fund based on the IRC, U.S. Treasury regulations, and other applicable authorities. These authorities are subject to change by legislative, administrative, or judicial action, possibly with retroactive effect. Each Fund has not requested and will not request an advance ruling from the Internal Revenue Service (IRS) as to the U.S. federal income tax matters discussed in this Statement of Additional Information. In some cases, a fund's tax position may be uncertain under current tax law and an adverse determination or future guidance by the IRS with respect to such a position could adversely affect the fund and its shareholders, including the fund's ability to continue to qualify as a regulated investment company or to continue to pursue its current investment strategy. A shareholder should consult their tax professional for information regarding the particular situation and the possible application of U.S. federal, state, local, foreign, and other taxes.

Tax Matters—Federal Tax Treatment of Derivatives, Hedging, and Related Transactions. A fund's transactions in derivative instruments (including, but not limited to, options, futures, forward contracts, and swap agreements), as well as any of the fund's hedging, short sale, securities loan, or similar transactions, may be subject to one or more special tax rules that accelerate income to the fund, defer losses to the fund, cause adjustments in the holding periods of the fund's securities, convert long-term capital gains into short-term capital gains, or convert short-term capital losses into long-term capital losses. These rules could therefore affect the amount, timing, and character of distributions to shareholders.

Because these and other tax rules applicable to these types of transactions are in some cases uncertain under current law, an adverse determination or future guidance by the IRS with respect to these rules (which determination or guidance could be retroactive) may affect whether a fund has made sufficient distributions, and otherwise satisfied the relevant requirements, to maintain its qualification as a regulated investment company and avoid a fund-level tax.

Tax Matters—Federal Tax Treatment of Futures Contracts. For federal income tax purposes, a fund generally must recognize, as of the end of each taxable year, any net unrealized gains and losses on certain futures contracts, as well as any gains and losses actually realized during the year. In these cases, any gain or loss recognized with respect to a futures contract is considered to be 60% long-term capital gain or loss and 40% short-term capital gain or loss, without regard to the holding period of the contract. Gains and losses on certain other futures contracts (primarily non-U.S. futures contracts) are not recognized until the contracts are closed and are treated as long-term or short-term, depending on the holding period of the contract. Sales of futures contracts that are intended to hedge against a change in the value of securities held by a fund may affect the holding period of such securities and, consequently, the nature of the gain or loss on such securities upon disposition. A fund may be required to defer the recognition of losses on one position, such as futures contracts, to the extent of any unrecognized gains on a related offsetting position held by the fund.

A fund will distribute to shareholders annually any net capital gains that have been recognized for federal income tax purposes on futures transactions. Such distributions will be combined with distributions of capital gains realized on the fund's other investments, and shareholders will be advised on the nature of the distributions.

Tax Matters—Federal Tax Treatment of Non-U.S. Currency Transactions. Special rules generally govern the federal income tax treatment of a fund's transactions in the following: non-U.S. currencies; non-U.S. currency-denominated debt obligations; and certain non-U.S. currency options, futures contracts, forward contracts, and similar instruments. Accordingly, if a fund engages in these types of transactions it may have ordinary income or loss to the extent that such income or loss results from fluctuations in the value of the non-U.S. currency concerned. Such ordinary income could accelerate fund distributions to shareholders and increase the distributions taxed to shareholders as ordinary income. Any ordinary loss so created will generally reduce ordinary income distributions and, in some cases, could require the recharacterization of prior ordinary income distributions. Net ordinary losses cannot be carried forward by the fund to offset income or gains realized in subsequent taxable years.

Any gain or loss attributable to the non-U.S. currency component of a transaction engaged in by a fund that is not subject to these special currency rules (such as foreign equity investments other than certain preferred stocks) will generally be treated as a capital gain or loss and will not be segregated from the gain or loss on the underlying transaction.

To the extent a fund engages in non-U.S. currency hedging, the fund may elect or be required to apply other rules that could affect the character, timing, or amount of the fund's gains and losses. For more information, see *"Tax Matters—Federal Tax Treatment of Derivatives, Hedging, and Related Transactions."*

Tax Matters—Foreign Tax Credit. Foreign governments may withhold taxes on dividends and interest paid with respect to foreign securities held by a fund. Foreign governments may also impose taxes on other payments or gains with respect to foreign securities. If, at the close of its fiscal year, more than 50% of a fund's total assets are invested in securities of foreign issuers, the fund may elect to pass through to shareholders the ability to deduct or, if they meet certain holding period requirements, take a credit for foreign taxes paid by the fund. Similarly, if at the close of each quarter of a fund's taxable year, at least 50% of its total assets consist of interests in other regulated investment companies, the fund is permitted to elect to pass through to its shareholders the foreign income taxes paid by the fund in connection with foreign securities held directly by the fund or held by a regulated investment company in which the fund invests that has elected to pass through such taxes to shareholders.

Tax Matters—Passive Foreign Investment Companies. To the extent that a fund invests in stock in a foreign company, such stock may constitute an equity investment in a passive foreign investment company (PFIC). A foreign company is generally a PFIC if 75% or more of its gross income is passive or if 50% or more of its assets produce passive income. Capital gains on the sale of an interest in a PFIC will be deemed ordinary income regardless of how long a fund held it. Also, a fund may be subject to corporate income tax and an interest charge on certain dividends and capital gains earned in respect to PFIC interests, whether or not such amounts are distributed to shareholders. To avoid such tax and interest, a fund may elect to "mark to market" its PFIC interests, that is, to treat such interests as sold on the last day of a fund's fiscal year, and to recognize any unrealized gains (or losses, to the extent of previously recognized gains) as ordinary income (or loss) each year. Distributions from a fund that are attributable to income or gains earned in respect to PFIC interests are characterized as ordinary income.

Tax Matters—Real Estate Mortgage Investment Conduits. If a fund invests directly or indirectly, including through a REIT or other pass-through entity, in residual interests in real estate mortgage investment conduits (REMICs) or equity interests in taxable mortgage pools (TMPs), a portion of the fund's income that is attributable to a residual interest in a REMIC or an equity interest in a TMP (such portion referred to in the IRC as an "excess inclusion") will be subject to U.S. federal income tax in all events—including potentially at the fund level—under a notice issued by the IRS in October 2006 and U.S. Treasury regulations that have yet to be issued but may apply retroactively. This notice also provides, and the regulations are expected to provide, that excess inclusion income of a regulated investment company will be allocated to shareholders of the regulated investment company in proportion to the dividends received by such shareholders, with the same consequences as if the shareholders held the related interest directly. In general, excess inclusion income allocated to shareholders (1) cannot be offset by net operating losses (subject to a limited exception for certain thrift institutions); (2) will constitute unrelated business taxable income (UBTI) to entities (including a qualified pension plan, an individual retirement account, a 401(k) plan, a Keogh plan, or other tax-exempt entity) subject to tax on UBTI, thereby potentially requiring such an entity, which otherwise might not be required, to file a tax return and pay tax on such income; and (3) in the case of a non-U.S. investor, will not qualify for any reduction in U.S. federal withholding tax. A shareholder will be subject to U.S. federal income tax on such inclusions notwithstanding any exemption from such income tax otherwise available under the IRC. As a result, a fund investing in such interests may not be suitable for charitable remainder trusts. See *"Tax Matters—Tax-Exempt Investors."*

Tax Matters—Tax Considerations for Non-U.S. Investors. U.S. withholding and estate taxes and certain U.S. tax reporting requirements may apply to any investments made by non-U.S. investors in Vanguard funds. Certain properly reported distributions of qualifying interest income or short-term capital gain made by a fund to its non-U.S. investors are exempt from U.S. withholding taxes, provided the investors furnish valid tax documentation (i.e., IRS Form W-8) certifying as to their non-U.S. status.

A fund is permitted, but is not required, to report any of its distributions as eligible for such relief, and some distributions (e.g., distributions of interest a fund receives from non-U.S. issuers) are not eligible for this relief. For some funds, Vanguard has chosen to report qualifying distributions and apply the withholding exemption to those distributions when made to non-U.S. shareholders who invest directly with Vanguard. For other funds, Vanguard may choose not to apply the withholding exemption to qualifying fund distributions made to direct shareholders, but may provide the reporting to such shareholders. In these cases, a shareholder may be able to reclaim such withholding tax directly from the IRS.

If shareholders hold fund shares (including ETF shares) through a broker or intermediary, their broker or intermediary may apply this relief to properly reported qualifying distributions made to shareholders with respect to those shares. If a shareholder's broker or intermediary instead collects withholding tax where the fund has provided the proper reporting, the shareholder may be able to reclaim such withholding tax from the IRS. Please consult your broker or intermediary regarding the application of these rules.

This relief does not apply to any withholding required under the Foreign Account Tax Compliance Act (FATCA), which generally requires a fund to obtain information sufficient to identify the status of each of its shareholders. If a shareholder fails to provide this information or otherwise fails to comply with FATCA, a fund may be required to withhold under FATCA at a rate of 30% with respect to that shareholder on fund distributions. Please consult your tax advisor for more information about these rules.

Tax Matters—Tax-Exempt Investors. Income of a fund that would be UBTI if earned directly by a tax-exempt entity will not generally be attributed as UBTI to a tax-exempt shareholder of the fund. Notwithstanding this “blocking” effect, a tax-exempt shareholder could realize UBTI by virtue of its investment in a fund if shares in the fund constitute debt-financed property in the hands of the tax-exempt shareholder within the meaning of IRC Section 514(b).

A tax-exempt shareholder may also recognize UBTI if a fund recognizes “excess inclusion income” derived from direct or indirect investments in residual interests in REMICs or equity interests in TMPs. See “*Tax Matters—Real Estate Mortgage Investment Conduits.*”

In addition, special tax consequences apply to charitable remainder trusts that invest in a fund that invests directly or indirectly in residual interests in REMICs or equity interests in TMPs. Charitable remainder trusts and other tax-exempt investors are urged to consult their tax advisors concerning the consequences of investing in a fund.

Time Deposits. Time deposits are subject to the same risks that pertain to domestic issuers of money market instruments, most notably credit risk (and, to a lesser extent, income risk, market risk, and liquidity risk). Additionally, time deposits of foreign branches of U.S. banks and foreign branches of foreign banks may be subject to certain sovereign risks. One such risk is the possibility that a sovereign country might prevent capital, in the form of U.S. dollars, from flowing across its borders. Other risks include adverse political and economic developments, the extent and quality of government regulation of financial markets and institutions, the imposition of foreign withholding taxes, and expropriation or nationalization of foreign issuers. However, time deposits of such issuers will undergo the same type of credit analysis as domestic issuers in which a Vanguard fund invests and will have at least the same financial strength as the domestic issuers approved for the fund.

Warrants. Warrants are instruments that give the holder the right, but not the obligation, to buy an equity security at a specific price for a specific period of time. Changes in the value of a warrant do not necessarily correspond to changes in the value of its underlying security. The price of a warrant may be more volatile than the price of its underlying security, and a warrant may offer greater potential for capital appreciation as well as capital loss. Warrants do not entitle a holder to dividends or voting rights with respect to the underlying security and do not represent any rights in the assets of the issuing company. A warrant ceases to have value if it is not exercised prior to its expiration date. These factors can make warrants more speculative than other types of investments. Other kinds of warrants exist, including, but not limited to, warrants linked to countries' economic performance or to commodity prices such as oil prices. These warrants may be subject to risk from fluctuation of underlying assets or indexes, as well as credit risk that the issuer does not pay on the obligations and risk that the data used for warrant payment calculation does not accurately reflect the true underlying commodity price or economic performance.

When-Issued, Delayed-Delivery, and Forward-Commitment Transactions. When-issued, delayed-delivery, and forward-commitment transactions involve a commitment to purchase or sell specific securities at a predetermined price or yield in which payment and delivery take place after the customary settlement period for that type of security. Typically, no interest accrues to the purchaser until the security is delivered. When purchasing securities pursuant to one of these transactions, payment for the securities is not required until the delivery date. However, the purchaser assumes the rights and risks of ownership, including the risks of price and yield fluctuations and the risk that the security will not be issued as anticipated. When a fund has sold a security pursuant to one of these transactions, the fund does not participate in further gains or losses with respect to the security. If the other party to a delayed-delivery transaction fails to deliver or pay for the securities, the fund could miss a favorable price or yield opportunity or suffer a loss. A fund may renegotiate a when-issued or forward-commitment transaction and may sell the underlying securities before delivery, which may result in capital gains or losses for the fund. When-issued, delayed-delivery, and forward-commitment transactions will not be considered to constitute the issuance, by a fund, of a “senior security,” as that term is defined in Section 18(g) of the 1940 Act, and therefore such transaction will not be subject to the 300% asset coverage requirement otherwise applicable to borrowings by the fund, if the fund complies with Rule 18f-4.

Regulatory Restrictions in India. Shares of Vanguard Emerging Markets Stock Index, FTSE All-World ex-US Index, FTSE All-World ex-US Small-Cap Index, Global ex-U.S. Real Estate Index, and Total World Stock Index Funds have not been, and will not be, registered under the laws of India and are not intended to benefit from any laws in India promulgated for the protection of shareholders. As a result of regulatory requirements in India, shares of the Funds shall not be knowingly offered to (directly or indirectly) or sold or delivered to (within India); transferred to or purchased by; or held by, for, on the account of, or for the benefit of (i) a “person resident in India” (as defined under applicable Indian law), (ii) an “overseas corporate body” or a “person of Indian origin” (as defined under applicable Indian law), or (iii) any other entity or person disqualified or otherwise prohibited from accessing the Indian securities market under applicable laws, as may be amended from time to time. Investors, prior to purchasing shares of the Funds, must satisfy themselves regarding compliance with these requirements.

SHARE PRICE

Multiple-class funds do not have a single share price. Rather, each class has a share price, also known as *net asset value* (NAV), which is typically calculated as of the close of regular trading on the New York Stock Exchange (NYSE), generally 4 p.m., Eastern time, on each day that the NYSE is open for business (a business day). In the rare event the NYSE experiences unanticipated disruptions and is unavailable at the close of the trading day, each Fund reserves the right to treat such day as a business day and calculate NAVs as of the close of regular trading on the Nasdaq (or another alternate exchange if the Nasdaq is unavailable, as determined at Vanguard’s discretion), generally 4 p.m., Eastern time. The NAV per share is computed by dividing the total assets, minus liabilities, allocated to the share class by the number of Fund shares outstanding for that class. On U.S. holidays or other days when the NYSE is closed, the NAV is not calculated, and the Funds do not sell or redeem shares. However, on those days the value of a Fund’s assets may be affected to the extent that the Fund holds securities that change in value on those days (such as foreign securities that trade on foreign markets that are open).

The NYSE typically observes the following holidays: New Year’s Day; Martin Luther King, Jr., Day; Presidents’ Day (Washington’s Birthday); Good Friday; Memorial Day; Juneteenth National Independence Day; Independence Day; Labor Day; Thanksgiving Day; and Christmas Day. Although each Fund expects the same holidays to be observed in the future, the NYSE may modify its holiday schedule or hours of operation at any time.

PURCHASE AND REDEMPTION OF SHARES

Purchase of Shares (Other than ETF Shares)

The purchase price of shares of each Fund is the NAV per share next determined after the purchase request is received in good order, as defined in the Fund’s prospectus.

The Funds (other than Vanguard Global ex-U.S. Real Estate Index Fund) do not charge purchase fees. The Global ex-U.S. Real Estate Index Fund charges a 0.25% purchase fee. The purchase fee is paid to the Fund to reimburse it for the transaction costs incurred from purchasing securities. The fee is deducted from all purchases, including shares purchased by exchange from other Vanguard funds. Information regarding the application of purchase fees is described more fully in the Fund’s prospectus.

Exchange of Securities for Shares of a Fund. Shares of a Fund may be purchased “in kind” (i.e., in exchange for securities, rather than for cash) at the discretion of the Fund’s portfolio manager. Such securities must not be restricted as to transfer and must have a value that is readily ascertainable. Securities accepted by the Fund will be valued, as set forth in the Fund’s prospectus, as of the time of the next determination of NAV after such acceptance. All dividend, subscription, or other rights that are reflected in the market price of accepted securities at the time of valuation become the property of the Fund and must be delivered to the Fund by the investor upon receipt from the issuer. A gain or loss for federal income tax purposes, depending upon the cost of the securities tendered, would be realized by the investor upon the exchange. Investors interested in purchasing fund shares in kind should contact Vanguard.

Redemption of Shares (Other than ETF Shares)

The redemption price of shares of each Fund is the NAV per share next determined after the redemption request is received in good order, as defined in the Fund’s prospectus.

Each Fund can postpone payment of redemption proceeds for up to seven calendar days. In addition, each Fund can suspend redemptions and/or postpone payments of redemption proceeds beyond seven calendar days (1) during any period that the NYSE is closed or trading on the NYSE is restricted as determined by the SEC; (2) during any period when an emergency exists, as defined by the SEC, as a result of which it is not reasonably practicable for the Fund to dispose of securities it owns or to fairly determine the value of its assets; or (3) for such other periods as the SEC may permit.

The Trust has filed a notice of election with the SEC to pay in cash all redemptions requested by any shareholder of record limited in amount during any 90-day period to the lesser of \$250,000 or 1% of the net assets of a Fund at the beginning of such period.

If Vanguard determines that it would be detrimental to the best interests of the remaining shareholders of a Fund to make payment wholly or partly in cash, the Fund may pay the redemption price in whole or in part by a distribution in kind of readily marketable securities held by the Fund in lieu of cash in conformity with applicable rules of the SEC and in accordance with procedures adopted by the Fund’s board of trustees. Investors may incur brokerage charges on the sale of such securities received in payment of redemptions.

The Funds (other than Vanguard Global ex-U.S. Real Estate Index Fund) do not charge redemption fees. There is a 0.25% redemption fee charged for redemptions from the Global ex-U.S. Real Estate Index Fund. The redemption fee is paid to the Fund to reimburse it for the transaction costs incurred from liquidating securities in order to meet fund redemptions. Information regarding the application of redemption fees is described more fully in the Fund’s prospectus. Shares redeemed may be worth more or less than what was paid for them, depending on the market value of the securities held by the Funds.

Vanguard processes purchase and redemption requests through a pooled account. Pending investment direction or distribution of redemption proceeds, the assets in the pooled account are invested and any earnings (the “float”) are allocated proportionately among the Vanguard funds in order to offset fund expenses. Other than the float, Vanguard treats assets held in the pooled account as the assets of each shareholder making such purchase or redemption request.

Right to Change Policies

Vanguard reserves the right, without notice, to (1) alter, add, or discontinue any conditions of purchase (including eligibility requirements), redemption, exchange, conversion, service, or privilege at any time and (2) alter, impose, discontinue, or waive any purchase fee, redemption fee, account service fee, or other fee charged to a shareholder or a group of shareholders. Changes may affect any or all investors. These actions will be taken when, at the sole discretion of Vanguard management, Vanguard believes they are in the best interest of a fund.

