

Investment Performance Review
Period Ending December 31, 2022

Butler County Employees Retirement Plan



On behalf of everyone at AndCo, we want to Thank You for the opportunity to serve you and for the trust you place in us! We take our role as your consultant and trusted advisor seriously and will continue working hard to maintain your confidence.

Looking back at the year, we would like to provide a brief update on where we stand as a firm. 2022 marked the 22nd straight year of revenue growth for the firm and we advise on approximately \$90 billion in client assets as of December 31st. We reinvested 100% of our net profits back into the organization so we can continue to evolve and adapt within a market environment that is constantly changing and challenging. As we have stated in previous updates, we do not believe the "status quo" is an effective strategy and we are convicted in our belief that a firm not focused on moving forward in our industry is moving backward.

To execute on our commitment to evolve and continue to enhance the organization, we made additional personnel and technology investments in 2022. Specifically, we hired a Chief Information Officer (Bharat Kumta) after a national search led by a specialized executive recruiting firm. We believe technology is going to drive successful firms in our industry and we plan to invest heavily within this business function to support digital transformation. We also integrated a new Chief Human Resources Officer (Stacie Runion) through a national search led by an executive recruiter. We believe our firm's most important asset is our people, so we need to ensure we have the right leadership team in HR to focus on that asset. We also hired team members in Finance, Human Resources, Consulting, Research, Solutions & Growth, Technology and Performance & Reporting. These personnel investments focused on further enhancing functional areas, departmental service levels, and narrowing potential gaps. We also continued to invest in our proprietary software system to compile and share information firmwide to better serve our clients more effectively and efficiently. Finally, we engaged several outside consulting firms to help us better assess and invest in areas within our firm we believe will drive value for our clients going forward. Some examples include working with an outside group to evaluate and enhance our Operational Due Diligence efforts with investment managers and a separate group to help us review and analyze our current Discretionary Services offerings and how to make this service stronger for our clients.

As we start 2023, we are 93 team members strong with plans to grow. We are targeting several new positions for the year as we thoughtfully continue to invest in our firm to provide the quality services you expect from AndCo. These talent enhancements cover multiple functions and departments at AndCo including Consulting, Research, Performance & Reporting, Marketing, Technology and Compliance. While adding additional resources to a firm our size is a significant investment, it is one we embrace due to the impact we believe it will have on our ability to continue serving our clients at a high level and will push us closer to our vision of being a transformational organization viewed as the leader in our industry. We thoughtfully grow while helping to ensure that service will not suffer at AndCo at the expense of growth. Rather, we utilize growth to enhance our value proposition and overall service to our valued clients.

At the beginning of each year, we also discuss the AndCo partnership and, when earned, announce new partners.

This year I am thrilled to share three new team members were named partners at AndCo – Jon Breth, Tyler Grumbles and Brooke Wilson. Jon has been with AndCo for 11-years and Tyler has been with AndCo for 15-years. Jon and Tyler are both members of our Consulting Department. Brooke was recently promoted to Executive Director of our Performance & Reporting Department and has been with AndCo 7-years. We could not be happier for Jon, Tyler, and Brooke or more grateful for the contributions they have made to AndCo since joining the firm. Jon, Tyler, and Brooke represent what it means to be an AndCo team member, and we are honored and fortunate to have them as partners at our firm.

While three new members will be added to the partnership in 2023, we will also be losing one valuable team member. Donna Sullivan retired on December 31, 2022. Donna joined AndCo at its inception in September of 2000. Donna has been integral in the success of the firm and for many years was the glue that held everything together. Her contributions and sacrifices are too many to reference in this letter. While we are extraordinarily excited for her and the next chapter of her life, she will be greatly missed as a partner and team member. We will be honoring Donna and her legacy with the Donna Sullivan Believe Award. This award will be given each year to the team member at AndCo that best demonstrates their belief in AndCo's Mission, Vision, and Values. Donna believed in what AndCo stood for before anyone else did, and she carried that belief for 23 years. Thank you, Donna!

With the addition of Jon, Tyler, and Brooke, and Donna's retirement, we now have 15 partners representing various functions and departments at AndCo. Our growing partnership group provides great perspective and insight which continues to strengthen AndCo and reaffirm our belief that 100% employee management is vital to the long-term success of our organization. We have great team members at AndCo and this partnership group will continue to expand as we move forward.

In closing, we know that 2022 was a dramatically different environment for investing as compared to 2021, with record high inflation and double-digit losses in both equity AND fixed income assets - all resulting in challenging client portfolio results. Please know our team works tirelessly to provide the advice and guidance you need regardless of the market environment. Our name, AndCo, reminds us of who we work for every day - "Our Client" & Co. You are first in our service model. As we continue to discuss strategic decisions and reinvestments regarding our firm, please know that our decisions are filtered through the following question: "How does this keep our clients' interests first?" If it doesn't meet this standard, we don't do it - it's that simple.

Thank you again for your valued partnership and the opportunity to serve you.
Happy New Year!



Mike Welker, CFA®
CEO


Organizational Chart



PARTNERSHIP

Mike Welker, CFA® Jason Purdy
Brian Green Jon Breth, CFP®
Brooke Wilson, CIPM® **Kerry Richardville, CFA®**
Bryan Bakardjiev, CFA® Kim Spurlin, CPA
Dan Johnson Steve Gordon
Dan Osika, CFA® Troy Brown, CFA®
Evan Scussel, CFA®, CAIA® Tyler Grumbles, CFA®, CIPM®, CAIA®
Jacob Peacock, CPFA

LEADERSHIP & MANAGEMENT

Mike Welker, CFA® **CEO**
Bharat Kumta CIO
Bryan Bakardjiev, CFA® COO
Evan Scussel, CFA®, CAIA® Executive Director of Research
Kim Spurlin, CPA CFO
Sara Searle CCO
Stacie Runion CHRO
Steve Gordon Solutions & Growth Director
Troy Brown, CFA® Executive Director of Consulting
Molly Halcom Solutions & Growth Director
Philip Schmitt Research Director
Rachel Brignoni, MHR People & Culture Director

INVESTMENT POLICY COMMITTEE

Bryan Bakardjiev, CFA® **Sara Searle**
Mike Welker, CFA® **Troy Brown, CFA®**



93
EMPLOYEES

37 ADVANCED
DEGREES

23 CFA®

8 CAIA®

11 CPFA **5** CIPM®

CONSULTING

Annette Bidart **James Ross** **Mary Nye**
Brad Hess, CFA®, CPFA **Jeff Kuchta, CFA®, CPFA** **Michael Fleiner**
Brendon Vavrica, CFP® **Jennifer Brozstek** **Michael Holycross**
Brian Green **Jennifer Gainfort, CFA®, CPFA** **Mike Bostler**
Chris Kuhn, CFA®, CAIA® **John Mellinger** **Oleg Sydak, CFA®, FSA, EA**
Christiaan Brokaw, CFA® **John Thinnes, CFA®, CAIA®, CPFA** **Paul Murray, CPFA**
Dave West, CFA® **Jon Breth, CFP®** **Peter Brown**
Doug Anderson, CPFA **Jorge Friguls, CPFA** **Tim Walters**
Frank Burnette **Justin Lauver, Esq.** **Tony Kay**
Gwelda Swilley **Kerry Richardville, CFA®** **Tyler Grumbles, CFA®, CIPM®, CAIA®**
Ian Jones

PERFORMANCE REPORTING

Albert Sauerland **Edward Cha** **Julio Garcia Rengifo**
Amy Steele **Grace Niebrzydowski** **Kim Hummel**
Bob Bulas **James Culpepper** **Rotchild Dorson**
David Gough, CPFA **James Reno** **Yoon Lee-Choi**
Don Delaney **Jeff Pruniski**
Donnell Lehrer, CPFA **Joe Carter, CPFA**

OPERATIONS

FINANCE	I.T. & OPERATIONS	MARKETING
Kahjeelia Pope	Geoffrey Granger	Lauren Kaufmann
Michelle Boff	Jerry Camel	SOLUTIONS & GROWTH
Robert Marquetti	Kenneth Day	Dan Osika, CFA®
HUMAN RESOURCES	COMPLIANCE	John Rodak, CIPM®
Kelly Pearce	Allen Caldwell	Paola Gervasi
Shelley Berthold	Thay Arroyo	

RESEARCH

Andrew Mulhall Public Equity & Fixed Income
Ben Baldridge, CFA®, CAIA® Private & Hedged Fixed Income
Chester Wyche Real Estate & Real Assets
Dan Lomelino, CFA® Fixed Income
David Julier Real Estate & Real Assets
Elizabeth Wolfe Capital Markets & Asset Allocation
Evan Scussel, CFA®, CAIA® Private & Public Equity
Joseph Ivaszuk Operational Due Diligence
Josue Christiansen, CFA®, CIPM® Public Equity
Julie Baker, CFA®, CAIA® Private & Hedged Equity
Justin Ellsesser, CFA®, CAIA® Private Equity
Kevin Laake, CFA®, CAIA® Private Equity
Michael Kosoff Hedge Funds
Philip Schmitt Fixed Income & Capital Markets
Ryan McCuskey Real Estate & Real Assets
Xinxin Liu, CFA®, FRM Private Equity and Private Debt
Zac Chichinski, CFA®, CIPM® Public Equity

Employee counts are as of 1/1/2023 and reflect only full time employees and do not include any who are part time, temporary or independent contractors.



4th Quarter 2022 Market Environment

The Economy

- US GDP growth is expected to remain strong in the 4th quarter. While the final measure of 3rd quarter GDP was revised upward to 3.2%, global GDP growth remains challenged with higher energy prices continuing to act as a headwind, especially in Europe. However, China is beginning the process of reopening its economy which should boost emerging markets.
- The US Federal Reserve Bank (the Fed) continued to increase interest rates during the quarter with a 0.75% increase in November and a 0.50% increase in December. Importantly, the Fed signaled it remains committed to fighting inflation through additional rate hikes if needed.
- The US labor market continued to show its resiliency by adding roughly 680 thousand jobs during the 4th quarter. As a result, the unemployment rate fell to 3.5% in December. Despite these gains, the number announced layoffs during the quarter increased, which could impact labor markets in the future periods.
- Global markets were broadly positive during the 4th quarter. Despite persistent inflation, tighter central bank monetary policy, slowing GDP growth, and continuing geopolitical risks investors were focused on the potential of central banks slowing the pace of tightening as inflation moderated.

Equity (Domestic and International)

- US equities moved higher during the 4th quarter despite concerns regarding inflation, the potential for higher interest rates, and a slowing global GDP growth. Large cap value was the best performing domestic segment of the equity market relative to other US market capitalizations and styles during the period while large cap growth performed the worst.
- International stocks also experienced strong returns during the 4th quarter. While local currency performance was solid, the primary catalyst for outsized returns was a weakening USD, which fell against most major and emerging market currencies. GDP growth, especially in Europe, remained under pressure as central bank policies remained restrictive and elevated energy prices acted as a headwind. Finally, China began to relax its zero-tolerance policy regarding Covid-19, which positively contributed to both global GDP growth and equity market performance.

Fixed Income

- While inflation declined during the 4th quarter, the Fed continued increasing interest rates with two increases totaling 1.25%. Despite the short-term increases, long-term interest rates remained relatively stable during the period. US interest rates moved slightly higher during the quarter with the US 10-Year Treasury bond rising 0.08% to close the year at a yield of 3.88%.
- Performance across domestic bond market sectors was positive during the quarter, led by US high yield and corporate investment grade bonds. Much like equities, global bonds outperformed their domestic peers mainly due to a weaker USD.
- The combination of higher coupons, a shorter maturity profile relative to high quality government bonds, and narrower credit spreads were the primary drivers of relative return during the period.
- US Treasury bonds lagged their corporate bond peers during the quarter as investors' concerns about rising interest rates and the need for safety subsided.

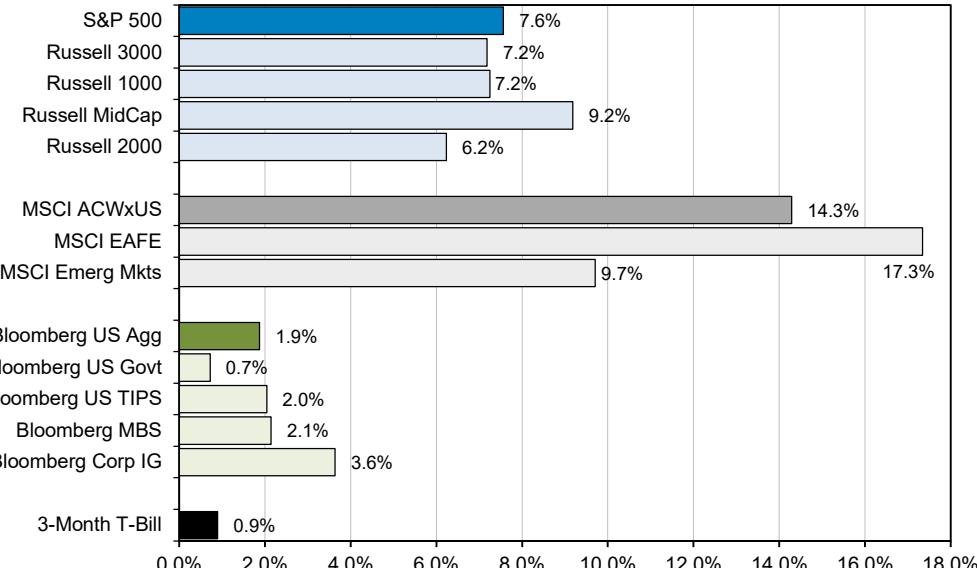
Market Themes

- Central banks remained vigilant in their fight against inflation with the Fed, the Bank of England, and the European Central Bank all raising interest rates during the quarter. Additionally, the Bank of Japan relaxed their targeting of interest rates, allowing the 10-Year Japanese Government Bond to float to 0.50%, above the previous 0.25% level.
- The conflict in Ukraine continues to disrupt global energy markets, in addition to the ongoing humanitarian crisis. Energy costs remain elevated which could further negatively impact economic growth.
- Both US and international equity markets rebounded during the quarter on expectations that inflation would continue to moderate, which could lead central banks to begin the process of slowing the pace of monetary tightening. Value-oriented stocks outperformed growth stocks as investors remained concerned about the pace of future growth.
- Short-term interest rates rose across most developed markets as central banks continued to tighten. Despite concerns about the potential for slowing economic growth, lower quality corporate bonds outperformed higher quality government bonds and USD weakness acted as a tailwind for global bonds during the quarter.

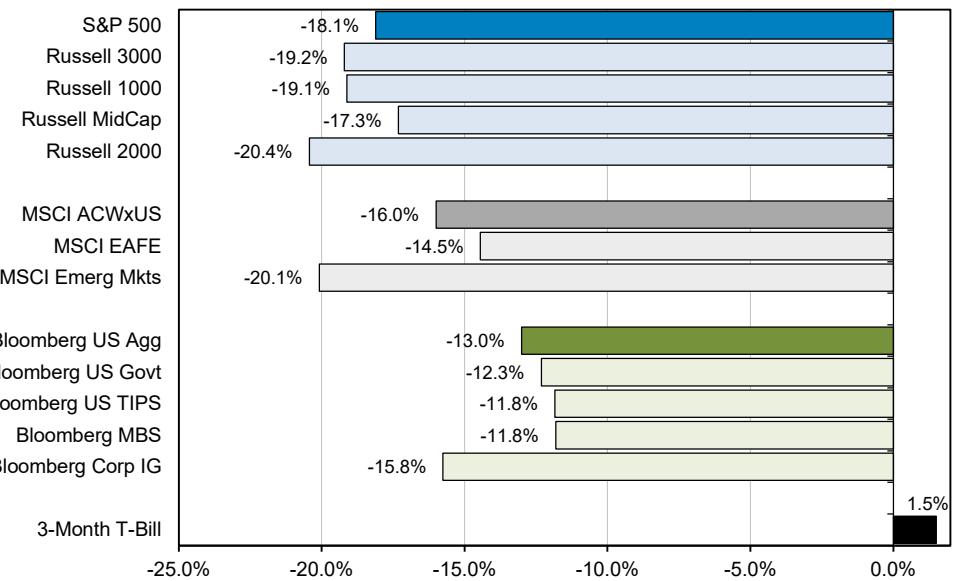
- Equity markets moved higher during the 4th quarter, but it was not sufficient to offset prior quarter pullbacks. Factors that contributed to performance included declining inflation, expectations that the Fed would slow the pace of future interest rate increases, and expectations that China would begin to open its economy. For the period, the S&P 500 large cap benchmark returned 7.6%, compared to 9.2% for mid-cap and 6.2% for small cap benchmarks.
- Like domestic equities, developed markets international and emerging market equities delivered positive results for the 4th quarter. Europe continues to face headwinds from higher-than-expected inflation, elevated energy prices, geopolitical risks related to the conflict in Ukraine, and rising interest rates. Emerging markets were positively impacted by China's decision to loosen restrictions related to the pandemic. Importantly, global equities were positively impacted by a decline in the USD. For the quarter, the MSCI EAFE Index returned 17.3% while the MSCI Emerging Markets Index rose by 9.7%.
- For the quarter, performance of the bond market was broadly positive due to lower inflation and lower interest rate volatility. The Bloomberg (BB) US Aggregate Index returned 1.9%, for the period while investment grade corporate bonds posted a return of 3.6%.

- Performance for developed equity markets was strongly negative over the trailing 1-year period. The bellwether S&P 500 Index dropped -18.1% for the year. The primary drivers of return during the period were concerns related to rising inflation, tighter monetary policy from global central banks, and slowing global economic growth. The weakest relative performance outlier was the Russell 2000 Index which declined by -20.4% for the year.
- Over the trailing 1-year period, international markets declined similarly to domestic markets. The MSCI EAFE Index returned -14.5% while the MSCI Emerging Markets Index fell by -20.1%. Continued concerns related to Ukraine, elevated inflation, and slowing global economic growth negatively impacted markets. However, a weakening USD acted as a tailwind to international performance in the second half of the year.
- Bond market returns were widely negative over the trailing 1-year period due primarily to concerns about persistently high inflation and the expectation of higher future interest rates. US TIPS and mortgage-backed bonds were the least negative sectors with both returning -11.6% for the year. Investment grade corporate bonds suffered the year's largest loss, falling -15.8%.

Quarter Performance



1-Year Performance



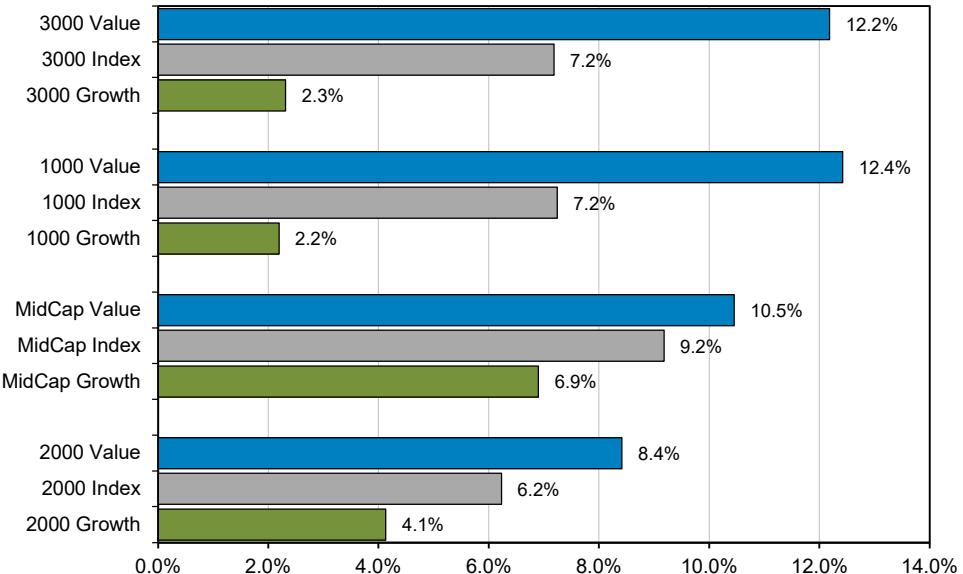
Source: Investment Metrics

- Despite a pullback in December, equity markets broadly experienced strong absolute returns during the 4th quarter across both the style and market capitalization spectrums. With concerns about the potential for slowing economic conditions, large cap stocks resumed their leadership, followed by mid and small cap stocks. The Russell 1000 Value Index delivered 12.4% for the quarter, followed by while the Russell Mid Cap Value Index and the Russell 2000 Index, which rose by 10.5% and 8.4%, respectively.
- Performance across styles and market capitalizations was disparate during the quarter. Large, mid, and small cap value stocks all outperformed their growth counterparts. For the period, the Russell 1000 Value Index was the best relative performing style index, posting a return of 12.4%. Large and small cap growth stocks were the laggards during the period with the Russell Large Cap Growth Index and Russell 2000 Growth Index returning 2.2% and 4.1%, respectfully.

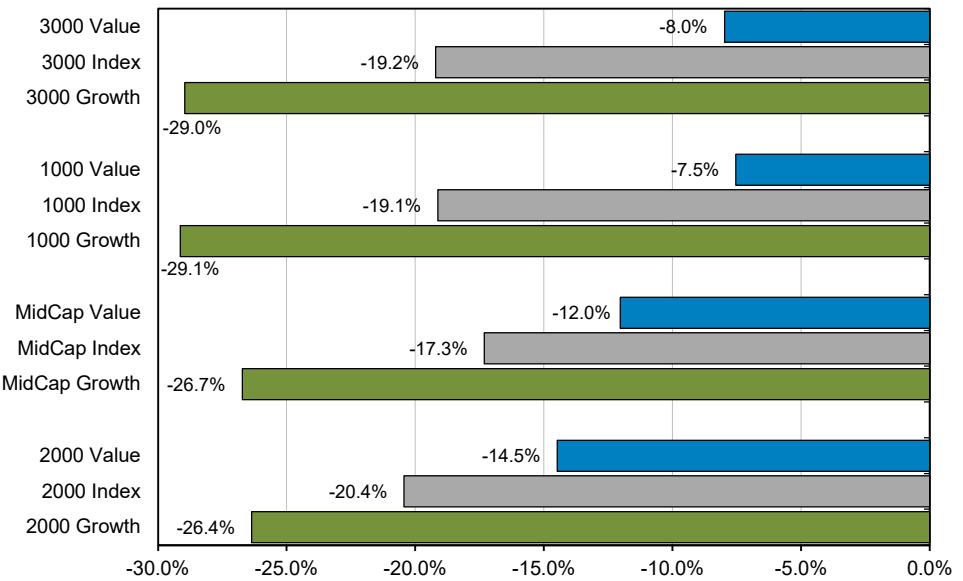
- In contrast to the 4th quarter's positive performance, there was a wide range of negative results across market capitalizations over the trailing 1-year period. The Russell 2000 Index returned a disappointing -20.4% for the year, which underperformed both its large and mid cap index counterparts.
- There was also a wide performance dispersion across the style-based indexes for the year with growth stocks down significantly more than their value counterparts at all capitalization ranges. Within large cap stocks, the Russell 1000 Value Index returned -7.5% compared to much larger -29.1% decline for the Russell Large Cap Growth benchmark. The Russell Mid Cap Value Index returned -12.0% while the Russell 2000 Value Index returned -14.5% for the period. While these value benchmark results represented double-digit losses for the year, the Russell Mid Cap Growth Index fell a much larger -26.7% and the Russell 2000 Growth Index declined by a similar -26.4%.

Source: Investment Metrics

Quarter Performance - Russell Style Series

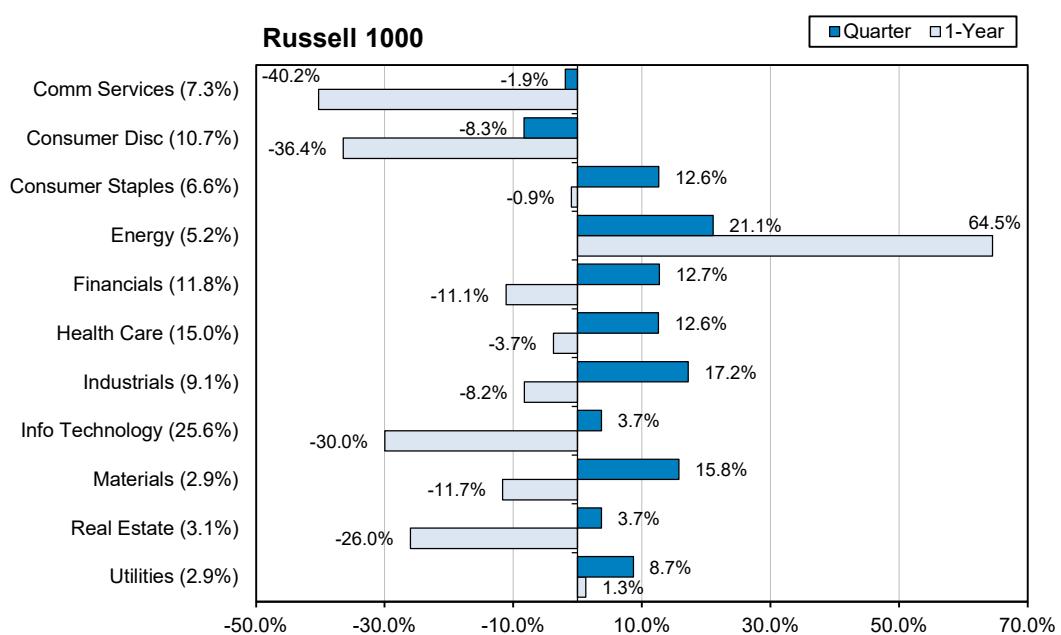


1-Year Performance - Russell Style Series

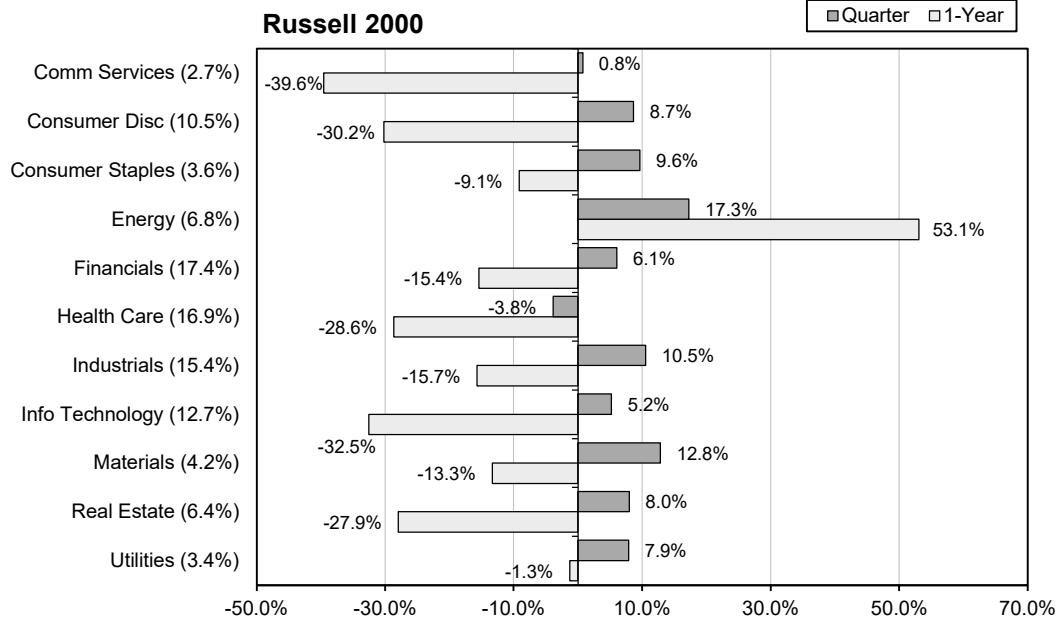


The Market Environment
GICS Sector Performance & (Sector Weight)
As of December 31, 2022

- Economic sector performance was positive for nine of the eleven large cap economic sectors for the 4th quarter. Seven sectors outpaced the return of the broad index on a relative basis during the period.
- Energy continued its strong 2022 performance with a 4th quarter return of 21.1%. Other sectors that outpaced the headline index's return for the quarter included industrials (17.2%), materials (15.8%), financials (12.7%), healthcare (12.6%), consumer staples (12.6%), and utilities (8.7%). The real estate (3.7%), information technology (3.7%), communication services (-1.9%), and consumer discretionary (-8.3%) sectors all trailed the Russell 1000 Index return for the period.
- For the full year, seven economic sectors exceeded the return of the broad large cap benchmark but only the energy (64.5%) and utilities (1.3%) sectors managed to post positive, albeit vastly different, results. The weakest economic sector performance in the Russell 1000 for the year was communication services which declined by a staggering -40.2%.



- Ten small cap economic sectors posted positive returns during the quarter and seven exceeded the 6.2% return of the broader Russell 2000 Index. The energy (17.3%), materials (12.8%), and industrials (10.5%) sectors each posted double-digit positive results for the quarter. The only small cap economic sector that posted negative performance for the quarter was health care which fell by -3.8%.
- For the trailing 1-year period, six of the eleven economic sectors were down less than the broad small cap benchmark's return of -20.4%. Energy was the best performing and only positive economic sector for the year with a strong return of 53.1%. The utilities (-1.3%) and consumer staples (-9.1%) sectors were only small cap index segments to fall less than double-digit amounts for the year. The worst performing sector for the full year was communication services with a return of -39.6%. In addition, the information technology (-32.5%), consumer discretionary (-30.2%), health care (28.6%), and real estate (-27.9%) sectors all were down significantly for the year.



Source: Morningstar Direct

The Market Environment
Top 10 Index Weights & Quarterly Performance for the Russell 1000 & 2000
As of December 31, 2022

Top 10 Weighted Stocks				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Apple Inc	5.5%	-5.8%	-26.4%	Information Technology
Microsoft Corp	5.1%	3.3%	-28.0%	Information Technology
Amazon.com Inc	2.1%	-25.7%	-49.6%	Consumer Discretionary
Berkshire Hathaway Inc Class B	1.6%	15.7%	3.3%	Financials
Alphabet Inc Class A	1.5%	-7.8%	-39.1%	Communication Services
UnitedHealth Group Inc	1.4%	5.3%	7.0%	Health Care
Alphabet Inc Class C	1.3%	-7.7%	-38.7%	Communication Services
Johnson & Johnson	1.3%	8.8%	6.0%	Health Care
Exxon Mobil Corp	1.3%	27.4%	87.4%	Energy
JPMorgan Chase & Co	1.1%	29.5%	-12.6%	Financials

Top 10 Weighted Stocks				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Halozyme Therapeutics Inc	0.3%	43.9%	41.5%	Health Care
ShockWave Medical Inc	0.3%	-26.1%	15.3%	Health Care
Inspire Medical Systems Inc	0.3%	42.0%	9.5%	Health Care
EMCOR Group Inc	0.3%	28.4%	16.8%	Industrials
Crocs Inc	0.3%	57.9%	-15.4%	Consumer Discretionary
Matador Resources Co	0.3%	17.2%	55.9%	Energy
Iridium Communications Inc	0.3%	15.8%	24.5%	Communication Services
Murphy Oil Corp	0.3%	22.9%	68.3%	Energy
Agree Realty Corp	0.3%	6.0%	3.5%	Real Estate
Texas Roadhouse Inc	0.3%	4.7%	4.1%	Consumer Discretionary

Top 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Horizon Therapeutics PLC	0.1%	83.9%	5.6%	Health Care
Burlington Stores Inc	0.0%	81.2%	-30.4%	Consumer Discretionary
Halliburton Co	0.1%	60.4%	74.5%	Energy
Universal Health Services Inc Class B	0.0%	60.0%	9.4%	Health Care
PVH Corp	0.0%	57.7%	-33.7%	Consumer Discretionary
Spectrum Brands Holdings Inc	0.0%	57.4%	-38.6%	Consumer Staples
Boeing Co	0.3%	57.3%	-5.4%	Industrials
Under Armour Inc A	0.0%	52.8%	-52.1%	Consumer Discretionary
Exact Sciences Corp	0.0%	52.4%	-36.4%	Health Care
Moderna Inc	0.2%	51.9%	-29.3%	Health Care

Top 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Madrigal Pharmaceuticals Inc	0.2%	346.6%	242.5%	Health Care
Immunovant Inc	0.0%	218.1%	108.3%	Health Care
Rayonier Advanced Materials Inc	0.0%	204.8%	68.1%	Materials
Maxar Technologies Inc	0.2%	176.5%	75.5%	Industrials
4D Molecular Therapeutics Inc	0.0%	176.2%	1.2%	Health Care
Icosavax Inc	0.0%	151.3%	-65.3%	Health Care
Imago BioSciences Inc	0.0%	138.9%	51.6%	Health Care
Provention Bio Inc	0.0%	134.9%	88.1%	Health Care
Biohaven Ltd	0.0%	120.3%	N/A	Health Care
Oceaneering International Inc	0.1%	119.7%	54.6%	Energy

Bottom 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Carvana Co Class A	0.0%	-76.7%	-98.0%	Consumer Discretionary
Opendoor Technologies Inc Class A	0.0%	-62.7%	-92.1%	Real Estate
Tesla Inc	0.9%	-53.6%	-65.0%	Consumer Discretionary
Lucid Group Inc Shs	0.0%	-51.1%	-82.1%	Consumer Discretionary
Guardant Health Inc	0.0%	-49.5%	-72.8%	Health Care
Affirm Holdings Inc - Class A	0.0%	-48.5%	-90.4%	Information Technology
WeWork Inc	0.0%	-46.0%	-83.4%	Real Estate
AppLovin Corp - Class A	0.0%	-46.0%	-88.8%	Information Technology
Ginkgo Bioworks Holdings Inc	0.0%	-45.8%	-79.7%	Materials
Olaplex Holdings Inc	0.0%	-45.5%	-82.1%	Consumer Staples

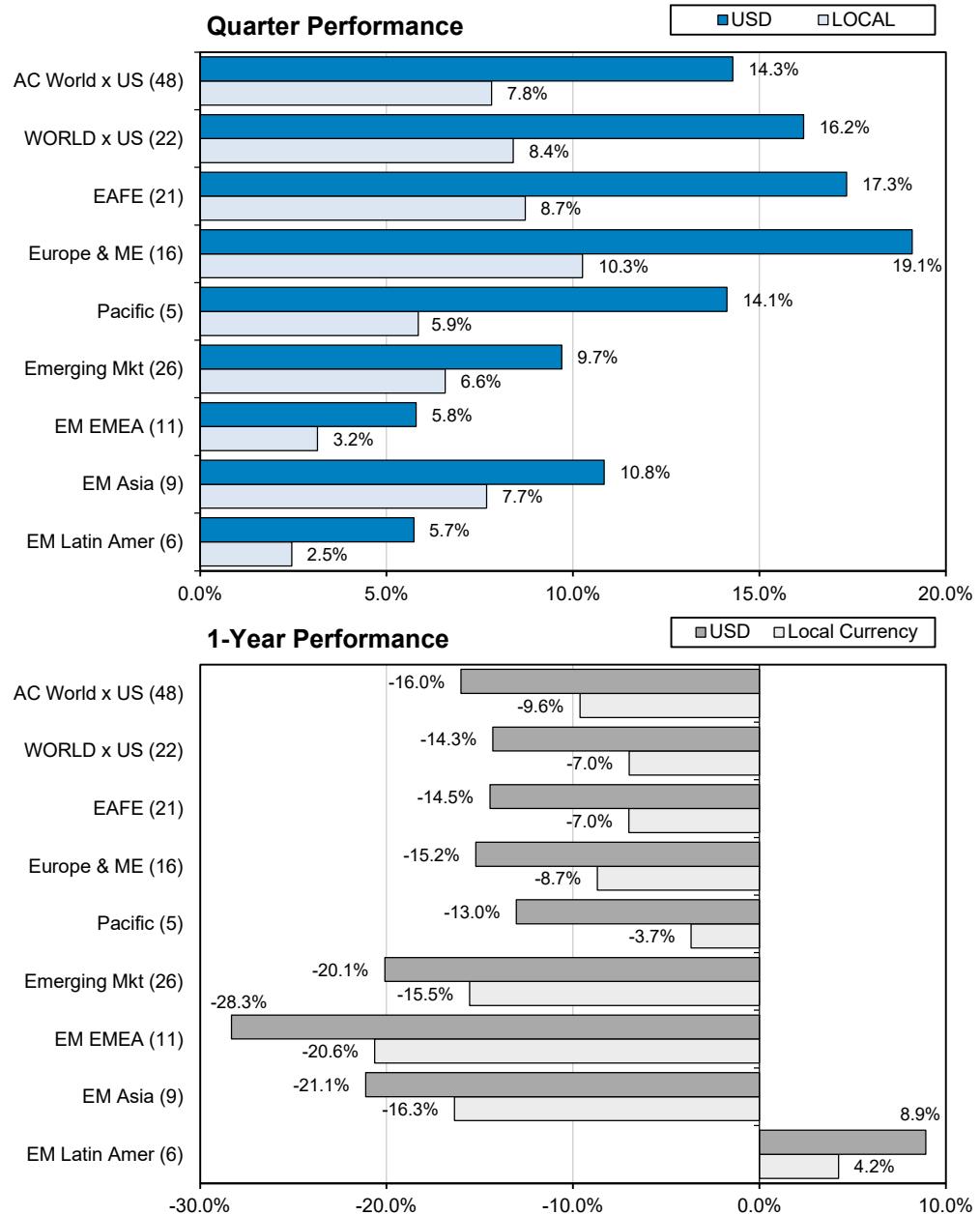
Bottom 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Tricida Inc	0.0%	-98.5%	-98.4%	Health Care
Relmada Therapeutics Inc	0.0%	-90.6%	-84.5%	Health Care
Avaya Holdings Corp	0.0%	-87.7%	-99.0%	Information Technology
Instil Bio Inc	0.0%	-87.0%	-96.3%	Health Care
Greenidge Generation Holdings Inc.	0.0%	-85.5%	-98.2%	Information Technology
Eiger BioPharmaceuticals Inc	0.0%	-84.3%	-77.3%	Health Care
Cano Health Inc - Class A	0.0%	-84.2%	-84.6%	Health Care
Gossamer Bio Inc	0.0%	-81.9%	-80.8%	Health Care
Rockley Photonics Holdings Ltd	0.0%	-80.3%	-96.8%	Information Technology
Boxed Inc	0.0%	-78.9%	-98.6%	Consumer Discretionary

Source: Morningstar Direct



The Market Environment
International and Regional Market Index Performance (Country Count)
As of December 31, 2022

- Each of the developed and emerging market international equity indexes tracked in the chart posted positive returns in both US dollar (USD) and local currency (LC) terms for the 4th quarter. A weaker USD acted as a tailwind for non-US index performance during the quarter. Higher energy prices and the reopening of China also drove performance, especially in emerging markets. The developed market MSCI EAFE Index returned a strong 17.3% in USD and 8.7% in LC terms for the period, and the MSCI Emerging Markets Index rose by 9.7% in USD and 6.6% in LC terms.



Source: MSCI Global Index Monitor (Returns are Net)

The Market Environment
US Dollar International Index Attribution & Country Detail
As of December 31, 2022

MSCI - EAFE	Sector Weight	Quarter Return	1-Year Return
Communication Services	7.8%	10.1%	-16.8%
Consumer Discretionary	5.0%	17.8%	-22.4%
Consumer Staples	18.7%	10.6%	-13.0%
Energy	4.5%	19.8%	27.7%
Financials	15.1%	23.9%	-4.6%
Health Care	13.6%	14.2%	-11.0%
Industrials	10.5%	19.0%	-20.6%
Information Technology	7.8%	14.9%	-32.4%
Materials	11.1%	20.7%	-10.3%
Real Estate	3.5%	11.0%	-20.9%
Utilities	2.6%	19.4%	-12.4%
Total	100.0%	17.3%	-14.5%

MSCI - ACWIxUS	Sector Weight	Quarter Return	1-Year Return
Communication Services	8.4%	12.0%	-21.6%
Consumer Discretionary	6.0%	14.7%	-21.7%
Consumer Staples	21.0%	9.8%	-11.9%
Energy	5.9%	13.3%	8.1%
Financials	12.3%	15.6%	-7.3%
Health Care	9.8%	14.1%	-12.9%
Industrials	8.9%	17.3%	-18.4%
Information Technology	10.8%	13.5%	-34.5%
Materials	11.4%	16.6%	-11.2%
Real Estate	3.4%	10.4%	-20.6%
Utilities	2.3%	13.0%	-11.1%
Total	100.0%	14.3%	-16.0%

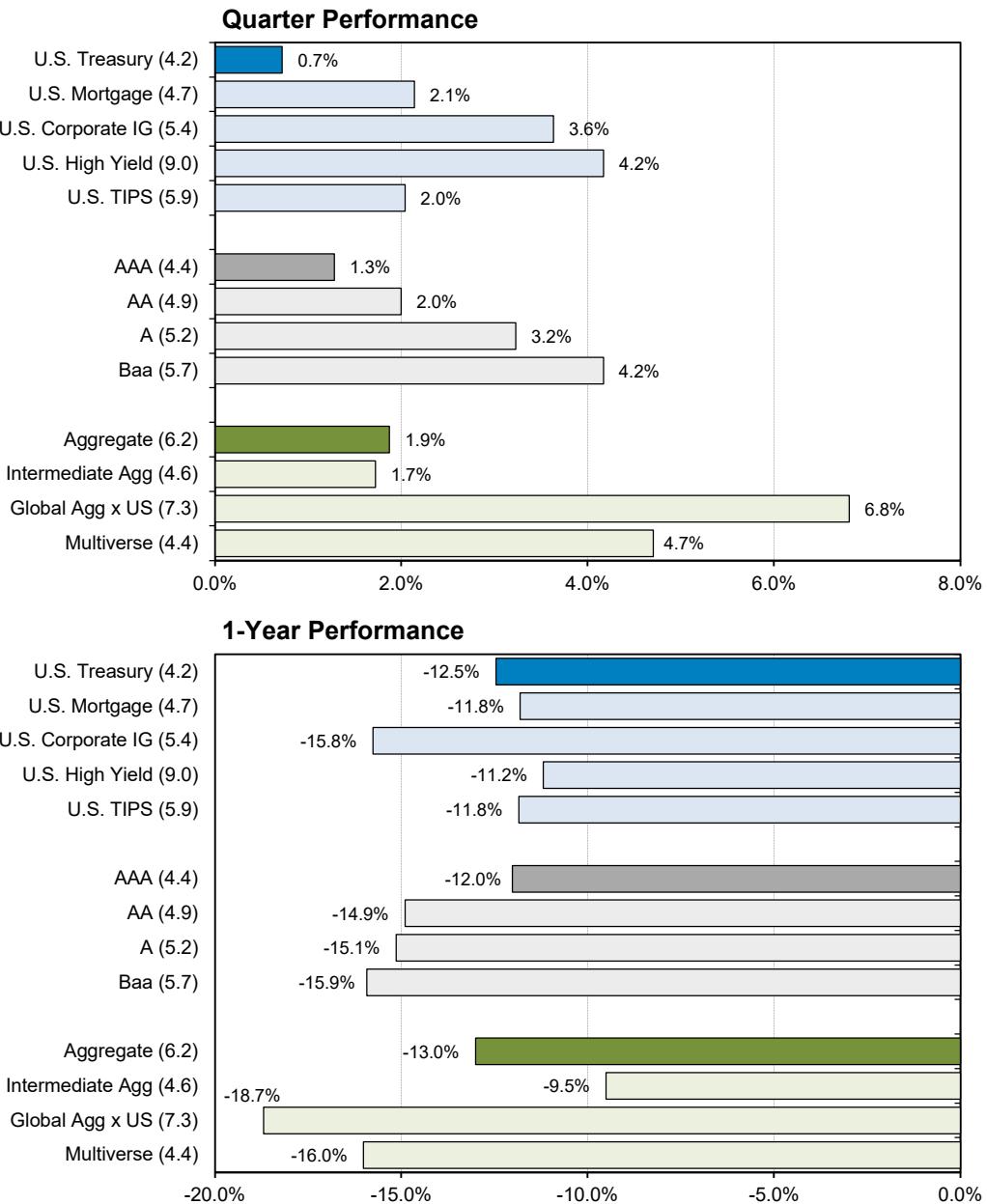
MSCI - Emerging Mkt	Sector Weight	Quarter Return	1-Year Return
Communication Services	8.9%	58.8%	1.8%
Consumer Discretionary	4.9%	46.2%	5.6%
Consumer Staples	22.1%	77.4%	48.9%
Energy	9.9%	92.9%	40.2%
Financials	6.1%	44.6%	24.5%
Health Care	4.1%	53.5%	3.8%
Industrials	6.4%	49.7%	18.8%
Information Technology	18.6%	9.8%	-34.7%
Materials	14.1%	45.6%	10.6%
Real Estate	3.0%	13.8%	-15.4%
Utilities	1.9%	38.8%	26.8%
Total	100.0%	9.7%	-20.1%

Country	MSCI-EAFE Weight	MSCI-ACWIxUS Weight	Quarter Return	1- Year Return
Japan	21.9%	14.0%	13.2%	-16.6%
United Kingdom	15.3%	9.8%	17.0%	-4.8%
France	11.8%	7.6%	22.2%	-13.3%
Switzerland	10.1%	6.5%	10.4%	-18.3%
Australia	7.9%	5.1%	15.7%	-5.3%
Germany	8.2%	5.2%	24.6%	-22.3%
Netherlands	4.3%	2.7%	21.0%	-27.7%
Sweden	3.3%	2.1%	18.1%	-28.4%
Hong Kong	3.0%	1.9%	18.2%	-4.7%
Denmark	3.0%	1.9%	31.6%	-4.8%
Spain	2.4%	1.5%	22.9%	-7.3%
Italy	2.3%	1.5%	26.4%	-14.4%
Singapore	1.5%	1.0%	10.5%	-11.0%
Belgium	1.0%	0.7%	22.6%	-12.5%
Finland	1.0%	0.7%	16.3%	-15.3%
Norway	0.8%	0.5%	16.9%	-7.0%
Israel	0.7%	0.5%	0.4%	-26.7%
Ireland	0.7%	0.4%	21.5%	-26.2%
Portugal	0.2%	0.1%	17.2%	0.2%
Austria	0.2%	0.1%	31.1%	-26.4%
New Zealand	0.2%	0.1%	24.5%	-13.6%
Total EAFE Countries	100.0%	63.9%	17.3%	-14.5%
Canada			7.7%	7.4%
Total Developed Countries	71.6%	16.2%		-14.3%
China			9.2%	13.5%
Taiwan			3.9%	9.6%
India			4.1%	2.0%
Korea			3.2%	18.1%
Brazil			1.5%	2.4%
Saudi Arabia			1.2%	-7.4%
South Africa			1.0%	18.3%
Mexico			0.6%	12.5%
Thailand			0.6%	16.1%
Indonesia			0.5%	-3.6%
Malaysia			0.4%	14.0%
United Arab Emirates			0.4%	-1.5%
Qatar			0.3%	-15.3%
Kuwait			0.3%	5.7%
Philippines			0.2%	21.1%
Poland			0.2%	47.7%
Chile			0.2%	6.2%
Turkey			0.2%	62.9%
Peru			0.1%	17.4%
Greece			0.1%	29.1%
Colombia			0.0%	19.7%
Czech Republic			0.0%	6.5%
Hungary			0.1%	36.3%
Egypt			0.0%	28.5%
Total Emerging Countries	28.4%	9.7%		-20.1%
Total ACWIxUS Countries		100.0%	14.3%	-16.0%

Source: Morningstar Direct, MSCI Global Index Monitor (Returns are Net in USD)

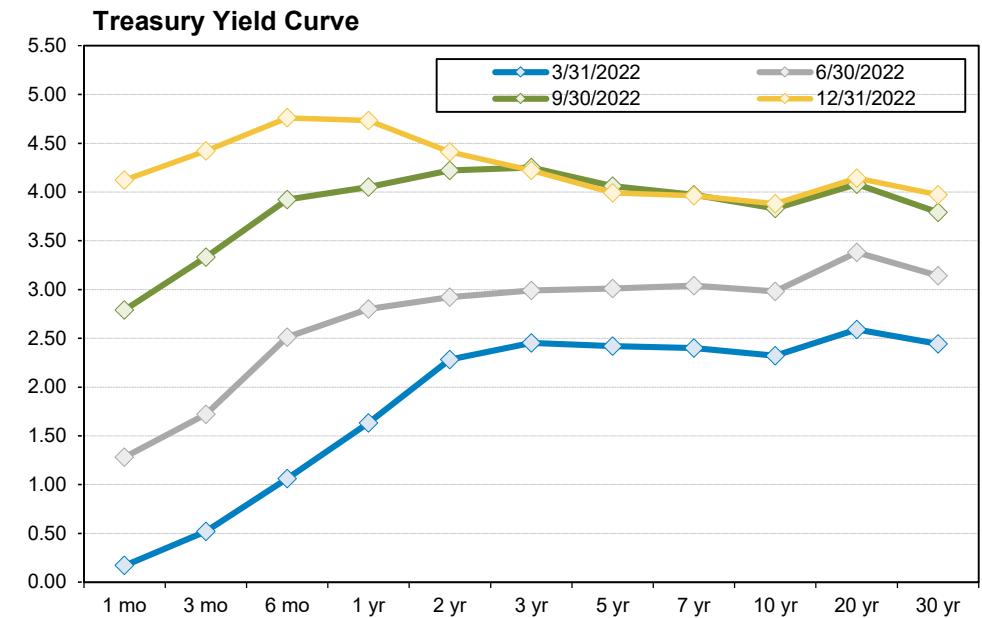
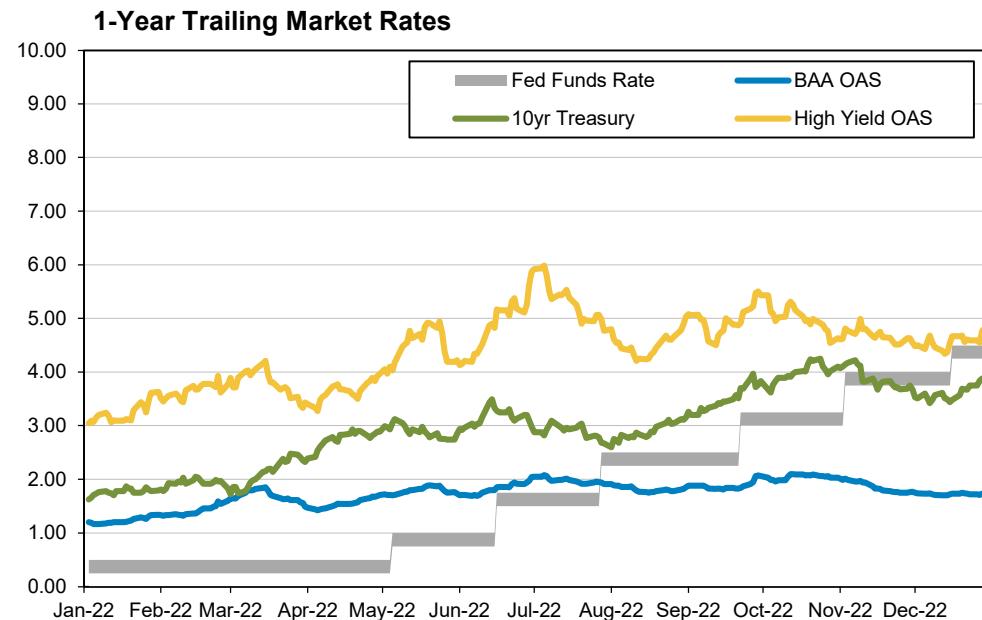


- After an extremely challenging year in fixed income markets, the 4th quarter's positive bond benchmark results were a welcome relief. Despite two rate increases during the quarter, bond performance was aided by lower investor concerns about rising inflation as US CPI declined. This was reflected in both intermediate and long-term interest rates which remained relatively stable during the quarter.
- The return for the BB US Aggregate Bond Index, the bellwether US investment grade benchmark, rose by 1.9% for the period.
- Performance across the investment grade index's segments was also positive during the period with the US Corporate Investment Grade Index returning 3.6% and the US Mortgage Index component posting a return of 2.1%.
- High yield bonds outperformed their investment grade counterparts, surging 4.2% during the quarter. US TIPS, which have delivered strong performance in recent periods, rose by 2.0% as investors' expectations of future inflation declined.
- Outside of domestic markets, the Bloomberg Global Aggregate ex US Index posted a strong return of 6.8% for the quarter. Like domestic bonds, global bond index performance was positively impacted declining inflation, but the benchmark also received a boost from the decline in the USD for the quarter.
- Over the trailing 1-year period, the bellwether BB US Aggregate Bond Index declined by -13.0% and each of the benchmark's components fell by more than -10%. US TIPS, which are excluded from the bellwether index, dropped by -11.8% for the year.
- Lower quality high yield corporate bonds were down less than their investment grade counterparts on a relative basis with the Bloomberg US High Yield Index posting still discouraging return of -11.2% for the period.
- Performance for non-US bonds was also strongly negative for the year with the developed market Bloomberg Global Aggregate ex US Index falling by -18.7%. The combination of rising interest rates overseas, elevated inflation, geopolitical risks, and USD strength earlier in the year hindered non-US index performance.



Source: Bloomberg

- The gray band across the graph illustrates the range of the current Fed Funds Rate. In the 4th quarter this year, the Fed raised the lower end of its target rate range from 3.00% to 4.25% through a 0.75% increase in November and a 0.50% increase in December. During its December meeting, the Federal Open Market Committee (FOMC) stated it intends to monitor economic growth closely and will continue to raise interest rates to fight inflation if needed. The FOMC also stated that it would continue its policy of removing liquidity from the market by allowing bonds held on its balance sheet to mature without reinvesting those proceeds.
- The yield on the US 10-year Treasury (green line) ended the period slightly higher as concerns over the pace of inflation, combined with the Fed's announced rate increase, drove yields. The closing yield on the 10-Year Treasury was 3.88% at year-end, an increase of 0.08% from its 3rd quarter closing yield. The benchmark's rate peaked in October, reaching a high of roughly 4.25% before declining to end the quarter.
- The blue line illustrates changes in the BAA OAS (Option Adjusted Spread). This measure quantifies the additional yield premium that investors require to purchase and hold non-US Treasury investment grade issues. For the full year, the spread widened slightly from 1.17% to 1.72%. High Yield OAS spreads rose from roughly 3.05% at the beginning of the year to 4.81% at year-end. During 2022, high yield spreads reached a level of 5.80% in early July before trading lower the remainder of the year.
- The lower graph provides a snapshot of the US Treasury yield curve at the end of each of the last four quarters. Short-term rates continued to rise during the 4th quarter as the FOMC increased interest rates twice to combat elevated inflation. Despite these short-term rate increases, both intermediate and longer-term rates remained largely unchanged during the quarter. The yield curve remained inverted between 2-year and 10-year rates. Said differently, the short-term rate was higher than the long-term rate. Historically, a persistent inversion of these two key rates has been an indication of a future recession within 6- to 24-months.



Source: US Department of Treasury, FRED (Federal Reserve of St. Louis)

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PLEASE NOTE ALL PERFORMANCE IN THIS REPORT IS NET OF FEES.