Account Restrictions

Vanguard reserves the right to: (1) redeem all or a portion of a fund/account to meet a legal obligation, including tax withholding, tax lien, garnishment order, or other obligation imposed on your account by a court or government agency; (2) redeem shares, close an account, or suspend account privileges, features, or options in the case of threatening conduct or activity; (3) redeem shares, close an account, or suspend account privileges, features, or options if Vanguard believes or suspects that not doing so could result in a suspicious, fraudulent, or illegal transaction; (4) place restrictions on the ability to redeem any or all shares in an account if it is required to do so by a court or government agency; (5)

place restrictions on the ability to redeem any or all shares in an account if Vanguard believes that doing so will prevent fraud or financial exploitation or abuse, or will protect vulnerable investors; (6) freeze any account and/or suspend account services if Vanguard has received reasonable notice of a dispute regarding the assets in an account, including notice of a dispute between the registered or beneficial account owners; and (7) freeze any account and/or suspend account services upon initial notification to Vanguard of the death of an account owner.

Investing With Vanguard Through Other Firms

Each Fund has authorized certain agents to accept on its behalf purchase and redemption orders, and those agents are authorized to designate other intermediaries to accept purchase and redemption orders on the Fund's behalf (collectively, Authorized Agents). The Fund will be deemed to have received a purchase or redemption order when an Authorized Agent accepts the order in accordance with the Fund's instructions. In most instances, a customer order that is properly transmitted to an Authorized Agent will be priced at the NAV per share next determined after the order is received by the Authorized Agent.

MANAGEMENT OF THE FUNDS

Vanguard

Each Fund is part of the Vanguard group of investment companies, which consists of over 200 funds. Each fund is a series of a Delaware statutory trust. The funds obtain virtually all of their corporate management, administrative, and distribution services through the trusts' jointly owned subsidiary, Vanguard. Vanguard may contract with certain third-party service providers to assist Vanguard in providing certain administrative and/or accounting services with respect to the funds, subject to Vanguard's oversight. Vanguard also provides investment advisory services to certain Vanguard funds. All of these services are provided at Vanguard's total cost of operations pursuant to the Fifth Amended and Restated Funds' Service Agreement (the Agreement).

Vanguard employs a supporting staff of management and administrative personnel needed to provide the requisite services to the funds and also furnishes the funds with necessary office space, furnishings, and equipment. Each fund (other than a fund of funds) pays its share of Vanguard's total expenses, which are allocated among the funds under methods approved by the board of trustees of each fund. In addition, each fund bears its own direct expenses, such as legal, auditing, and custodial fees.

Pursuant to an agreement between Vanguard and JP Morgan Chase Bank N.A. (JP Morgan), JP Morgan provides services for Vanguard Emerging Markets Stock Index Fund. These services include, but are not limited to: (i) the calculation of the fund's daily NAVs and (ii) the furnishing of financial reports. The fees paid to JP Morgan under this agreement are based on a combination of flat and asset based fees. During the fiscal years ended October 31, 2022, 2023, and 2024, JP Morgan had received fees from the Fund for administrative services rendered as shown in the table below.

Pursuant to an agreement between Vanguard and State Street Bank and Trust Company (State Street), State Street provides services for Vanguard European Stock Index Fund, Vanguard FTSE All-World ex-US Index Fund, Vanguard FTSE All-World ex-US Small-Cap Index Fund, Vanguard Global ex-U.S. Real Estate Index Fund, Vanguard Pacific Stock Index Fund, and Vanguard Total World Stock Index Fund. These services include, but are not limited to: (i) the calculation of such funds' daily NAVs and (ii) the furnishing of financial reports. The fees paid to State Street under this agreement are based on a combination of flat and asset based fees. During the fiscal years ended October 31, 2022, 2023, and 2024, State Street had received fees from the Funds for administrative services rendered as shown in the table below.

Vanguard Fund	2022	2023	2024
Vanguard Emerging Markets Stock Index Fund	\$16,999.91	\$16,999.93	\$17,999.81
Vanguard European Stock Index Fund	21,500.06	21,500.07	21,770.90
Vanguard FTSE All-World ex-US Index Fund	21,500.03	21,500.03	21,687.52
Vanguard FTSE All-World ex-US Small-Cap Index Fund	21,500.00	21,500.04	21,604.17
Vanguard Global ex-US Real Estate Index Fund	21,500.01	21,499.99	21,604.17
Vanguard Pacific Stock Index Fund	21,500.02	21,500.05	21,687.56
Vanguard Total World Stock Index Fund	21,500.03	21,500.04	21,604.19

The funds' officers are also employees of Vanguard.

Vanguard, Vanguard Marketing Corporation (VMC), the funds, and the funds' advisors have adopted codes of ethics designed to prevent employees who may have access to nonpublic information about the trading activities of the funds (access persons) from profiting from that information. The codes of ethics permit access persons to invest in securities for their own accounts, including securities that may be held by a fund, but place substantive and procedural restrictions on the trading activities of access persons. For example, the codes of ethics require that access persons receive advance approval for most securities trades to ensure that there is no conflict with the trading activities of the funds.

Vanguard was established and operates under the Agreement. The Agreement provides that each Vanguard fund may be called upon to invest up to 0.40% of its net assets in Vanguard. The amounts that each fund has invested are adjusted from time to time in order to maintain the proportionate relationship between each fund's relative net assets and its contribution to Vanguard's capital.

As of October 31, 2024, each Fund had contributed capital to Vanguard as follows:

Vanguard Fund	Capital Contribution to Vanguard	Percentage of Fund's Average Net Assets	Percent of Vanguard's Capitalization
Vanguard Emerging Markets Stock Index Fund	\$3,156,000	Less than 0.01%	1.26%
Vanguard European Stock Index Fund	710,000	Less than 0.01%	0.28
Vanguard FTSE All-World ex-US Index Fund	1,612,000	Less than 0.01%	0.64
Vanguard FTSE All-World ex-US Small-Cap Index Fund	305,000	Less than 0.01%	0.12
Vanguard Global ex-US Real Estate Index Fund	109,000	Less than 0.01%	0.04
Vanguard Pacific Stock Index Fund	287,000	Less than 0.01%	0.11
Vanguard Total World Stock Index Fund	1,464,000	Less than 0.01%	0.59

Management. Corporate management and administrative services include (1) executive staff, (2) accounting and financial, (3) legal and regulatory, (4) shareholder account maintenance, (5) monitoring and control of custodian relationships, (6) shareholder reporting, (7) review and evaluation of advisory and other services provided to the funds by third parties, and (8) such other services necessary to operate the funds at the lowest reasonable cost in accordance with the Agreement.

Distribution. Vanguard Marketing Corporation, 100 Vanguard Boulevard, Malvern, PA 19355, a wholly owned subsidiary of Vanguard, is the principal underwriter for the funds and in that capacity performs and finances marketing, promotional, and distribution activities (collectively, marketing and distribution activities) that are primarily intended to result in the sale of the funds' shares. VMC offers shares of each fund for sale on a continuous basis and will use all reasonable efforts in connection with the distribution of shares of the funds. VMC performs marketing and distribution activities in accordance with the conditions of a 1981 SEC exemptive order that permits the Vanguard funds to internalize and jointly finance the marketing, promotion, and distribution of their shares. The funds' trustees review and approve the marketing and distribution expenses incurred by the funds, including the nature and cost of the activities and the desirability of each fund's continued participation in the joint arrangement.

To ensure that each fund's participation in the joint arrangement falls within a reasonable range of fairness, each fund contributes to VMC's marketing and distribution expenses in accordance with an SEC-approved formula. Under that formula, one half of the marketing and distribution expenses are allocated among the funds based upon their relative net assets. The remaining half of those expenses is allocated among the funds based upon each fund's sales for the preceding 24 months relative to the total sales of the funds as a group, provided, however, that no fund's aggregate quarterly rate of contribution for marketing and distribution expenses shall exceed 125% of the average marketing and distribution expense rate for Vanguard and that no fund shall incur annual marketing and distribution expenses in excess of 0.20% of its average month-end net assets. Each fund's contribution to these marketing and distribution expenses helps to maintain and enhance the attractiveness and viability of the Vanguard complex as a whole, which benefits all of the funds and their shareholders.

VMC's principal marketing and distribution expenses are for advertising, promotional materials, and marketing personnel. Other marketing and distribution activities of an administrative nature that VMC undertakes on behalf of the funds may include, but are not limited to:

- Conducting or publishing Vanguard-generated research and analysis concerning the funds, other investments, the financial markets, or the economy.
- Providing views, opinions, advice, or commentary concerning the funds, other investments, the financial markets, or the economy.
- Providing analytical, statistical, performance, or other information concerning the funds, other investments, the financial markets, or the economy.
- Providing administrative services in connection with investments in the funds or other investments, including, but not limited to, shareholder services, recordkeeping services, and educational services.
- Providing products or services that assist investors or financial service providers (as defined below) in the investment decision-making process.

VMC performs most marketing and distribution activities itself. Some activities may be conducted by third parties pursuant to shared marketing arrangements under which VMC agrees to share the costs and performance of marketing and distribution activities in concert with a financial service provider. Financial service providers include, but are not limited to, investment advisors, broker-dealers, financial planners, financial consultants, banks, and insurance companies. Under these cost- and performance-sharing arrangements, VMC may pay or reimburse a financial service provider (or a third party it retains) for marketing and distribution activities that VMC would otherwise perform. VMC's cost- and performance-sharing arrangements may be established in connection with Vanguard investment products or services offered or provided to or through the financial service providers.

VMC's arrangements for shared marketing and distribution activities may vary among financial service providers, and its payments or reimbursements to financial service providers in connection with shared marketing and distribution activities may be significant. VMC, as a matter of policy, does not pay asset-based fees, sales-based fees, or account-based fees to financial service providers in connection with its marketing and distribution activities for the Vanguard funds. VMC does make fixed dollar payments to financial service providers when sponsoring, jointly sponsoring, financially supporting, or participating in conferences, programs, seminars, presentations, meetings, or other events involving fund shareholders, financial service providers, or others concerning the funds, other investments, the financial markets, or the economy, such as industry conferences, prospecting trips, due diligence visits, training or education meetings, and sales presentations. VMC also makes fixed dollar payments to financial service providers for data regarding funds, such as statistical information regarding sales of fund shares. In addition, VMC makes fixed dollar payments for expenses associated with financial service providers' use of Vanguard's funds including, but not limited to, the use of funds in model portfolios. These payments may be used for services including, but not limited to, technology support and development; platform support and development; due diligence related to products used on a platform; legal, regulatory, and compliance expenses related to a platform; and other platform-related services.

In connection with its marketing and distribution activities, VMC may give financial service providers (or their representatives) (1) promotional items of nominal value that display Vanguard's logo, such as golf balls, shirts, towels, pens, and mouse pads; (2) gifts that do not exceed \$100 per person annually and are not preconditioned on achievement of a sales target; (3) an occasional meal, a ticket to a sporting event or the theater, or comparable entertainment that is neither so frequent nor so extensive as to raise any question of propriety and is not preconditioned on achievement of a sales target; and (4) reasonable travel and lodging accommodations to facilitate participation in marketing and distribution activities.

VMC policy prohibits marketing and distribution activities that are intended, designed, or likely to compromise suitability determinations by, or the fulfillment of any fiduciary duties or other obligations that apply to, financial service providers. Nonetheless, VMC's marketing and distribution activities are primarily intended to result in the sale of the funds' shares, and as such, its activities, including shared marketing and distribution activities and fixed dollar payments as described above, may influence applicable financial service providers (or their representatives) to recommend, promote, include, or invest in a Vanguard fund or share class. In addition, Vanguard or any of its subsidiaries may retain a financial service provider to provide consulting or other services, and that financial service provider also may provide services to investors. Investors should consider the possibility that any of these activities, relationships, or payments may influence

a financial service provider's (or its representatives') decision to recommend, promote, include, or invest in a Vanguard fund or share class. Each financial service provider should consider its suitability determinations, fiduciary duties, and other legal obligations (or those of its representatives) in connection with any decision to consider, recommend, promote, include, or invest in a Vanguard fund or share class.

The following table describes the expenses of Vanguard and VMC that are incurred by Funds. Amounts captioned "Management and Administrative Expenses" include a Fund's allocated share of expenses associated with the management, administrative, and transfer agency services Vanguard provides to the Vanguard funds. Amounts captioned "Marketing and Distribution Expenses" include a Fund's allocated share of expenses associated with the marketing and distribution activities that VMC conducts on behalf of the Vanguard funds.

As is the case with all mutual funds, transaction costs incurred by the Funds for buying and selling securities are not reflected in the table. Annual Shared Fund Operating Expenses are based on expenses incurred in the fiscal years ended October 31, 2022, 2023, and 2024, and are presented as a percentage of each Fund's average month-end net assets.

**Annual Shared Fund Operating Expenses
(Shared Expenses Deducted From Fund Assets)**

Vanguard Fund	2022	2023	2024
Vanguard Emerging Markets Stock Index Fund			
Management and Administrative Expenses	0.06%	0.06%	0.06%
Marketing and Distribution Expenses	Less than 0.01	Less than 0.01	Less than 0.01
Vanguard European Stock Index Fund			
Management and Administrative Expenses	0.05%	0.07%	0.07%
Marketing and Distribution Expenses	Less than 0.01	Less than 0.01	Less than 0.01
Vanguard FTSE All-World ex-U.S. Index Fund			
Management and Administrative Expenses	0.06%	0.05%	0.06%
Marketing and Distribution Expenses	Less than 0.01	Less than 0.01	Less than 0.01
Vanguard FTSE All-World ex-U.S. Small-Cap Index Fund			
Management and Administrative Expenses	0.05%	0.05%	0.06%
Marketing and Distribution Expenses	Less than 0.01	Less than 0.01	Less than 0.01
Vanguard Global ex-U.S. Real Estate Index Fund			
Management and Administrative Expenses	0.09%	0.09%	0.08%
Marketing and Distribution Expenses	Less than 0.01	Less than 0.01	Less than 0.01
Vanguard Pacific Stock Index Fund			
Management and Administrative Expenses	0.06%	0.06%	0.06%
Marketing and Distribution Expenses	Less than 0.01	Less than 0.01	Less than 0.01
Vanguard Total World Stock Index Fund			
Management and Administrative Expenses	0.06%	0.06%	0.06%
Marketing and Distribution Expenses	Less than 0.01	Less than 0.01	Less than 0.01

Officers and Trustees

Each Vanguard fund is governed by the board of trustees of its trust and a single set of officers. Consistent with the board's corporate governance principles, the trustees believe that their primary responsibility is oversight of the management of each fund for the benefit of its shareholders, not day-to-day management. The trustees set broad policies for the funds; select investment advisors; monitor fund operations, regulatory compliance, performance, and costs; nominate and select new trustees; and elect fund officers. Vanguard manages the day-to-day operations of the funds under the direction of the board of trustees.

The trustees play an active role, as a full board and at the committee level, in overseeing risk management for the funds. The trustees delegate the day-to-day risk management of the funds to various groups, including portfolio review, investment management, risk management, compliance, legal, fund accounting, and fund services and oversight. These groups provide the trustees with regular reports regarding investment, valuation, liquidity, and compliance, as well as the risks associated with each. The trustees also oversee risk management for the funds through regular interactions with the funds' internal and external auditors.

The full board participates in the funds' risk oversight, in part, through the Vanguard funds' compliance program, which covers the following broad areas of compliance: investment and other operations; recordkeeping; valuation and pricing; communications and disclosure; reporting and accounting; oversight of service providers; fund governance; and codes of ethics, insider trading controls, and protection of nonpublic information. The program seeks to identify and assess risk through various methods, including through regular interdisciplinary communications between compliance professionals and business personnel who participate on a daily basis in risk management on behalf of the funds. The funds' chief compliance officer regularly provides reports to the board in writing and in person.

The Audit and Risk Committee of the board, which is composed of Sarah Bloom Raskin, Peter F. Volanakis, Tara Bunch, and Mark Loughridge, each of whom is an independent trustee, oversees the management of financial risks and controls and enterprise-wide risk management. The Audit and Risk Committee serves as the channel of communication between the independent auditors of the funds and the board with respect to financial statements and financial reporting processes, systems of internal control, and the audit process. The committee also serves as a channel of communication between risk management personnel and the board with respect to enterprise-wide risk management.

Vanguard's head of internal audit reports directly to the Audit and Risk Committee. The committee receives reports in writing and in person on a regular basis from Vanguard's head of internal audit and Vanguard's chief risk officer. Although the Audit and Risk Committee is responsible for overseeing the management of financial risks and enterprise-wide risk management, the entire board is regularly informed of these risks through the committee's reports.

All of the trustees bring to each fund's board a wealth of executive leadership experience derived from their service as executives (in many cases chief executive officers), board members, and leaders of diverse public operating companies, academic institutions, and other organizations. In determining whether an individual is qualified to serve as a trustee of the funds, the board considers a wide variety of information about the trustee, and multiple factors contribute to the board's decision. Each trustee is determined to have the experience, skills, and attributes necessary to serve the funds and their shareholders because each trustee demonstrates an exceptional ability to consider complex business and financial matters, evaluate the relative importance and priority of issues, make decisions, and contribute effectively to the deliberations of the board. The board also considers the individual experience of each trustee and determines that the trustee's professional experience, education, and background contribute to the diversity of perspectives on the board. The business acumen, experience, and objective thinking of the trustees are considered invaluable assets for Vanguard management and, ultimately, the Vanguard funds' shareholders. The specific roles and experience of each board member that factor into this determination are presented on the following pages. The mailing address of the trustees and officers is P.O. Box 876, Valley Forge, PA 19482.

Name, Year of Birth	Position(s) Held With Funds	Vanguard Funds' Trustee/ Officer Since	Principal Occupation(s) During the Past Five Years, Outside Directorships, and Other Experience	Number of Vanguard Funds Overseen by Trustee/Officer
Interested Trustee¹				
Salim Ramji (1970)	Chief Executive Officer and President	CEO and President since July 2024; Trustee since February 2025	Chief executive officer and president of each of the investment companies served by Vanguard (2024–present). Chief executive officer and director of Vanguard (2024–present). Global head of iShares and of index investing of BlackRock (2019–2024) and member of iShares fund board (2019–2024). Head of U.S. Wealth Advisory of BlackRock (2015–2019). Member of investment committee of Friends Seminary. Trustee of Graham Windham (child-welfare organization). Member of the international leadership council of the University of Toronto.	215
Independent Trustees				
Tara Bunch (1962)	Trustee	November 2021	Head of global operations at Airbnb (2020–present). Vice president of AppleCare (2012–2020). Member of the boards of the University of California, Berkeley School of Engineering, and Santa Clara University's School of Business.	215
Mark Loughridge (1953)	Independent Chair	March 2012	Senior vice president and chief financial officer (retired 2013) of IBM (information technology services). Fiduciary member of IBM's Retirement Plan Committee (2004–2013), senior vice president and general manager (2002–2004) of IBM Global Financing, and vice president and controller (1998–2002) of IBM. Member of the Council on Chicago Booth.	215
Scott C. Malpass (1962)	Trustee	March 2012	Co-founder and managing partner (2022–present) of Grafton Street Partners (investment advisory firm). Chief investment officer and vice president of the University of Notre Dame (retired 2020). Chair of the board of Catholic Investment Services, Inc. (investment advisor). Member of the board of superintendence of the Institute for the Works of Religion. Member of the board of directors of Paxos Trust Company (finance).	215

¹ Mr. Ramji is considered an "interested person" as defined in the 1940 Act because he is an officer of the Funds.

Name, Year of Birth	Position(s) Held With Funds	Vanguard Funds' Trustee/ Officer Since	Principal Occupation(s) During the Past Five Years, Outside Directorships, and Other Experience	Number of Vanguard Funds Overseen by Trustee/Officer
John Murphy (1962)	Trustee	February 2025	President (2022–present), chief financial officer (2019–present), and president of the Asia Pacific group (2016–2018) of The Coca-Cola Company (TCCC). Member of the board of directors of Mexico-based Coca-Cola FEMSA (beverage bottler company); The Coca-Cola Foundation (TCCC's philanthropic arm); and Engage (innovation and corporate venture platform supporting startups). Member of the board of trustees of the Woodruff Arts Center.	215
Lubos Pastor (1974)	Trustee	January 2024	Charles P. McQuaid Distinguished Service Professor of Finance (2023–present) at the University of Chicago Booth School of Business; Charles P. McQuaid Professor of Finance at the University of Chicago Booth School of Business (2009–2023). Managing director (2024–present) of Andersen (professional services) and a member of the Advisory Board of the Andersen Institute for Finance and Economics. President of the European Finance Association. Member of the board of the Fama-Miller Center for Research in Finance. Research associate at the National Bureau of Economic Research. Member of the Center for Research in Security Prices (CRSP) Index Advisory Council and Advisory Board.	215
Rebecca Patterson (1968)	Trustee	February 2025	Chief investment strategist at Bridgewater Associates LP (2020–2023). Chief investment officer at Bessemer Trust (2012–2019). Member of the Council on Foreign Relations and the Economic Club of New York. Chair of the Board of Directors of the Council for Economic Education. Member of the Board of the University of Florida Investment Corporation.	215
André F. Perold (1952)	Trustee	December 2004	George Gund Professor of Finance and Banking, Emeritus at the Harvard Business School (retired 2011). Chief investment officer and partner of HighVista Strategies LLC (private investment firm). Board member of RIT Capital Partners (investment firm).	215
Sarah Bloom Raskin (1961)	Trustee	January 2018	Deputy secretary (2014–2017) of the U.S. Department of the Treasury. Governor (2010–2014) of the Federal Reserve Board. Commissioner (2007–2010) of financial regulation for the State of Maryland. Colin W. Brown Distinguished Professor of the Practice, Duke Law School (2021–present); Rubenstein fellow, Duke University (2017–2020); distinguished fellow of the Global Financial Markets Center, Duke Law School (2020–2022); and senior fellow, Duke Center on Risk (2020–present). Partner of Kaya Partners (climate policy advisory services).	215
Grant Reid (1959)	Trustee	July 2023	Senior operating partner (2023–present) of CVC Capital (alternative investment manager). Chief executive officer and president (2014–2022) and member of the board of directors (2015–2022) of Mars, Incorporated (multinational manufacturer). Member of the board of directors of Marriott International, Inc. Member of the board of the Sustainable Markets Initiative (environmental services) and chair of the Sustainable Markets Initiative's Agribusiness Task Force.	215

Name, Year of Birth	Position(s) Held With Funds	Vanguard Funds' Trustee/Officer Since	Principal Occupation(s) During the Past Five Years, Outside Directorships, and Other Experience	Number of Vanguard Funds Overseen by Trustee/Officer
David Thomas (1956)	Trustee	July 2021	President of Morehouse College (2018–present). Professor of Business Administration, Emeritus at Harvard University (2017–2018) and dean (2011–2016) and professor of management at Georgetown University, McDonough School of Business (2016–2017). Director of DTE Energy Company. Trustee of Commonfund.	215
Barbara Venneman (1964)	Trustee	February 2025	Global head of Deloitte Digital (retired 2024) and member of the Deloitte Global Consulting Executive Committee (retired 2024) at Deloitte Consulting LLP. Member of the board of Reality Changers (educational nonprofit).	215
Peter F. Volanakis (1955)	Trustee	July 2009	President and chief operating officer (retired 2010) of Corning Incorporated (communications equipment) and director of Corning Incorporated (2000–2010) and Dow Corning (2001–2010). Overseer of the Amos Tuck School of Business Administration, Dartmouth College (2001–2013). Member of the BMW Group Mobility Council.	215
Executive Officers				
Jacqueline Angell (1974)	Chief Compliance Officer	November 2022	Principal of Vanguard. Chief compliance officer (2022–present) of Vanguard and of each of the investment companies served by Vanguard. Chief compliance officer (2018–2022) and deputy chief compliance officer (2017–2019) of State Street.	215
Christine Buchanan (1970)	Chief Financial Officer	November 2017	Principal of Vanguard. Chief financial officer (2021–present) and treasurer (2017–2021) of each of the investment companies served by Vanguard. Partner (2005–2017) at KPMG (audit, tax, and advisory services).	215
Gregory Davis (1970)	Vice President	July 2024	Vice president of each of the investment companies served by Vanguard (2024–present). President (2024–present) and director (2024–present) of Vanguard. Chief investment officer (2017–present) of Vanguard. Principal (2014–present) and head of the Fixed Income Group (2014–2017) of Vanguard. Asia-Pacific chief investment officer (2013–2014) and director of Vanguard Investments Australia, Ltd. (2013–2014). Member of the Treasury Borrowing Advisory Committee of the U.S. Department of the Treasury. Member of the investment advisory committee on Financial Markets for the Federal Reserve Bank of New York. Vice chairman of the board of the Children's Hospital of Philadelphia.	215
John Galloway (1973)	Investment Stewardship Officer	September 2020	Principal of Vanguard. Investment stewardship officer (2020–present) of each of the investment companies served by Vanguard. Head of Investor Advocacy (2020–present) and head of Marketing Strategy and Planning (2017–2020) at Vanguard. Special Assistant to the President of the United States (2015).	215
Ashley Grim (1984)	Treasurer	February 2022	Treasurer (2022–present) of each of the investment companies served by Vanguard. Fund transfer agent controller (2019–2022) and director of Audit Services (2017–2019) at Vanguard. Senior manager (2015–2017) at PriceWaterhouseCoopers (audit and assurance, consulting, and tax services).	215

Name, Year of Birth	Position(s) Held With Funds	Vanguard Funds' Trustee/Officer Since	Principal Occupation(s) During the Past Five Years, Outside Directorships, and Other Experience	Number of Vanguard Funds Overseen by Trustee/Officer
Jodi Miller (1980)	Finance Director	September 2022	Principal of Vanguard. Finance director (2022–present) of each of the investment companies served by Vanguard. Head of Enterprise Investment Services (2020–present), head of Retail Client Services & Operations (2020–2022), and head of Retail Strategic Support (2018–2020) at Vanguard.	215
Tonya T. Robinson (1970)	Secretary	October 2024	General counsel of Vanguard (2024–present). Secretary (2024–present) of Vanguard and of each of the investment companies served by Vanguard. Managing director (2024–present) of Vanguard. General counsel (2017–2024) and vice chair for Legal, Regulatory and Compliance (2019–2024) at KPMG LLP. Member of the board of the National Women's Law Center and the National Women's Law Center Action Fund. Member of the board of the Ethics Research Center. Member of the board of visitors for the Duke University Sanford School of Public Policy. Member of the Advisory Council for the Diversity Lab. Member of the Pro Bono Institute Corporate Pro Bono Advisory Board.	215
Michael Rollings (1963)	Finance Director	February 2017	Finance director (2017–present) and treasurer (2017) of each of the investment companies served by Vanguard. Managing director (2016–present) of Vanguard. Chief financial officer (2016–present) of Vanguard. Director (2016–present) of Vanguard Marketing Corporation. Executive vice president and chief financial officer (2006–2016) of MassMutual Financial Group.	215

With the exception of Mr. Ramji, all of the trustees are independent. The trustees designate a chair of the board. Mr. Loughridge, an independent trustee, serves as chair. The independent chair is a spokesperson and principal point of contact for the trustees, including the independent trustees, and is responsible for coordinating the activities of the trustees, including calling regular executive sessions of the independent trustees, developing the agenda of each board meeting together with the chief executive officer, and chairing the meetings of the trustees.

Board Committees: The Trust's board has the following committees:

- **Audit and Risk Committee:** This committee oversees the accounting and financial reporting policies, the systems of internal controls, the independent audits of each fund, and enterprise-wide risk management. Ms. Raskin and Mr. Volanakis co-chair the committee. The following independent trustees serve as members of the committee: Ms. Bunch and Mr. Loughridge. The committee held five meetings during the Trust's fiscal year ended October 31, 2024.
- **Compensation Committee:** This committee oversees the compensation programs established by each fund for the benefit of its trustees. Mr. Reid chairs the committee. The following independent trustees serve as members of the committee: Mr. Loughridge, Mr. Murphy, and Ms. Patterson. The committee held three meetings during the Trust's fiscal year ended October 31, 2024.
- **Independent Governance Committee:** This committee assists the board in fulfilling its responsibilities and is empowered to exercise board powers in the intervals between board meetings unless such action is prohibited by applicable law or Trust bylaws. Mr. Loughridge chairs the committee. The following independent trustees serve as members of the committee: Mr. Pastor, Mr. Perold, Ms. Raskin, and Mr. Volanakis. The committee held eleven meetings during the Trust's fiscal year ended October 31, 2024.
- **Investment Committees:** These committees assist the board in its oversight of investment advisors to the funds and in the review and evaluation of materials relating to the board's consideration of investment advisory agreements with the funds. Mr. Pastor and Mr. Malpass each chair one of the committees. Each trustee serves on one of two investment committees. Each investment committee held two meetings during the Trust's fiscal year ended October 31, 2024.
- **Nominating Committee:** This committee nominates candidates for election to the board of trustees of each fund. The committee also has the authority to recommend the removal of any trustee. Ms. Bunch chairs the committee. The

following independent trustees serve as members of the committee: Mr. Loughridge, Mr. Malpass, Dr. Thomas, and Ms. Venneman. The committee held three meetings during the Trust's fiscal year ended October 31, 2024.

The Nominating Committee will consider shareholder recommendations for trustee nominees. Shareholders may send recommendations to Ms. Bunch, chair of the committee.

Trustees retire in accordance with the funds' governing documents and policies, and typically by age 75.

Trustee Compensation

The same individuals serve as trustees of all Vanguard funds and each fund pays a proportionate share of the trustees' compensation. Vanguard funds also employ their officers on a shared basis; however, officers are compensated by Vanguard, not the funds.

Independent Trustees. The funds compensate their independent trustees (i.e., the ones who are not also officers of the funds) in two ways:

- The independent trustees receive an annual fee for their service to the funds, which is subject to reduction based on absences from scheduled board meetings.
- The independent trustees are reimbursed for the travel and other expenses that they incur in attending board meetings.

"Interested" Trustee. Mr. Ramji serves as a trustee, but is not compensated in this capacity. He is, however, compensated in his role as an officer of Vanguard.

Compensation Table. The following table provides compensation details for each of the trustees. We list the amounts paid as compensation by the Funds for each trustee. In addition, the table shows the total amount of compensation paid to each trustee by all Vanguard funds.

**VANGUARD INTERNATIONAL EQUITY INDEX FUNDS
TRUSTEES' COMPENSATION TABLE**

Trustee	Aggregate Compensation From the Funds ¹	Total Compensation From All Vanguard Funds Paid to Trustees ²
Salim Ramji ³	—	—
Tara Bunch	\$14,661	\$380,000
Emerson U. Fullwood ⁴	14,661	380,000
F. Joseph Loughrey ⁵	15,046	390,000
Mark Loughridge	17,360	525,000
Scott C. Malpass	14,661	380,000
Deanna Mulligan ⁶	7,041	121,667
John Murphy ⁷	—	—
Lubos Pastor ⁸	14,082	365,000
Rebecca Patterson ⁹	—	—
André F. Perold	14,082	365,000
Sarah Bloom Raskin	15,046	390,000
Grant Reid	14,082	365,000
David Thomas	14,082	365,000
Barbara Venneman ¹⁰	—	—
Peter F. Volanakis	15,046	390,000

1 The amounts shown in this column are based on the Trust's fiscal year ended October 31, 2024. Each Fund within the Trust is responsible for a proportionate share of these amounts.

2 The amounts reported in this column reflect the total compensation paid to each trustee for his or her service as trustee of 212 Vanguard funds for the 2024 calendar year and include any amount a trustee has elected to defer. During the 2024 calendar year, the following trustees elected to defer all or a portion of their compensation as follows: Ms. Bunch, \$380,000; Mr. Perold, \$365,000; Ms. Raskin, \$195,000; Mr. Reid, \$365,000; and Dr. Thomas, \$182,500.

3 Mr. Ramji became a member of the Funds' board effective February 26, 2025.

4 Mr. Fullwood retired from the Funds' board effective February 26, 2025.

5 Mr. Loughrey retired from the Funds' board effective February 26, 2025.

6 Ms. Mulligan resigned from the Funds' board effective May 3, 2024.

7 Mr. Murphy became a member of the Funds' board effective February 26, 2025.

8 Mr. Pastor became a member of the Funds' board effective January 1, 2024.

9 Ms. Patterson became a member of the Funds' board effective February 26, 2025.

10 Ms. Venneman became a member of the Funds' board effective February 26, 2025.

Ownership of Fund Shares

All trustees allocate their investments among the various Vanguard funds based on their own investment needs. The following table shows each trustee's ownership of shares of each Fund and of all Vanguard funds served by the trustee as of December 31, 2024.

VANGUARD INTERNATIONAL EQUITY INDEX FUNDS

Vanguard Fund	Trustee	Dollar Range of Fund Shares Owned by Trustee	Aggregate Dollar Range of Vanguard Fund Shares Owned by Trustee
Vanguard Emerging Markets Stock Index Fund	Tara Bunch	\$50,001 – \$100,000	Over \$100,000
	Mark Loughridge	—	Over \$100,000
	Scott C. Malpass	—	Over \$100,000
	John Murphy	—	Over \$100,000
	Lubos Pastor	Over \$100,000	Over \$100,000
	Rebecca Patterson	—	Over \$100,000
	André F. Perold	Over \$100,000	Over \$100,000
	Salim Ramji	\$50,001 – \$100,000	Over \$100,000
	Sarah Bloom Raskin	\$50,001 – \$100,000	Over \$100,000
	Grant Reid	—	Over \$100,000
	David Thomas	—	Over \$100,000
	Barbara Venneman	—	Over \$100,000
	Peter F. Volanakis	Over \$100,000	Over \$100,000
	Vanguard European Stock Index Fund	Tara Bunch	—
Mark Loughridge		—	Over \$100,000
Scott C. Malpass		—	Over \$100,000
John Murphy		—	Over \$100,000
Lubos Pastor		—	Over \$100,000
Rebecca Patterson		—	Over \$100,000
André F. Perold		—	Over \$100,000
Salim Ramji		—	Over \$100,000
Sarah Bloom Raskin		—	Over \$100,000
Grant Reid		—	Over \$100,000
David Thomas		—	Over \$100,000
Barbara Venneman		—	Over \$100,000
Peter F. Volanakis		—	Over \$100,000
Vanguard FTSE All-World ex-US Index Fund		Tara Bunch	—
	Mark Loughridge	Over \$100,000	Over \$100,000
	Scott C. Malpass	—	Over \$100,000
	John Murphy	—	Over \$100,000
	Lubos Pastor	Over \$100,000	Over \$100,000
	Rebecca Patterson	—	Over \$100,000
	André F. Perold	—	Over \$100,000
	Salim Ramji	—	Over \$100,000
	Sarah Bloom Raskin	—	Over \$100,000
	Grant Reid	—	Over \$100,000
	David Thomas	—	Over \$100,000
	Barbara Venneman	—	Over \$100,000
	Peter F. Volanakis	—	Over \$100,000

Vanguard Fund	Trustee	Dollar Range of Fund Shares Owned by Trustee	Aggregate Dollar Range of Vanguard Fund Shares Owned by Trustee
Vanguard FTSE All-World ex-US Small-Cap Index Fund	Tara Bunch	—	Over \$100,000
	Mark Loughridge	—	Over \$100,000
	Scott C. Malpass	—	Over \$100,000
	John Murphy	—	Over \$100,000
	Lubos Pastor	—	Over \$100,000
	Rebecca Patterson	—	Over \$100,000
	André F. Perold	—	Over \$100,000
	Salim Ramji	—	Over \$100,000
	Sarah Bloom Raskin	—	Over \$100,000
	Grant Reid	—	Over \$100,000
	David Thomas	—	Over \$100,000
	Barbara Venneman	—	Over \$100,000
	Peter F. Volanakis	—	Over \$100,000
Vanguard Global ex-US Real Estate Index Fund	Tara Bunch	—	Over \$100,000
	Mark Loughridge	—	Over \$100,000
	Scott C. Malpass	—	Over \$100,000
	John Murphy	—	Over \$100,000
	Lubos Pastor	—	Over \$100,000
	Rebecca Patterson	—	Over \$100,000
	André F. Perold	—	Over \$100,000
	Salim Ramji	—	Over \$100,000
	Sarah Bloom Raskin	—	Over \$100,000
	Grant Reid	—	Over \$100,000
	David Thomas	—	Over \$100,000
	Barbara Venneman	—	Over \$100,000
	Peter F. Volanakis	—	Over \$100,000
Vanguard Pacific Stock Index Fund	Tara Bunch	—	Over \$100,000
	Mark Loughridge	—	Over \$100,000
	Scott C. Malpass	—	Over \$100,000
	John Murphy	—	Over \$100,000
	Lubos Pastor	—	Over \$100,000
	André F. Perold	—	Over \$100,000
	Rebecca Patterson	—	Over \$100,000
	Salim Ramji	—	Over \$100,000
	Sarah Bloom Raskin	—	Over \$100,000
	Grant Reid	—	Over \$100,000
	David Thomas	—	Over \$100,000
	Barbara Venneman	—	Over \$100,000
	Peter F. Volanakis	—	Over \$100,000

Vanguard Fund	Trustee	Dollar Range of Fund Shares Owned by Trustee	Aggregate Dollar Range of Vanguard Fund Shares Owned by Trustee
Vanguard Total World Stock Index Fund	Tara Bunch	Over \$100,000	Over \$100,000
	Mark Loughridge	—	Over \$100,000
	Scott C. Malpass	—	Over \$100,000
	John Murphy	—	Over \$100,000
	Lubos Pastor	—	Over \$100,000
	Rebecca Patterson	—	Over \$100,000
	André F. Perold	—	Over \$100,000
	Salim Ramji	—	Over \$100,000
	Sarah Bloom Raskin	—	Over \$100,000
	Grant Reid	—	Over \$100,000
	David Thomas	—	Over \$100,000
	Barbara Venneman	—	Over \$100,000
	Peter F. Volanakis	Over \$100,000	Over \$100,000

As of January 31, 2025, the trustees and officers of the funds owned, in the aggregate, less than 1% of each class of each fund's outstanding shares.