Comparative Performance
Total Fund
As of December 31, 2022

Comparative Performance Trailing Returns												
	QTR	FYTD	1 YR	2 YR	3 YR	5 YR	10 YR	15 YR	Inception	Inception Date		
Total Fund Performance	6.81	(18)	-15.61	(81)	-15.61	(81)	-1.92	(68)	1.86	(92)	3.66	(89)
Total Fund Policy	6.41	(32)	-14.86	(70)	-14.86	(70)	-1.56	(61)	2.54	(79)	4.10	(81)
Allocation Index	6.79	(19)	-15.63	(81)	-15.63	(81)	-1.88	(67)	1.90	(91)	3.71	(89)
All Public Plans-Total Fund Median	5.98		-13.82		-13.82		-1.02		3.54		4.92	
All Public Plan Sponsor Universes with 50% or Less Equities	6.81	(16)	-15.61	(90)	-15.61	(90)	-1.92	(76)	1.86	(89)	3.66	(86)
Total Fund Performance	6.41	(29)	-14.86	(85)	-14.86	(85)	-1.56	(69)	2.54	(79)	4.10	(77)
Total Fund Policy	6.41	(29)	-14.86	(85)	-14.86	(85)	-1.56	(69)	2.54	(79)	4.10	(77)
All Public Plans <= 50% Equities Median	5.72		-12.69		-12.69		-0.58		3.60		4.89	
All Public Plan Sponsor Universes with 60% or More Equities	6.81	(34)	-15.61	(64)	-15.61	(64)	-1.92	(62)	1.86	(97)	3.66	(94)
Total Fund Performance	6.41	(49)	-14.86	(50)	-14.86	(50)	-1.56	(56)	2.54	(81)	4.10	(88)
Total Fund Policy	6.41	(49)	-14.86	(50)	-14.86	(50)	-1.56	(56)	2.54	(81)	4.10	(88)
All Public Plans >=60% Equities Median	6.40		-14.94		-14.94		-1.40		3.58		5.15	

Returns for periods greater than one year are annualized.
 Returns are expressed as percentages.



Comparative Performance

Total Fund

As of December 31, 2022

	QTR	FYTD	1 YR	2 YR	3 YR	5 YR	10 YR	15 YR	Inception	Inception Date
Domestic Equity										
Total Fund Domestic Equity	8.64	-16.59	-16.59	2.89	6.45	7.77	N/A	N/A	8.98	07/01/2014
Vanguard Inst'l Index Fund (VINIX)	7.55	(16)	-18.14 (12)	-18.14 (12)	2.63 (10)	N/A	N/A	N/A	N/A	11/01/2020
S&P 500 Index	7.56	(8)	-18.11 (3)	-18.11 (3)	2.66 (2)	7.66 (3)	9.42 (1)	12.56 (1)	8.81 (1)	9.37 (3)
IM S&P 500 Index (MF) Median	7.46	-18.38	-18.38	2.30	7.31	9.07	12.09	8.34	9.00	
Vanguard Growth Index (VIGIX)	-0.15	(83)	-33.14 (70)	-33.14 (70)	-7.75 (43)	6.06 (28)	9.62 (28)	12.81 (28)	N/A	12.36 (19) 05/01/2010
Vanguard Growth Index Hybrid	-0.15	(83)	-33.13 (69)	-33.13 (69)	-7.73 (43)	6.09 (27)	9.65 (28)	12.85 (27)	9.60 (16)	12.42 (18)
Russell 1000 Growth Index	2.20	(57)	-29.14 (27)	-29.14 (27)	-4.91 (21)	7.79 (10)	10.96 (11)	14.10 (7)	10.32 (7)	13.33 (6)
IM U.S. Large Cap Growth Equity (MF) Median	2.48	-31.30	-31.30	-8.24	4.76	8.53	12.04	8.55	11.39	
Vanguard Value Index (VIVIX)	14.67	(17)	-2.05 (12)	-2.05 (12)	11.30 (12)	8.22 (24)	8.57 (24)	11.92 (10)	N/A	12.73 (16) 07/01/2009
Vanguard Value Index Hybrid	14.68	(16)	-2.01 (11)	-2.01 (11)	11.34 (12)	8.23 (24)	8.58 (23)	11.95 (10)	7.98 (22)	12.77 (15)
Russell 1000 Value Index	12.42	(59)	-7.54 (66)	-7.54 (66)	7.58 (69)	5.96 (79)	6.67 (73)	10.29 (58)	6.96 (54)	11.73 (46)
IM U.S. Large Cap Value Equity (MF) Median	12.88	-6.10	-6.10	8.40	7.19	7.50	10.51	7.07	11.60	
Vanguard Mid-Cap 400 Index Fund I (VSPMX)	10.77	(35)	-13.11 (50)	-13.11 (50)	4.08 (54)	7.16 (27)	N/A	N/A	N/A	8.14 (48) 12/01/2018
S&P MidCap 400 Index	10.78	(35)	-13.06 (50)	-13.06 (50)	4.15 (53)	7.23 (27)	6.71 (35)	10.78 (18)	8.87 (9)	8.20 (45)
IM U.S. Mid Cap Core Equity (MF) Median	9.63	-13.21	-13.21	4.34	5.90	5.94	9.49	7.27	8.01	
Vanguard Small-Cap 600 Index I (VSMSX)	9.17	(58)	-16.18 (56)	-16.18 (56)	3.07 (48)	5.79 (39)	N/A	N/A	N/A	6.19 (49) 12/01/2018
S&P SmallCap 600 Index	9.19	(58)	-16.10 (54)	-16.10 (54)	3.15 (48)	5.80 (39)	5.88 (23)	10.82 (6)	8.89 (6)	6.20 (49)
IM U.S. Small Cap Core Equity (MF) Median	9.65	-15.78	-15.78	2.84	5.20	4.78	8.97	7.20	6.14	

Returns for periods greater than one year are annualized.
 Returns are expressed as percentages.



Comparative Performance
Total Fund
As of December 31, 2022

	QTR	FYTD	1 YR	2 YR	3 YR	5 YR	10 YR	15 YR	Inception	Inception Date
International Equity										
Total Fund Performance - International Equity	12.82	-18.46	-18.46	-6.60	-1.30	-0.01	N/A	N/A	1.77	07/01/2014
Vanguard Intl Value (VTRIX)	15.76 (84)	-11.66 (76)	-11.66 (76)	N/A	N/A	N/A	N/A	N/A	-6.79 (79)	12/01/2021
MSCI AC World ex USA Value	15.82 (84)	-7.95 (44)	-7.95 (44)	1.14 (53)	0.69 (73)	0.57 (67)	3.33 (100)	1.40 (77)	-2.79 (38)	
IM International Multi-Cap Value Equity (MF) Median	18.92	-9.47	-9.47	1.19	2.08	1.21	4.67	1.92	-3.96	
Vanguard Intl Growth (VWILX)	12.62 (80)	-30.79 (86)	-30.79 (86)	N/A	N/A	N/A	N/A	N/A	-29.66 (91)	12/01/2021
MSCI AC World ex USA Growth	12.94 (73)	-22.80 (48)	-22.80 (48)	-9.81 (63)	-0.10 (68)	1.83 (60)	5.04 (80)	2.45 (73)	-19.05 (50)	
IM International Multi-Cap Growth Equity (MF) Median	14.60	-23.50	-23.50	-7.65	0.97	2.41	5.75	3.47	-19.15	
Vanguard FTSE AW ex-US SC Index (VFSNX)	13.14 (92)	-21.25 (85)	-21.25 (85)	-5.77 (86)	N/A	N/A	N/A	N/A	13.41 (53)	04/01/2020
FTSE Global ex U.S. Small Cap Index (Net)	12.53 (93)	-21.58 (87)	-21.58 (87)	-5.86 (86)	-0.42 (55)	-0.54 (47)	N/A	N/A	13.13 (58)	
IM International SMID Cap Core Equity (MF) Median	16.57	-17.04	-17.04	-3.15	0.08	-1.79	4.25	N/A	13.47	
Vanguard Developed Markets Index (VTMNX)	17.10 (40)	-15.34 (47)	-15.34 (47)	-2.87 (40)	1.32 (26)	1.67 (25)	4.94 (21)	N/A	6.07 (32)	07/01/2009
Vanguard Spliced Developed ex U.S. Index (Net)	16.28 (51)	-15.58 (49)	-15.58 (49)	-2.95 (41)	1.19 (30)	1.55 (28)	4.97 (21)	2.00 (39)	6.02 (35)	
MSCI EAFE (Net) Index	17.34 (35)	-14.45 (40)	-14.45 (40)	-2.44 (34)	0.87 (38)	1.54 (28)	4.67 (29)	1.81 (44)	5.80 (43)	
IM International Multi-Cap Equity (MF) Median	16.34	-15.71	-15.71	-4.00	0.45	0.83	4.18	1.58	5.57	
Vanguard Emerging Markets Index (VEMIX)	8.22 (74)	-17.74 (21)	-17.74 (21)	-8.88 (25)	-1.46 (31)	-0.31 (26)	1.58 (41)	N/A	1.56 (43)	10/01/2010
FTSE Emerging Mkts All Cap China A Inclusion Index	8.23 (73)	-17.26 (19)	-17.26 (19)	-8.24 (22)	-0.83 (24)	0.15 (20)	2.43 (26)	1.42 (26)	2.15 (27)	
MSCI Emerging Markets (Net) Index	9.70 (55)	-20.09 (32)	-20.09 (32)	-11.75 (40)	-2.69 (44)	-1.40 (42)	1.44 (45)	0.65 (48)	1.46 (46)	
IM Emerging Markets Equity (MF) Median	9.95	-22.44	-22.44	-12.84	-3.16	-1.74	1.24	0.47	1.33	

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 Returns are expressed as percentages.



Comparative Performance
Total Fund
As of December 31, 2022

	QTR	FYTD	1 YR	2 YR	3 YR	5 YR	10 YR	15 YR	Inception	Inception Date
Fixed Income										
Total Fund Performance - Fixed Income	2.69	-11.27	-11.27	-5.78	-1.78	0.72	N/A	N/A	1.34	07/01/2014
Vanguard Short Term Bond Index (VBITX)	1.07 (48)	-5.61 (91)	-5.61 (91)	-3.32 (96)	-0.71 (86)	0.79 (72)	N/A	N/A	0.92 (59)	04/01/2013
Bloomberg 1-5 Year Gov/Credit Idx	1.20 (33)	-5.50 (89)	-5.50 (89)	-3.26 (95)	-0.67 (84)	0.85 (67)	0.98 (52)	1.92 (24)	0.97 (52)	
IM U.S. Short Term Investment Grade (MF) Median	1.05	-3.78	-3.78	-1.76	0.01	1.06	0.98	1.62	0.99	
Vanguard Total Bond Index (VBTIX)	1.67 (56)	-13.15 (26)	-13.15 (26)	-7.58 (35)	-2.73 (52)	N/A	N/A	N/A	-2.63 (57)	09/01/2019
Bloomberg U.S. Aggregate Index	1.87 (35)	-13.01 (21)	-13.01 (21)	-7.45 (28)	-2.71 (50)	0.02 (42)	1.06 (46)	2.66 (51)	-2.55 (51)	
IM U.S. Broad Market Core Fixed Income (MF) Median	1.71	-13.67	-13.67	-7.75	-2.72	-0.07	1.02	2.67	-2.53	
Vanguard High Yield Bond Fund (VWEAX)	4.88 (9)	-8.97 (18)	-8.97 (18)	-2.80 (36)	-0.15 (39)	2.31 (22)	N/A	N/A	3.43 (15)	12/01/2014
Bloomberg U.S. Corp High Yield	4.17 (35)	-11.19 (57)	-11.19 (57)	-3.31 (52)	0.05 (34)	2.31 (22)	4.03 (12)	6.09 (3)	3.58 (11)	
IM U.S. High Yield Bonds (MF) Median	3.96	-10.94	-10.94	-3.25	-0.49	1.70	3.21	4.87	2.74	
Vanguard International Bond (VTIFX)	-0.05 (98)	-12.89 (48)	-12.89 (48)	-7.68 (38)	-3.76 (30)	-0.19 (21)	N/A	N/A	0.91 (8)	05/01/2015
Bloomberg Global Agg ex-USD Flt Adj RIC Cpd (H)	0.08 (92)	-12.72 (44)	-12.72 (44)	-7.56 (38)	-3.63 (28)	-0.04 (16)	1.86 (8)	N/A	0.93 (8)	
IM International Fixed Income (MF) Median	7.07	-12.94	-12.94	-9.11	-5.44	-2.80	-1.38	1.64	-1.45	
Vanguard EM Bond (VEGBX)	9.83 (28)	-13.02 (40)	-13.02 (40)	N/A	N/A	N/A	N/A	N/A	-10.66 (37)	12/01/2021
Bloomberg Emerging Markets USD Aggregate Index	6.59 (82)	-15.26 (69)	-15.26 (69)	-8.71 (65)	-3.89 (61)	-0.42 (50)	1.71 (43)	4.48 (51)	-13.40 (71)	
IM Emerging Markets Debt (MF) Median	8.87	-14.18	-14.18	-8.11	-3.36	-0.44	1.54	4.54	-11.98	
REIT										
Vanguard Real Estate Index Fund (VGSNX)	4.36 (25)	-26.20 (51)	-26.20 (51)	1.82 (58)	-0.39 (57)	3.71 (50)	6.45 (30)	N/A	8.00 (33)	10/01/2010
Vanguard Spliced REIT Index	4.35 (27)	-26.12 (47)	-26.12 (47)	1.91 (55)	-0.29 (55)	3.78 (46)	6.53 (27)	6.33 (28)	8.07 (31)	
IM Real Estate Sector (MF) Median	3.86	-26.17	-26.17	2.09	-0.13	3.70	6.03	5.66	7.57	

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 Returns are expressed as percentages.



Comparative Performance
Total Fund
As of December 31, 2022

	QTR	FYTD	1 YR	2 YR	3 YR	5 YR	10 YR	15 YR	Inception	Inception Date
Total Fund - Domestic Equity	8.64	-16.59	-16.59	2.89	6.45	7.77	N/A	N/A	8.98	07/01/2014
Total Domestic Large Cap Equity	7.73	-17.98	-17.98	2.08	5.91	7.99	N/A	N/A	9.54	06/01/2014
S&P 500 Index	7.56	-18.11	-18.11	2.66	7.66	9.42	12.56	8.81	10.47	
Large Cap Growth	-0.15	-33.14	-33.14	-7.75	6.41	9.82	N/A	N/A	10.95	06/01/2014
Vanguard Growth Index Hybrid	-0.15	-33.13	-33.13	-7.73	6.09	9.65	12.85	9.60	10.84	
Russell 1000 Growth Index	2.20	-29.14	-29.14	-4.91	7.79	10.96	14.10	10.32	12.20	
Large Cap Core	7.47	-18.20	-18.20	1.94	4.25	6.69	N/A	N/A	8.66	06/01/2014
S&P 500 Index	7.56	-18.11	-18.11	2.66	7.66	9.42	12.56	8.81	10.47	
Large Cap Value	14.67	-2.05	-2.05	11.30	8.22	8.55	N/A	N/A	9.69	06/01/2014
Vanguard Value Index Hybrid	14.68	-2.01	-2.01	11.34	8.23	8.58	11.95	7.98	9.66	
Russell 1000 Value Index	12.42	-7.54	-7.54	7.58	5.96	6.67	10.29	6.96	7.79	
Mid Cap Equity	10.77	-13.11	-13.11	4.08	7.16	6.81	N/A	N/A	8.26	06/01/2014
Mid Cap Hybrid Index	10.78	-13.06	-13.06	4.15	7.23	6.80	10.85	N/A	8.27	
Small Cap Equity	9.17	-16.18	-16.18	3.07	5.79	5.41	N/A	N/A	7.29	06/01/2014
Small Cap Hybrid Index	9.19	-16.10	-16.10	3.15	5.80	5.45	9.85	N/A	7.30	
Total Fund - International Equity	12.82	-18.46	-18.46	-6.60	-1.30	-0.01	N/A	N/A	1.77	07/01/2014
Small Cap - International Equity	13.14	-21.25	-21.25	-5.77	N/A	N/A	N/A	N/A	13.41	04/01/2020
FTSE Global ex U.S. Small Cap Index (Net)	12.53	-21.58	-21.58	-5.86	-0.42	-0.54	N/A	N/A	13.13	
Developed Markets - International Equity	17.10	-15.34	-15.34	-2.87	1.32	1.67	N/A	N/A	2.88	06/01/2014
Vanguard Spliced Developed ex U.S. Index (Net)	16.28	-15.58	-15.58	-2.95	1.19	1.55	4.97	2.00	2.88	
Emerging Markets - International Equity	8.22	-17.74	-17.74	-8.80	-1.40	-0.28	N/A	N/A	1.97	06/01/2014
FTSE Emerging Mkts All Cap China A Inclusion Index	8.23	-17.26	-17.26	-8.24	-0.83	0.15	2.43	1.42	2.69	
MSCI Emerging Markets (Net) Index	9.70	-20.09	-20.09	-11.75	-2.69	-1.40	1.44	0.65	1.59	

Returns for periods greater than one year are annualized.
 Returns are expressed as percentages.



Comparative Performance
Total Fund
As of December 31, 2022

	QTR	FYTD	1 YR	2 YR	3 YR	5 YR	10 YR	15 YR	Inception	Inception Date
Total Fund - Fixed Income	2.69	-11.27	-11.27	-5.78	-1.78	0.72	N/A	N/A	1.34	07/01/2014
Short - Term Fixed Income	1.07	-5.61	-5.61	-3.32	-0.71	0.77	N/A	N/A	0.90	06/01/2014
Bloomberg 1-5 Year Gov/Credit Iidx	1.20	-5.50	-5.50	-3.26	-0.67	0.85	0.98	1.92	0.97	
High Yield - Fixed Income	4.88	-8.97	-8.97	-2.80	-0.15	2.31	N/A	N/A	3.42	11/01/2014
Blmbg. U.S. Corp High Yield	4.17	-11.19	-11.19	-3.31	0.05	2.31	4.03	6.09	3.45	
Non-US Fixed Income	-0.05	-12.89	-12.89	-7.68	-3.76	-0.19	N/A	N/A	0.97	05/01/2015
Blmbg. Global Agg ex-USD Flt Adj RIC Cpd (H)	0.08	-12.72	-12.72	-7.56	-3.63	-0.04	1.86	N/A	0.93	
Real Estate	4.36	-26.20	-26.20	1.82	-0.39	3.71	N/A	N/A	5.23	06/01/2014
Vanguard Spliced REIT Index	4.35	-26.12	-26.12	1.91	-0.29	3.78	6.53	6.33	5.46	

Returns for periods greater than one year are annualized.
 Returns are expressed as percentages.



Comparative Performance
Total Fund
As of December 31, 2022

Comparative Performance Trailing Returns										
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Total Fund Performance	14.00	9.84	20.21	-5.76	13.91	8.58	-0.72	8.24	18.07	13.88
Total Fund Policy	13.81	11.44	19.49	-4.94	13.67	8.48	-0.69	8.15	16.99	14.31
Allocation Index	14.11	9.90	19.76	-5.32	14.25	7.44	-0.62	N/A	N/A	N/A
Domestic Equity										
Total Fund Domestic Equity	26.91	13.96	29.77	-7.16	20.07	13.45	-0.10	N/A	33.56	16.18
Twin Capital Low Volatility	N/A	5.51 (93)	29.24 (60)	-5.37 (57)	19.16 (83)	16.03 (9)	-1.31 (80)	12.91 (59)	N/A	N/A
S&P 500 Index	28.71 (38)	18.40 (46)	31.49 (33)	-4.38 (40)	21.83 (55)	11.96 (32)	1.38 (55)	13.69 (44)	32.39 (61)	16.00 (46)
IM U.S. Large Cap Core Equity (SA+CF) Median	27.78	17.55	30.08	-5.07	22.09	10.50	1.52	13.43	33.17	15.66
Twin Capital Enhanced Index	N/A	15.07 (61)	29.73 (51)	-6.43 (69)	20.37 (79)	11.66 (57)	2.42 (27)	13.42 (62)	N/A	N/A
S&P 500 Index	28.71 (60)	18.40 (48)	31.49 (33)	-4.38 (31)	21.83 (65)	11.96 (56)	1.38 (46)	13.69 (57)	32.39 (72)	16.00 (66)
IM U.S. Large Cap Enhanced Index Equity (SA+CF) Median	28.93	17.38	29.78	-5.30	22.60	12.31	1.22	14.00	33.46	16.69
Vanguard Inst'l Index Fund (VINIX)	28.67 (8)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S&P 500 Index	28.71 (1)	18.40 (9)	31.49 (3)	-4.38 (7)	21.83 (1)	11.96 (3)	1.38 (2)	13.69 (1)	32.39 (1)	16.00 (2)
IM S&P 500 Index (MF) Median	28.25	18.05	31.06	-4.66	21.37	11.55	0.96	13.17	31.77	15.44
Vanguard Growth Index (VIGIX)	27.27 (20)	40.20 (28)	37.25 (12)	-3.32 (72)	27.82 (64)	6.11 (19)	3.23 (75)	13.70 (17)	32.44 (69)	16.99 (30)
Vanguard Growth Index Hybrid	27.30 (19)	40.27 (28)	37.31 (11)	-3.34 (73)	27.86 (64)	6.16 (18)	3.38 (72)	13.69 (17)	32.51 (68)	17.14 (28)
Russell 1000 Growth Index	27.60 (17)	38.49 (34)	36.39 (19)	-1.51 (54)	30.21 (39)	7.08 (10)	5.67 (49)	13.05 (24)	33.48 (57)	15.26 (46)
IM U.S. Large Cap Growth Equity (MF) Median	22.39	35.62	33.26	-1.22	29.28	2.21	5.61	10.49	34.12	14.81
Vanguard Value Index (VIVIX)	26.48 (44)	2.30 (70)	25.83 (59)	-5.42 (22)	17.14 (47)	16.87 (21)	-0.81 (18)	13.20 (10)	33.01 (38)	15.12 (60)
Vanguard Value Index Hybrid	26.51 (43)	2.26 (71)	25.85 (59)	-5.40 (22)	17.16 (46)	16.93 (20)	-0.86 (19)	13.29 (9)	33.20 (35)	15.22 (58)
Russell 1000 Value Index	25.16 (63)	2.80 (61)	26.54 (50)	-8.27 (45)	13.66 (82)	17.34 (17)	-3.83 (69)	13.45 (8)	32.53 (44)	17.51 (27)
IM U.S. Large Cap Value Equity (MF) Median	25.96	3.82	26.50	-8.61	16.95	13.85	-3.00	10.82	32.11	15.79
Vanguard Mid-Cap 400 Index Fund I (VSPMX)	24.67 (59)	13.58 (26)	26.13 (72)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S&P MidCap 400 Index	24.76 (59)	13.66 (26)	26.20 (72)	-11.08 (40)	16.24 (38)	20.74 (12)	-2.18 (29)	9.77 (41)	33.50 (58)	17.88 (25)
IM U.S. Mid Cap Core Equity (MF) Median	25.73	8.44	28.59	-11.64	14.94	14.51	-3.74	8.88	34.49	15.88
Vanguard Small-Cap 600 Index I (VSMSX)	26.74 (37)	11.46 (40)	22.74 (62)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S&P SmallCap 600 Index	26.82 (36)	11.29 (41)	22.78 (61)	-8.48 (9)	13.23 (38)	26.56 (16)	-1.97 (21)	5.76 (34)	41.31 (18)	16.33 (33)
IM U.S. Small Cap Core Equity (MF) Median	25.12	9.89	23.94	-12.71	12.09	21.66	-4.35	4.71	36.85	14.81

Returns for periods greater than one year are annualized.
 Returns are expressed as percentages.



Comparative Performance
Total Fund
As of December 31, 2022

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
International Equity										
Total Fund Performance - International Equity	6.98	10.24	21.55	-14.50	28.00	5.26	-5.56	N/A	13.97	19.18
Vanguard Intl Value (VTRIX)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MSCI AC World ex USA Value	11.13 (69)	-0.21 (74)	16.45 (72)	-13.45 (16)	23.35 (64)	9.59 (18)	-9.59 (96)	-4.60 (43)	15.65 (96)	17.69 (48)
IM International Multi-Cap Value Equity (MF) Median	12.67	3.54	18.80	-16.15	24.73	4.03	-2.29	-5.21	23.66	17.42
Vanguard Intl Growth (VWILX)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MSCI AC World ex USA Growth	5.37 (74)	22.56 (39)	27.84 (49)	-14.10 (46)	32.47 (40)	0.50 (51)	-0.91 (77)	-2.29 (35)	15.86 (81)	17.07 (77)
IM International Multi-Cap Growth Equity (MF) Median	10.12	20.55	27.73	-14.42	30.71	0.51	1.40	-3.79	20.30	19.51
Vanguard FTSE AW ex-US SC Index (VFSNX)	12.76 (55)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FTSE Global ex U.S. Small Cap Index (Net)	13.02 (53)	11.40 (14)	21.55 (30)	-18.91 (39)	29.78 (50)	3.93 (29)	-0.61 (82)	-4.34 (30)	N/A	N/A
IM International SMID Cap Core Equity (MF) Median	13.19	5.76	19.58	-19.67	29.44	-0.75	4.70	-6.30	24.68	20.35
Vanguard Developed Markets Index (VTMNX)	11.44 (35)	10.27 (42)	22.14 (43)	-14.49 (35)	26.46 (46)	2.46 (35)	-0.19 (44)	-5.62 (55)	22.07 (34)	18.92 (27)
Vanguard Spliced Developed ex U.S. Index (Net)	11.57 (33)	10.00 (44)	22.34 (42)	-14.79 (38)	26.31 (47)	2.29 (37)	-0.28 (45)	-4.85 (44)	22.71 (28)	17.32 (55)
MSCI EAFE (Net) Index	11.26 (37)	7.82 (57)	22.01 (45)	-13.79 (25)	25.03 (62)	1.00 (52)	-0.81 (52)	-4.90 (45)	22.78 (27)	17.32 (55)
IM International Multi-Cap Equity (MF) Median	10.28	8.74	21.55	-15.87	25.85	1.12	-0.74	-5.32	20.36	17.65
Vanguard Emerging Markets Index (VEMIX)	0.92 (36)	15.26 (65)	20.37 (50)	-14.54 (29)	31.43 (72)	11.76 (26)	-15.39 (68)	0.72 (18)	-5.06 (80)	18.06 (57)
FTSE Emerging Mkts All Cap China A Inclusion Index	1.76 (32)	15.84 (61)	20.81 (47)	-14.49 (29)	31.46 (72)	10.66 (34)	-13.28 (46)	2.96 (10)	-2.82 (60)	18.48 (54)
MSCI Emerging Markets (Net) Index	-2.54 (58)	18.31 (47)	18.42 (63)	-14.57 (30)	37.28 (43)	11.19 (29)	-14.92 (62)	-2.19 (43)	-2.60 (58)	18.23 (56)
IM Emerging Markets Equity (MF) Median	-1.62	17.66	20.17	-16.45	35.66	8.25	-13.73	-3.01	-1.45	18.78

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 Returns are expressed as percentages.