As of January 31, 2025, the following owned of record 5% or more of the outstanding shares of each class (Other than ETF Shares):

Vanguard Fund	Share Class	Owner and Address	Percentage of Ownership
Vanguard Emerging Markets Index Fund	Institutional Plus Shares	TIAA Trust, N.A., Retirement Plans Recordkept By TIAA, Charlotte, NC	27.73%
		The Bank of New York Mellon, FBO MAC & Co, Pittsburgh, PA	13.19%
		Google LLC 401(K) Savings Plan, Mountain View, CA	9.00%
		Charles Schwab & Co., Inc., San Francisco, CA	5.89%
		The Northern Trust Company, FBO Accenture United States 401(K) Match And Savings Plan, Chicago, IL	5.00%

Vanguard Fund	Share Class	Owner and Address	Percentage of Ownership	
Vanguard Emerging Markets Stock Index Fund	Admiral Shares	Charles Schwab & Co., Inc., San Francisco, CA	11.29%	
		State Street Bank and Trust Company, FBO Guideline Technologies 401K, Overland Park, KS	8.22%	
		National Financial Services LLC, Jersey City, NJ	6.54%	
	Institutional Shares	National Financial Services LLC, Jersey City, NJ	20.17%	
		TIAA Trust, N.A., Retirement Plans Recordkept By TIAA, Charlotte, NC	11.81%	
		Charles Schwab & Co., Inc., San Francisco, CA	9.78%	
		Fidelity Investments Institutional Operations Company Inc., Covington, KY	7.29%	
	Investor Shares	Ascensus Trust Company, Vanguard House Account Frontier Pro, Fargo, ND	45.48%	
		Georgetown University Retirement Plan, Washington, DC	8.68%	
		BrightSphere Inc. Profit Sharing and 401(K) Plan, Boston, MA	5.90%	
		Cleveland Brothers Retirement Plan, Harrisburg, PA	5.48%	
	Vanguard European Stock Index Fund	Admiral Shares	Charles Schwab & Co., Inc., San Francisco, CA	10.21%
			National Financial Services LLC, Jersey City, NJ	5.02%
Institutional Shares		National Financial Services LLC, Jersey City, NJ	35.52%	
		Vanguard Charitable Program European Stock Pool, Valley Forge, PA	6.67%	
Investor Shares		SLMA Retirement Savings Plan, Oakbrook Terrace, IL	9.58%	
		BrightSphere Inc. Profit Sharing and 401(K) Plan, Boston, MA	9.57%	
		University of Minnesota Optional Retirement Plan, Minneapolis, MN	9.36%	
		Ascensus Trust Company, Vanguard House Account Frontier Pro, Fargo, ND	7.59%	
		Memorial Health Services 403(B)(7) Tax Sheltered Annuity Plan, Fountain Valley, CA	7.50%	
		Shartsis Friese LLP Profit Sharing/401(K) Plan, San Francisco, CA	6.73%	
		QRM 401(K) Retirement Savings Plan, Chicago, IL	6.72%	
Institutional Plus Shares		Intercity Transit Employees' Retirement Plan and Trust, Olympia, WA	5.01%	
		Arthur L. Williams Jr., Palm Beach, FL	81.24%	
	Angela H. Williams, Duluth, GA	18.76%		

Vanguard Fund	Share Class	Owner and Address	Percentage of Ownership		
Vanguard FTSE All-World ex-US Index Fund	Admiral Shares	Charles Schwab & Co., Inc., San Francisco, CA	10.65%		
		National Financial Services LLC, Jersey City, NJ	6.53%		
		Vanguard Variable Insurance Fund - Total International Stock Market Index Portfolio, Valley Forge, PA	5.44%		
	Institutional Shares	Fidelity Investments Institutional Operations Company Inc., Covington, KY	9.46%		
		National Financial Services LLC, Jersey City, NJ	9.02%		
		John Hancock Trust Company LLC, Boston, MA	5.00%		
		National Financial Services LLC, Jersey City, NJ	33.32%		
	Institutional Plus Shares	Driscoll Childrens Hospital, Corpus Christi, TX	16.22%		
		Toyota Motors, Toyota Motors Insurance Services Inc., Plano, TX	7.34%		
		Driscoll Childrens Hospital, Driscoll Endowment Fund, Corpus Christi, TX	5.24%		
		Admiral Shares	Charles Schwab & Co., Inc., San Francisco, CA	15.30%	
			Institutional Shares	National Financial Services LLC, Jersey City, NJ	51.97%
				Northshore University Healthsystem, Evanston, IL	11.03%
Vanguard FTSE All-World ex-US Small-Cap Index Fund		Pershing LLC, Jersey City, NJ	10.01%		
		Charles Schwab & Co., Inc., San Francisco, CA	7.06%		
	Admiral Shares	Charles Schwab & Co., Inc., San Francisco, CA	5.78%		
Institutional Shares		Washington Suburban Sanitary Commission Employees Retirement Plan, Laurel, MD	100.00%		
Vanguard Global ex-U.S. Real Estate Index Fund	Admiral Shares	Charles Schwab & Co., Inc., San Francisco, CA	6.84%		
		Vanguard Variable Insurance Fund - Total International Stock Market Index Portfolio, Valley Forge, PA	5.58%		
	Institutional Shares	Charles Schwab & Co., Inc., San Francisco, CA	29.68%		
		Vanguard Charitable Program Pacific Stock Pool, Valley Forge, PA	9.27%		
	Investor Shares	Shartsis Friese LLP Profit Sharing/401(K) Plan, San Francisco, CA	18.20%		
		BrightSphere Inc. Profit Sharing and 401(K) Plan, Boston, MA	11.71%		
		QRM 401(K) Retirement Savings Plan, Chicago, IL	11.55%		
		Ascensus Trust Company, Vanguard House Account Frontier Pro, Fargo, ND	11.37%		
		Intercity Transit Employees' Retirement Plan and Trust, Olympia, WA	6.89%		
		University of Minnesota Optional Retirement Plan, Minneapolis, MN	5.76%		

Vanguard Fund	Share Class	Owner and Address	Percentage of Ownership
Vanguard Total World Stock Index Fund	Admiral Shares	Ascensus Trust Company, Omnibus Reinvest, Fargo, ND	7.89%
		National Financial Services LLC, Jersey City, NJ	7.77%
	Institutional Shares	National Financial Services LLC, Jersey City, NJ	20.42%
		US Bank, N.A., FBO Capinco, Milwaukee, WI	8.63%
		TIAA Trust, N.A., Retirement Plans Recordkept By TIAA, Charlotte, NC	5.83%

Although the Funds do not have information concerning the beneficial ownership of shares held in the names of Depository Trust Company (DTC) participants, as of January 31, 2025, the name and percentage ownership of each DTC participant that owned of record 5% or more of the outstanding ETF Shares of the Fund were as follows:

Vanguard Fund	Owner	Percentage of Ownership
Vanguard FTSE All-World ex-US ETF	Vanguard Marketing Corporation	20.26%
	Charles Schwab & Co., Inc.	20.08%
	National Financial Services LLC	9.34%
	Morgan Stanley DW Inc.	6.21%
	Comp Trust	5.77%
Vanguard FTSE All-World ex-US Small-Cap ETF	Charles Schwab & Co., Inc.	33.14%
	National Financial Services LLC	12.33%
	Pershing LLC	11.51%
	Edward D. Jones & Co.	8.28%
Vanguard FTSE Emerging Markets ETF	Vanguard Marketing Corporation	7.55%
	Charles Schwab & Co., Inc.	18.13%
	National Financial Services LLC	10.19%
	Pershing LLC	7.46%
Vanguard FTSE Europe ETF	The Northern Trust Company	6.33%
	Charles Schwab & Co., Inc.	15.16%
	National Financial Services LLC	10.83%
	State Street Bank and Trust Company	9.23%
	JPMorgan Chase Bank, N.A.	8.89%
	Morgan Stanley DW Inc.	7.29%
Vanguard FTSE Pacific ETF	J.P. Morgan Clearing Corp.	5.73%
	Vanguard Marketing Corporation	5.16%
	The Bank of New York Mellon	5.08%
	National Financial Services LLC	16.78%
	Charles Schwab & Co., Inc.	16.10%
	Citibank, N.A.	14.58%
	Vanguard Marketing Corporation	6.51%
Vanguard Global ex-U.S. Real Estate ETF	Merrill, Lynch, Pierce, Fenner & Smith Inc.	6.50%
	Morgan Stanley DW Inc.	6.39%
	Charles Schwab & Co., Inc.	28.61%
	Pershing LLC	22.39%
	National Financial Services LLC	12.36%
	JPMorgan Chase Bank, N.A.	9.78%
	Vanguard Marketing Corporation	6.01%

Vanguard Fund	Owner	Percentage of Ownership
Vanguard Total World Stock ETF	Charles Schwab & Co., Inc.	15.37%
	National Financial Services LLC	11.21%
	Vanguard Marketing Corporation	7.47%
	Interactive Broker, LLC	7.00%

A shareholder who owns more than 25% of a Fund's voting shares may be considered a controlling person. As of January 31, 2025, the following held of record 25% or more of the voting shares:

Vanguard Fund	Owner	Percentage of Ownership
Vanguard FTSE All-World ex-US Small-Cap Index Fund	Charles Schwab & Co., Inc.	27.07%
Vanguard Global ex-U.S. Real Estate Index Fund	Charles Schwab & Co., Inc.	26.18%

Portfolio Holdings Disclosure Policies and Procedures

Introduction

Vanguard and the boards of trustees of the Vanguard funds (the Boards) have adopted Portfolio Holdings Disclosure Policies and Procedures (Policies and Procedures) to govern the disclosure of the portfolio holdings of each Vanguard fund. Vanguard and the Boards considered each of the circumstances under which Vanguard fund portfolio holdings may be disclosed to different categories of persons under the Policies and Procedures. Vanguard and the Boards also considered actual and potential material conflicts that could arise in such circumstances between the interests of Vanguard fund shareholders, on the one hand, and those of the fund's investment advisor, sub-advisor, distributor, or any affiliated person of the fund, its investment advisor, sub-advisor, or its distributor, on the other. After giving due consideration to such matters and after the exercise of their fiduciary duties and reasonable business judgment, Vanguard and the Boards determined that the Vanguard funds have a legitimate business purpose for disclosing portfolio holdings to the persons described in each of the circumstances set forth in the Policies and Procedures and that the Policies and Procedures are reasonably designed to ensure that disclosure of portfolio holdings and information about portfolio holdings is in the best interests of fund shareholders and appropriately addresses the potential for material conflicts of interest.

The Boards exercise continuing oversight of the disclosure of Vanguard fund portfolio holdings by (1) overseeing the implementation and enforcement of the Policies and Procedures, the Code of Ethical Conduct, and the Policies and Procedures Designed to Prevent the Misuse of Inside Information (collectively, the portfolio holdings governing policies) by the chief compliance officer of Vanguard and the Vanguard funds; (2) considering reports and recommendations by the chief compliance officer concerning any material compliance matters (as defined in Rule 38a-1 under the 1940 Act and Rule 206(4)-7 under the Investment Advisers Act of 1940) that may arise in connection with any portfolio holdings governing policies; and (3) considering whether to approve or ratify any amendment to any portfolio holdings governing policies.

Vanguard and the Boards reserve the right to amend the Policies and Procedures at any time and from time to time without prior notice at their sole discretion. For purposes of the Policies and Procedures, the term "portfolio holdings" means the equity and debt securities (e.g., stocks and bonds) held by a Vanguard fund and does not mean the cash equivalent investments, derivatives, and other investment positions (collectively, other investment positions) held by the fund.

Online Disclosure of Complete Portfolio Holdings

Actively managed equity funds, unless otherwise stated, generally will seek to disclose complete portfolio holdings as of the end of the most recent calendar quarter online at *vanguard.com*, 30 calendar days after the end of the calendar quarter. Actively managed fixed income funds will seek to disclose complete portfolio holdings as of the end of the most recent month online at *vanguard.com*, 15 calendar days after the end of the month. Each Vanguard fund relying on Rule 6c-11 under the 1940 Act generally will seek to disclose complete portfolio holdings, including other investment positions, at the beginning of each business day. These portfolio holdings, including other investment positions, will be disclosed online at *vanguard.com*. In accordance with Rule 2a-7 under the 1940 Act, each of the Vanguard money

market funds will disclose the fund's complete portfolio holdings as of the last business day of the prior month online at *vanguard.com* no later than the fifth business day of the current month. The complete portfolio holdings information for money market funds will remain available online for at least six months after the initial posting. Each Vanguard index fund, other than those Vanguard index funds relying on Rule 6c-11 under the 1940 Act, generally will seek to disclose the fund's complete portfolio holdings as of the end of the most recent month online at *vanguard.com*, 15 calendar days after the end of the month.

Online disclosure of complete portfolio holdings is made to all categories of persons, including individual investors, institutional investors, intermediaries, third-party service providers, rating and ranking organizations, affiliated persons of a Vanguard fund, and all other persons. Vanguard will review complete portfolio holdings before disclosure is made and, except with respect to the complete portfolio holdings of the Vanguard money market funds, may withhold any portion of the fund's complete portfolio holdings from disclosure when deemed to be in the best interests of the fund after consultation with a Vanguard fund's investment advisor.

Disclosure of Complete Portfolio Holdings to Service Providers Subject to Confidentiality and Trading Restrictions

Vanguard, for legitimate business purposes, may disclose Vanguard fund complete portfolio holdings at times it deems necessary and appropriate to rating and ranking organizations; financial printers; proxy voting service providers; pricing information vendors; issuers of guaranteed investment contracts for stable value portfolios; third parties that deliver analytical, statistical, or consulting services; and other third parties that provide services (collectively, Service Providers) to Vanguard, Vanguard subsidiaries, and/or the Vanguard funds. Disclosure of complete portfolio holdings to a Service Provider is conditioned on the Service Provider being subject to a written agreement imposing a duty of confidentiality, including a duty not to trade on the basis of any material nonpublic information.

The frequency with which complete portfolio holdings may be disclosed to a Service Provider, and the length of the lag, if any, between the date of the information and the date on which the information is disclosed to the Service Provider, is determined based on the facts and circumstances, including, without limitation, the nature of the portfolio holdings information to be disclosed, the risk of harm to the funds and their shareholders, and the legitimate business purposes served by such disclosure. The frequency of disclosure to a Service Provider varies and may be as frequent as daily, with no lag. Disclosure of Vanguard fund complete portfolio holdings by Vanguard to a Service Provider must be authorized by a Vanguard fund officer or a Principal in Vanguard's Portfolio Review Department or Office of the General Counsel. Any disclosure of Vanguard fund complete portfolio holdings to a Service Provider as previously described may also include a list of the other investment positions that make up the fund, such as cash equivalent investments and derivatives.

Currently, Vanguard fund complete portfolio holdings are disclosed to the following Service Providers as part of ongoing arrangements that serve legitimate business purposes: Abel/Noser Corporation; Advisor Software, Inc.; Alcom Printing Group Inc.; Apple Press, L.C.; Bloomberg L.P.; Brilliant Graphics, Inc.; Broadridge Financial Solutions, Inc.; Brown Brothers Harriman & Co.; Canon Business Process Services; Charles River Systems, Inc.; Confluence Technology Inc.; Eagle Investments; Equilend; FactSet Research Systems Inc.; Gresham Technologies, Plc.; Institutional Shareholder Services, Inc.; Intellicor, LLC; Investment Technology Group, Inc.; Lipper, Inc.; Markit WSO Corporation; McMunn Associates Inc.; Morningstar, Inc.; Phoenix Lithographing Corporation; Pirium Systems Inc.; Reuters America Inc.; R.R. Donnelley, Inc.; Schvey, Inc. d/b/a Axoni; State Street Bank and Trust Company; Stonewain Systems Inc.; and Trade Informatics LLC.

Disclosure of Complete Portfolio Holdings to Vanguard Affiliates and Certain Fiduciaries Subject to Confidentiality and Trading Restrictions

Vanguard fund complete portfolio holdings may be disclosed between and among the following persons (collectively, Affiliates and Fiduciaries) for legitimate business purposes within the scope of their official duties and responsibilities, subject to such persons' continuing legal duty of confidentiality and legal duty not to trade on the basis of any material nonpublic information, as such duties are imposed under the Code of Ethical Conduct, the Policies and Procedures Designed to Prevent the Misuse of Inside Information, by agreement, or under applicable laws, rules, and regulations: (1) persons who are subject to the Code of Ethical Conduct or the Policies and Procedures Designed to Prevent the Misuse of Inside Information; (2) an investment advisor, sub-advisor, distributor, administrator, transfer agent, or custodian to a Vanguard fund; (3) an accounting firm, an auditing firm, or outside legal counsel retained by Vanguard, a

Vanguard subsidiary, or a Vanguard fund; (4) an investment advisor to whom complete portfolio holdings are disclosed for due diligence purposes when the advisor is in merger or acquisition talks with a Vanguard fund's current advisor; and (5) a newly hired investment advisor or sub-advisor to whom complete portfolio holdings are disclosed prior to the time it commences its duties.

The frequency with which complete portfolio holdings may be disclosed between and among Affiliates and Fiduciaries, and the length of the lag, if any, between the date of the information and the date on which the information is disclosed between and among the Affiliates and Fiduciaries, is determined by such Affiliates and Fiduciaries based on the facts and circumstances, including, without limitation, the nature of the portfolio holdings information to be disclosed, the risk of harm to the funds and their shareholders, and the legitimate business purposes served by such disclosure. The frequency of disclosure between and among Affiliates and Fiduciaries varies and may be as frequent as daily, with no lag. Any disclosure of Vanguard fund complete portfolio holdings to any Affiliates and Fiduciaries as previously described may also include a list of the other investment positions that make up the fund, such as cash equivalent investments and derivatives. Disclosure of Vanguard fund complete portfolio holdings or other investment positions by Vanguard, VMC, or a Vanguard fund to Affiliates and Fiduciaries must be authorized by a Vanguard fund officer or a Principal of Vanguard.

Currently, Vanguard discloses complete portfolio holdings to the following Affiliates and Fiduciaries as part of ongoing arrangements that serve legitimate business purposes: Vanguard and each investment advisor, sub-advisor, custodian, and independent registered public accounting firm identified in each fund's Statement of Additional Information.

Disclosure of Portfolio Holdings to Trading Counterparties in the Normal Course of Managing a Fund's Assets

An investment advisor, sub-advisor, administrator, or custodian for a Vanguard fund may, for legitimate business purposes within the scope of its official duties and responsibilities, disclose portfolio holdings (whether partial portfolio holdings or complete portfolio holdings) and other investment positions that make up the fund to any trading counterparty, including one or more broker-dealers or banks, during the course of, or in connection with, normal day-to-day securities and derivatives transactions with or through such trading counterparties subject to the counterparty's legal obligation not to use or disclose material nonpublic information concerning the fund's portfolio holdings, other investment positions, securities transactions, or derivatives transactions without the consent of the fund or its agents. The Vanguard funds have not given their consent to any such use or disclosure and no person or agent of Vanguard is authorized to give such consent except as approved in writing by the Boards of the Vanguard funds. Disclosure of portfolio holdings or other investment positions by Vanguard to trading counterparties must be authorized by a Vanguard fund officer or a Principal of Vanguard.

In addition to the disclosures described below to Authorized Participants, a Vanguard fund investment advisor or administrator may also disclose portfolio holdings information to other current or prospective fund shareholders in connection with the dissemination of information necessary for transactions in Creation Units (as defined below) or other large transactions with a Vanguard fund. Such shareholders are typically Authorized Participants or other financial institutions that have been authorized by VMC to purchase and redeem large blocks of shares, but may also include market makers and other institutional market participants and entities to whom a Vanguard fund advisor or administrator may provide information in connection with transactions in a Vanguard fund.

Disclosure of Nonmaterial Information

The Policies and Procedures permit Vanguard fund officers, Vanguard fund portfolio managers, and other Vanguard representatives (collectively, Approved Vanguard Representatives) to disclose any views, opinions, judgments, advice, or commentary, or any analytical, statistical, performance, or other information, in connection with or relating to a Vanguard fund or its portfolio holdings and/or other investment positions (collectively, commentary and analysis) or any changes in the portfolio holdings of a Vanguard fund that occurred after the end of the most recent calendar quarter (recent portfolio changes) to any person if (1) such disclosure serves a legitimate business purpose, (2) such disclosure does not effectively result in the disclosure of the complete portfolio holdings of any Vanguard fund (which can be disclosed only in accordance with the Policies and Procedures), and (3) such information does not constitute material nonpublic information. Disclosure of commentary and analysis or recent portfolio changes by Vanguard, VMC, or a Vanguard fund must be authorized by a Vanguard fund officer or a Principal of Vanguard.

An Approved Vanguard Representative must make a good faith determination whether the information constitutes material nonpublic information, which involves an assessment of the particular facts and circumstances. Vanguard believes that in most cases recent portfolio changes that involve a few or even several securities in a diversified portfolio

or commentary and analysis would be immaterial and would not convey any advantage to a recipient in making an investment decision concerning a Vanguard fund. Nonexclusive examples of commentary and analysis about a Vanguard fund include (1) the allocation of the fund's portfolio holdings and other investment positions among various asset classes, sectors, industries, and countries; (2) the characteristics of the stock and bond components of the fund's portfolio holdings and other investment positions; (3) the attribution of fund returns by asset class, sector, industry, and country; and (4) the volatility characteristics of the fund. Approved Vanguard Representatives may, at their sole discretion, deny any request for information made by any person, and may do so for any reason or for no reason. Approved Vanguard Representatives include, for purposes of the Policies and Procedures, persons employed by or associated with Vanguard or a subsidiary of Vanguard who have been authorized by Vanguard's Portfolio Review Department to disclose recent portfolio changes and/or commentary and analysis in accordance with the Policies and Procedures.

Disclosure of Portfolio Holdings, Including Other Investment Positions, in Accordance with Securities and Exchange Commission (SEC) Exemptive Orders and Rule 6c-11

Vanguard's Fund Services and Oversight unit may disclose to the National Securities Clearing Corporation (NSCC), Authorized Participants, and other market makers the daily portfolio composition files (PCFs) that identify a basket of specified securities that may overlap with the actual or expected portfolio holdings of the Vanguard funds that offer a class of shares known as Vanguard ETF Shares (ETF Funds). Each Vanguard fund relying on Rule 6c-11 under the 1940 Act generally will seek to disclose complete portfolio holdings, including other investment positions, at the beginning of each business day. These portfolio holdings, including other investment positions, will be disclosed online at *vanguard.com*. The disclosure of PCFs and portfolio holdings, including other investment positions, will be in accordance with the terms and conditions of related exemptive orders (Vanguard ETF Exemptive Orders) issued by the SEC or Rule 6c-11 under the 1940 Act, as described in this section. In addition to disclosing PCFs to the NSCC, as previously described, Vanguard's Fund Services and Oversight unit will generally disclose the PCF for any ETF Fund online at *vanguard.com*.

Unlike the conventional classes of shares issued by ETF Funds, the ETF Shares are listed for trading on a national securities exchange. Each ETF Fund issues and redeems ETF Shares in large blocks, known as "Creation Units." To purchase or redeem a Creation Unit, an investor must be an "Authorized Participant" or the investor must purchase or redeem through a broker-dealer that is an Authorized Participant. An Authorized Participant is a participant in the Depository Trust Company (DTC) that has executed a "Participant Agreement" with VMC. Each ETF Fund issues Creation Units in exchange for a "portfolio deposit" consisting of a basket of specified securities (Deposit Securities) and a cash payment (Balancing Amount). Each ETF Fund also generally redeems Creation Units in kind; an investor who tenders a Creation Unit will receive, as redemption proceeds, a basket of specified securities together with a Balancing Amount.

In connection with the creation and redemption process, and in accordance with the terms and conditions of the Vanguard ETF Exemptive Orders and Rule 6c-11, Vanguard makes available to the NSCC (a clearing agency registered with the SEC and affiliated with the DTC), for dissemination to NSCC participants on each business day prior to the opening of trading on the listing exchange, a PCF containing a list of the names and the required number of shares of each Deposit Security for each ETF Fund. In addition, the listing exchange disseminates (1) continuously throughout the trading day, through the facilities of the Consolidated Tape Association, the market value of an ETF Share; and (2) every 15 seconds throughout the trading day, a calculation of the estimated NAV of an ETF Share (expected to be accurate to within a few basis points). Comparing these two figures allows an investor to determine whether, and to what extent, ETF Shares are selling at a premium or at a discount to NAV. ETF Shares are listed on the exchange and traded on the secondary market in the same manner as other equity securities. The price of ETF Shares trading on the secondary market is based on a current bid/offer market.

Disclosure of Portfolio Holdings Related Information to the Issuer of a Security for Legitimate Business Purposes

Vanguard, at its sole discretion, may disclose portfolio holdings information concerning a security held by one or more Vanguard funds to the issuer of such security if the issuer presents, to the satisfaction of Vanguard's Fund Services and Oversight unit, convincing evidence that the issuer has a legitimate business purpose for such information. Disclosure of this information to an issuer is conditioned on the issuer being subject to a written agreement imposing a duty of confidentiality, including a duty not to trade on the basis of any material nonpublic information. The frequency with which portfolio holdings information concerning a security may be disclosed to the issuer of such security, and the length of the lag, if any, between the date of the information and the date on which the information is disclosed to the issuer, is

determined based on the facts and circumstances, including, without limitation, the nature of the portfolio holdings information to be disclosed, the risk of harm to the funds and their shareholders, and the legitimate business purposes served by such disclosure. The frequency of disclosure to an issuer cannot be determined in advance of a specific request and will vary based upon the particular facts and circumstances and the legitimate business purposes, but in unusual situations could be as frequent as daily, with no lag. Disclosure of portfolio holdings information concerning a security held by one or more Vanguard funds to the issuer of such security must be authorized by a Vanguard fund officer or a Principal in Vanguard's Equity Investment Group, Portfolio Review Department, or Office of the General Counsel.

Disclosure of Portfolio Holdings as Required by Applicable Law

Vanguard fund portfolio holdings (whether partial portfolio holdings or complete portfolio holdings) and other investment positions that make up a fund shall be disclosed to any person as required by applicable laws, rules, and regulations. Examples of such required disclosure include, but are not limited to, disclosure of Vanguard fund portfolio holdings (1) in a filing or submission with the SEC or another regulatory body, (2) in connection with seeking recovery on defaulted bonds in a federal bankruptcy case, (3) in connection with a lawsuit, or (4) as required by court order. Disclosure of portfolio holdings or other investment positions by Vanguard, VMC, or a Vanguard fund as required by applicable laws, rules, and regulations must be authorized by a Vanguard fund officer or a Principal of Vanguard.

Prohibitions on Disclosure of Portfolio Holdings

No person is authorized to disclose Vanguard fund portfolio holdings or other investment positions (whether online at *vanguard.com*, in writing, by fax, by email, orally, or by other means) except in accordance with the Policies and Procedures. In addition, no person is authorized to make disclosure pursuant to the Policies and Procedures if such disclosure is otherwise unlawful under the antifraud provisions of the federal securities laws (as defined in Rule 38a-1 under the 1940 Act). Furthermore, Vanguard's management, at its sole discretion, may determine not to disclose portfolio holdings or other investment positions that make up a Vanguard fund to any person who would otherwise be eligible to receive such information under the Policies and Procedures, or may determine to make such disclosures publicly as provided by the Policies and Procedures.

Prohibitions on Receipt of Compensation or Other Consideration

The Policies and Procedures prohibit a Vanguard fund, its investment advisor, and any other person or entity from paying or receiving any compensation or other consideration of any type for the purpose of obtaining disclosure of Vanguard fund portfolio holdings or other investment positions. "Consideration" includes any agreement to maintain assets in the fund or in other investment companies or accounts managed by the investment advisor or sub-advisor or by any affiliated person of the investment advisor or sub-advisor.

INVESTMENT ADVISORY AND OTHER SERVICES

The Funds receive all investment advisory services from Vanguard, through its Equity Index Group. These services are provided by an experienced investment advisory staff employed directly by Vanguard. The compensation and other expenses of the advisory staff are allocated among the funds utilizing these services.

During the fiscal years ended October 31, 2022, 2023, and 2024, the Funds incurred the following approximate advisory expenses:

Vanguard Fund	2022	2023	2024
Vanguard European Stock Index Fund	\$1,447,000	\$1,586,000	\$1,444,000
Vanguard Pacific Stock Index Fund	876,000	612,000	572,000
Vanguard Emerging Markets Stock Index Fund	2,374,000	3,326,000	4,101,000
Vanguard FTSE All-World ex-US Index Fund	2,185,000	3,427,000	3,135,000
Vanguard Total World Stock Index Fund	1,597,000	2,502,000	2,710,000
Vanguard FTSE All-World ex-US Small-Cap Index Fund	1,032,000	701,000	606,000
Vanguard Global ex-U.S. Real Estate Index Fund	516,000	284,000	225,000

1. Other Accounts Managed

The following table provides information relating to the other accounts managed by the portfolio managers of the Funds as of the fiscal year ended October 31, 2024 (unless otherwise noted):

Portfolio Manager		No. of accounts	Total assets	No. of accounts with performance-based fees	Total assets in accounts with performance-based fees
Nicole Brubaker ¹	Registered investment companies ³	0	\$ 0	0	\$0
	Other pooled investment vehicles	0	\$ 0	0	\$0
	Other accounts	0	\$ 0	0	\$0
John Kraynak ²	Registered investment companies ³	0	\$ 0	0	\$0
	Other pooled investment vehicles	0	\$ 0	0	\$0
	Other accounts	0	\$ 0	0	\$0
Christine D. Franquin	Registered investment companies ⁴	6	\$776.9B	0	\$0
	Other pooled investment vehicles	0	\$ 0	0	\$0
	Other accounts	0	\$ 0	0	\$0
Scott E. Geiger	Registered investment companies ⁵	5	\$ 92.5B	0	\$0
	Other pooled investment vehicles	0	\$ 0	0	\$0
	Other accounts	0	\$ 0	0	\$0
Jeffrey D. Miller	Registered investment companies ⁶	4	\$190.4B	0	\$0
	Other pooled investment vehicles	0	\$ 0	0	\$0
	Other accounts	0	\$ 0	0	\$0
Michael Perre	Registered investment companies ⁷	8	\$792.3B	0	\$0
	Other pooled investment vehicles	0	\$ 0	0	\$0
	Other accounts	23	\$ 65.1B	0	\$0

1 Ms. Brubaker began co-managing Vanguard Pacific Stock Index Fund and Vanguard FTSE All-World ex-US Small-Cap Index Fund on February 18, 2025.

2 Mr. Kraynak began co-managing Vanguard Emerging Markets Stock Index Fund, Vanguard European Stock Index Fund, and Vanguard Global ex-U.S. Real Estate Index Fund on February 18, 2025.

3 Information provided as of December 31, 2024.

4 Includes Vanguard FTSE All-World ex-US Index Fund, Vanguard Total World Stock Index Fund, and Vanguard European Stock Index Fund, which collectively held assets of \$134 billion as of October 31, 2024.

5 Includes Vanguard Total World Stock Index Fund, Vanguard Global ex-U.S. Real Estate Index Fund, and Vanguard European Stock Index Fund, which collectively held assets of \$80.9 billion as of October 31, 2024.

6 Includes Vanguard FTSE All-World ex-US Index Fund, Vanguard FTSE All-World ex-US Small-Cap Index Fund, Vanguard Emerging Markets Stock Index Fund, and Vanguard Pacific Stock Index Fund, which collectively held assets of \$190.4 billion as of October 31, 2024.

7 Includes Vanguard Global ex-U.S. Real Estate Index Fund, Vanguard FTSE All-World ex-US Small-Cap Index Fund, Vanguard Emerging Markets Stock Index Fund, and Vanguard Pacific Stock Index Fund, which collectively held assets of \$137.4 billion as of October 31, 2024.

2. Material Conflicts of Interest

At Vanguard, individual portfolio managers may manage multiple accounts for multiple clients. In addition to mutual funds, these accounts may include separate accounts, collective trusts, and offshore funds. Managing multiple funds or accounts may give rise to potential conflicts of interest including, for example, conflicts among investment strategies and conflicts in the allocation of investment opportunities. Vanguard manages potential conflicts between funds or accounts through allocation policies and procedures, internal review processes, and oversight by trustees and independent third parties. Vanguard has developed trade allocation procedures and controls to ensure that no one client, regardless of type, is intentionally favored at the expense of another. Allocation policies are designed to address potential conflicts in situations in which two or more funds or accounts participate in investment decisions involving the same securities.

3. Description of Compensation

All Vanguard portfolio managers are Vanguard employees. This section describes the compensation of the Vanguard employees who manage Vanguard mutual funds. As of October 31, 2024, a Vanguard portfolio manager's compensation generally consists of base salary, bonus, and payments under Vanguard's long-term incentive compensation program. In addition, portfolio managers are eligible for the standard retirement benefits and health and welfare benefits available to all Vanguard employees. Also, certain portfolio managers may be eligible for additional retirement benefits under several supplemental retirement plans that Vanguard adopted in the 1980s to restore dollar-for-dollar the benefits of management employees that had been cut back solely as a result of tax law changes. These plans are structured to provide the same retirement benefits as the standard retirement plans.

In the case of portfolio managers responsible for managing multiple Vanguard funds or accounts, the method used to determine their compensation is the same for all funds and investment accounts. A portfolio manager's base salary is determined by the manager's experience and performance in the role, taking into account the ongoing compensation benchmark analyses performed by Vanguard's Human Resources Department. A portfolio manager's base salary is generally a fixed amount that may change as a result of an annual review, upon assumption of new duties, or when a market adjustment of the position occurs.

A portfolio manager's bonus is determined by a number of factors. One factor is gross, pre-tax performance of a fund relative to expectations for how the fund should have performed, given the fund's investment objective, policies, strategies, and limitations, and the market environment during the measurement period. This performance factor is not based on the amount of assets held in any individual fund's portfolio. For each Fund, the performance factor depends on how closely the portfolio manager tracks the Fund's benchmark index over a one-year period. Additional factors include the portfolio manager's contributions to the investment management functions within the sub-asset class, contributions to the development of other investment professionals and supporting staff, and overall contributions to strategic planning and decisions for the investment group. The target bonus is expressed as a percentage of base salary. The actual bonus paid may be more or less than the target bonus, based on how well the manager satisfies the objectives previously described. The bonus is paid on an annual basis.

Under the long-term incentive compensation program, all full-time employees receive a payment from Vanguard's long-term incentive compensation plan based on their years of service, job level, and, if applicable, management responsibilities. Each year, Vanguard's independent directors determine the amount of the long-term incentive compensation award for that year based on the investment performance of the Vanguard funds relative to competitors and Vanguard's operating efficiencies in providing services to the Vanguard funds.

4. Ownership of Securities

As of October 31, 2024, Mr. Miller owned shares of Vanguard Emerging Markets Stock Index Fund within the \$10,001–\$50,000 range and Vanguard FTSE All-World ex-US Small-Cap Index Fund within the \$10,001–\$50,000 range; Mr. Geiger owned shares of Vanguard Total World Stock Index Fund within the \$50,001–\$100,000 range; and Mr. Perre owned shares of Vanguard Emerging Markets Stock Index Fund within the \$100,001–\$500,000 range. As of October 31, 2024, Ms. Franquin did not own any shares of the Funds she manages.

As of December 31, 2024, Mr. Kraynak owned shares of Vanguard Emerging Markets Stock Index Fund in the \$1–\$10,000 range. He did not own shares of the other Funds he now co-manages. Also as of December 31, 2024, Ms. Brubaker did not own any shares of the Funds she now co-manages.

Duration and Termination of Investment Advisory Agreement

Vanguard provides investment advisory services to the Funds pursuant to the terms of the Fifth Amended and Restated Funds' Service Agreement. This agreement will continue in full force and effect until terminated or amended by mutual agreement of the Vanguard funds and Vanguard.