Comparative Performance
Total Fund
As of December 31, 2022

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Fixed Income										
Total Fund Performance - Fixed Income	0.05	6.75	10.16	-0.71	3.82	4.79	-0.18	N/A	-3.65	7.39
Vanguard Short Term Bond Index (VBITX)	-0.97 (94)	4.71 (11)	4.84 (24)	1.37 (42)	1.19 (71)	1.51 (59)	0.98 (9)	1.32 (13)	N/A	N/A
Bloomberg 1-5 Year Gov/Credit Idx	-0.97 (94)	4.71 (11)	5.01 (18)	1.38 (41)	1.27 (66)	1.56 (56)	0.97 (9)	1.42 (11)	0.28 (63)	2.24 (69)
IM U.S. Short Term Investment Grade (MF) Median	0.02	3.02	4.11	1.24	1.46	1.69	0.27	0.67	0.47	3.12
Vanguard Total Bond Index (VBTIX)	-1.65 (64)	7.73 (65)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bloomberg U.S. Aggregate Index	-1.55 (60)	7.51 (73)	8.72 (53)	0.01 (18)	3.54 (54)	2.65 (62)	0.55 (20)	5.97 (27)	-2.02 (54)	4.21 (81)
IM U.S. Broad Market Core Fixed Income (MF) Median	-1.33	8.15	8.76	-0.62	3.60	2.90	0.04	5.55	-1.97	6.04
Vanguard High Yield Bond Fund (VWEAX)	3.78 (79)	5.38 (51)	15.90 (9)	-2.87 (46)	7.13 (31)	11.27 (86)	-1.31 (13)	N/A	N/A	N/A
Bloomberg U.S. Corp High Yield	5.28 (42)	7.11 (20)	14.32 (38)	-2.08 (22)	7.50 (21)	17.13 (8)	-4.47 (58)	2.45 (24)	7.44 (32)	15.81 (26)
IM U.S. High Yield Bonds (MF) Median	4.93	5.43	13.83	-2.97	6.63	13.80	-3.96	1.50	6.72	14.57
Vanguard International Bond (VTIFX)	-2.17 (20)	4.59 (75)	7.89 (25)	3.00 (2)	2.43 (86)	4.69 (35)	N/A	N/A	N/A	N/A
Bloomberg Global Agg ex-USD Flt Adj RIC Cpd (H)	-2.10 (19)	4.75 (72)	8.06 (24)	3.16 (1)	2.57 (82)	4.90 (33)	1.34 (3)	9.14 (9)	1.26 (16)	N/A
IM International Fixed Income (MF) Median	-5.39	6.55	6.64	-2.47	9.80	3.34	-5.82	0.63	-3.74	7.43
Vanguard EM Bond (VEGBX)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bloomberg Emerging Markets USD Aggregate Index	-1.65 (43)	6.52 (53)	13.11 (78)	-2.46 (16)	8.17 (94)	9.88 (77)	1.29 (17)	4.76 (31)	-4.12 (29)	17.95 (70)
IM Emerging Markets Debt (MF) Median	-1.94	6.76	14.80	-4.96	11.72	11.65	-1.16	2.39	-5.44	20.07
REIT										
Vanguard Real Estate Index Fund (VGSNX)	40.47 (61)	-4.67 (54)	29.02 (33)	-5.93 (54)	4.93 (58)	8.51 (21)	2.56 (58)	30.17 (36)	2.46 (29)	17.64 (33)
Vanguard Spliced REIT Index	40.56 (60)	-4.55 (53)	29.03 (33)	-5.86 (52)	5.07 (54)	8.60 (20)	2.52 (58)	30.38 (30)	2.47 (29)	17.77 (30)
IM Real Estate Sector (MF) Median	41.32	-4.31	27.32	-5.71	5.32	6.34	2.91	29.47	1.64	16.91

Returns for periods greater than one year are annualized.
 Returns are expressed as percentages.



Comparative Performance
Total Fund
As of December 31, 2022

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Total Fund - Domestic Equity	26.91	13.96	29.77	-7.16	20.07	13.45	-0.10	N/A	33.56	16.18
Total Domestic Large Cap Equity	27.04	14.02	30.31	-5.16	20.67	13.09	1.00	N/A	N/A	N/A
S&P 500 Index	28.71	18.40	31.49	-4.38	21.83	11.96	1.38	13.69	32.39	16.00
Large Cap Growth	27.27	41.61	37.36	-3.51	27.82	5.87	3.78	N/A	N/A	N/A
Vanguard Growth Index Hybrid	27.30	40.27	37.31	-3.34	27.86	6.16	3.38	13.69	32.51	17.14
Russell 1000 Growth Index	27.60	38.49	36.39	-1.51	30.21	7.08	5.67	13.05	33.48	15.26
Large Cap Core	27.04	9.03	29.41	-5.71	19.57	14.29	0.18	N/A	N/A	N/A
S&P 500 Index	28.71	18.40	31.49	-4.38	21.83	11.96	1.38	13.69	32.39	16.00
Large Cap Value	26.48	2.30	25.83	-5.50	17.14	16.87	-0.27	N/A	N/A	N/A
Vanguard Value Index Hybrid	26.51	2.26	25.85	-5.40	17.16	16.93	-0.86	13.29	33.20	15.22
Russell 1000 Value Index	25.16	2.80	26.54	-8.27	13.66	17.34	-3.83	13.45	32.53	17.51
Mid Cap Equity	24.67	13.58	26.13	-10.44	19.29	11.23	-1.31	N/A	N/A	N/A
Mid Cap Hybrid Index	24.76	13.66	26.20	-10.67	19.30	11.25	-1.28	13.83	35.21	16.04
Small Cap Equity	26.74	11.46	22.74	-10.45	16.25	18.32	-3.63	N/A	N/A	N/A
Small Cap Hybrid Index	26.82	11.29	22.78	-10.32	16.24	18.26	-3.68	7.54	37.77	18.20
Total Fund - International Equity	6.98	10.24	21.55	-14.50	28.00	5.26	-5.56	N/A	13.97	19.18
Small Cap - International Equity	12.76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FTSE Global ex U.S. Small Cap Index (Net)	13.02	11.40	21.55	-18.91	29.78	3.93	-0.61	-4.34	N/A	N/A
Developed Markets - International Equity	11.44	10.27	22.14	-14.49	26.46	2.46	-0.41	N/A	N/A	N/A
Vanguard Spliced Developed ex U.S. Index (Net)	11.57	10.00	22.34	-14.79	26.31	2.29	-0.28	-4.85	22.71	17.32
Emerging Markets - International Equity	1.10	15.26	20.37	-14.54	31.43	11.76	-15.80	N/A	N/A	N/A
FTSE Emerging Mkts All Cap China A Inclusion Index	1.76	15.84	20.81	-14.49	31.46	10.66	-13.28	2.96	-2.82	18.48
MSCI Emerging Markets (Net) Index	-2.54	18.31	18.42	-14.57	37.28	11.19	-14.92	-2.19	-2.60	18.23

Returns for periods greater than one year are annualized.
 Returns are expressed as percentages.



Comparative Performance
Total Fund
As of December 31, 2022

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Total Fund - Fixed Income	0.05	6.75	10.16	-0.71	3.82	4.79	-0.18	N/A	-3.65	7.39
Short - Term Fixed Income	-0.97	4.71	4.71	1.37	1.19	1.51	0.98	N/A	N/A	N/A
Bloomberg 1-5 Year Gov/Credit Idx	-0.97	4.71	5.01	1.38	1.27	1.56	0.97	1.42	0.28	2.24
High Yield - Fixed Income	3.78	5.38	15.90	-2.87	6.65	10.89	-1.28	N/A	N/A	N/A
Blmbg. U.S. Corp High Yield	5.28	7.11	14.32	-2.08	7.50	17.13	-4.47	2.45	7.44	15.81
Non-US Fixed Income	-2.17	4.59	7.89	3.00	2.43	4.69	N/A	N/A	N/A	N/A
Blmbg. Global Agg ex-USD Flt Adj RIC Cpd (H)	-2.10	4.75	8.06	3.16	2.57	4.90	1.34	9.14	1.26	N/A
Real Estate	40.47	-4.67	29.02	-5.93	4.93	8.51	2.56	N/A	N/A	N/A
Vanguard Spliced REIT Index	40.56	-4.55	29.03	-5.86	5.07	8.60	2.52	30.38	2.47	17.77

Returns for periods greater than one year are annualized.
 Returns are expressed as percentages.



Multi Time Period Statistics
Butler County Employees Retirement Plan
As of December 31, 2022

Multi Time Period Statistics											
	3 YR Return		3 YR Standard Deviation		3 YR Sharpe Ratio		5 YR Return		5 YR Standard Deviation		5 YR Sharpe Ratio
Total Fund Performance	1.86		14.72		0.15		3.66		12.74		0.25
Total Fund Policy	2.54		14.26		0.20		4.10		12.30		0.29
Vanguard Instl Indx;Inst (VINIX) *	7.64	(9)	20.87	(34)	0.42	(9)	9.40	(6)	18.53	(34)	0.51
S&P 500 Index	7.66		20.87		0.42		9.42		18.53		0.51
IM S&P 500 Index (MF) Median	7.31		20.86		0.41		9.07		18.52		0.49
Vanguard Growth Index (VIGIX)	6.06	(28)	24.25	(19)	0.33	(31)	9.62	(28)	21.22	(27)	0.48
Vanguard Growth Index Hybrid	6.09		24.26		0.33		9.65		21.23		0.48
IM U.S. Large Cap Growth Equity (MF) Median	4.76		23.27		0.29		8.53		20.60		0.44
Vanguard Value Index (VIVIX)	8.22	(24)	20.20	(68)	0.46	(27)	8.57	(24)	17.95	(67)	0.48
Vanguard Value Index Hybrid	8.23		20.20		0.46		8.58		17.95		0.48
IM U.S. Large Cap Value Equity (MF) Median	7.19		20.92		0.40		7.50		18.44		0.42
Vanguard S&P MC400;Inst (VSPMX) *	7.16	(27)	24.51	(18)	0.38	(31)	6.64	(37)	21.89	(15)	0.35
S&P MidCap 400 Index	7.23		24.51		0.38		6.71		21.89		0.35
IM U.S. Mid Cap Core Equity (MF) Median	5.90		23.03		0.33		5.94		20.48		0.32
Vanguard S&P SC600;Inst (VSMSX) *	5.79	(39)	26.08	(44)	0.32	(39)	5.86	(24)	23.44	(42)	0.31
S&P SmallCap 600 Index	5.80		26.07		0.32		5.88		23.43		0.31
IM U.S. Small Cap Core Equity (MF) Median	5.20		26.02		0.30		4.78		23.31		0.27

* Mutual fund returns were used for this report if 3 & 5 year client specific results were not available.

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All performance is reported net of fees.



Multi Time Period Statistics
Butler County Employees Retirement Plan
As of December 31, 2022

	3 YR Return		3 YR Standard Deviation		3 YR Sharpe Ratio		5 YR Return		5 YR Standard Deviation		5 YR Sharpe Ratio	
Vanguard Intl Val;Inv (VTRIX)*	1.66	(44)	21.64	(22)	0.15	(44)	1.71	(60)	18.68	(36)	0.12	(59)
MSCI EAFE Index	1.34		19.95		0.13		2.03		17.36		0.13	
IM International Large Cap Core Equity (MF) Median	1.22		20.60		0.13		1.81		17.99		0.12	
Vanguard Intl Gro;Adm (VWILX)*	3.48	(22)	24.61	(3)	0.23	(22)	5.09	(23)	21.96	(1)	0.28	(29)
MSCI EAFE Growth Index	0.79		19.83		0.10		2.85		17.23		0.18	
IM International Large Cap Growth Equity (MF) Median	2.05		20.59		0.16		3.11		18.21		0.19	
Vanguard FTSEUSSC;Ins (VFSNX) *	-0.20	(44)	23.24	(45)	0.08	(43)	-0.26	(57)	20.00	(53)	0.03	(57)
FTSE Global ex U.S. Small Cap Index (Net)	-0.42		23.05		0.07		-0.54		19.84		0.01	
IM International SMID Cap Growth Equity (MF) Median	-0.46		23.14		0.07		0.14		20.14		0.05	
Vanguard Developed Markets Index (VTMNX)	1.32	(26)	21.13	(45)	0.13	(27)	1.67	(25)	18.33	(52)	0.11	(26)
Vanguard Spliced Developed ex U.S. Index (Net)	1.19		20.55		0.13		1.55		17.88		0.11	
IM International Multi-Cap Equity (MF) Median	0.45		20.92		0.09		0.83		18.39		0.07	
Vanguard Emerging Markets Index (VEMIX)	-1.46	(31)	19.75	(92)	-0.01	(33)	-0.31	(26)	18.12	(88)	0.00	(29)
FTSE Emerging Mkts All Cap China A Inclusion Index	-0.83		19.56		0.02		0.15		17.90		0.03	
IM Emerging Markets Equity (MF) Median	-3.16		21.53		-0.08		-1.74		19.48		-0.06	
Vanguard Short Term Bond Index (VBITX)	-0.71	(86)	2.53	(54)	-0.56	(89)	0.79	(72)	2.24	(49)	-0.20	(73)
Bloomberg 1-5 Year Gov/Credit Idx	-0.67		2.53		-0.54		0.85		2.25		-0.18	
IM U.S. Short Term Investment Grade (MF) Median	0.01		2.58		-0.20		1.06		2.21		-0.07	
Vanguard Tot Bd:Inst (VBTIX) *	-2.73	(52)	5.81	(81)	-0.57	(71)	0.01	(43)	5.08	(72)	-0.22	(50)
Blmbg. U.S. Aggregate Index	-2.71		5.77		-0.57		0.02		5.04		-0.22	
IM U.S. Broad Market Core Fixed Income (MF) Median	-2.72		6.33		-0.51		-0.07		5.35		-0.22	
Vanguard High Yield Bond Fund (VWEAX)	-0.15	(39)	10.12	(77)	-0.03	(43)	2.31	(22)	8.47	(78)	0.16	(22)
Vanguard High Yield Corporate Composite Index	0.21		10.13		0.00		2.54		8.31		0.19	
IM U.S. High Yield Bonds (MF) Median	-0.49		10.81		-0.05		1.70		8.99		0.09	

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All performance is reported net of fees.



Multi Time Period Statistics
Butler County Employees Retirement Plan
As of December 31, 2022

	3 YR Return		3 YR Standard Deviation		3 YR Sharpe Ratio		5 YR Return		5 YR Standard Deviation		5 YR Sharpe Ratio	
Vanguard Tot Itl Bl;Inst (VTIFX) *	-3.77	(31)	5.46	(85)	-0.80	(78)	-0.20	(21)	4.72	(89)	-0.28	(29)
Blmbg. Global Agg ex-USD Flt Adj RIC Cpd (H)	-3.63		5.30		-0.79		-0.04		4.61		-0.26	
IM International Fixed Income (MF) Median	-5.44		8.96		-0.68		-2.80		7.62		-0.41	
Vanguard Em Mkt Bond;Adm (VEGBX)*	0.04	(6)	13.36	(42)	0.02	(6)	3.39	(5)	10.99	(85)	0.24	(6)
JPM GBI-EM Diversified	-8.11		12.86		-0.65		-4.40		12.35		-0.40	
IM Emerging Markets Debt - LC (MF) Median	-4.22		13.28		-0.32		-1.18		12.72		-0.13	
Vanguard Real Estate Index Fund (VGSNX)	-0.39	(57)	22.55	(36)	0.07	(54)	3.71	(50)	19.63	(29)	0.22	(51)
Vanguard Spliced REIT Index	-0.29		22.53		0.07		3.78		19.61		0.23	
IM Real Estate Sector (MF) Median	-0.13		22.11		0.07		3.70		19.17		0.22	

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All performance is reported net of fees.



Multi Time Period Statistics
Butler County Employees Retirement Plan
As of December 31, 2022

Multi Time Period Statistics												
	10 YR Return		10 YR Standard Deviation		10 YR Sharpe Ratio		15 YR Return		15 YR Standard Deviation		15 YR Sharpe Ratio	
Total Fund Performance	6.51		10.92		0.56		5.52		12.05		0.45	
Total Fund Policy	6.63		10.69		0.59		5.94		12.05		0.48	
Vanguard Instl Indx;Inst (VINIX) *	12.53	(3)	15.14	(12)	0.81	(4)	8.80	(2)	17.55	(13)	0.53	
S&P 500 Index	12.56		15.14		0.82		8.81		17.56		0.53	
IM S&P 500 Index (MF) Median	12.09		15.12		0.79		8.34		17.53		0.51	
Vanguard Growth Index (VIGIX)	12.81	(28)	17.69	(45)	0.73	(32)	N/A		N/A		N/A	
Vanguard Growth Index Hybrid	12.85		17.71		0.74		9.60		19.33		0.54	
IM U.S. Large Cap Growth Equity (MF) Median	12.04		17.55		0.70		8.55		19.65		0.49	
Vanguard Value Index (VIVIX)	11.92	(10)	14.83	(69)	0.79	(12)	N/A		N/A		N/A	
Vanguard Value Index Hybrid	11.95		14.83		0.79		7.98		17.63		0.49	
IM U.S. Large Cap Value Equity (MF) Median	10.51		15.30		0.68		7.07		18.30		0.43	
Vanguard S&P MC400;Inst (VSPMX)	10.71	(13)	19.03	(68)	0.60	(12)	N/A		N/A		N/A	
S&P MidCap 400 Index	10.78		19.03		0.60		8.87		21.16		0.48	
IM U.S. SMID Cap Core Equity (MF) Median	9.12		19.51		0.51		7.19		21.75		0.41	
Vanguard S&P SC600;Inst (VSMSX)	10.80	(6)	21.12	(51)	0.56	(8)	N/A		N/A		N/A	
S&P SmallCap 600 Index	10.82		21.11		0.56		8.89		22.54		0.47	
IM U.S. Small Cap Core Equity (MF) Median	8.97		21.12		0.48		7.20		22.87		0.40	

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All performance is reported net of fees.



Multi Time Period Statistics
Butler County Employees Retirement Plan
As of December 31, 2022

	10 YR Return		10 YR Standard Deviation		10 YR Sharpe Ratio		15 YR Return		15 YR Standard Deviation		15 YR Sharpe Ratio	
Vanguard Intl Val;Inv (VTRIX)	4.67	(60)	17.29	(36)	0.31	(63)	2.17	(63)	20.82	(40)	0.18	(61)
MSCI EAFE Index	5.16		15.99		0.35		2.29		19.81		0.18	
IM International Large Cap Core Equity (MF) Median	4.68		16.41		0.32		2.27		20.43		0.18	
Vanguard Intl Gro;Adm (VWILX)	8.19	(7)	21.42	(2)	0.44	(25)	5.08	(17)	23.62	(1)	0.30	(23)
MSCI EAFE Growth Index	5.97		16.06		0.40		2.98		19.39		0.22	
IM International Large Cap Growth Equity (MF) Median	5.82		16.88		0.37		3.60		20.42		0.24	
Vanguard FTSEUSSC;Ins (VFSNX)	4.16	(84)	19.07	(67)	0.27	(85)	N/A		N/A		N/A	
FTSE Global ex U.S. Small Cap Index (Net)	N/A		N/A		N/A		N/A		N/A		N/A	
IM International SMID Cap Growth Equity (MF) Median	5.14		19.50		0.33		3.26		23.40		0.23	
Vanguard Developed Markets Index (VTMNX)	4.94	(21)	16.64	(60)	0.33	(21)	N/A		N/A		N/A	
Vanguard Spliced Developed ex U.S. Index (Net)	4.97		16.49		0.33		2.00		20.07		0.17	
IM International Multi-Cap Equity (MF) Median	4.18		17.03		0.29		1.58		20.54		0.15	
Vanguard EM St I;Inst (VEMIX)*	1.59	(40)	17.30	(90)	0.14	(42)	0.78	(41)	22.63	(83)	0.12	(45)
Vanguard Spliced Emerging Markets Index (Net)	1.76		17.10		0.15		0.86		22.49		0.12	
IM Emerging Markets Equity (MF) Median	1.24		18.93		0.12		0.47		23.53		0.12	
Vanguard Sh-Tm B;Inst (VBITX)	0.91	(60)	2.10	(46)	0.09	(58)	N/A		N/A		N/A	
Bloomberg 1-5 Year Gov/Credit Idx	0.98		2.11		0.12		1.92		2.24		0.58	
IM U.S. Short Term Investment Grade (MF) Median	0.98		2.03		0.13		1.62		2.49		0.36	
Vanguard Tot Bd;Inst (VBTIX)	1.02	(51)	4.46	(70)	0.08	(49)	2.63	(53)	4.25	(79)	0.48	(32)
Blmbg. U.S. Aggregate Index	1.06		4.39		0.09		2.66		4.19		0.49	
IM U.S. Broad Market Core Fixed Income (MF) Median	1.02		4.64		0.08		2.67		4.80		0.43	
Vanguard HY Corp;Adm (VWEAX)	3.75	(21)	7.12	(92)	0.45	(12)	5.37	(21)	8.99	(92)	0.55	(5)
Blmbg. U.S. Corp High Yield	4.03		8.35		0.43		6.09		11.64		0.51	
IM U.S. High Yield Bonds (MF) Median	3.21		8.25		0.34		4.87		10.80		0.43	

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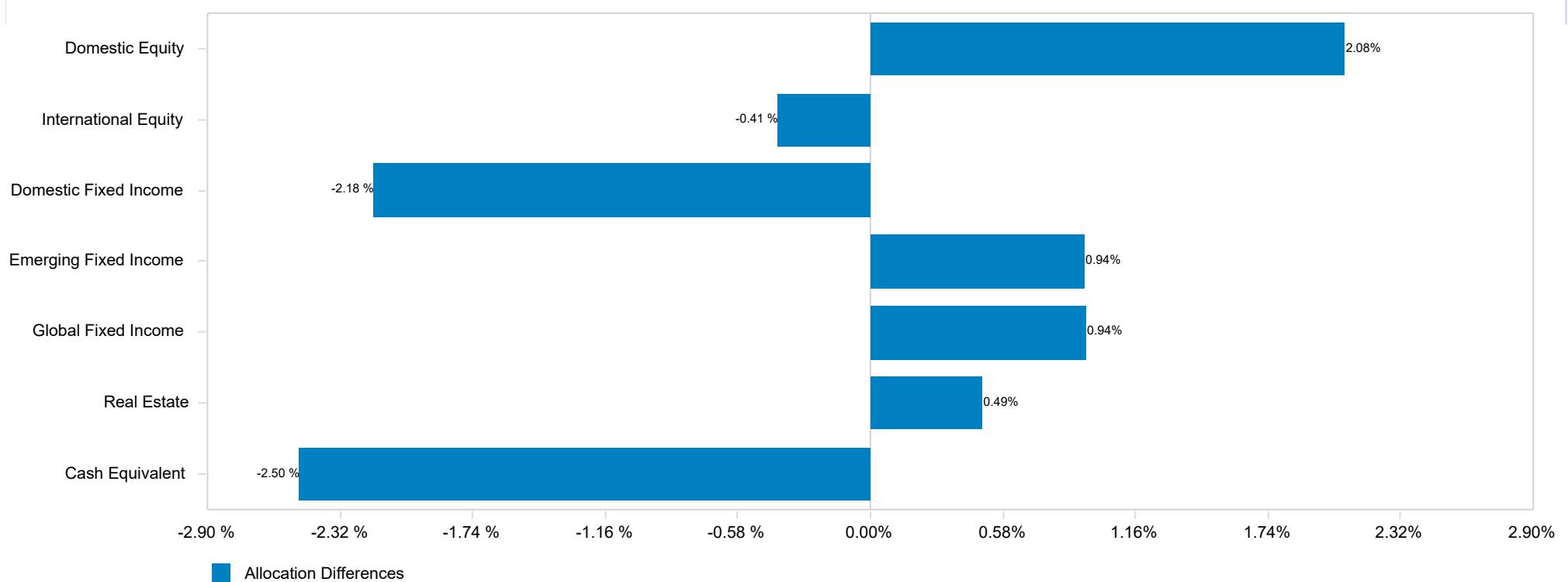


Multi Time Period Statistics
Butler County Employees Retirement Plan
As of December 31, 2022

	10 YR Return	10 YR Standard Deviation	10 YR Sharpe Ratio	15 YR Return	15 YR Standard Deviation	15 YR Sharpe Ratio						
Vanguard Tot Itl Bl;Inst (VTIFX)	N/A	N/A	N/A	N/A	N/A	N/A						
Blmbg. Global Agg ex-USD Flt Adj RIC Cpd (H)	1.86	4.05	0.29	N/A	N/A	N/A						
IM International Fixed Income (MF) Median	-1.38	8.99	-0.21	1.64	9.34	0.15						
Vanguard Em Mkt Bond;Adm (VEGBX)	N/A	N/A	N/A	N/A	N/A	N/A						
JPM GBI-EM Diversified	-2.73	12.35	-0.22	1.01	12.50	0.09						
IM Emerging Markets Debt - LC (MF) Median	-0.79	12.98	-0.05	N/A	N/A	N/A						
Vanguard RE Idx;Inst (VGSNX)	6.44	(30)	16.79	(36)	0.41	(36)	6.33	(28)	23.59	(36)	0.36	(29)
Vanguard Spliced REIT Index	6.53		16.79		0.42		6.33		23.59		0.36	
IM Real Estate Sector (MF) Median	6.03		16.51		0.40		5.66		23.25		0.33	

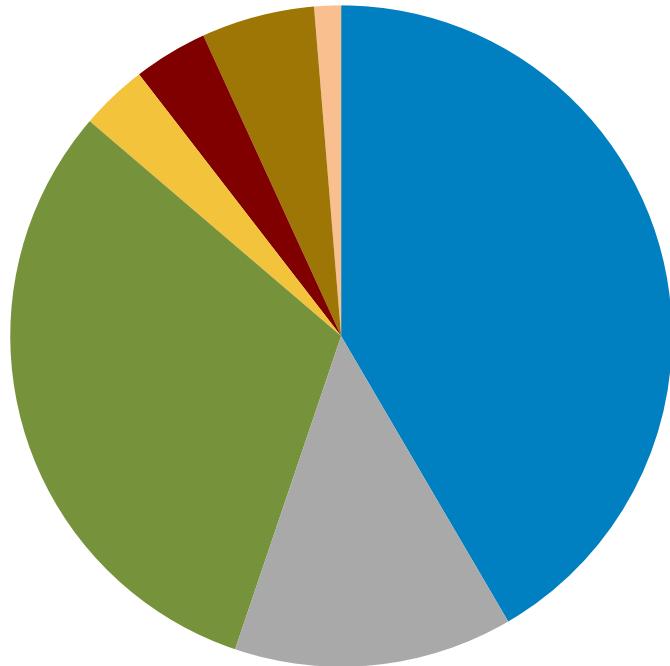
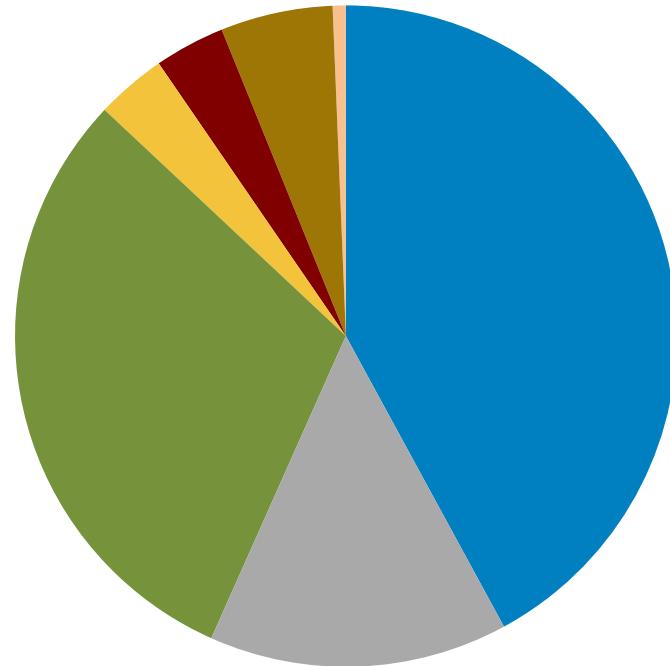
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Asset Allocation Compliance

	Current Allocation (%)	Target Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)
Domestic Equity	42.08	40.00	15.00	65.00
International Equity	14.59	15.00	5.00	25.00
Domestic Fixed Income	30.32	32.50	15.00	50.00
Emerging Fixed Income	3.44	2.50	0.00	5.00
Global Fixed Income	3.44	2.50	0.00	5.00
Real Estate	5.49	5.00	0.00	10.00
Cash Equivalent	0.00	2.50	0.00	5.00
Total Fund	100.00	100.00	N/A	N/A

Asset Allocation By Segment as of
September 30, 2022 : \$215,269,854Asset Allocation By Segment as of
December 31, 2022 : \$226,499,809

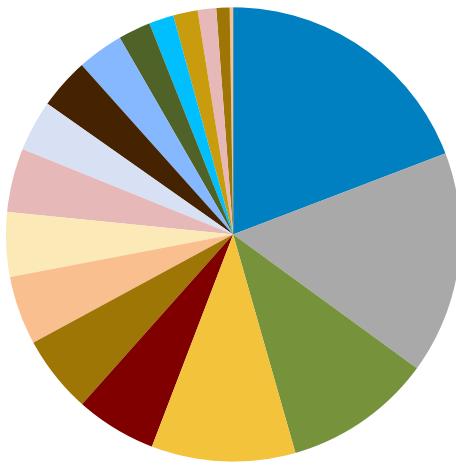
Allocation

Segments	Market Value	Allocation
Domestic Equity	89,510,915	41.6
International Equity	29,300,574	13.6
Domestic Fixed Income	66,886,716	31.1
Emerging Fixed Income	7,049,069	3.3
Global Fixed Income	7,796,977	3.6
Real Estate	11,905,476	5.5
Cash	2,820,127	1.3