Securities Lending

The following table describes the securities lending activities of each Fund during the fiscal year ended October 31, 2024:

Vanguard Fund	Securities Lending Activities
Vanguard Emerging Markets Stock Index Fund	
<i>Gross income from securities lending activities</i>	\$92,216,670
Fees paid to securities lending agent from a revenue split	\$2,642,630
Fees paid for any cash collateral management service (including fees deducted from a pooled cash collateral reinvestment vehicle) that are not included in the revenue split	\$73,755
Administrative fees not included in revenue split	\$535,830
Indemnification fee not included in revenue split	\$0
Rebate (paid to borrower)	\$41,264,889
Other fees not included in revenue split (specify)	\$0
Aggregate fees/compensation for securities lending activities	\$44,517,104
<i>Net income from securities lending activities</i>	\$47,699,566
Vanguard European Stock Index Fund	
<i>Gross income from securities lending activities</i>	\$5,985,399
Fees paid to securities lending agent from a revenue split	\$142,826
Fees paid for any cash collateral management service (including fees deducted from a pooled cash collateral reinvestment vehicle) that are not included in the revenue split	\$4,299
Administrative fees not included in revenue split	\$19,348
Indemnification fee not included in revenue split	\$0
Rebate (paid to borrower)	\$3,239,016
Other fees not included in revenue split (specify)	\$0
Aggregate fees/compensation for securities lending activities	\$3,405,489
<i>Net income from securities lending activities</i>	\$2,579,910
Vanguard FTSE All-World ex-U.S. Index Fund	
<i>Gross income from securities lending activities</i>	\$31,185,600
Fees paid to securities lending agent from a revenue split	\$335,647
Fees paid for any cash collateral management service (including fees deducted from a pooled cash collateral reinvestment vehicle) that are not included in the revenue split	\$25,969
Administrative fees not included in revenue split	\$291,774
Indemnification fee not included in revenue split	\$0
Rebate (paid to borrower)	\$18,548,270
Other fees not included in revenue split (specify)	\$0
Aggregate fees/compensation for securities lending activities	\$19,201,660
<i>Net income from securities lending activities</i>	\$11,983,940
Vanguard FTSE All-World ex-U.S. Small-Cap Index Fund	
<i>Gross income from securities lending activities</i>	\$28,668,898
Fees paid to securities lending agent from a revenue split	\$1,013,782
Fees paid for any cash collateral management service (including fees deducted from a pooled cash collateral reinvestment vehicle) that are not included in the revenue split	\$21,086
Administrative fees not included in revenue split	\$10,723
Indemnification fee not included in revenue split	\$0
Rebate (paid to borrower)	\$13,292,681
Other fees not included in revenue split (specify)	\$0
Aggregate fees/compensation for securities lending activities	\$14,338,272

Vanguard Fund	Securities Lending Activities
<i>Net income from securities lending activities</i>	\$14,330,626
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Vanguard Global ex-U.S. Real Estate Index Fund	
<i>Gross income from securities lending activities</i>	\$6,167,721
Fees paid to securities lending agent from a revenue split	\$195,762
Fees paid for any cash collateral management service (including fees deducted from a pooled cash collateral reinvestment vehicle) that are not included in the revenue split	\$3,919
Administrative fees not included in revenue split	\$15,903
Indemnification fee not included in revenue split	\$0
Rebate (paid to borrower)	\$2,571,075
Other fees not included in revenue split (specify)	\$0
Aggregate fees/compensation for securities lending activities	\$2,786,659
<i>Net income from securities lending activities</i>	\$3,381,062
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Vanguard Pacific Stock Index Fund	
<i>Gross income from securities lending activities</i>	\$7,163,437
Fees paid to securities lending agent from a revenue split	\$177,758
Fees paid for any cash collateral management service (including fees deducted from a pooled cash collateral reinvestment vehicle) that are not included in the revenue split	\$5,764
Administrative fees not included in revenue split	\$16,100
Indemnification fee not included in revenue split	\$0
Rebate (paid to borrower)	\$3,944,150
Other fees not included in revenue split (specify)	\$0
Aggregate fees/compensation for securities lending activities	\$4,143,772
<i>Net income from securities lending activities</i>	\$3,019,665
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Vanguard Total World Stock Index Fund	
<i>Gross income from securities lending activities</i>	\$14,679,531
Fees paid to securities lending agent from a revenue split	\$366,595
Fees paid for any cash collateral management service (including fees deducted from a pooled cash collateral reinvestment vehicle) that are not included in the revenue split	\$10,555
Administrative fees not included in revenue split	\$64,049
Indemnification fee not included in revenue split	\$0
Rebate (paid to borrower)	\$7,445,125
Other fees not included in revenue split (specify)	\$0
Aggregate fees/compensation for securities lending activities	\$7,886,324
<i>Net income from securities lending activities</i>	\$6,793,207

The services provided by Brown Brothers Harriman & Co. and Vanguard, each acting separately as securities lending agents for certain Vanguard funds, include coordinating the selection of securities to be loaned to approved borrowers; negotiating the terms of the loan; monitoring the value of the securities loaned and corresponding collateral, marking to market daily; coordinating the investment of cash collateral in the funds' approved cash collateral reinvestment vehicle; monitoring dividends and coordinating material proxy votes relating to loaned securities; and transferring, recalling, and arranging the return of loaned securities to the funds upon termination of the loan.

PORTFOLIO TRANSACTIONS

The advisor decides which securities to buy and sell on behalf of a Fund and then selects the brokers or dealers that will execute the trades on an agency basis or the dealers with whom the trades will be effected on a principal basis. For each trade, the advisor must select a broker-dealer that it believes will provide "best execution." Best execution does not necessarily mean paying the lowest spread or commission rate available. In seeking best execution, the SEC has said that an advisor should consider the full range of a broker-dealer's services. The factors considered by the advisor in seeking best execution include, but are not limited to, the broker-dealer's execution capability, clearance and settlement services, commission rate, trading expertise, willingness and ability to commit capital, ability to provide anonymity, financial responsibility, reputation and integrity, responsiveness, access to underwritten offerings and secondary markets, and access to company management, as well as the value of any research provided by the broker-dealer. In assessing which broker-dealer can provide best execution for a particular trade, the advisor also may consider the

timing and size of the order and available liquidity and current market conditions. Subject to applicable legal requirements, the advisor may select a broker based partly on brokerage or research services provided to the advisor and its clients, including the Funds. The advisor may cause a Fund to pay a higher commission than other brokers would charge if the advisor determines in good faith that the amount of the commission is reasonable in relation to the value of services provided. The advisor also may receive brokerage or research services from broker-dealers that are provided at no charge in recognition of the volume of trades directed to the broker. To the extent research services or products may be a factor in selecting brokers, services and products may include written research reports analyzing performance or securities, discussions with research analysts, meetings with corporate executives to obtain oral reports on company performance, market data, and other products and services that will assist the advisor in its investment decision-making process. The research services provided by brokers through which a Fund effects securities transactions may be used by the advisor in servicing all of its accounts, and some of the services may not be used by the advisor in connection with the Fund.

During the fiscal years ended October 31, 2022, 2023, and 2024, the Funds paid the following approximate amounts in brokerage commissions. Brokerage commissions paid by a fund may be substantially different from year to year for multiple reasons, such as overall fund performance, market volatility, trading volumes, cash flows, or changes to the securities that make up the Fund or a fund's target index.

Vanguard Fund	2022	2023	2024
Vanguard Emerging Markets Stock Index Fund	\$9,094,000	\$5,043,000	\$6,448,000
Vanguard European Stock Index Fund	413,000	319,000	303,000
Vanguard FTSE All-World ex-U.S. Index Fund	1,899,000	1,102,000	1,507,000
Vanguard FTSE All-World ex-U.S. Small-Cap Index Fund	935,000	777,000	998,000
Vanguard Global ex-U.S. Real Estate Index Fund	324,000	177,000	226,000
Vanguard Pacific Stock Index Fund	236,000	156,000	179,000
Vanguard Total World Stock Index Fund	941,000	781,000	814,000

Some securities that are considered for investment by a Fund may also be appropriate for other Vanguard funds or for other clients served by the advisors. If such securities are compatible with the investment policies of a Fund and one or more of the advisor's other clients, and are considered for purchase or sale at or about the same time, then transactions in such securities may be aggregated by the advisor, and the purchased securities or sale proceeds may be allocated among the participating Vanguard funds and the other participating clients of the advisor in a manner deemed equitable by the advisor. Although there may be no specified formula for allocating such transactions, the allocation methods used, and the results of such allocations, will be subject to periodic review by the Funds' board of trustees.

As of October 31, 2024, each Fund held securities of its "regular brokers or dealers," as that term is defined in Rule 10b-1 of the 1940 Act, as follows:

Vanguard Fund	Regular Broker or Dealer (or Parent)	Aggregate Holdings
Vanguard Emerging Markets Stock Index Fund	—	—
Vanguard European Stock Index Fund	Barclays Capital, Inc.	\$ 90,414,000
	BNP PARIBAS	137,091,000
	UBS Securities LLC	196,698,000
Vanguard FTSE All-World ex-U.S. Index Fund	BNP PARIBAS	136,061,000
	UBS Securities LLC	195,281,000
Vanguard FTSE All-World ex-U.S. Small-Cap Index Fund	ICICI Securities Limited	2,282,961,000
Vanguard Global ex-U.S. Real Estate Index Fund	—	—
Vanguard Pacific Stock Index Fund	Macquarie Group	64,923,000
Vanguard Total World Stock Index Fund	Citigroup, Inc.	74,893,000
	Credit Agricole Securities (USA) Inc.	9,266,000
	Jefferies LLC	6,743,000
	Morgan Stanley & Co. LLC	82,216,000

PROXY VOTING

I. Proxy Voting Policies

Each Vanguard fund advised by Vanguard retains the authority to vote proxies received with respect to the shares of equity securities held in a portfolio advised by Vanguard. The Board of Trustees of the Vanguard-advised funds (the Board) has adopted proxy voting procedures and guidelines to govern proxy voting for each portfolio retaining proxy voting authority, which are summarized in Appendix A.

Vanguard has entered into agreements with various state, federal, and non-U.S. regulators and with certain issuers that limit the amount of shares that the funds may vote at their discretion for particular securities. For these securities, the funds are able to vote a limited portion of the shares at their discretion. Any additional shares generally are voted in the same proportion as votes cast by the issuer's entire shareholder base (i.e., mirror voted), or the fund is not permitted to vote such shares. Further, the Board has adopted policies that will result in certain funds mirror voting a higher proportion of the shares they own in a regulated issuer in order to permit certain other funds (generally advised by managers not affiliated with Vanguard) to mirror vote none, or a lower proportion, of their shares in such regulated issuer.

II. Securities Lending

There may be occasions when Vanguard needs to restrict lending of and/or recall securities that are out on loan in order to vote the full position at a shareholder meeting. For the funds managed by Vanguard, Vanguard has processes to monitor securities on loan and to evaluate any circumstances that may require it to restrict and/or attempt to recall the security based on the criteria set forth in Appendix A.

To obtain a free copy of a report that details how the funds voted the proxies relating to the portfolio securities held by the funds for the prior 12-month period ended June 30, log on to vanguard.com or visit the SEC's website at sec.gov.

INFORMATION ABOUT THE ETF SHARE CLASS

Each Fund (collectively, the ETF Funds) offers and issues an exchange-traded class of shares called ETF Shares. Each Fund issues and redeems ETF Shares in large blocks, known as "Creation Units."

To purchase or redeem a Creation Unit, you must be an Authorized Participant or you must transact through a broker that is an Authorized Participant. An Authorized Participant is a participant in the Depository Trust Company (DTC) that has executed a Participant Agreement with Vanguard Marketing Corporation, the ETF Funds' Distributor (the Distributor). For a current list of Authorized Participants, contact the Distributor.

Investors that are not Authorized Participants must hold ETF Shares in a brokerage account. As with any stock traded on an exchange through a broker, purchases and sales of ETF Shares will be subject to usual and customary brokerage commissions.

Each ETF Fund issues Creation Units in kind in exchange for a basket of securities that are part of—or soon to be part of—its target index (Deposit Securities). Each ETF Fund also redeems Creation Units in kind; an investor who tenders a Creation Unit will receive, as redemption proceeds, a basket of securities that are part of the Fund's portfolio holdings (Redemption Securities). The Deposit Securities and Redemption Securities may include American Depository Receipts (ADRs). As part of any creation or redemption transaction, the investor will either pay or receive some cash in addition to the securities, as described more fully on the following pages. Each ETF Fund reserves the right to issue Creation Units for cash, rather than in kind. As of the date of this Statement of Additional Information, cash purchases and redemptions will be required for securities traded in Brazil, Chile, China, Colombia, Egypt, India, Kuwait, Malaysia, Pakistan, Peru, Qatar, Russia, Saudi Arabia, South Korea, Taiwan, and UAE.

Exchange Listing and Trading

The ETF Shares have been approved for listing on a national securities exchange and will trade on the exchange at market prices that may differ from net asset value (NAV). There can be no assurance that, in the future, ETF Shares will continue to meet all of the exchange's listing requirements. The exchange will institute procedures to delist the Fund's ETF Shares if the Fund's ETF Shares do not continuously comply with the exchange's listing rules. The exchange will also delist the Fund's ETF Shares upon termination of the ETF share class.

The exchange disseminates, through the facilities of the Consolidated Tape Association, an updated "indicative optimized portfolio value" (IOPV) for the ETF Fund as calculated by an information provider. The ETF Funds are not

involved with or responsible for the calculation or dissemination of the IOPVs, and they make no warranty as to the accuracy of the IOPVs. An IOPV for the Fund's ETF Shares is disseminated every 15 seconds during regular exchange trading hours. An IOPV has a securities value component and a cash component. The IOPV is designed as an estimate of the ETF Fund's NAV at a particular point in time, but it is only an estimate and should not be viewed as the actual NAV, which is calculated once each day.

Conversions and Exchanges

Owners of conventional (i.e., not exchange-traded) shares issued by the ETF Fund may convert those shares to ETF Shares of equivalent value of the same Fund. Please see "Conversion Rights" in the **Description of the Trust** section, to confirm the conversion rights. Please note that investors who own conventional shares through a 401(k) plan or other employer-sponsored retirement or benefit plan generally may not convert those shares to ETF Shares and should check with their plan sponsor or recordkeeper. ETF Shares, whether acquired through a conversion or purchased on the secondary market, cannot be converted to conventional shares by a shareholder. Also, ETF Shares of one fund cannot be exchanged for ETF Shares of another fund.

Investors that are not Authorized Participants must hold ETF Shares in a brokerage account. Thus, before converting conventional shares to ETF Shares, an investor must have an existing, or open a new, brokerage account. This account may be with Vanguard Brokerage Services or with any other brokerage firm. To initiate a conversion of conventional shares to ETF Shares, an investor must contact their broker.

Vanguard Brokerage Services does not impose a fee on conversions from Vanguard conventional shares to Vanguard ETF Shares. However, other brokerage firms may charge a fee to process a conversion. Vanguard reserves the right, in the future, to impose a transaction fee on conversions or to limit or terminate the conversion privilege.

Converting conventional shares to ETF Shares is generally accomplished as follows. First, after the broker notifies Vanguard of an investor's request to convert, Vanguard will transfer conventional shares from the investor's account with Vanguard to the broker's omnibus account with Vanguard (an account maintained by the broker on behalf of all its customers who hold conventional Vanguard fund shares through the broker). After the transfer, Vanguard's records will reflect the broker, not the investor, as the owner of the shares. Next, the broker will instruct Vanguard to convert the appropriate number or dollar amount of conventional shares in its omnibus account to ETF Shares of equivalent value, based on the respective NAVs of the two share classes. The ETF Fund's transfer agent will reflect ownership of all ETF Shares in the name of the DTC. The DTC will keep track of which ETF Shares belong to the broker, and the broker, in turn, will keep track of which ETF Shares belong to its customers.

Because the DTC is unable to handle fractional shares, only whole shares can be converted. For example, if the investor owned 300.25 conventional shares, and this was equivalent in value to 90.75 ETF Shares, the DTC account would receive 90 ETF Shares. Conventional shares with a value equal to 0.75 ETF Shares (in this example, that would be 2.481 conventional shares) would remain in the broker's omnibus account with Vanguard. The broker then could either (1) take certain internal actions necessary to credit the investor's account with 0.75 ETF Shares or (2) redeem the 2.481 conventional shares for cash at NAV and deliver that cash to the investor's account. If the broker chose to redeem the conventional shares, the investor would realize a gain or loss on the redemption that must be reported on their tax return (unless the shares are held in an IRA or other tax-deferred account). An investor should consult their broker for information on how the broker will handle the conversion process, including whether the broker will impose a fee to process a conversion.

The conversion process works differently for investors who opt to hold ETF Shares through an account at Vanguard Brokerage Services. Investors who convert their conventional shares to ETF Shares through Vanguard Brokerage Services will have *all* conventional shares for which they request conversion converted to the equivalent dollar value of ETF Shares. Because no fractional shares will have to be sold, the transaction will not be taxable.

Here are some important points to keep in mind when converting conventional shares of the ETF Fund to ETF Shares:

- The conversion process can take anywhere from several days to several weeks, depending on the broker. Vanguard generally will process conversion requests either on the day they are received or on the next business day. Vanguard imposes conversion blackout windows around the dates when the ETF Fund declares dividends. This is necessary to prevent a shareholder from collecting a dividend from both the conventional share class currently held and also from the ETF share class to which the shares will be converted.
- During the conversion process, an investor will remain fully invested in the Fund's conventional shares, and the investment will increase or decrease in value in tandem with the NAV of those shares.

- The conversion transaction is nontaxable except, if applicable, to the very limited extent previously described.
- During the conversion process, an investor will be able to liquidate all or part of an investment by instructing Vanguard or the broker (depending on whether the shares are held in the investor's account or the broker's omnibus account) to redeem the conventional shares. After the conversion process is complete, an investor will be able to liquidate all or part of an investment by instructing the broker to sell the ETF Shares.

Book Entry Only System

ETF Shares issued by the ETF Funds are registered in the name of the DTC or its nominee, Cede & Co., and are deposited with, or on behalf of, the DTC. The DTC is a limited-purpose trust company that was created to hold securities of its participants (DTC Participants) and to facilitate the clearance and settlement of transactions among them through electronic book-entry changes in their accounts, thereby eliminating the need for physical movement of securities certificates. DTC Participants include securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organizations. The DTC is a subsidiary of the Depository Trust and Clearing Corporation (DTCC), which is owned by certain participants of the DTCC's subsidiaries, including the DTC. Access to the DTC system is also available to others such as banks, brokers, dealers, and trust companies that clear through or maintain a custodial relationship with a DTC Participant, either directly or indirectly (Indirect Participants).