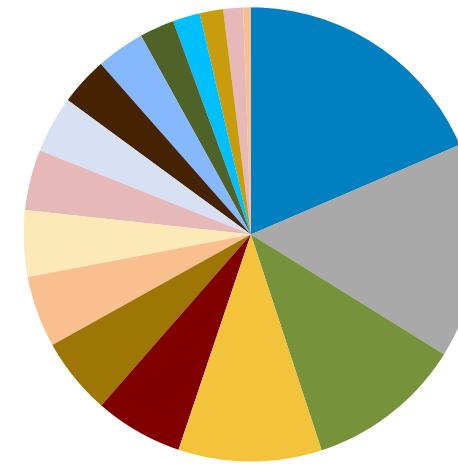
Allocation

Segments	Market Value	Allocation
Domestic Equity	95,300,856	42.1
International Equity	33,057,593	14.6
Domestic Fixed Income	68,675,773	30.3
Emerging Fixed Income	7,786,237	3.4
Global Fixed Income	7,801,035	3.4
Real Estate	12,424,512	5.5
Cash	1,453,802	0.6

Asset Allocation By Manager as of September 30, 2022 : \$215,269,854



Asset Allocation By Manager as of December 31, 2022 : \$226,499,809



Allocation

	Market Value	Allocation
Vanguard Total Bond Index (VBTIX)	41,296,894	19.2
Vanguard Inst'l Index Fund (VINIX)	34,092,007	15.8
Vanguard Mid-Cap 400 Index Fund I (VSPMX)	22,738,561	10.6
Vanguard High Yield Bond Fund (VWEAX)	22,035,297	10.2
Vanguard Value Index (VIVIX)	12,375,018	5.7
Vanguard Real Estate Index Fund (VGSNX)	11,905,476	5.5
Vanguard Small-Cap 600 Index I (VSMSX)	10,536,281	4.9
Vanguard Emerging Markets Index (VEMIX)	9,894,449	4.6
Vanguard Growth Index (VIGIX)	9,769,048	4.5
Vanguard Developed Markets Index (VTMNX)	7,834,856	3.6
Vanguard International Bond (VTIFX)	7,805,066	3.6
Vanguard EM Bond (VEGBX)	7,089,567	3.3
Vanguard FTSE AW ex-US SC Index (VFSNX)	4,970,036	2.3
Vanguard Intl Value (VTRIX)	3,766,072	1.7
Vanguard Short Term Bond Index (VBITX)	3,755,405	1.7
Vanguard Intl Growth (VWILX)	2,835,160	1.3
Cash	2,035,425	0.9
NMA	535,235	0.2

Allocation

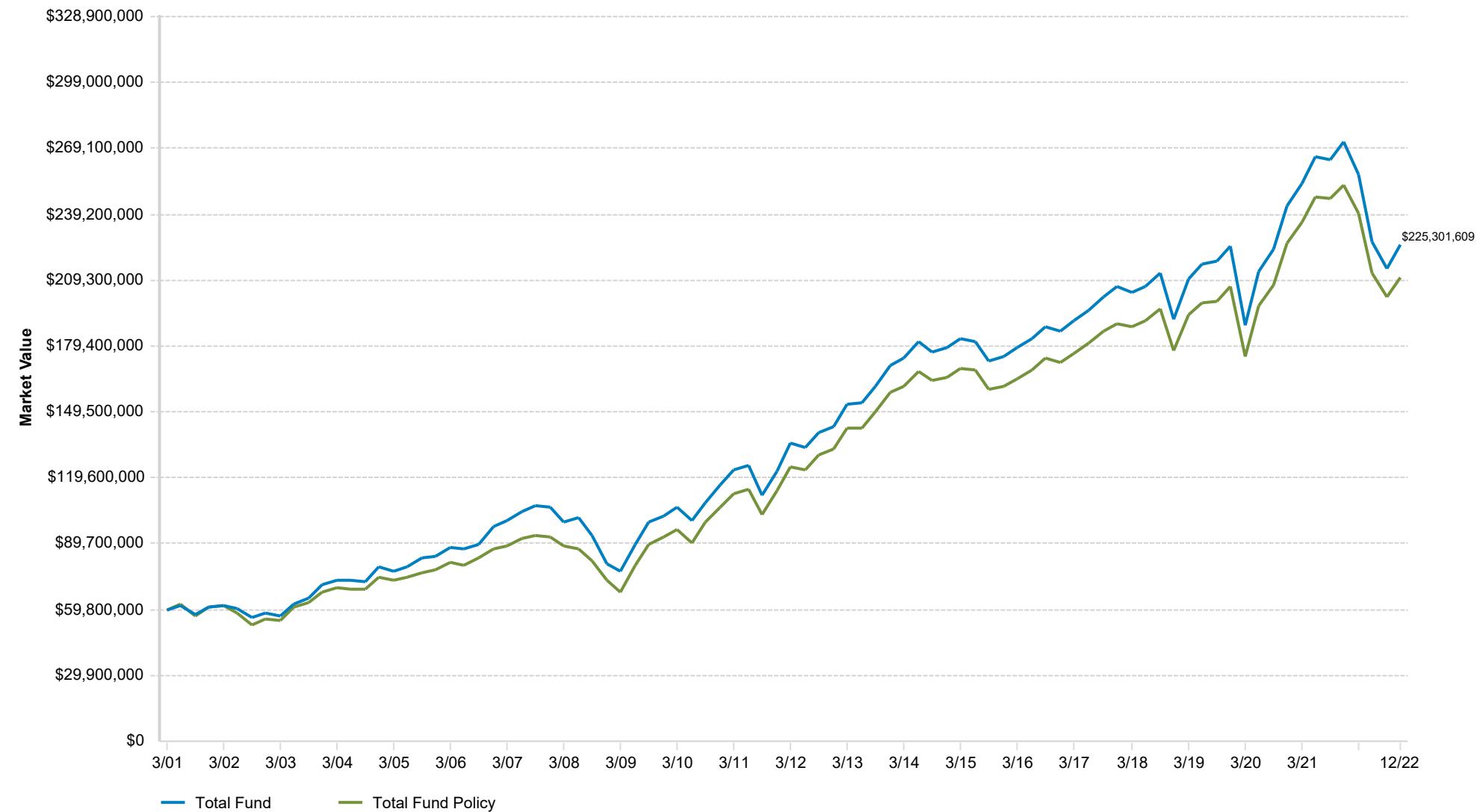
	Market Value	Allocation
Vanguard Total Bond Index (VBTIX)	41,986,723	18.5
Vanguard Inst'l Index Fund (VINIX)	34,668,004	15.3
Vanguard Mid-Cap 400 Index Fund I (VSPMX)	25,186,430	11.1
Vanguard High Yield Bond Fund (VWEAX)	23,109,650	10.2
Vanguard Value Index (VIVIX)	14,189,986	6.3
Vanguard Real Estate Index Fund (VGSNX)	12,424,512	5.5
Vanguard Small-Cap 600 Index I (VSMSX)	11,501,932	5.1
Vanguard Emerging Markets Index (VEMIX)	10,707,303	4.7
Vanguard Growth Index (VIGIX)	9,754,505	4.3
Vanguard Developed Markets Index (VTMNX)	9,174,392	4.1
Vanguard International Bond (VTIFX)	7,801,035	3.4
Vanguard EM Bond (VEGBX)	7,786,237	3.4
Vanguard FTSE AW ex-US SC Index (VFSNX)	5,623,130	2.5
Vanguard Intl Value (VTRIX)	4,359,758	1.9
Vanguard Short Term Bond Index (VBITX)	3,795,614	1.7
Vanguard Intl Growth (VWILX)	3,193,010	1.4
NMA	1,198,200	0.5
Cash	39,388	0.0

Asset Allocation Attributes																	
	Domestic Equity		International Equity		Domestic Fixed Income		Emerging Fixed Income		Global Fixed Income		Real Estate		Cash		Total Fund		
	(\$)	%	(\$)	%	(\$)	%	(\$)	%	(\$)	%	(\$)	%	(\$)	%	(\$)	%	
Vanguard Inst'l Index Fund (VINIX)	34,668	100.0	-	-	-	-	-	-	-	-	-	-	-	-	34,668	15.3	
Vanguard Value Index (VIVIX)	14,190	100.0	-	-	-	-	-	-	-	-	-	-	-	-	14,190	6.3	
Vanguard Small-Cap 600 Index I (VSMSX)	11,502	100.0	-	-	-	-	-	-	-	-	-	-	-	-	11,502	5.1	
Vanguard Mid-Cap 400 Index Fund I (VSPMX)	25,186	100.0	-	-	-	-	-	-	-	-	-	-	-	-	25,186	11.1	
Vanguard Growth Index (VIGIX)	9,755	100.0	-	-	-	-	-	-	-	-	-	-	-	-	9,755	4.3	
Twin Capital Enhanced Index	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	
Vanguard Intl Value (VTRIX)	-	-	4,360	100.0	-	-	-	-	-	-	-	-	-	-	4,360	1.9	
Vanguard Intl Growth (VWILX)	-	-	3,193	100.0	-	-	-	-	-	-	-	-	-	-	3,193	1.4	
Vanguard FTSE AW ex-US SC Index (VFSNX)	-	-	5,623	100.0	-	-	-	-	-	-	-	-	-	-	5,623	2.5	
Vanguard Developed Markets Index (VTMNX)	-	-	9,174	100.0	-	-	-	-	-	-	-	-	-	-	9,174	4.1	
Vanguard Emerging Markets Index (VEMIX)	-	-	10,707	100.0	-	-	-	-	-	-	-	-	-	-	10,707	4.7	
Vanguard High Yield Bond Fund (VWEAX)	-	-	-	-	23,001	99.5	-	-	-	-	-	-	-	109	0.5	23,110	10.2
Vanguard Short Term Bond Index (VBITX)	-	-	-	-	3,790	99.8	-	-	-	-	-	-	-	6	0.2	3,796	1.7
Vanguard Total Bond Index (VBTIX)	-	-	-	-	41,886	99.8	-	-	-	-	-	-	-	101	0.2	41,987	18.5
Vanguard International Bond (VTIFX)	-	-	-	-	-	-	-	-	7,801	100.0	-	-	-	-	7,801	3.4	
Vanguard EM Bond (VEGBX)	-	-	-	-	-	-	7,786	100.0	-	-	-	-	-	-	7,786	3.4	
Vanguard Real Estate Index Fund (VGSNX)	-	-	-	-	-	-	-	-	-	-	12,425	100.0	-	-	12,425	5.5	
Cash	-	-	-	-	-	-	-	-	-	-	-	-	-	39	100.0	39	0.0
NMA	-	-	-	-	-	-	-	-	-	-	-	-	-	1,198	100.0	1,198	0.5
Total Fund	95,301	42.1	33,058	14.6	68,676	30.3	7,786	3.4	7,801	3.4	12,425	5.5	1,454	0.6	226,500	100.0	



Schedule of Investable Assets
Total Fund
January 1, 2001 To December 31, 2022

Schedule of Investable Assets



Schedule of Investable Assets

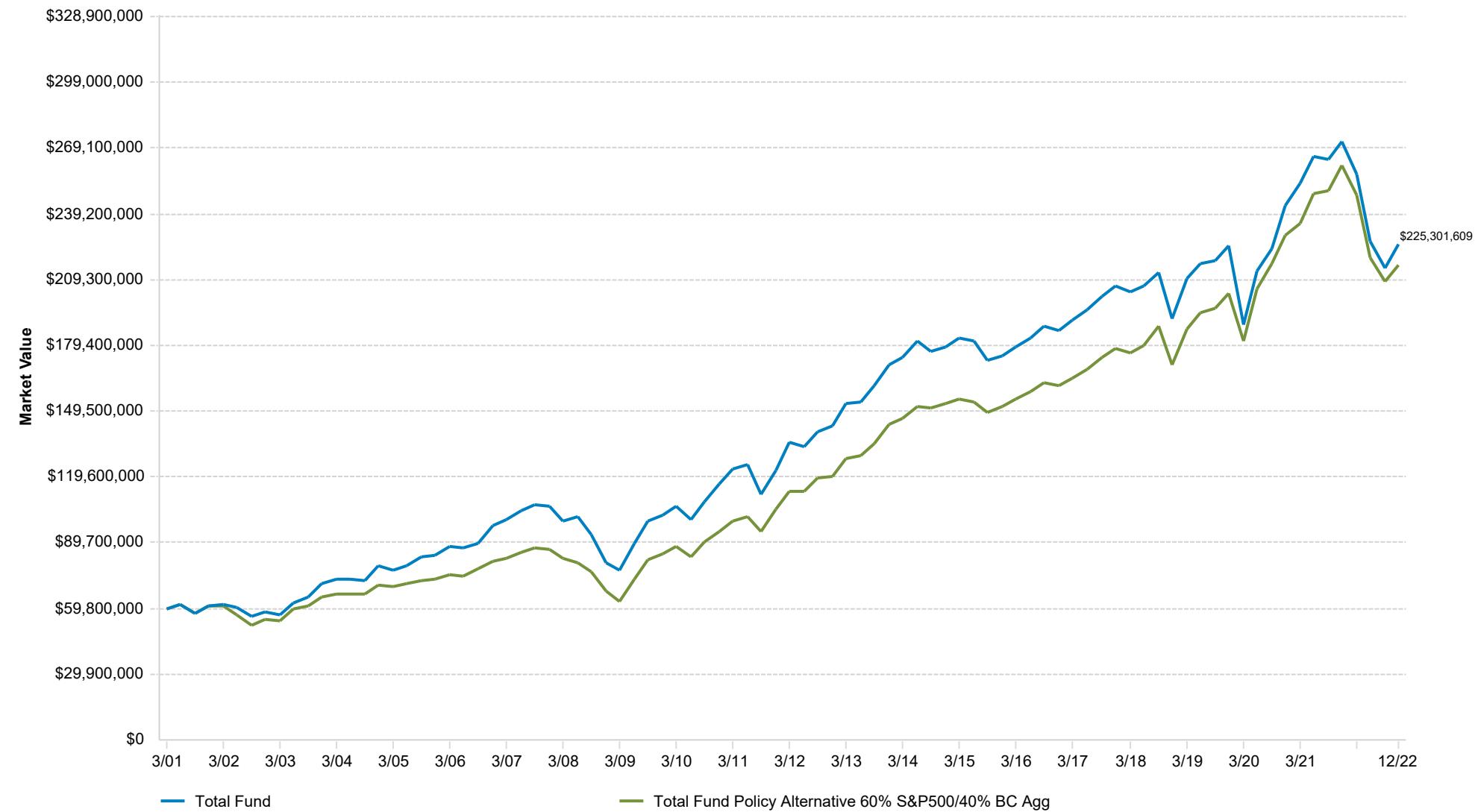
Periods Ending	Beginning Market Value \$	Net Cash Flow \$	Gain/Loss \$	Ending Market Value \$	%Return
Jan-2001 To Dec-2022	59,528,253	-23,554,123	189,327,479	225,301,609	258.86

Does not include Non-Measured Assets (NMA).



Schedule of Investable Assets
Total Fund
January 1, 2001 To December 31, 2022

Schedule of Investable Assets



Schedule of Investable Assets

Periods Ending	Beginning Market Value \$	Net Cash Flow \$	Gain/Loss \$	Ending Market Value \$	%Return
Jan-2001 To Dec-2022	59,528,253	-23,554,123	189,327,479	225,301,609	258.86

Does not include Non-Measured Assets (NMA).



Fee Analysis
Total Fund
As of December 31, 2022

	Estimated Annual Fee (%)	Market Value (\$)	Estimated Annual Fee (\$)	Fee Schedule
Vanguard Inst'l Index Fund (VINIX)	0.03	34,668,004	10,400	0.03 % of Assets
Vanguard Growth Index (VIGIX)	0.04	9,754,505	3,902	0.04 % of Assets
Vanguard Value Index (VIVIX)	0.04	14,189,986	5,676	0.04 % of Assets
Vanguard Mid-Cap 400 Index Fund I (VSPMX)	0.08	25,186,430	20,149	0.08 % of Assets
Vanguard Small-Cap 600 Index I (VSMSX)	0.08	11,501,932	9,202	0.08 % of Assets
Vanguard Intl Value (VTRIX)	0.35	4,359,758	15,259	0.35 % of Assets
Vanguard Intl Growth (VWILX)	0.33	3,193,010	10,537	0.33 % of Assets
Vanguard FTSE AW ex-US SC Index (VFSNX)	0.11	5,623,130	6,185	0.11 % of Assets
Vanguard Developed Markets Index (VTMNX)	0.05	9,174,392	4,587	0.05 % of Assets
Vanguard Emerging Markets Index (VEMIX)	0.10	10,707,303	10,707	0.10 % of Assets
Vanguard Short Term Bond Index (VBITX)	0.05	3,795,614	1,898	0.05 % of Assets
Vanguard Total Bond Index (VBTIX)	0.03	41,986,723	12,596	0.03 % of Assets
Vanguard High Yield Bond Fund (VWEAX)	0.13	23,109,650	30,043	0.13 % of Assets
Vanguard International Bond (VTIFX)	0.07	7,801,035	5,461	0.07 % of Assets
Vanguard EM Bond (VEGBX)	0.45	7,786,237	35,038	0.45 % of Assets
Vanguard Real Estate Index Fund (VGSNX)	0.10	12,424,512	12,425	0.10 % of Assets
Total Fund Performance	0.09	225,301,609	194,065	

Does not include Non-Measured Assets (NMA).



Financial Reconciliation
Total Fund
as of December 31, 2022

Quarter To Date	Market Value 10/01/2022	Management Fees	Net Flows	Return On Investment	Market Value 12/31/2022
Domestic Equity					
Vanguard Inst'l Index Fund (VINIX)	34,092,007	-	-2,000,000	2,575,997	34,668,004
Vanguard Value Index (VIVIX)	12,375,018	-	-	1,814,968	14,189,986
Vanguard Small-Cap 600 Index I (VSMSX)	10,536,281	-	-	965,651	11,501,932
Vanguard Mid-Cap 400 Index Fund I (VSPMX)	22,738,561	-	-	2,447,869	25,186,430
Vanguard Growth Index (VIGIX)	9,769,048	-	-	-14,543	9,754,505
International Equity					
Vanguard Intl Value (VTRIX)	3,766,072	-	-	593,686	4,359,758
Vanguard Intl Growth (VWILX)	2,835,160	-	-	357,850	3,193,010
Vanguard FTSE AW ex-US SC Index (VFSNX)	4,970,036	-	-	653,094	5,623,130
Vanguard Developed Markets Index (VTMNX)	7,834,856	-	-	1,339,536	9,174,392
Vanguard Emerging Markets Index (VEMIX)	9,894,449	-	-	812,854	10,707,303
Fixed Income					
Vanguard Short Term Bond Index (VBITX)	3,755,405	-	-	40,209	3,795,614
Vanguard Total Bond Index (VBTIX)	41,296,894	-	-	689,830	41,986,723
Vanguard High Yield Bond Fund (VWEAX)	22,035,297	-	-	1,074,353	23,109,650
Vanguard International Bond (VTIFX)	7,805,066	-	-	-4,030	7,801,035
Vanguard EM Bond (VEGBX)	7,089,567	-	-	696,669	7,786,237
REIT					
Vanguard Real Estate Index Fund (VGSNX)	11,905,476	-	-	519,036	12,424,512
Cash	2,035,425	-	-2,000,000	3,962	39,388
Total Fund Performance	214,734,618	-	-4,000,000	14,566,991	225,301,609
NMA	535,235	-	662,965	-	1,198,200
Total Fund	215,269,854	-	-3,337,035	14,566,991	226,499,809

Financial Reconciliation
Total Fund
as of December 31, 2022

Year To Date	Market Value 01/01/2022	Management Fees	Net Flows	Return On Investment	Market Value 12/31/2022
Domestic Equity					
Vanguard Inst'l Index Fund (VINIX)	44,790,891	-	-2,000,000	-8,122,887	34,668,004
Vanguard Value Index (VIVIX)	14,487,646	-	-	-297,660	14,189,986
Vanguard Small-Cap 600 Index I (VSMSX)	13,722,499	-	-	-2,220,567	11,501,932
Vanguard Mid-Cap 400 Index Fund I (VSPMX)	28,985,592	-	-	-3,799,163	25,186,430
Vanguard Growth Index (VIGIX)	14,588,707	-	-	-4,834,202	9,754,505
Twin Capital Enhanced Index	15,820	-	-16,212	392	-
International Equity					
Vanguard Intl Value (VTRIX)	4,935,181	-	-	-575,423	4,359,758
Vanguard Intl Growth (VWILX)	4,613,759	-	-	-1,420,749	3,193,010
Vanguard FTSE AW ex-US SC Index (VFSNX)	7,140,659	-	-	-1,517,530	5,623,130
Vanguard Developed Markets Index (VTMINX)	10,837,143	-	-	-1,662,751	9,174,392
Vanguard Emerging Markets Index (VEMIX)	13,016,328	-	-	-2,309,025	10,707,303
Fixed Income					
Vanguard Short Term Bond Index (VBITX)	6,171,714	-	-2,000,000	-376,100	3,795,614
Vanguard Total Bond Index (VBTIX)	48,343,193	-	-	-6,356,470	41,986,723
Vanguard High Yield Bond Fund (VWEAX)	25,387,557	-	-	-2,277,908	23,109,650
Vanguard International Bond (VTIFX)	8,954,893	-	-	-1,153,858	7,801,035
Vanguard EM Bond (VEGBX)	8,951,542	-	-	-1,165,305	7,786,237
REIT					
Vanguard Real Estate Index Fund (VGSNX)	16,834,302	-	-	-4,409,790	12,424,512
Cash	17,519	-	16,492	5,377	39,388
Total Fund Performance	271,794,945	-	-3,999,720	-42,493,616	225,301,609
NMA	2,929,815	-	-1,731,615	-	1,198,200
Total Fund	274,724,760	-	-5,731,335	-42,493,616	226,499,809



Goals

- Maintain the actuarial soundness of the Plan in order to meet future obligations by preserving the inflation adjusted value of the Plan's assets after all investment expenses, administrative costs, benefit payments and refunds.
- Obtain an average annual rate of investment return equal to or greater than the actuarial assumed rate of 7.5% (net of fees), with an emphasis over a longer term (fifteen year) trailing period.

Asset Allocation Ranges (Based on IPS Second Addendum)

Asset Class	Minimum	Target	Maximum
Large Cap Core	10%	15%	20%
Large Cap Value	0%	5%	10%
Large Cap Growth	0%	5%	10%
Mid Cap Core	5%	10%	15%
Small Cap Core	0%	5%	10%
International Developed Markets	5%	7.5%	15%
International Emerging Markets	0%	5%	10%
All World ex US Small Cap	0%	2.5%	5%
Aggregate Fixed Income	10%	20%	30%
Short-Term Fixed Income	0%	2.5%	5%
High Yield Fixed Income	5%	10%	15%
Non-US Fixed Income	0%	5%	10%
Real Estate	0%	5%	10%
Cash	0%	2.5%	5%

Rebalancing Policy

The Investment Consultant will monitor the asset allocation policy and shall recommend any necessary rebalancing on a quarterly basis, or more frequently. At each quarterly Board meeting, the Investment Consultant will provide the Plan's actual and target allocations (including ranges). Upon any Board approval, the Investment Consultant will initiate rebalancing.

Other Portfolio Guidelines and Restrictions

- Additional investment policies and guidelines are contained in the formal Investment Policy Statement.

Portfolio Guidelines and Restrictions

Equity Guidelines

- Equity investment manager of a separate account should diversify their portfolio in an attempt to minimize the impact of a substantial loss in any specific sector, industry or company.
- No more than 5% of each manager's equity holdings shall be invested in the securities of any one company (valued at market).
- The economic sector weightings shall not exceed the greater of two and half times the appropriate benchmark, valued at market, or 15% of the equity portfolio.
- The market for individual security holdings in the equity portfolio shall be liquid enough to allow for easy monetization.

Fixed Income Guidelines

- A fixed income investment manager of a separate account should diversify their portfolio in an attempt to minimize the adverse effects of interest rate fluctuations and default risk.
- No more than 5% of the fixed income portfolio in any one issuer, excluding direct and/or indirect obligations of the US Government.
- The market for individual security holdings in the fixed income shall be liquid enough to allow for easy monetization.
- The minimum quality rating for any fixed income security is an “investment grade” rating as determined by at least one nationally recognized credit ratings agency. Bond held in the fixed income portfolio must be rated investment grade (“Baa/BBB”) or better by at least one agency, with the exception of securities held in a high-yield bond fund.
- The duration of the bonds held in the portfolios are at the discretion of the investment manager(s). However, the effective duration of the fixed income security should be within +/-20% of the index.

Cash & Equivalents Restrictions

- Commercial paper must be rated A-1 or P-1 by at least one nationally recognized credit rating agency.

Permissible Investments

- Permissible investments include those identified in the Plan's Asset Allocation Policy, subject to state statute and local ordinance.

Prohibited Investments

- Prohibited investments include those not specifically identified in the Plan's Asset Allocation Policy without prior approval of the Board, upon recommendation of the Investment Consultant.

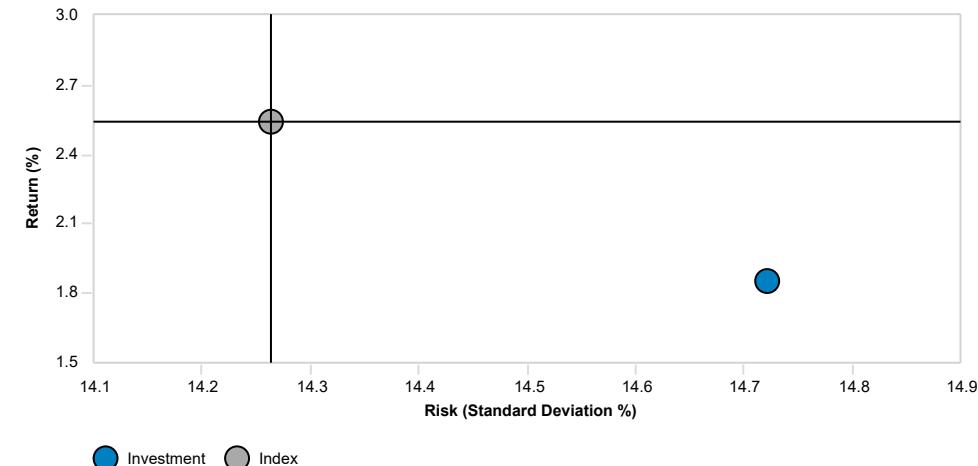
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.86	14.72	0.15	101.87	7	105.61	5
Index	2.54	14.26	0.20	100.00	7	100.00	5

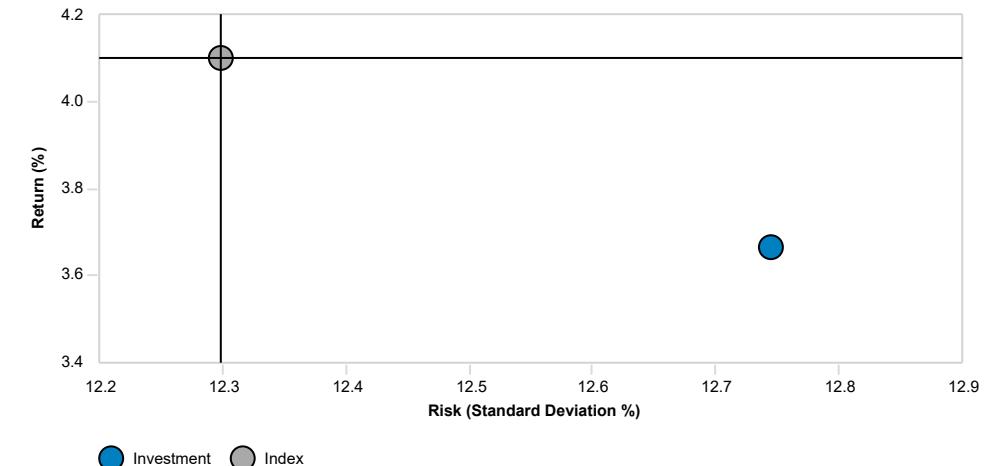
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	3.66	12.74	0.25	102.01	13	105.26	7
Index	4.10	12.30	0.29	100.00	13	100.00	7

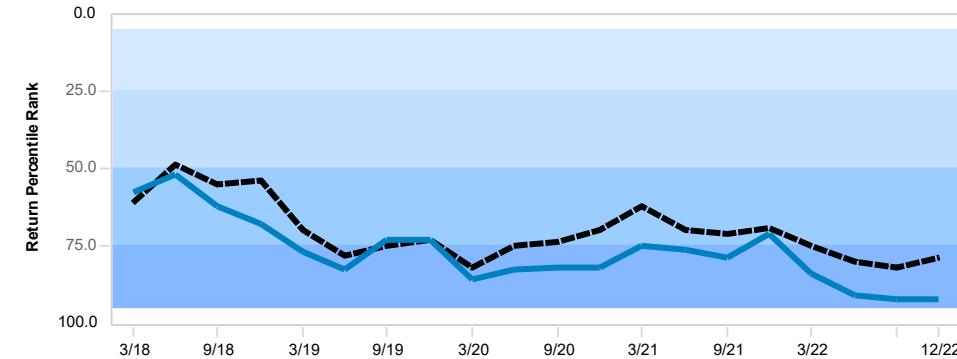
Risk and Return 3 Years



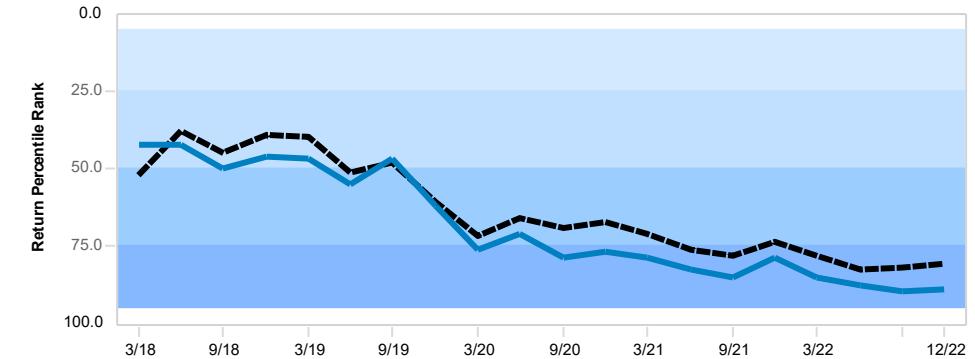
Risk and Return 5 Years



3 Year Rolling Percentile Rank All Public Plans-Total Fund



5 Year Rolling Percentile Rank All Public Plans-Total Fund



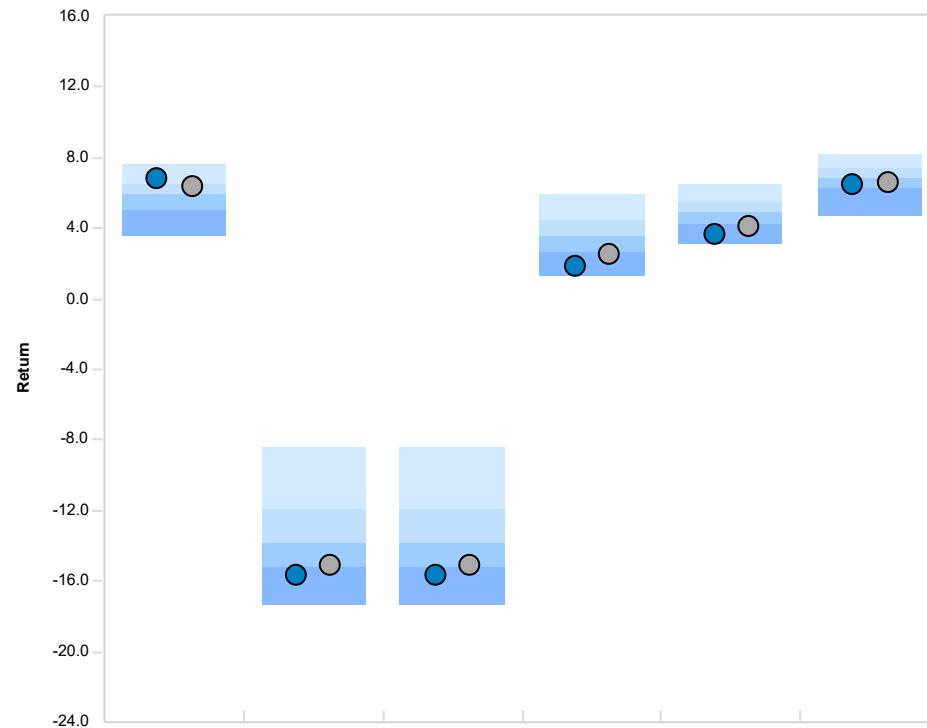
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	0 (0%)	8 (40%)	12 (60%)
Index	20	0 (0%)	1 (5%)	14 (70%)	5 (25%)

	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	6 (30%)	3 (15%)	11 (55%)
Index	20	0 (0%)	5 (25%)	9 (45%)	6 (30%)

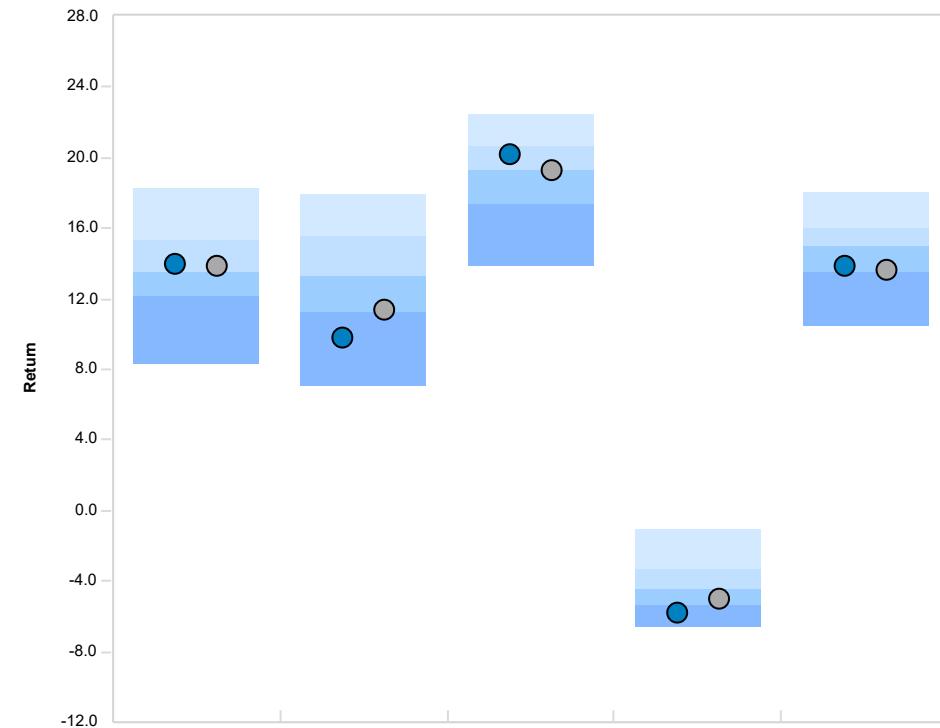
Does not include Non-Measured Assets (NMA).



Plan Sponsor Peer Group Analysis vs. All Public Plans-Total Fund



Plan Sponsor Peer Group Analysis vs. All Public Plans-Total Fund



	QTR	YTD	1 YR	3 YR	5 YR	10 YR
● Investment	6.81 (18)	-15.61 (81)	-15.61 (81)	1.86 (92)	3.66 (89)	6.51 (68)
○ Index	6.35 (35)	-15.03 (72)	-15.03 (72)	2.54 (79)	4.11 (81)	6.63 (64)
Median	5.98	-13.82	-13.82	3.54	4.92	6.86

	2021	2020	2019	2018	2017
● Investment	14.00 (43)	9.84 (86)	20.21 (36)	-5.76 (86)	13.91 (68)
○ Index	13.87 (47)	11.44 (73)	19.29 (51)	-4.94 (64)	13.67 (74)
Median	13.58	13.29	19.35	-4.45	14.96

Financial Reconciliation Since Inception Ending December 31, 2022

	Market Value 04/01/2001	Net Flows	Return On Investment	Market Value 12/31/2022
Investment	59,528,253	-24,400,163	190,173,519	225,301,609

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-5.15	-11.85	-5.51	5.02	-0.74	4.84
Index	-4.91	-11.37	-5.06	4.75	-0.48	4.86

Does not include Non-Measured Assets (NMA).



Strategy Review
Vanguard Instl Indx;Inst (VINIX) | S&P 500 Index
As of December 31, 2022

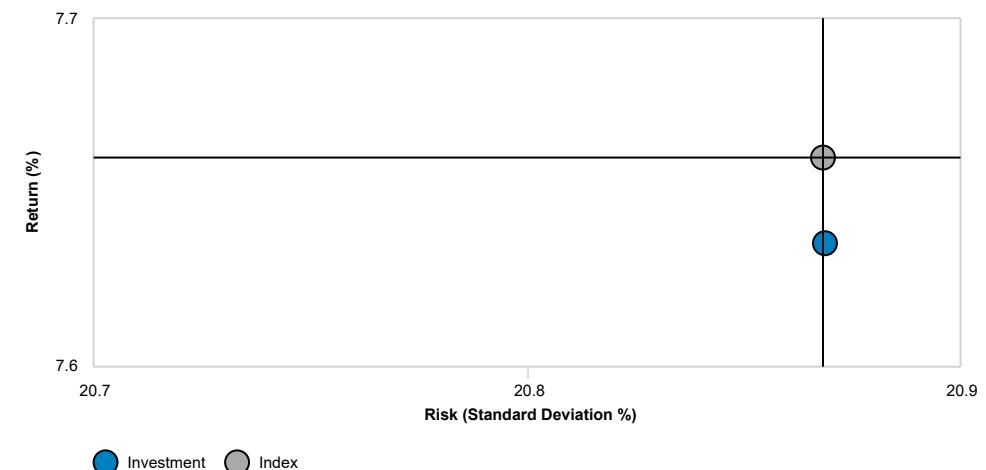
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	7.64	20.87	0.42	99.97	8	100.05	4
Index	7.66	20.87	0.42	100.00	8	100.00	4

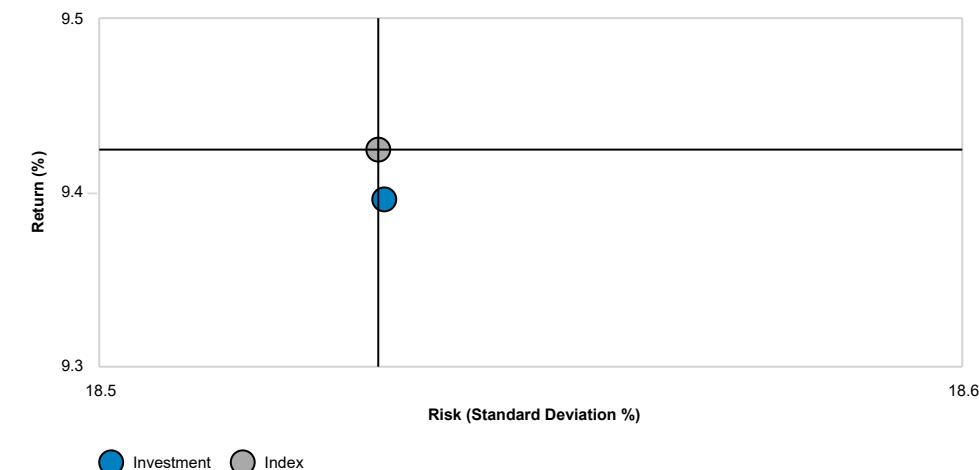
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	9.40	18.53	0.51	99.95	14	100.05	6
Index	9.42	18.53	0.51	100.00	14	100.00	6

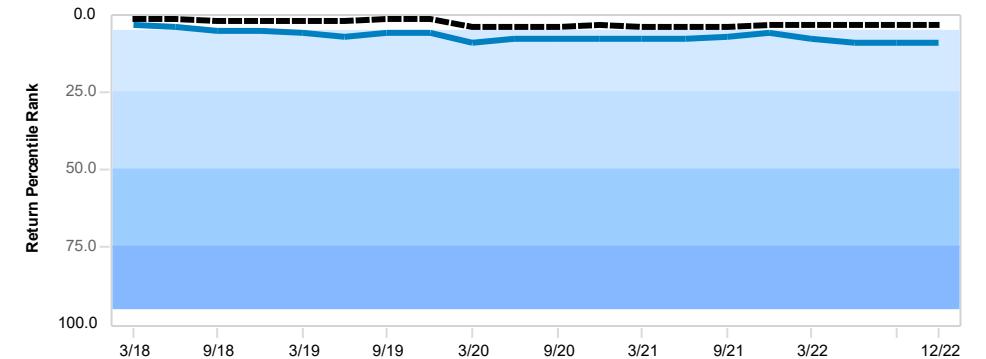
Risk and Return 3 Years



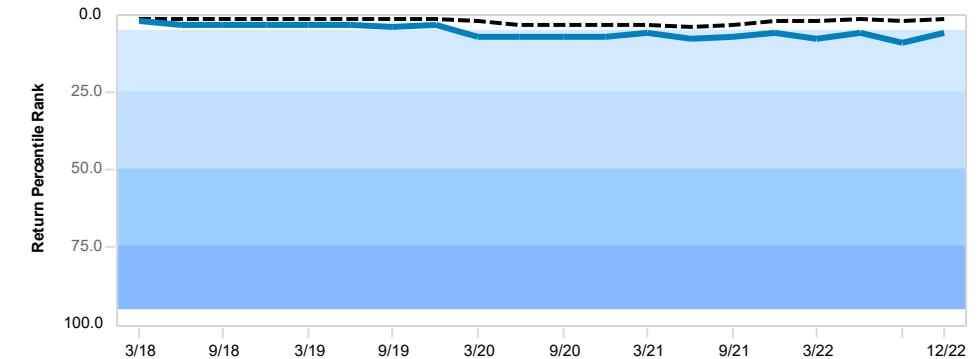
Risk and Return 5 Years



3 Year Rolling Percentile Rank IM S&P 500 Index (MF)



5 Year Rolling Percentile Rank IM S&P 500 Index (MF)



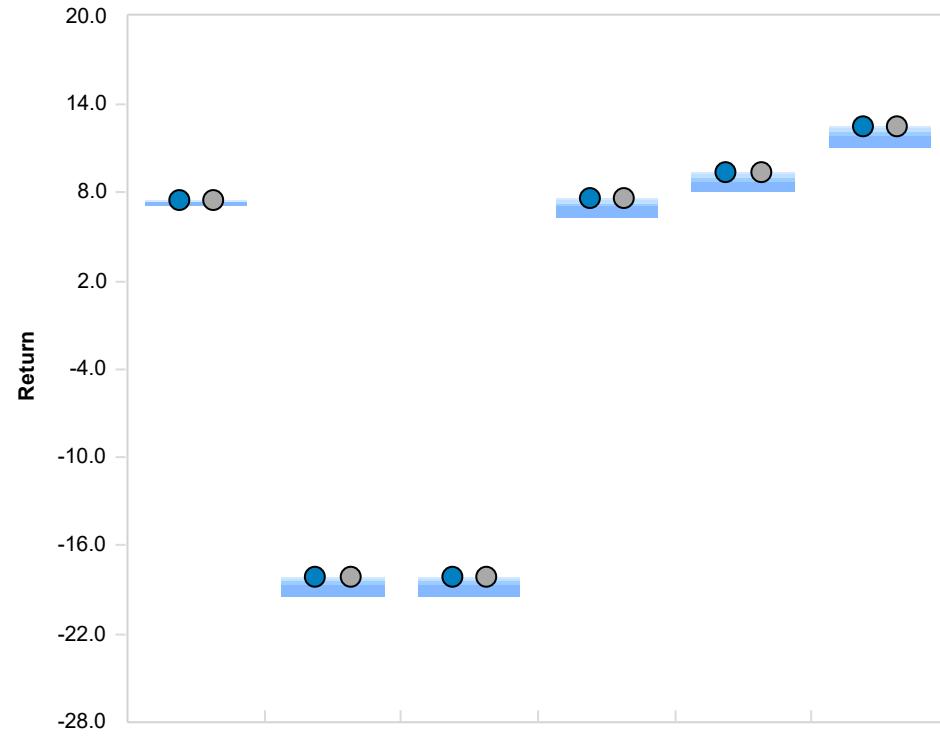
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	20 (100%)	0 (0%)	0 (0%)	0 (0%)
Index	20	20 (100%)	0 (0%)	0 (0%)	0 (0%)

	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	20 (100%)	0 (0%)	0 (0%)	0 (0%)
Index	20	20 (100%)	0 (0%)	0 (0%)	0 (0%)

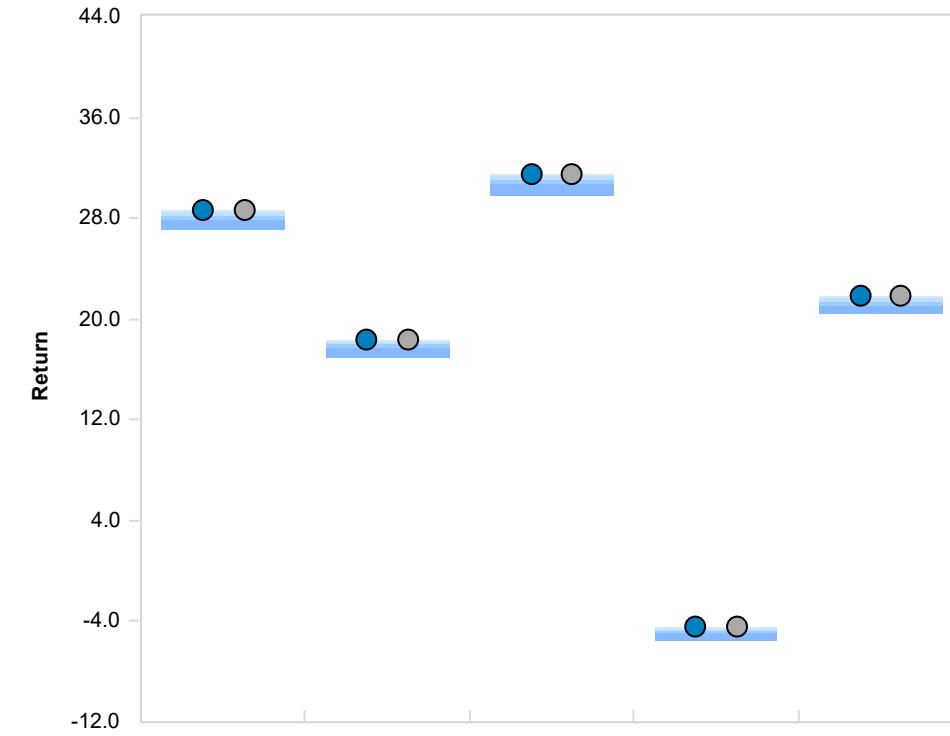
Inception date for VINIX is 12/2020. Manager returns for VINIX have been used for this report.



Peer Group Analysis - IM S&P 500 Index (MF)



Peer Group Analysis - IM S&P 500 Index (MF)



Financial Reconciliation Since Inception Ending December 31, 2022

No data found.

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-4.89 (16)	-16.11 (14)	-4.60 (9)	11.02 (13)	0.57 (10)	8.54 (12)
Index	-4.88 (5)	-16.10 (8)	-4.60 (6)	11.03 (3)	0.58 (1)	8.55 (3)
Median	-4.94	-16.17	-4.68	10.94	0.51	8.46

Inception date for VINIX is 12/2020. Manager returns for VINIX have been used for this report.



Fund Information

Fund Name :	Vanguard Institutional Index Fund: Vanguard Institutional Index Fund; Institutional Shares	Portfolio Assets :	\$243,838 Million
Fund Family :	Vanguard	Portfolio Manager :	Butler/Louie
Ticker :	VINIX	PM Tenure :	2000--2017
Inception Date :	07/31/1990	Fund Style :	IM S&P 500 Index (MF)
Fund Assets :	\$103,278 Million	Style Benchmark :	S&P 500 Index
Portfolio Turnover :	3%		

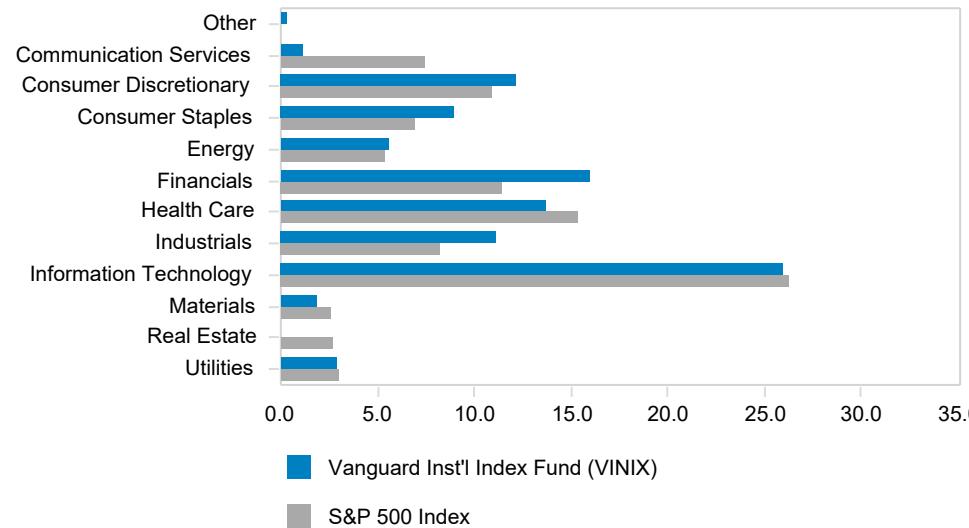
Portfolio Characteristics As of 10/31/2022

	Portfolio	Benchmark
Total Securities	505	503
Avg. Market Cap	449,754,472,445	471,866,342,604
Price/Earnings (P/E)	27.46	19.67
Price/Book (P/B)	8.46	3.89
Dividend Yield	2.03	1.72
Annual EPS	45.28	13.76
5 Yr EPS	18.55	17.08
3 Yr EPS Growth	19.17	N/A
Beta	N/A	1.00

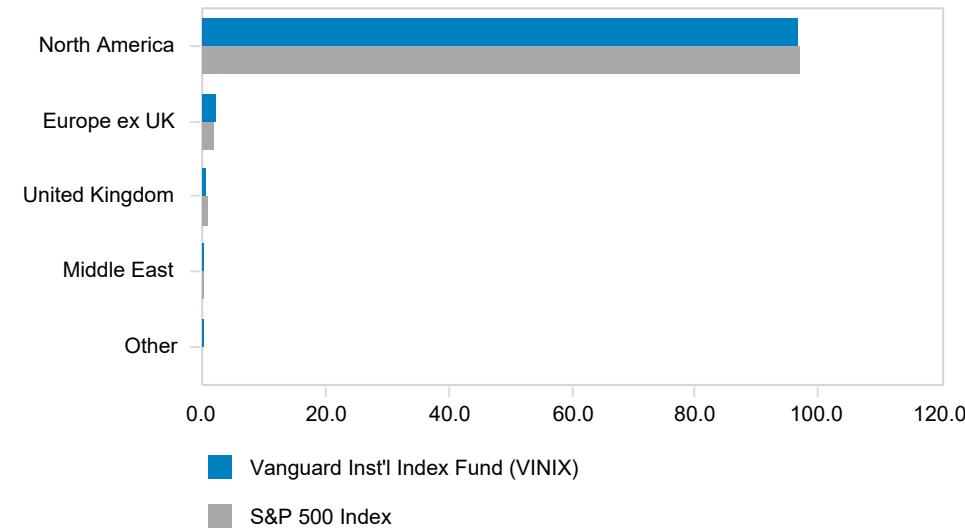
Top Ten Securities As of 10/31/2022

Apple Inc ORD	7.1 %
Microsoft Corp ORD	5.3 %
Amazon.com Inc ORD	2.8 %
Tesla Inc ORD	1.9 %
Alphabet Inc Class A ORD	1.7 %
Berkshire Hathaway Inc ORD	1.6 %
UnitedHealth Group Inc ORD	1.6 %
Alphabet Inc Class C ORD	1.6 %
Exxon Mobil Corp ORD	1.4 %
Johnson & Johnson ORD	1.4 %

Sector Weights As of 10/31/2022



Region Weights As of 10/31/2022



Statistics provided by Lipper. Most recent available data shown.