Beneficial ownership of ETF Shares is limited to DTC Participants, Indirect Participants, and persons holding interests through DTC Participants and Indirect Participants. Ownership of beneficial interests in ETF Shares (owners of such beneficial interests are referred to herein as Beneficial Owners) is shown on, and the transfer of ownership is effected only through, records maintained by the DTC (with respect to DTC Participants) and on the records of DTC Participants (with respect to Indirect Participants and Beneficial Owners that are not DTC Participants). Beneficial Owners will receive from, or through, the DTC Participant a written confirmation relating to their purchase of ETF Shares. The laws of some jurisdictions may require that certain purchasers of securities take physical delivery of such securities. Such laws may impair the ability of certain investors to acquire beneficial interests in ETF Shares.

Each ETF Fund recognizes the DTC or its nominee as the record owner of all ETF Shares for all purposes. Beneficial Owners of ETF Shares are not entitled to have ETF Shares registered in their names and will not receive or be entitled to physical delivery of share certificates. Each Beneficial Owner must rely on the procedures of the DTC and any DTC Participant and/or Indirect Participant through which such Beneficial Owner holds its interests to exercise any rights of a holder of ETF Shares.

Conveyance of all notices, statements, and other communications to Beneficial Owners is effected as follows. The DTC will make available to the ETF Fund, upon request and for a fee, a listing of the ETF Shares of the Fund held by each DTC Participant. The ETF Fund shall obtain from each DTC Participant the number of Beneficial Owners holding ETF Shares, directly or indirectly, through the DTC Participant. The ETF Fund shall provide each DTC Participant with copies of such notice, statement, or other communication, in form, in number, and at such place as the DTC Participant may reasonably request, in order that these communications may be transmitted by the DTC Participant, directly or indirectly, to the Beneficial Owners. In addition, the ETF Fund shall pay to each DTC Participant a fair and reasonable amount as reimbursement for the expenses attendant to such transmittal, subject to applicable statutory and regulatory requirements.

Share distributions shall be made to the DTC or its nominee as the registered holder of all ETF Shares. The DTC or its nominee, upon receipt of any such distributions, shall immediately credit the DTC Participants' accounts with payments in amounts proportionate to their respective beneficial interests in ETF Shares of the appropriate ETF Fund as shown on the records of the DTC or its nominee. Payments by DTC Participants to Indirect Participants and Beneficial Owners of ETF Shares held through such DTC Participants will be governed by standing instructions and customary practices, as is now the case with securities held for the accounts of customers in bearer form or registered in a "street name," and will be the responsibility of such DTC Participants.

The ETF Funds have no responsibility or liability for any aspects of the records relating to or notices to Beneficial Owners; for payments made on account of beneficial ownership interests in such ETF Shares; for maintenance, supervision, or review of any records relating to such beneficial ownership interests; or for any other aspect of the relationship between the DTC and DTC Participants or the relationship between such DTC Participants and the Indirect Participants and Beneficial Owners owning through such DTC Participants.

The DTC may determine to discontinue providing its service with respect to ETF Shares at any time by giving reasonable notice to the ETF Funds and discharging its responsibilities with respect thereto under applicable law. Under such circumstances, the ETF Funds shall take action either to find a replacement for the DTC to perform its functions at a comparable cost or, if such replacement is unavailable, to issue and deliver printed certificates representing ownership of ETF Shares, unless the ETF Funds make other arrangements with respect thereto satisfactory to the exchange.

Purchase and Issuance of ETF Shares in Creation Units

Except for conversions to ETF Shares from conventional shares, the ETF Funds issue and sell ETF Shares only in Creation Units on a continuous basis through the Distributor, without a sales load, at their NAV next determined after receipt of an order in proper form on any business day. The ETF Funds do not issue fractional Creation Units. (Please see “Conversions and Exchanges” for the issuance of ETF Shares resulting from a conversion.)

A business day is any day on which the NYSE is open for business. As of the date of this Statement of Additional Information, the NYSE observes the following U.S. holidays: New Year’s Day; Martin Luther King, Jr., Day; Presidents’ Day (Washington’s Birthday); Good Friday; Memorial Day; Juneteenth National Independence Day; Independence Day; Labor Day; Thanksgiving Day; and Christmas Day.

Fund Deposit. The consideration for purchase of a Creation Unit from the ETF Fund generally consists of an in-kind deposit of a designated portfolio of securities (Deposit Securities) and an amount of cash (Cash Component) consisting of a purchase balancing amount and a transaction fee (both described in the following paragraphs). Together, the Deposit Securities and the Cash Component constitute the fund deposit.

The purchase balancing amount is an amount equal to the difference between the NAV of a Creation Unit and the market value of the Deposit Securities (Deposit Amount). It ensures that the NAV of a fund deposit (not including the transaction fee) is identical to the NAV of the Creation Unit it is used to purchase. If the purchase balancing amount is a positive number (i.e., the NAV per Creation Unit exceeds the market value of the Deposit Securities), then that amount will be paid by the purchaser to the ETF Fund in cash. If the purchase balancing amount is a negative number (i.e., the NAV per Creation Unit is less than the market value of the Deposit Securities), then that amount will be paid by the ETF Fund to the purchaser in cash (except as offset by the transaction fee).

Vanguard, through the National Securities Clearing Corporation (NSCC), makes available after the close of each business day a list of the names and the number of shares of each Deposit Security to be included in the next business day’s fund deposit for the ETF Fund (subject to possible amendment or correction). Each ETF Fund reserves the right to accept a nonconforming fund deposit.

The identity and number of shares of the Deposit Securities required for a fund deposit may change from one day to another to reflect rebalancing adjustments and corporate actions or to respond to adjustments to the weighting or composition of the component securities of the relevant target index.

Each ETF Fund reserves the right to permit or require the substitution of an amount of cash—referred to as “cash in lieu”—to be added to the Cash Component to replace any Deposit Security. This might occur, for example, if a Deposit Security is not available in sufficient quantity for delivery, is not eligible for transfer through the applicable clearance and settlement system, or is not eligible for trading by an Authorized Participant or the investor for which an Authorized Participant is acting. Trading costs incurred by the ETF Fund in connection with the purchase of Deposit Securities with cash-in-lieu amounts will be an expense of the ETF Fund. However, Vanguard may adjust the transaction fee to protect existing shareholders from this expense.

All questions as to the number of shares of each security in the Deposit Securities and the validity, form, eligibility, and acceptance for deposit of any securities to be delivered shall be determined by the ETF Fund, and the ETF Fund’s determination shall be final and binding.

Procedures for Purchasing Creation Units. An order to purchase a Creation Unit of each ETF Fund other than Vanguard Emerging Markets Stock Index Fund, and an order to purchase a Creation Unit of Vanguard Emerging Markets Stock Index Fund transmitted via U.S. mail or overnight delivery service, must be submitted in proper form to the Distributor; such order must be received by the Distributor prior to the closing time of regular trading on the NYSE (Closing Time) (ordinarily 4 p.m., Eastern time) to receive that business day’s NAV. An order to purchase a Creation Unit of Vanguard Emerging Markets Stock Index Fund transmitted via portal, fax, email, or telephone must be submitted in proper form to the Distributor; such order must be received by the Distributor within a ninety-minute window after Closing Time on the preceding business day (ordinarily between 4 p.m. and 5 p.m., Eastern time) to receive the NAV on

a particular business day. Each ETF Fund reserves the absolute right to reject a purchase order (see discussion below under the heading “*Rejection of Purchase Orders*”). The date on which an order to purchase (or redeem) Creation Units is placed is referred to as the transmittal date. Authorized Participants must transmit purchase orders using a transmission method acceptable to the Distributor pursuant to procedures set forth in the Participant Agreement.

The Distributor shall inform the ETF Fund’s custodian of the order. The custodian will then inform the appropriate foreign subcustodians. Each subcustodian shall maintain an account into which the Authorized Participant shall deliver, on behalf of itself or the party on whose behalf it is acting, the relevant Deposit Securities (or the cash value of all or part of such securities, in the case of a permitted or required cash purchase or cash-in-lieu amount), with any appropriate adjustments as advised by Vanguard. Deposit Securities must be delivered to an account maintained at the applicable local subcustodians.

The Authorized Participant must also make available on or before the contractual settlement date, by means satisfactory to the ETF Fund, immediately available or same-day funds estimated by the ETF Fund to be sufficient to pay the Cash Component. Any excess funds will be returned following settlement of the issue of the Creation Unit.

Neither the Trust, the ETF Funds, the Distributor, nor any affiliated party will be liable to an investor who is unable to submit a purchase order by Closing Time, or an earlier cut-off time in the case of an ETF Fund that has established such a time, even if the problem is the responsibility of one of those parties (e.g., the Distributor’s phone or email systems were not operating properly).

If you are not an Authorized Participant, you must place your purchase order in an acceptable form with an Authorized Participant. The Authorized Participant may request that you make certain representations or enter into agreements with respect to the order (e.g., to provide for payments of cash when required).

An order to purchase Creation Units is deemed received on the transmittal date if (1) such order is received by the Distributor prior to Closing Time on such transmittal date, or an earlier cut-off time in the case of an ETF Fund that has established such a time and (2) all other procedures set forth in the Participant Agreement are properly followed.

Except as provided herein, a Creation Unit will not be issued until the transfer of good title to an ETF Fund of the Deposit Securities and the payment of the Cash Component have been completed. When each subcustodian has confirmed to the custodian that the required securities included in the fund deposit have been delivered to the account of the relevant subcustodian, and the Cash Component has been delivered to the custodian, the Distributor shall be notified of such delivery, and the ETF Fund will issue and cause the delivery of the Creation Unit.

If a fund deposit is incomplete on the first business day after the trade date (the trade date, known as “T,” is the date on which the trade actually takes place; one business day after the trade date is known as “T+1”) because of the failed delivery of one or more of the Deposit Securities, an ETF Fund shall be entitled to cancel the purchase order. Alternatively, an ETF Fund may issue Creation Units in reliance on the Authorized Participant’s undertaking to deliver the missing Deposit Securities at a later date. Such undertaking shall be secured by the delivery and maintenance of cash collateral in an amount determined by the ETF Fund in accordance with the terms of the Participant Agreement.

Rejection of Purchase Orders. An ETF Fund reserves the absolute right to reject a purchase order. By way of example, and not limitation, the ETF Fund will reject a purchase order if:

- The order is not in proper form.
- The Deposit Securities delivered are not the same (in name or amount) as the published basket.
- Acceptance of the Deposit Securities would have certain adverse tax consequences to the ETF Fund.
- Acceptance of the fund deposit would, in the opinion of counsel, be unlawful.
- Acceptance of the fund deposit would otherwise, at the discretion of the ETF Fund or Vanguard, have an adverse effect on the Fund or any of its shareholders.
- Circumstances outside the control of the ETF Fund, the Trust, the transfer agent, the custodian, the subcustodian(s), the Distributor, and Vanguard make it for all practical purposes impossible to process the order. Examples include, but are not limited to, natural disasters, public service disruptions, or utility problems such as fires, floods, extreme weather conditions, and power outages resulting in telephone, telecopy, and computer failures; market conditions or activities causing trading halts; systems failures involving computer or other information systems affecting the aforementioned parties as well as the DTC, the NSCC, or any other participant in the purchase process; and similar extraordinary events.

If the purchase order is rejected, the Distributor shall notify the Authorized Participant that submitted the order. The ETF Funds, the Trust, the transfer agent, the custodian, the subcustodian(s), the Distributor, and Vanguard are under no duty, however, to give notification of any defects or irregularities in the delivery of a fund deposit, nor shall any of them incur any liability for the failure to give any such notification.

Transaction Fee on Purchases of Creation Units. An ETF Fund may impose a transaction fee (payable to the Fund) to compensate the ETF Fund for costs associated with the issuance of Creation Units. The amount of the fee, which may be changed by the ETF Fund from time to time at its sole discretion, is made available daily to Authorized Participants, market makers, and other interested parties through Vanguard's proprietary portal system. When an ETF Fund permits (or requires) a purchaser to substitute cash in lieu of depositing one or more Deposit Securities, the purchaser may be assessed an additional variable charge on the cash-in-lieu portion of the investment. The amount of this charge will be disclosed to investors before they place their orders. The amount will be determined by the ETF Fund at its sole discretion. The maximum transaction fee, including any variable charges, on purchases of Creation Units, including any additional charges as described, shall be 2% of the value of the Creation Units.

An ETF Fund reserves the right to not impose a transaction fee or to vary the amount of the transaction fee imposed, up to the maximum amount listed above. To the extent a creation transaction fee is not charged or does not cover the costs associated with the issuance of the Creation Units, certain costs may be borne by the ETF Fund.

Redemption of ETF Shares in Creation Units

To be eligible to place a redemption order, you must be an Authorized Participant. Investors that are not Authorized Participants must make appropriate arrangements with an Authorized Participant in order to redeem a Creation Unit.

ETF Shares may be redeemed only in Creation Units. Investors should expect to incur brokerage and other transaction costs in connection with assembling a sufficient number of ETF Shares to constitute a redeemable Creation Unit. There can be no assurance, however, that there will be sufficient liquidity in the public trading market at any time to permit assembly of a Creation Unit. Redemption requests received on a business day in good order will receive the NAV next determined after the request is made.

Unless cash redemptions are available or specified for the ETF Fund, an investor tendering a Creation Unit generally will receive redemption proceeds consisting of (1) a basket of Redemption Securities; plus (2) a redemption balancing amount in cash equal to the difference between (x) the NAV of the Creation Unit being redeemed, as next determined after receipt of a request in proper form, and (y) the value of the Redemption Securities; less (3) a transaction fee. If the Redemption Securities have a value greater than the NAV of a Creation Unit, the redeeming investor will pay the redemption balancing amount in cash to the ETF Fund, rather than receive such amount from the Fund.

Vanguard, through the NSCC, makes available after the close of each business day a list of the names and the number of shares of each Redemption Security to be included in the next business day's redemption basket for the ETF Fund (subject to possible amendment or correction). In the case of Vanguard Emerging Markets Stock Index Fund, which requires that redemption orders transmitted via certain modes of communication be placed during specified hours on T-1, Vanguard makes available prior to Closing Time on T-1, through its proprietary portal system, a list of the names and the number of shares of each Redemption Security to be included in the redemption basket for use on the trade date (subject to possible amendment or correction). The basket of Redemption Securities provided to an investor redeeming a Creation Unit may not be identical to the basket of Deposit Securities required of an investor purchasing a Creation Unit. An ETF Fund may provide a redeeming investor with a basket of Redemption Securities that differs from the composition of the redemption basket published through the NSCC.

An ETF Fund reserves the right to deliver cash in lieu of any Redemption Security for the same reason it might accept cash in lieu of a Deposit Security, as previously discussed, or if the ETF Fund could not lawfully deliver the security or could not do so without first registering such security under federal or state law.

Neither the Trust, the ETF Funds, the Distributor, nor any affiliated party will be liable to an investor who is unable to submit a redemption order by Closing Time, or an earlier cut-off time in the case of an ETF Fund that has established such a time, even if the problem is the responsibility of one of those parties (e.g., the Distributor's phone or email systems were not operating properly).

Transaction Fee on Redemptions of Creation Units. An ETF Fund may impose a transaction fee (payable to the Fund) to compensate the ETF Fund for costs associated with the redemption of Creation Units. The amount of the fee, which may be changed by the ETF Fund from time to time at its sole discretion, is made available daily to Authorized Participants, market makers, and other interested parties through Vanguard's proprietary portal system. When an ETF

Fund permits (or requires) a redeeming investor to receive cash in lieu of one or more Redemption Securities, Each ETF fund may assess an additional variable charge on the cash portion of redemption. The amount will vary as determined by the ETF Fund at its sole discretion and is made available daily to Authorized Participants, market makers, and other interested parties through Vanguard's proprietary portal system. The amount will vary as determined by the ETF Fund at its sole discretion. The maximum transaction fee, including any variable charges, on redemptions of Creation Units, shall be 2% of the value of the Creation Units.

An ETF Fund reserves the right to not impose a transaction fee or to vary the amount of the transaction fee imposed, up to the maximum amount listed above. To the extent a redemption transaction fee is not charged or does not cover the costs associated with the redemption of the Creation Units, certain costs may be borne by the ETF Fund.

Placement of Redemption Orders. An order to redeem a Creation Unit of each ETF Fund other than Vanguard Emerging Markets Stock Index Fund and an order to redeem a Creation Unit of Vanguard Emerging Markets Stock Index Fund transmitted via U.S. mail or overnight delivery service must be submitted in proper form to the Distributor; such order must be received by the Distributor prior to Closing Time to receive that business day's NAV. An order to redeem a Creation Unit of Vanguard Emerging Markets Stock Index Fund transmitted via portal, fax, email, or telephone must be submitted in proper form to the Distributor; such order must be received by the Distributor within a ninety-minute window after Closing Time on the preceding business day (ordinarily between 4 p.m. and 5:30 p.m., Eastern time) to receive the NAV on a particular business day. Authorized Participants must transmit redemption orders using a transmission method acceptable to the Distributor pursuant to procedures set forth in the Participant Agreement.

An order to redeem a Creation Unit is deemed received on the transmittal date if (1) such order is received by the Distributor before Closing Time on such transmittal date or an earlier cut-off time in the case of an ETF Fund that has established such a time and (2) all other procedures set forth in the Participant Agreement are properly followed.

If on T+1 an Authorized Participant has failed to deliver all of the Vanguard ETF Shares it is seeking to redeem, an ETF Fund shall be entitled to cancel the redemption order. Alternatively, the ETF Fund may deliver to the Authorized Participant the full complement of Redemption Securities and cash in reliance on the Authorized Participant's undertaking to deliver the missing ETF Shares at a later date. Such undertaking shall be secured by the Authorized Participant's delivery and maintenance of cash collateral in accordance with collateral procedures that are part of the Participant Agreement. In all cases the ETF Fund shall be entitled to charge the Authorized Participant for any costs (including investment losses, attorney's fees, and interest) incurred by the ETF Fund as a result of the late delivery or failure to deliver.

Each ETF Fund reserves the right, at its sole discretion, to require or permit a redeeming investor to receive the redemption proceeds in cash. In such cases, the investor would receive a cash payment equal to the NAV of its ETF Shares based on the NAV of those shares next determined after the redemption request is received in proper form (minus a transaction fee, including a charge for cash redemptions, as previously discussed).

If an Authorized Participant, or a redeeming investor acting through an Authorized Participant, is subject to a legal restriction with respect to a particular security included in the basket of Redemption Securities, such investor may be paid an equivalent amount of cash in lieu of the security.

Each ETF Fund generally will deliver redemption proceeds within one business day. Because of the schedule of holidays in certain markets, however, the delivery of in-kind redemption proceeds may take longer than one business day. For each market relating to the ETF Fund, the markets and dates where more than seven days would be needed to deliver redemption proceeds are identified under the heading ETF Shares: Foreign Market Information. The ETF Fund will deliver redemption proceeds within the number of days stated under ETF Shares: Foreign Market Information.