Strategy Review
Vanguard Growth Index (VIGIX) | Vanguard Growth Index Hybrid
As of December 31, 2022

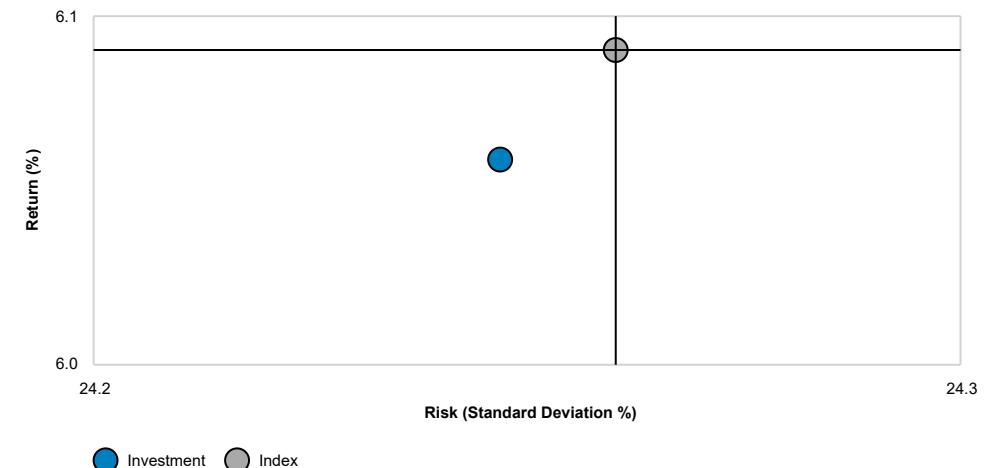
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	6.06	24.25	0.33	99.91	7	100.00	5
Index	6.09	24.26	0.33	100.00	7	100.00	5

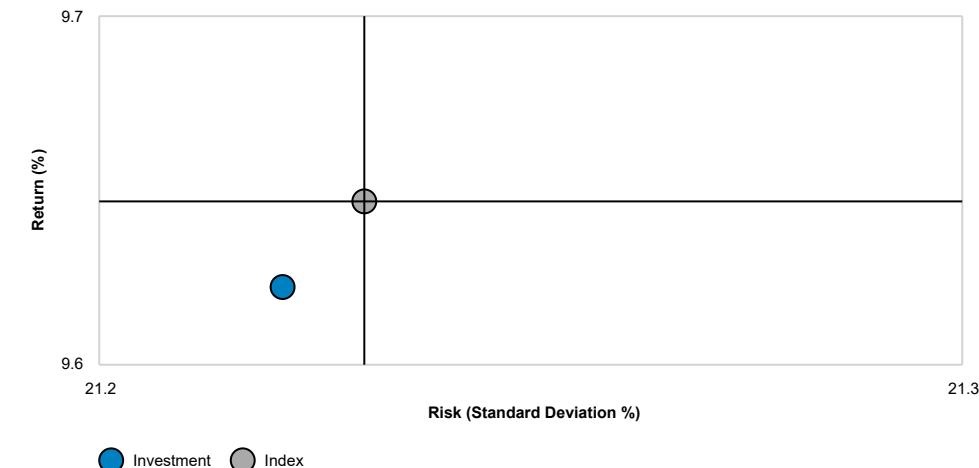
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	9.62	21.22	0.48	99.93	14	100.00	6
Index	9.65	21.23	0.48	100.00	14	100.00	6

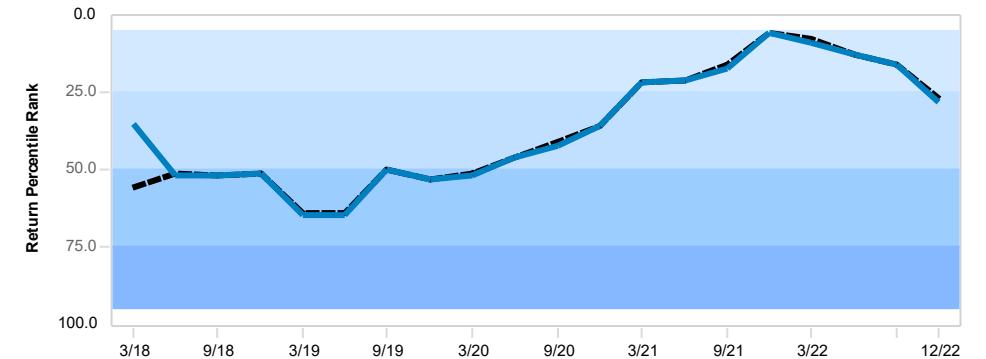
Risk and Return 3 Years



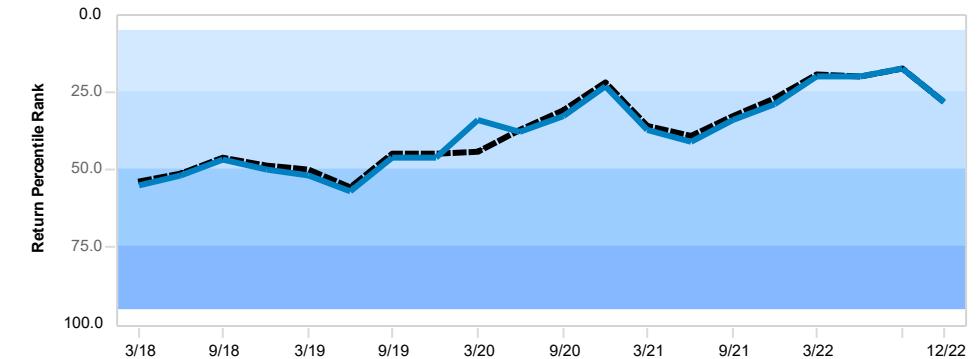
Risk and Return 5 Years



3 Year Rolling Percentile Rank IM U.S. Large Cap Growth Equity (MF)



5 Year Rolling Percentile Rank IM U.S. Large Cap Growth Equity (MF)



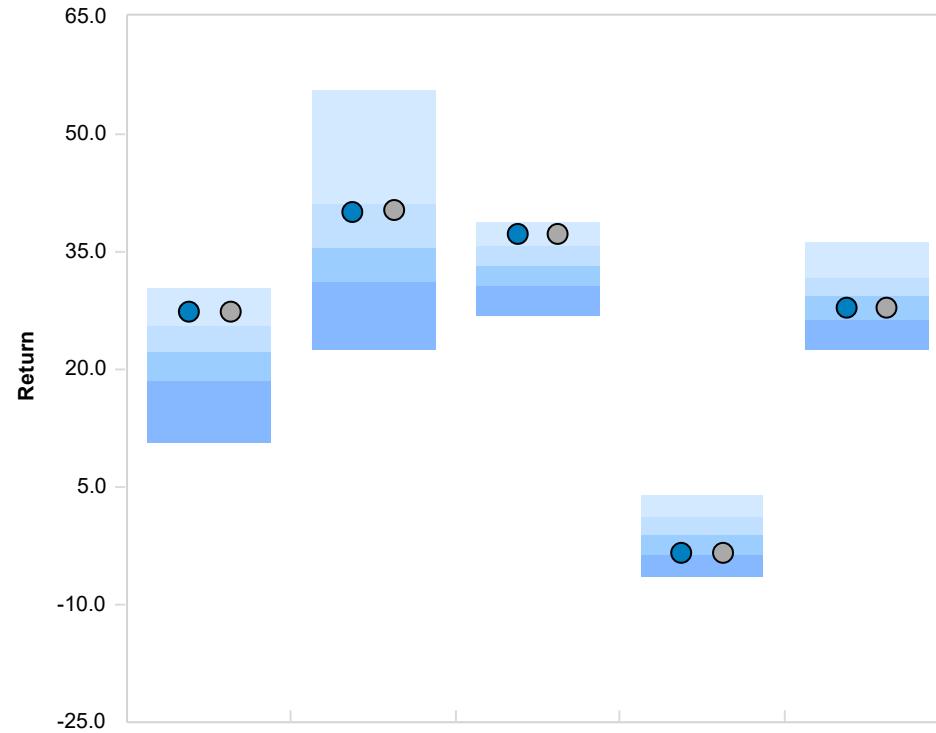
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	7 (35%)	6 (30%)	7 (35%)	0 (0%)
Index	20	7 (35%)	5 (25%)	8 (40%)	0 (0%)

	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	4 (20%)	12 (60%)	4 (20%)	0 (0%)
Index	20	4 (20%)	13 (65%)	3 (15%)	0 (0%)

Peer Group Analysis - IM U.S. Large Cap Growth Equity (MF)



Peer Group Analysis - IM U.S. Large Cap Growth Equity (MF)



Financial Reconciliation Since Inception Ending December 31, 2022

	Market Value 05/01/2010	Net Flows	Return On Investment	Market Value 12/31/2022
Investment	16,642,537	-27,644,975	20,756,943	9,754,505

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-3.79	-22.41	-10.29	10.73	1.38	11.70
Index	-3.78	-22.42	-10.28	10.74	1.39	11.71

Fund Information

Fund Name :	Vanguard Index Funds: Vanguard Growth Index Fund; Institutional Class Shares	Portfolio Assets :	\$146,674 Million
Fund Family :	Vanguard	Portfolio Manager :	O'Reilly/Nejman
Ticker :	VIGIX	PM Tenure :	2000--2016
Inception Date :	05/14/1998	Fund Style :	IM U.S. Large Cap Growth Equity (MF)
Fund Assets :	\$20,220 Million	Style Benchmark :	CRSP U.S. Large Cap Growth TR Index
Portfolio Turnover :	8%		

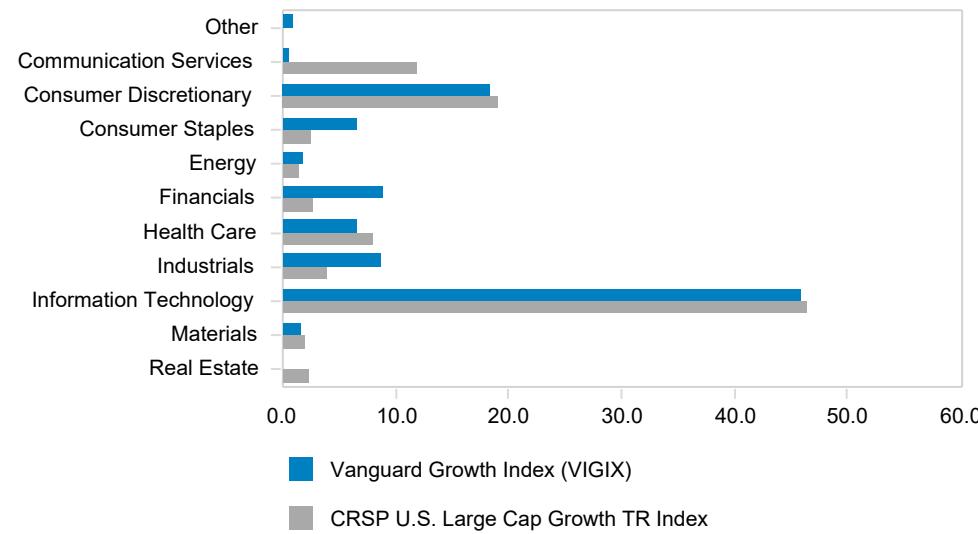
Portfolio Characteristics As of 10/31/2022

	Portfolio	Benchmark
Total Securities	251	248
Avg. Market Cap	725,546,910,322	759,733,604,554
Price/Earnings (P/E)	33.40	27.16
Price/Book (P/B)	12.34	7.05
Dividend Yield	1.19	0.75
Annual EPS	38.53	17.85
5 Yr EPS	25.53	21.66
3 Yr EPS Growth	23.26	N/A
Beta (5 Years, Monthly)	1.00	1.00

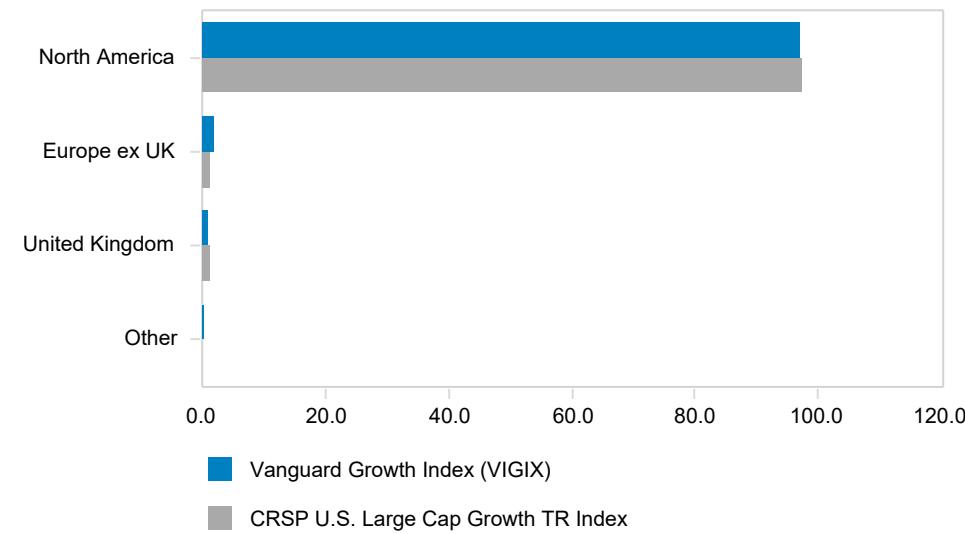
Top Ten Securities As of 10/31/2022

Apple Inc ORD	14.2 %
Microsoft Corp ORD	10.5 %
Amazon.com Inc ORD	5.4 %
Tesla Inc ORD	3.7 %
Alphabet Inc Class A ORD	3.4 %
Alphabet Inc Class C ORD	3.0 %
Visa Inc ORD	2.0 %
NVIDIA Corp ORD	2.0 %
Home Depot Inc ORD	1.8 %
Mastercard Inc ORD	1.7 %

Sector Weights As of 10/31/2022



Region Weights As of 10/31/2022



Statistics provided by Lipper. Most recent available data shown.



Strategy Review
Vanguard Value Index (VIVIX) | Vanguard Value Index Hybrid
As of December 31, 2022

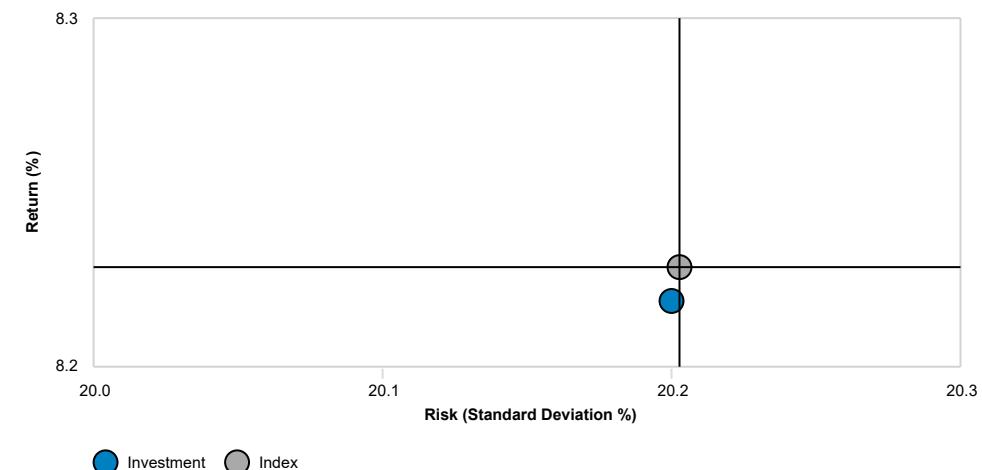
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.22	20.20	0.46	99.96	8	99.99	4
Index	8.23	20.20	0.46	100.00	8	100.00	4

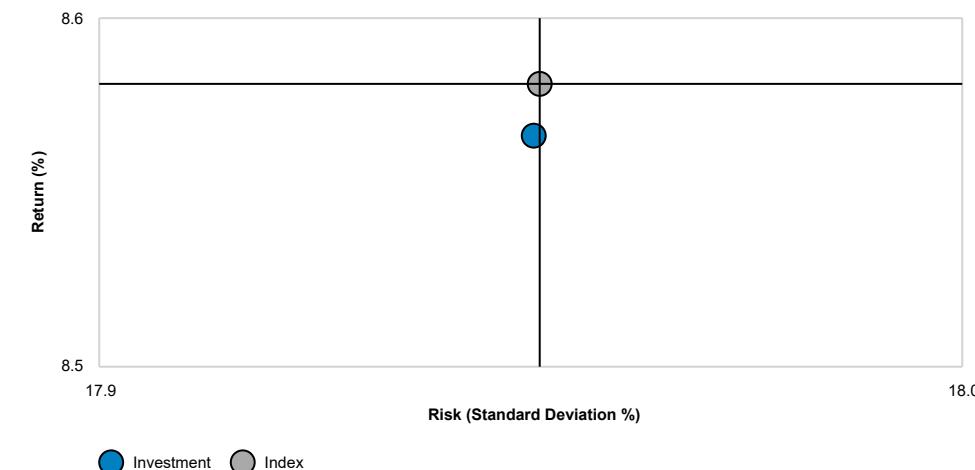
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.57	17.95	0.48	99.99	14	100.05	6
Index	8.58	17.95	0.48	100.00	14	100.00	6

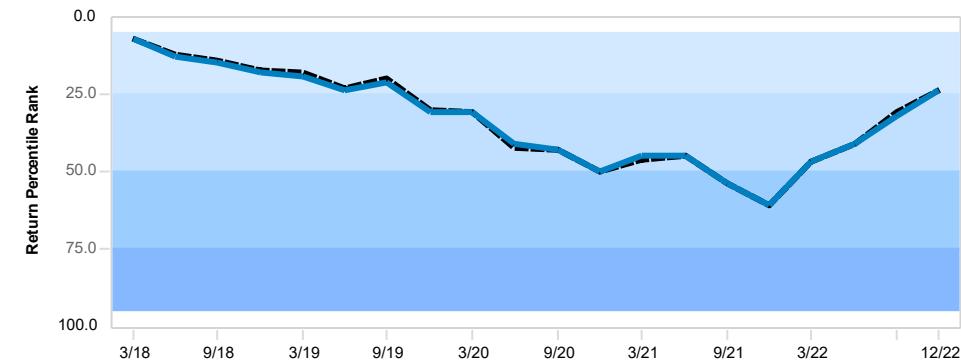
Risk and Return 3 Years



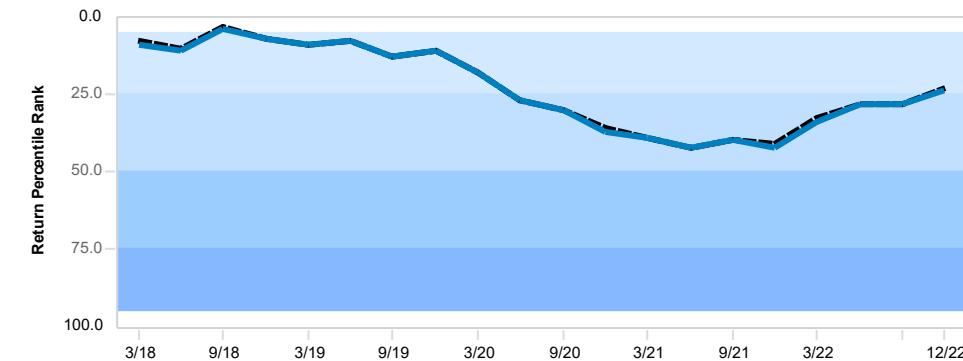
Risk and Return 5 Years



3 Year Rolling Percentile Rank IM U.S. Large Cap Value Equity (MF)



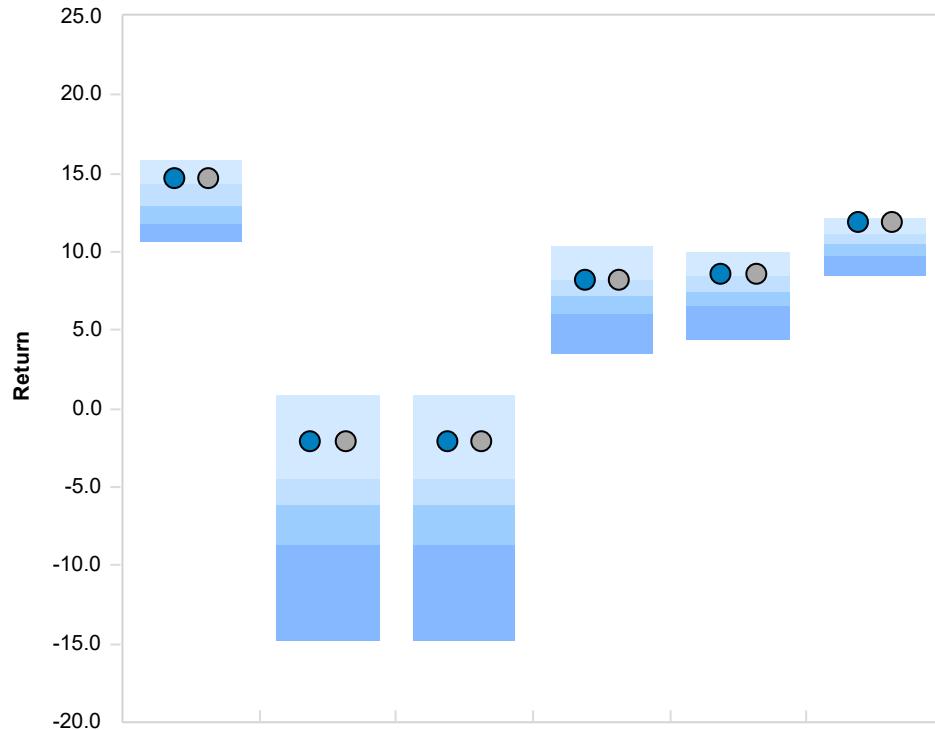
5 Year Rolling Percentile Rank IM U.S. Large Cap Value Equity (MF)



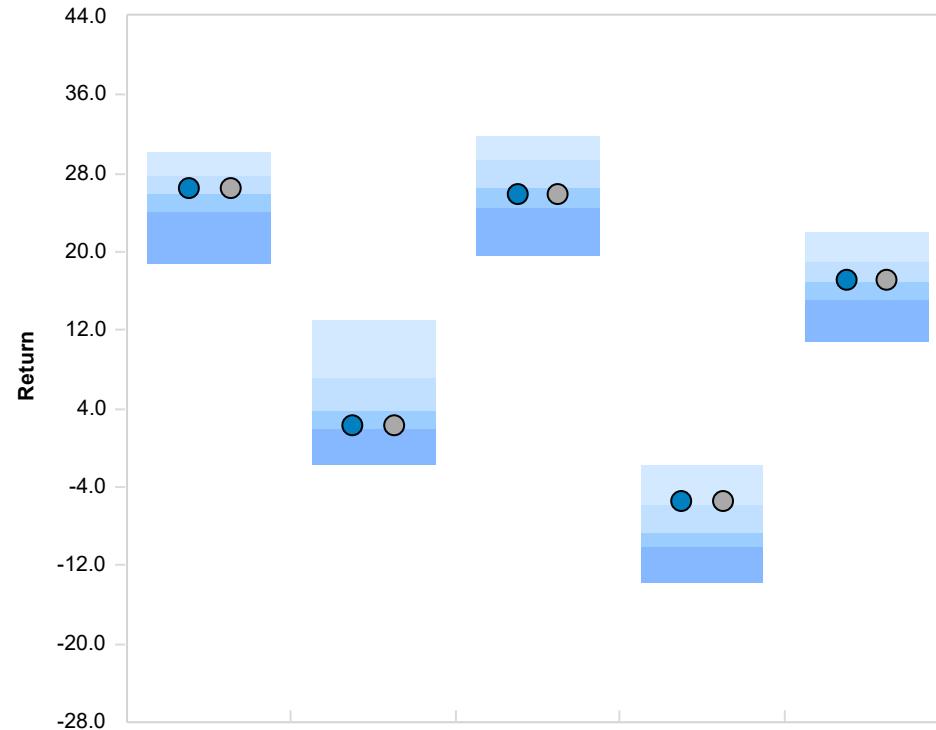
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	8 (40%)	10 (50%)	2 (10%)	0 (0%)
Index	20	8 (40%)	10 (50%)	2 (10%)	0 (0%)

	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	10 (50%)	10 (50%)	0 (0%)	0 (0%)
Index	20	10 (50%)	10 (50%)	0 (0%)	0 (0%)

Peer Group Analysis - IM U.S. Large Cap Value Equity (MF)



Peer Group Analysis - IM U.S. Large Cap Value Equity (MF)



Financial Reconciliation Since Inception Ending December 31, 2022

	Market Value 07/01/2009	Net Flows	Return On Investment	Market Value 12/31/2022
Investment	1,021,656	-963,564	14,131,894	14,189,986

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-5.74	-10.27	0.99	9.31	-0.94	5.24
Index	-5.72	-10.27	1.00	9.33	-0.94	5.25



Fund Information

Fund Name : Vanguard Index Funds: Vanguard Value Index Fund; Institutional Shares
 Fund Family : Vanguard
 Ticker : VIVIX
 Inception Date : 07/02/1998
 Fund Assets : \$17,016 Million
 Portfolio Turnover : 9%

Portfolio Assets : \$154,194 Million
 Portfolio Manager : O'Reilly/Nejman
 PM Tenure : 1998--2016
 Fund Style : IM U.S. Large Cap Value Equity (MF)
 Style Benchmark : CRSP U.S. Large Cap Value TR Index

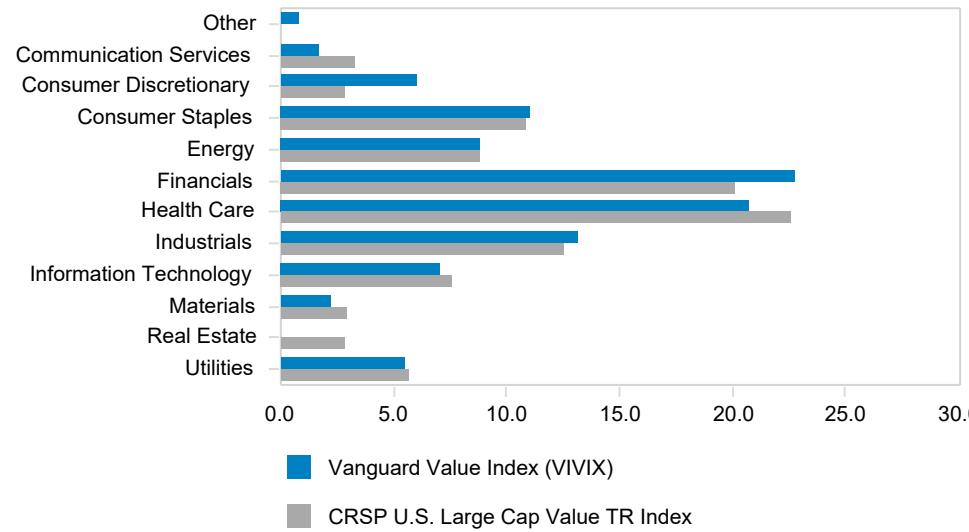
Portfolio Characteristics As of 10/31/2022

	Portfolio	Benchmark
Total Securities	343	342
Avg. Market Cap	164,214,114,055	173,055,954,129
Price/Earnings (P/E)	22.39	15.82
Price/Book (P/B)	5.07	2.75
Dividend Yield	2.57	2.58
Annual EPS	50.21	528.92
5 Yr EPS	12.47	12.85
3 Yr EPS Growth	15.85	N/A
Beta (5 Years, Monthly)	1.00	1.00

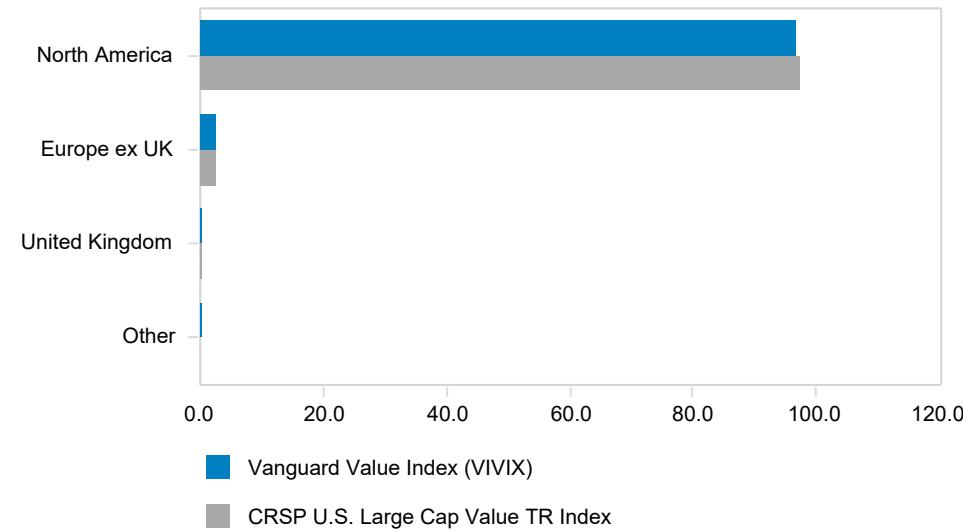
Top Ten Securities As of 10/31/2022

UnitedHealth Group Inc ORD	3.1 %
Berkshire Hathaway Inc ORD	3.0 %
Exxon Mobil Corp ORD	2.7 %
Johnson & Johnson ORD	2.7 %
JPMorgan Chase & Co ORD	2.2 %
Procter & Gamble Co ORD	1.9 %
Chevron Corp ORD	1.9 %
Eli Lilly and Co ORD	1.8 %
Pfizer Inc ORD	1.6 %
AbbVie Inc ORD	1.5 %

Sector Weights As of 10/31/2022



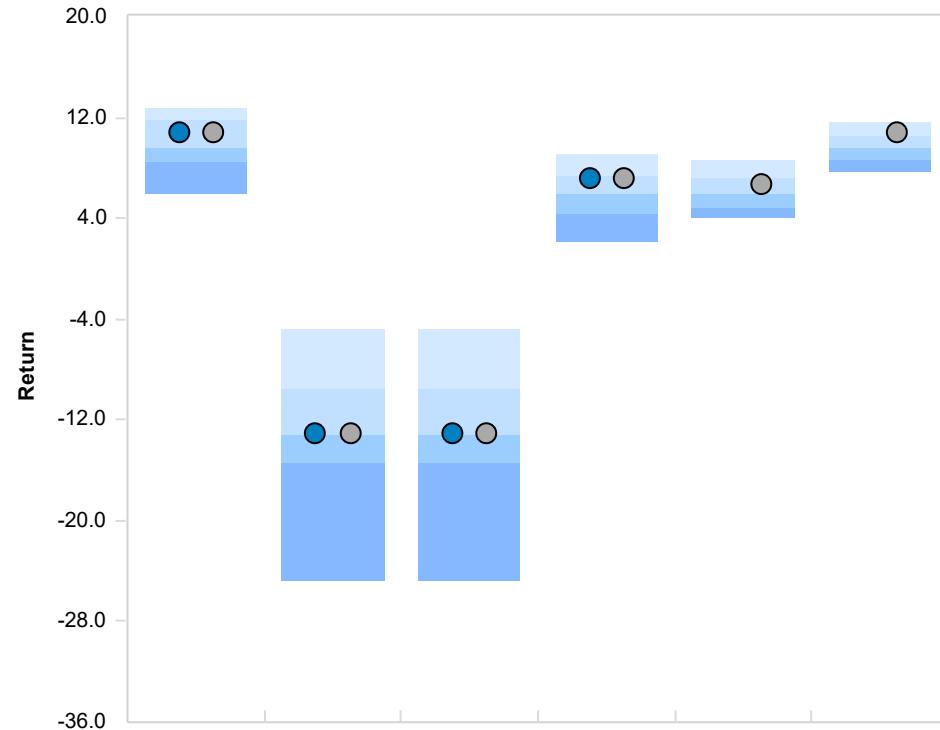
Region Weights As of 10/31/2022



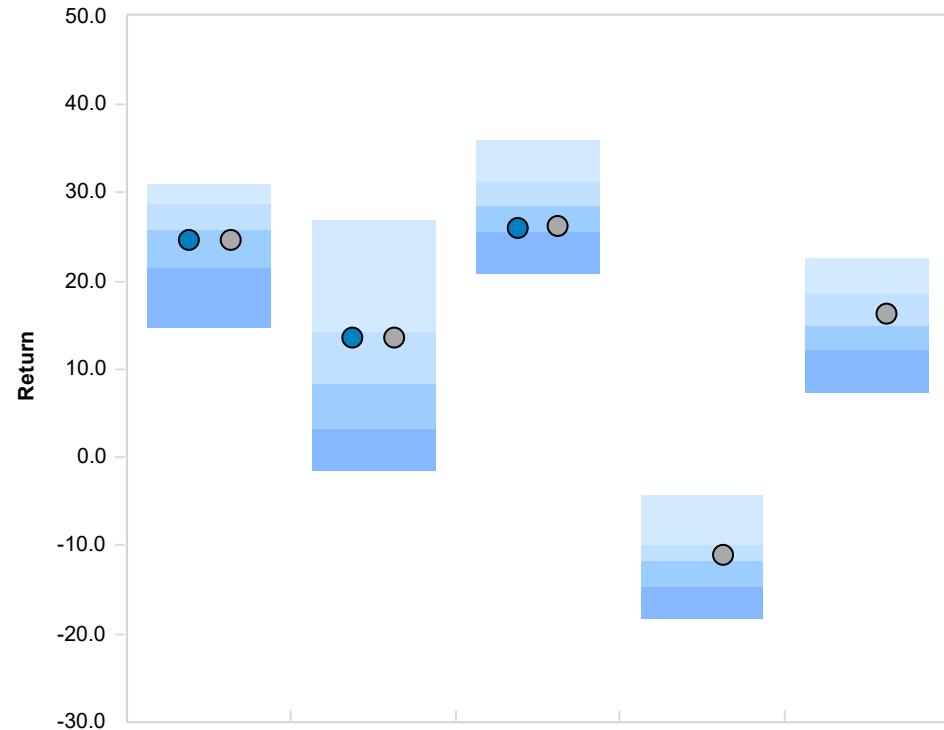
Statistics provided by Lipper. Most recent available data shown.