In connection with taking delivery of shares of Redemption Securities upon redemption of a Creation Unit, an Authorized Participant, or a Beneficial Owner redeeming through an Authorized Participant, must maintain appropriate security arrangements with a qualified broker-dealer, bank, or other custody provider in each jurisdiction in which any of the Redemption Securities are customarily traded, to which account such Deposit Securities will be delivered.

If appropriate arrangements to take delivery of the Redemption Securities in the applicable foreign jurisdictions, as required in the preceding paragraph, are not in place, or if it is not possible to effect deliveries of the Redemption Securities in such jurisdictions, the ETF Fund may at its discretion effect the redemption in cash. In such case, the investor will receive a cash payment equal to the NAV of the redeemed shares, based on the NAV next calculated after receipt of the redemption request in proper form (minus a transaction fee and an additional variable charge for cash redemptions specified previously, to offset the ETF Fund's transaction costs associated with the disposition of

Redemption Securities of the ETF Fund). Redemptions of Creation Units will be subject to compliance with applicable United States federal and state securities laws and the ETF Fund (whether or not it otherwise permits cash redemptions) reserves the right to redeem Creation Units for cash to the extent that the ETF Fund could not lawfully deliver specific Redemption Securities or could not do so without first registering such securities under federal or state law.

If cash redemptions are permitted or required by an ETF Fund, proceeds will be paid to the Authorized Participant as soon as practicable after the date of redemption (within seven calendar days thereafter, except for the instances listed under ETF Shares: Foreign Market Information hereto where more than seven calendar days may be needed).

To the extent contemplated by an Authorized Participant's agreement with the Distributor, in the event the Authorized Participant that has submitted a redemption request in proper form is unable to transfer all or part of the Creation Unit to be redeemed to the ETF Fund prior to Closing Time on the business day of submission of such redemption request, the Distributor may nonetheless accept the redemption in reliance on the undertaking by the Authorized Participant to deliver the missing ETF Shares as soon as possible, which undertaking shall be secured by the Authorized Participant's delivery and maintenance of collateral consisting of cash having a value at least equal to 103% of the value of the missing ETF Shares in accordance with the ETF Fund's then-effective procedures. In all cases the Fund shall be entitled to charge the redeeming investor for any costs (including investment losses, attorney's fees, and interest) sustained by the ETF Fund as a result of the late delivery or failure to deliver.

Because the Redemption Securities of an ETF Fund may trade on the relevant exchange(s) on days that the exchange is closed, stockholders may not be able to redeem their shares of the ETF Fund, or to purchase or sell ETF Shares on the exchange, on days when the NAVs of the ETF Funds could be significantly affected by events in the relevant foreign markets.

As a result of security settlement cycles, local market holidays, and unscheduled foreign market closings, ETFs that hold foreign investments may deliver redemption proceeds (either in kind or in cash) more than seven days (but no more than fifteen days) after receipt of a redemption request in proper form.

Suspension of Redemption Rights. The right of redemption may be suspended or the date of payment postponed with respect to the ETF Fund (1) for any period during which the NYSE or listing exchange is closed (other than customary weekend and holiday closings), (2) for any period during which trading on the NYSE or listing exchange is suspended or restricted, (3) for any period during which an emergency exists as a result of which disposal of the Fund's portfolio securities or determination of its NAV is not reasonably practicable, or (4) in such other circumstances as the SEC permits.

Precautionary Notes

A precautionary note to ETF investors: The DTC or its nominee will be the registered owner of all outstanding ETF Shares. Your ownership of ETF Shares will be shown on the records of the DTC and the DTC Participant broker through which you hold the shares. Vanguard will not have any record of your ownership. Your account information will be maintained by your broker, which will provide you with account statements, confirmations of your purchases and sales of ETF Shares, and tax information. Your broker also will be responsible for distributing income and capital gains distributions and for ensuring that you receive shareholder reports and other communications from the fund whose ETF Shares you own. You will receive other services (e.g., dividend reinvestment and average cost information) only if your broker offers these services.

You should also be aware that investments in ETF Shares may be subject to certain risks relating to having large shareholders. To the extent that a large number of the Fund's ETF Shares are held by a large shareholder (e.g., an institutional investor, an investment advisor or an affiliate of an investment advisor, an authorized participant, a lead market maker, or another entity), a large redemption by such a shareholder could result in an increase in the ETF's expense ratio, cause the ETF to incur higher transaction costs, cause the ETF to fail to comply with applicable listing standards of the listing exchange upon which it is listed, lead to the realization of taxable capital gains, or cause the remaining shareholders to receive distributions representing a disproportionate share of the ETF's ordinary income and long-term capital gains. In addition, transactions by large shareholders may account for a large percentage of the trading volume on an exchange and may, therefore, have a material upward or downward effect on the market price of the ETF Shares.

A precautionary note about investing in funds with both ETF and mutual fund share classes: A fund with both conventional mutual fund shares and ETF Shares may subject its ETF shareholders to different costs and tax impacts

than a fund with only exchange-traded shares. For example, a fund with both mutual fund shares and ETF Shares may need to buy and sell portfolio securities in response to inflows and outflows in the mutual fund share class. These purchases and sales could result in the fund's ETF shareholders sharing in brokerage and other transaction costs that shareholders would not incur in a fund with only exchange-traded shares. To the extent a fund with both mutual fund shares and ETF Shares needs to sell portfolio securities at a gain to satisfy mutual fund share class redemptions, the fund may need to distribute taxable capital gains to all of the fund's shareholders, including those who hold ETF Shares. In addition, a fund with both mutual fund shares and ETF Shares could need to hold more uninvested cash than a fund with only exchange-traded shares in order to satisfy mutual fund share class transactions. This uninvested cash could result in a drag on the fund's performance.

A precautionary note to purchasers of Creation Units: You should be aware of certain legal risks unique to investors purchasing Creation Units directly from the issuing fund.

Because new ETF Shares may be issued on an ongoing basis, a "distribution" of ETF Shares could be occurring at any time. Certain activities that you perform as a dealer could, depending on the circumstances, result in your being deemed a participant in the distribution in a manner that could render you a statutory underwriter and subject you to the prospectus delivery and liability provisions of the Securities Act of 1933 (the 1933 Act). For example, you could be deemed a statutory underwriter if you purchase Creation Units from the issuing fund, break them down into the constituent ETF Shares, and sell those shares directly to customers or if you choose to couple the creation of a supply of new ETF Shares with an active selling effort involving solicitation of secondary market demand for ETF Shares. Whether a person is an underwriter depends upon all of the facts and circumstances pertaining to that person's activities, and the examples mentioned here should not be considered a complete description of all the activities that could cause you to be deemed an underwriter.

Dealers who are not "underwriters" but are participating in a distribution (as opposed to engaging in ordinary secondary-market transactions), and thus dealing with ETF Shares as part of an "unsold allotment" within the meaning of Section 4(3)(C) of the 1933 Act, will be unable to take advantage of the prospectus delivery exemption provided by Section 4(3) of the 1933 Act.

A precautionary note to shareholders redeeming Creation Units: An Authorized Participant that is not a "qualified institutional buyer" as defined in Rule 144A under the 1933 Act will not be able to receive, as part of the redemption basket, restricted securities eligible for resale under Rule 144A.

A precautionary note to investment companies: Vanguard ETF Shares are issued by registered investment companies, and therefore the acquisition of such shares by other investment companies and private funds is subject to the restrictions of Section 12(d)(1) of the 1940 Act. SEC Rule 12d1-4 under the 1940 Act permits investments in Vanguard ETF Shares beyond the limits of Section 12(d)(1), subject to the conditions of Rule 12d1-4, as described under the heading "*Other Investment Companies*."

FINANCIAL STATEMENTS

Each Fund's [financial statements](#) for the fiscal year ended October 31, 2024, and the reports of PricewaterhouseCoopers LLP, an independent registered public accounting firm, appearing therein, are incorporated by reference into this Statement of Additional Information. For a more complete discussion of each Fund's performance, please see the Funds' annual reports to shareholders, which may be obtained without charge.

APPENDIX A

Summary of the Vanguard-Advised Funds Proxy Voting Policy

The funds for which Vanguard acts as investment advisor (Vanguard-advised funds) retain authority to vote proxies received for the shares of equity securities held in each fund. The Board of Trustees (the Board) for the Vanguard-advised funds has adopted proxy voting procedures and guidelines to govern proxy voting for each portfolio retaining proxy voting authority.

The Investment Stewardship Oversight Committee (the Committee), comprised primarily of fund officers and subject to the procedures described below, oversees the Vanguard-advised funds' proxy voting. The Committee reports directly to the Board. Vanguard is subject to these procedures and the proxy voting policies to the extent that they call for Vanguard to administer the voting process and implement the resulting voting decisions, and for these purposes the voting policies have also been approved by the Board of Directors of Vanguard.

The voting principles and policies adopted by the Board provide a framework for assessing each proposal and seek to ensure that each vote is cast in the best interests of each fund. Under the voting policies, each proposal is evaluated on its merits, based on the particular facts and circumstances presented at the company in question. For more information on the funds' proxy voting policies, please visit about.vanguard.com/investment-stewardship.

I. Investment Stewardship Team

The Investment Stewardship Team administers the day-to-day operation of the funds' proxy voting process, overseen by the Committee. The Investment Stewardship Team performs the following functions: (1) managing and conducting due diligence of proxy voting vendors; (2) reconciling share positions; (3) analyzing proxy proposals using factors described in the voting policies; (4) determining and addressing potential or actual conflicts of interest that may be presented by a particular proxy; and (5) voting proxies. The Investment Stewardship Team also prepares periodic and special reports for the Board and proposes amendments to the procedures and voting policies.

II. Investment Stewardship Oversight Committee

The Board, including a majority of the independent trustees, appoints the members of the Committee (which is comprised primarily of fund officers). The Committee works with the Investment Stewardship Team to provide reports and other guidance to the Board regarding proxy voting by the funds. The Committee has an obligation to exercise its decision-making authority in accordance with the Board's instructions as set forth in the funds' proxy voting procedures and voting policies and subject to the fiduciary standards of good faith, fairness, and Vanguard's Code of Ethical Conduct. The Committee may advise the Investment Stewardship Team on how to best apply the Board's instructions as set forth in the voting policies or refer the matter to the Board, which has ultimate decision-making authority for the funds. The Board reviews the procedures and voting policies annually and modifies them from time to time upon the recommendation of the Committee and in consultation with the Investment Stewardship Team.

III. Proxy Voting Pillars

Vanguard's investment stewardship activities are grounded in four pillars of corporate governance:

- 1) *Board composition and effectiveness*: Good governance begins with a company's board of directors. Our primary focus is on understanding to what extent the individuals who serve as board members are appropriately independent, capable, and experienced.
- 2) *Board oversight of strategy and risk*: Boards should be meaningfully involved in the formation and oversight of strategy and have ongoing oversight of material risks to their company. We work to understand how boards of directors are involved in strategy formation, oversee company strategy, and identify and govern material risks to long-term shareholder returns.
- 3) *Executive pay (compensation or remuneration)*: Sound, performance-linked compensation programs drive long-term investment returns. We look for companies to provide clear disclosure about their compensation practices, the board's oversight of those practices, and how said practices are aligned with long-term shareholder returns.

4) *Shareholder rights*: We believe governance structures should allow shareholders to effectively exercise their foundational rights. Shareholder rights enable a company's owners to use their voice and their vote—ideally, consistent with their economic exposure—to effect and approve changes in corporate governance practices.

IV. Evaluation of Proxies

For ease of reference, the procedures and guidelines often refer to all Vanguard-advised funds. However, the processes and practices seek to ensure that proxy voting decisions are suitable for individual funds. For most proxy proposals, particularly those involving routine corporate governance matters, the evaluation could result in the funds having a common interest in the matter and, accordingly, each fund casting votes in the same manner. In other cases, however, a fund may vote differently from other funds, depending upon the nature and objective of each fund, if doing so is in the best interest of the individual fund.

The voting policies do not permit the Board to delegate voting discretion to a third party that does not serve as a fiduciary for all Vanguard-advised funds. Because many factors bear on each decision, the voting policies incorporate factors that should be considered in each voting decision. A fund may refrain from voting some or all of its shares or vote in a particular way if doing so would be in the fund's and its shareholders' best interests. These circumstances may arise, for example, if the expected cost of voting exceeds the expected benefits of voting, if exercising the vote would result in the imposition of trading or other restrictions, or if a fund (or all Vanguard funds in the aggregate) were to own more than the permissible maximum percentage of a company's stock (as determined by the company's governing documents or by applicable law, regulation, or regulatory agreement), or if voting would present a potential conflict of interest.

In evaluating proxy proposals, the Investment Stewardship Team considers information from many sources, which could include, but is not limited to, the perspectives of the company management or shareholders presenting a proposal, independent proxy research services, or proprietary research. Additionally, data and recommendations from proxy advisors serve as one of many inputs into our research process. The Vanguard-advised funds may utilize automated voting for matters that are clearly addressed by the funds' proxy voting procedures and guidelines.

While serving as a framework, the voting policies cannot contemplate all possible proposals with which a fund may be presented. In the absence of a specific guideline for a particular proposal (e.g., in the case of a transactional issue or contested proxy), the Investment Stewardship Team, under the supervision of the Committee, will evaluate the matter and cast the fund's vote in a manner that is in the fund's best interest, subject to the individual circumstances of the fund.

V. Conflicts of Interest

Vanguard takes seriously its commitment to avoid potential conflicts of interest. Vanguard funds invest in thousands of publicly listed companies worldwide. Those companies may include clients, potential clients, vendors, or competitors. Some companies may employ Vanguard trustees, former Vanguard executives, or family members of Vanguard personnel who have direct involvement in Vanguard's Investment Stewardship program.

Vanguard's approach to mitigating conflicts of interest begins with the funds' proxy voting procedures. The procedures require that voting personnel act as fiduciaries and must conduct their activities at all times in accordance with the following standards: (i) fund shareholders' interests come first; (ii) conflicts of interest must be avoided and mitigated to the extent possible; and (iii) compromising situations must be avoided.

We maintain an important separation between Vanguard's Investment Stewardship Team and other groups within Vanguard that are responsible for sales, marketing, client service, and vendor/partner relationships. Proxy voting personnel are required to disclose potential conflicts of interest and must recuse themselves from all voting decisions and engagement activities in such instances. In certain circumstances, Vanguard may refrain from voting shares of a company, or may engage an independent third-party fiduciary to vote proxies.

Each externally managed fund has adopted the proxy voting guidelines of its advisor(s) and votes in accordance with the external advisors' guidelines and procedures. Each advisor has its own procedures for managing conflicts of interest in the best interests of fund shareholders.

VI. Shareholder Proposals

Shareholder proposals are evaluated in the context of the general corporate governance principle that a company's board has ultimate responsibility for providing effective ongoing oversight of relevant sector and company-specific risks,

including risks related to environmental and social matters. Each proposal is evaluated on its merits and in the context of the particular facts and circumstances at the company in question and supported when there is a logically demonstrable linkage between the specific proposal and long-term shareholder value of the company. Some of the factors considered when evaluating shareholder proposals include the materiality of the risk addressed by the proposal, the quality of the current disclosures/business practices, and any progress by the company toward addressing and disclosing the relevant material risk.

VII. Voting in Markets Outside the United States

Corporate governance standards, disclosure requirements, and voting mechanics vary greatly among the markets outside the United States (U.S.) in which the funds may invest. Each fund's votes will be used, where applicable, to support improvements in governance and disclosure by each fund's portfolio companies. Matters presented by non-U.S. portfolio companies will be evaluated in the foregoing context, as well as in accordance with local market standards and best practices. Votes are cast for each fund in a manner philosophically consistent with the voting policies, taking into account differing practices by market.

In many other markets, voting proxies will result in a fund being prohibited from selling the shares for a period of time due to requirements known as "share-blocking" or reregistration. Generally, the value of voting is unlikely to outweigh the loss of liquidity imposed by these requirements on the funds. In such instances, the funds will generally abstain from voting.

The costs of voting (e.g., custodian fees, vote agency fees) in other markets may be substantially higher than for U.S. holdings. As such, the fund may limit its voting on foreign holdings in instances in which the issues presented are unlikely to have a material impact on shareholder value.

VIII. Voting Shares of a Company That Has an Ownership Limitation

Certain companies have provisions in their governing documents or other agreements that restrict stock ownership in excess of a specified limit. Typically, these ownership restrictions are included in the governing documents of real estate investment trusts but may be included in other companies' governing documents. A company's governing documents normally allow the company to grant a waiver of these ownership limits, which would allow a fund to exceed the stated ownership limit. Sometimes a company will grant a waiver without restriction. From time to time, a company may grant a waiver only if a fund (or funds) agrees to not vote the company's shares in excess of the normal specified limit. In such a circumstance, a fund may refrain from voting shares if owning the shares beyond the company's specified limit is in the best interests of the fund and its shareholders.

In addition, applicable law may require prior regulatory approval to permit ownership of certain regulated issuer's voting securities above certain limits or may impose other restrictions on owners of more than a certain percentage of a regulated issuer's voting shares. The Board has authorized the funds to vote shares above these limits in the same proportion as votes cast by the issuer's entire shareholder base (i.e., mirror vote), or to refrain from voting excess shares. Further, the Board has adopted policies that will result in certain funds mirror voting a higher proportion of the shares they own in a regulated issuer in order to permit certain other funds (generally advised by managers not affiliated with Vanguard) to mirror vote none, or a lower proportion of, their shares in such regulated issuer.

IX. Voting on a Fund's Holdings of Other Vanguard Funds

Certain Vanguard funds (owner funds) may, from time to time, own shares of other Vanguard funds (underlying funds). If an underlying fund submits a matter to a vote of its shareholders, votes for and against such matters on behalf of the owner funds will be cast in the same proportion as the votes of the other shareholders in the underlying fund.

X. Securities Lending

There may be occasions when Vanguard needs to restrict lending of and/or recall securities that are out on loan in order to vote in a shareholder meeting. Vanguard has processes to monitor securities on loan and to evaluate any circumstances that may require us to restrict and/or recall the stock. In making this decision, we consider:

- The subject of the vote and whether, based on our knowledge and experience, we believe the topic is potentially material to the corporate governance and/or long-term performance of the company;
- The funds' individual and/or aggregate equity investment in a company, and whether we estimate that voting funds' shares would affect the shareholder meeting outcome; and

- The long-term impact to our fund shareholders, evaluating whether we believe the benefits of voting a company's shares would outweigh the benefits of stock lending revenues in a particular instance.

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