Peer Group Analysis - IM U.S. Mid Cap Core Equity (MF)



Peer Group Analysis - IM U.S. Mid Cap Core Equity (MF)



	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Investment	10.77 (35)	-13.11 (50)	-13.11 (50)	7.16 (27)	N/A	N/A
Index	10.78 (35)	-13.06 (50)	-13.06 (50)	7.23 (27)	6.71 (35)	10.78 (18)
Median	9.63	-13.21	-13.21	5.90	5.94	9.49

	2021	2020	2019	2018	2017
Investment	24.67 (59)	13.58 (26)	26.13 (72)	N/A	N/A
Index	24.76 (59)	13.66 (26)	26.20 (72)	-11.08 (40)	16.24 (38)
Median	25.73	8.44	28.59	-11.64	14.94

Financial Reconciliation Since Inception Ending December 31, 2022

	Market Value 12/01/2018	Net Flows	Return On Investment	Market Value 12/31/2022
Investment	21,384,601	-4,500,000	8,301,828	25,186,430

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-2.46 (14)	-15.43 (77)	-4.89 (59)	7.97 (59)	-1.78 (76)	3.62 (85)
Index	-2.46 (14)	-15.42 (77)	-4.88 (58)	8.00 (58)	-1.76 (76)	3.64 (84)
Median	-4.32	-13.63	-4.08	8.20	-0.87	5.14



Mutual Fund Holdings Analysis
Vanguard Mid-Cap 400 Index Fund I (VSPMX)
December 31, 2022

Fund Information

Fund Name :	Vanguard Admiral Funds: Vanguard S&P Mid-Cap 400 Index Fund; Institutional Shares	Portfolio Assets :	\$2,898 Million
Fund Family :	Vanguard	Portfolio Manager :	Coleman/Khan
Ticker :	VSPMX	PM Tenure :	2015-2017
Inception Date :	12/15/2010	Fund Style :	IM S&P Midcap 400 Index Funds (MF)
Fund Assets :	\$1,383 Million	Style Benchmark :	S&P MidCap 400 Index
Portfolio Turnover :	11%		

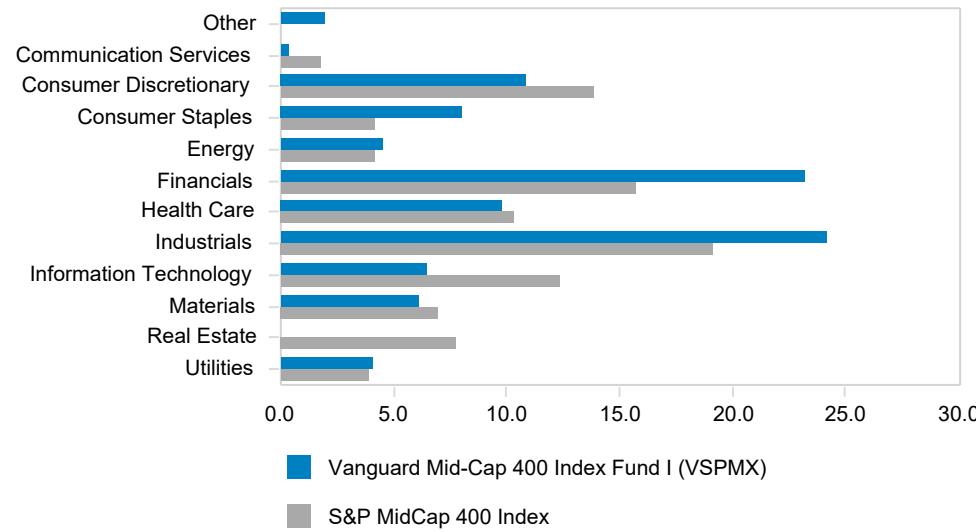
Portfolio Characteristics As of 10/31/2022

	Portfolio	Benchmark
Total Securities	404	401
Avg. Market Cap	6,831,750,350	6,744,654,415
Price/Earnings (P/E)	22.97	12.91
Price/Book (P/B)	4.11	2.56
Dividend Yield	2.37	1.72
Annual EPS	49.26	4.73
5 Yr EPS	18.52	18.85
3 Yr EPS Growth	18.60	N/A
Beta (3 Years, Monthly)	1.00	1.00

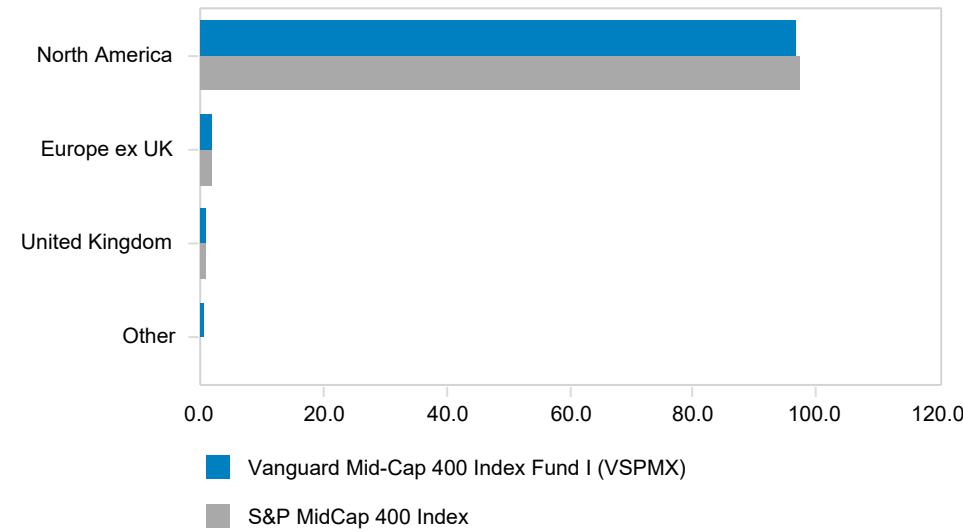
Top Ten Securities As of 10/31/2022

Steel Dynamics Inc ORD	0.8 %
First Solar Inc ORD	0.7 %
First Horizon Corp ORD	0.6 %
Hubbell Inc ORD	0.6 %
Darling Ingredients Inc ORD	0.6 %
Vanguard Market Liquidity Fund	0.6 %
Carlisle Companies Inc ORD	0.6 %
RPM International Inc ORD	0.6 %
Reliance Steel & Aluminum Co ORD	0.6 %
Fair Isaac Corp ORD	0.6 %

Sector Weights As of 10/31/2022



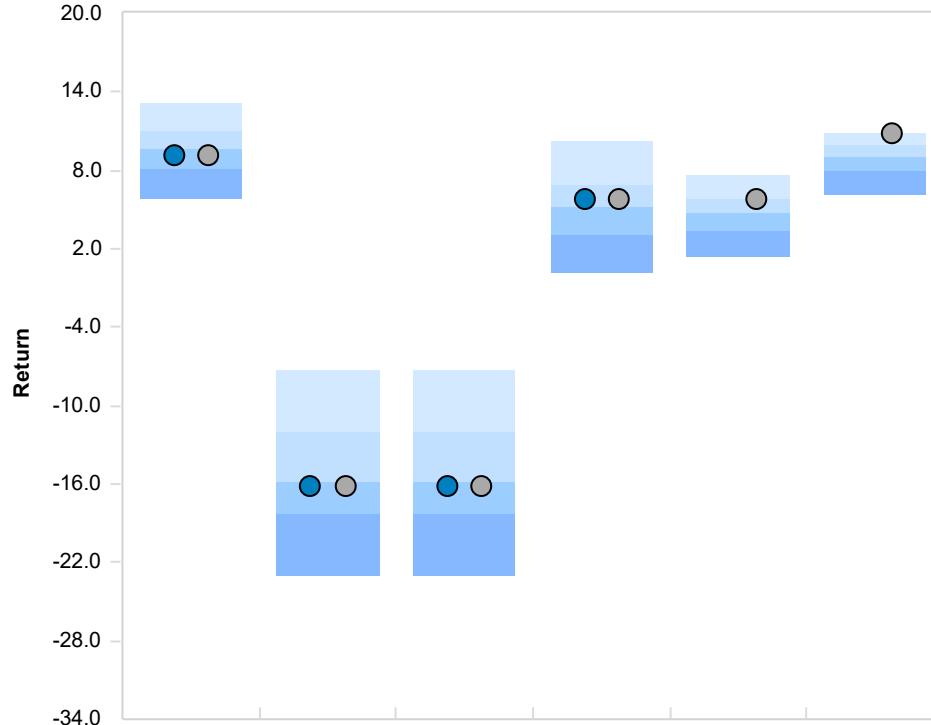
Region Weights As of 10/31/2022



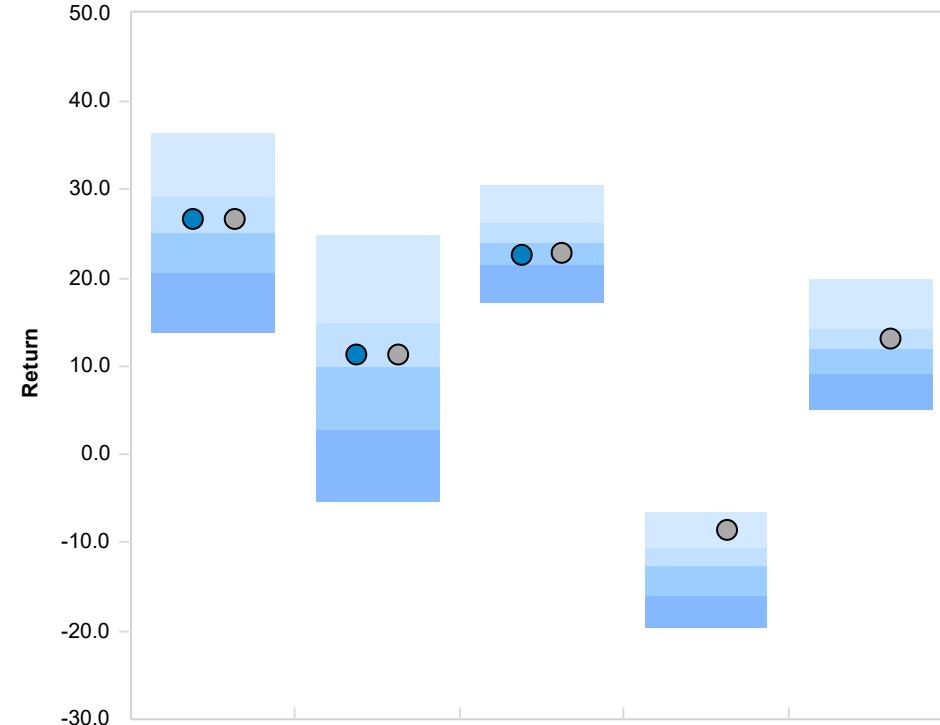
Statistics provided by Lipper. Most recent available data shown.



Peer Group Analysis - IM U.S. Small Cap Core Equity (MF)



Peer Group Analysis - IM U.S. Small Cap Core Equity (MF)



	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Investment	9.17 (58)	-16.18 (56)	-16.18 (56)	5.79 (39)	N/A	N/A
Index	9.19 (58)	-16.10 (54)	-16.10 (54)	5.80 (39)	5.88 (23)	10.82 (6)
Median	9.65	-15.78	-15.78	5.20	4.78	8.97

	2021	2020	2019	2018	2017
Investment	26.74 (37)	11.46 (40)	22.74 (62)	N/A	N/A
Index	26.82 (36)	11.29 (41)	22.78 (61)	-8.48 (9)	13.23 (38)
Median	25.12	9.89	23.94	-12.71	12.09

Financial Reconciliation Since Inception Ending December 31, 2022

	Market Value 12/01/2018	Net Flows	Return On Investment	Market Value 12/31/2022
Investment	10,695,104	-2,500,000	3,306,828	11,501,932

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-5.22 (69)	-14.14 (42)	-5.65 (51)	5.61 (57)	-2.86 (61)	4.49 (37)
Index	-5.20 (68)	-14.11 (41)	-5.62 (50)	5.64 (56)	-2.84 (61)	4.51 (36)
Median	-4.48	-14.56	-5.65	5.94	-2.38	4.05



Mutual Fund Holdings Analysis
Vanguard Small-Cap 600 Index I (VSMSX)
December 31, 2022

Fund Information

Fund Name :	Vanguard Admiral Funds: Vanguard S&P Small-Cap 600 Index Fund; Institutional Shares	Portfolio Assets :	\$4,312 Million
Fund Family :	Vanguard	Portfolio Manager :	Coleman/Butler
Ticker :	VSMSX	PM Tenure :	2013-2015
Inception Date :	12/15/2010	Fund Style :	IM U.S. Small Cap Core Equity (MF)
Fund Assets :	\$2,048 Million	Style Benchmark :	S&P SmallCap 600 Index
Portfolio Turnover :	12%		

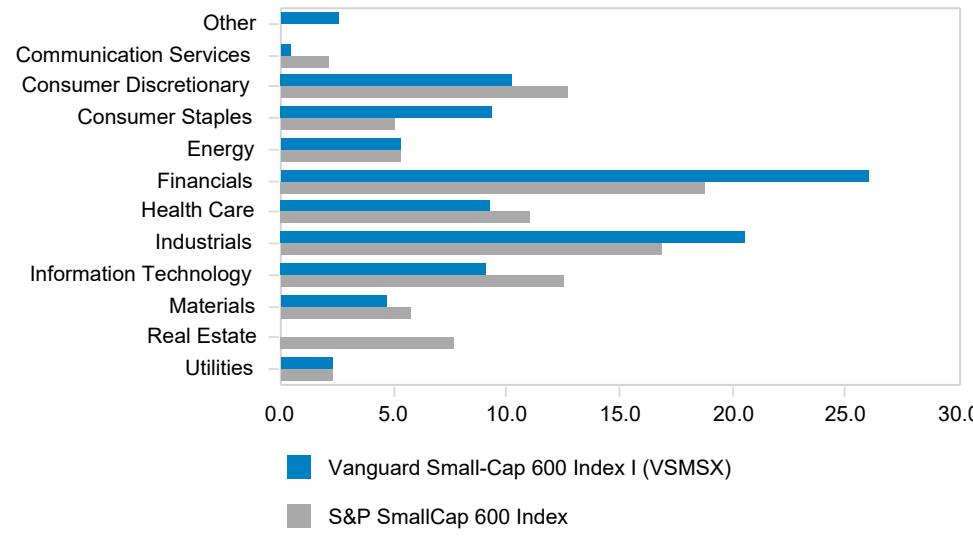
Portfolio Characteristics As of 10/31/2022

	Portfolio	Benchmark
Total Securities	604	601
Avg. Market Cap	2,324,654,105	2,336,230,756
Price/Earnings (P/E)	22.32	11.68
Price/Book (P/B)	2.91	2.06
Dividend Yield	2.69	1.69
Annual EPS	47.29	3.05
5 Yr EPS	13.48	16.73
3 Yr EPS Growth	14.75	N/A
Beta (3 Years, Monthly)	1.00	1.00

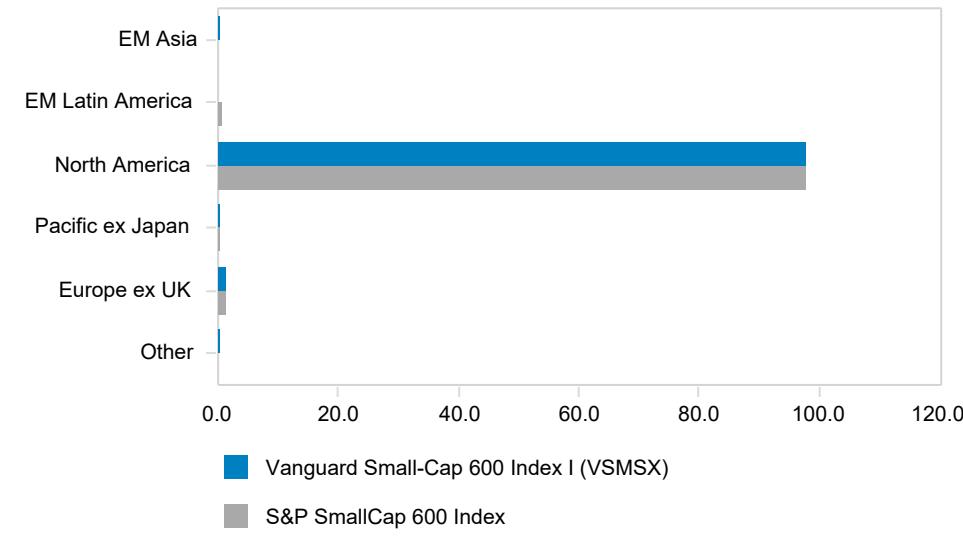
Top Ten Securities As of 10/31/2022

Livent Corp ORD	0.6 %
SM Energy Co ORD	0.6 %
Agree Realty Corp ORD	0.6 %
AMN Healthcare Services Inc ORD	0.6 %
Helmerich and Payne Inc ORD	0.6 %
Ensign Group Inc ORD	0.6 %
Exponent Inc ORD	0.5 %
Applied Industrial Technologies	0.5 %
PBF Energy Inc ORD	0.5 %
SPS Commerce Inc ORD	0.5 %

Sector Weights As of 10/31/2022



Region Weights As of 10/31/2022



Statistics provided by Lipper. Most recent available data shown.



Strategy Review
Vanguard Developed Markets Index (VTMNX) | Vanguard Spliced Developed ex U.S. Index (Net)
As of December 31, 2022

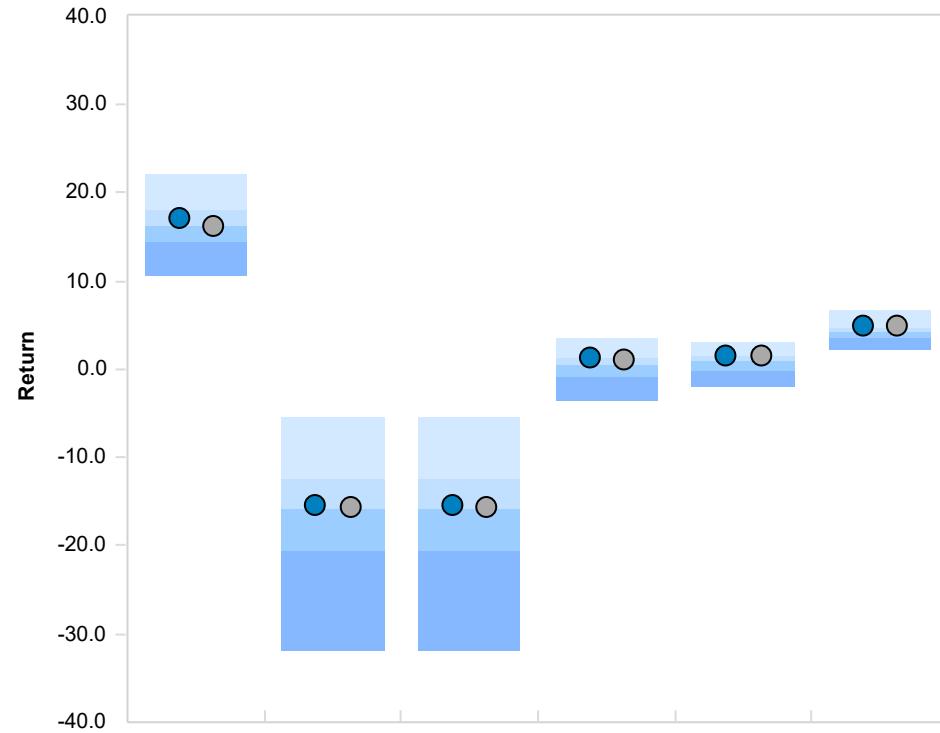
Historical Statistics 3 Years								Historical Statistics 5 Years								
	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters		Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters	
Investment	1.32	21.13	0.13	104.46	7	104.06	5	Index	1.67	18.33	0.11	103.37	11	102.96	9	
	1.19	20.55	0.13	100.00	7	100.00	5		1.55	17.88	0.11	100.00	11	100.00	9	
Risk and Return 3 Years								Risk and Return 5 Years								
	<p>A scatter plot showing the relationship between Risk (Standard Deviation %) on the x-axis (ranging from 20.4 to 21.3) and Return (%) on the y-axis (ranging from 1.0 to 1.5). A horizontal line is drawn at approximately 1.18% return, and a vertical line is drawn at approximately 20.55% risk. The 'Investment' is represented by a blue circle at approximately (21.15, 1.32) and the 'Index' by a grey circle at approximately (20.55, 1.19).</p>								<p>A scatter plot showing the relationship between Risk (Standard Deviation %) on the x-axis (ranging from 17.8 to 18.4) and Return (%) on the y-axis (ranging from 1.5 to 1.7). A horizontal line is drawn at approximately 1.55% return, and a vertical line is drawn at approximately 17.88% risk. The 'Investment' is represented by a blue circle at approximately (18.35, 1.67) and the 'Index' by a grey circle at approximately (17.9, 1.55).</p>							
	<p>A line plot showing the 3 Year Rolling Percentile Rank from March 2018 to December 2022. The y-axis ranges from 0.0 to 100.0. The 'Investment' (blue line) and 'Index' (black line) generally track each other, staying within a band between 25 and 50 for most of the period, with a notable peak around 2022.</p>								<p>A line plot showing the 5 Year Rolling Percentile Rank from March 2018 to December 2022. The y-axis ranges from 0.0 to 100.0. The 'Investment' (blue line) and 'Index' (black line) track each other closely, staying within a band between 25 and 50 for most of the period, with a slight divergence towards the end of the period.</p>							
Total Period				5-25 Count	25-Median Count	Median-75 Count	75-95 Count	Total Period				5-25 Count	25-Median Count	Median-75 Count	75-95 Count	
Investment	20	0 (0%)	20 (100%)	0 (0%)	0 (0%)	1 (5%)	0 (0%)	Investment	20	1 (5%)	19 (95%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Index	20	1 (5%)	19 (95%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	Index	20	1 (5%)	19 (95%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Strategy Review

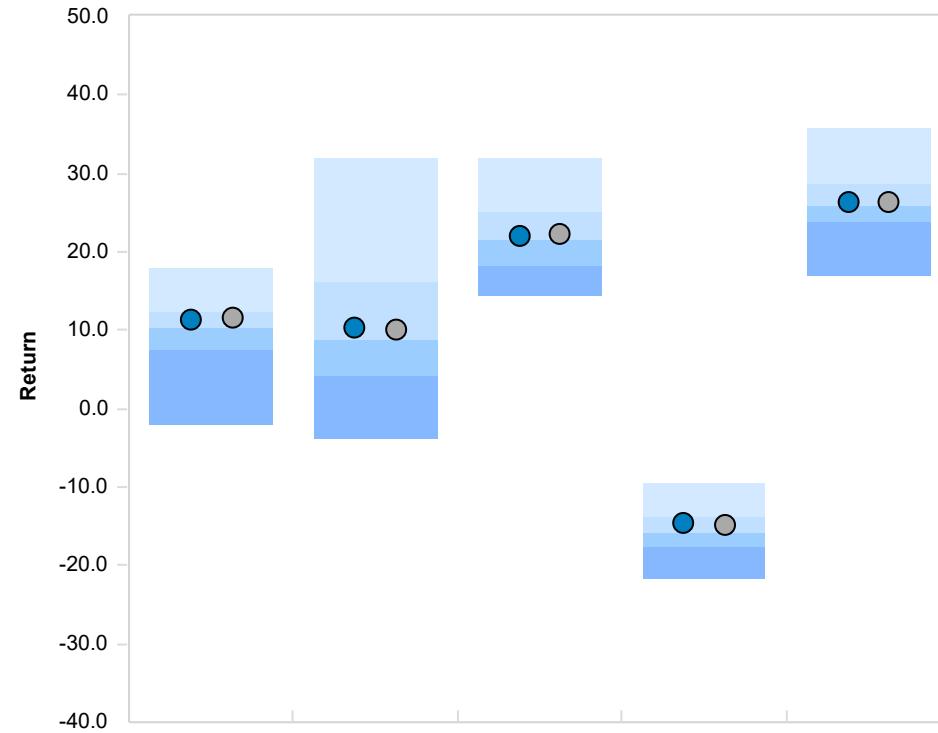
Vanguard Developed Markets Index (VTMNX) | Vanguard Spliced Developed ex U.S. Index (Net)

As of December 31, 2022

Peer Group Analysis - IM International Multi-Cap Equity (MF)



Peer Group Analysis - IM International Multi-Cap Equity (MF)



Financial Reconciliation Since Inception Ending December 31, 2022

	Market Value 07/01/2009	Net Flows	Return On Investment	Market Value 12/31/2022
Investment	253,831	45,927	8,874,633	9,174,392

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-10.49	-14.04	-6.04	2.99	-1.56	5.66
Index	-9.59	-15.23	-5.27	2.55	-1.06	5.69



Mutual Fund Holdings Analysis
Vanguard Developed Markets Index (VTMNX)
December 31, 2022

Fund Information

Fund Name :	Vanguard Tax-Managed Funds: Vanguard Developed Markets Index Fund; Institutional Shares	Portfolio Assets :	\$152,849 Million
Fund Family :	Vanguard	Portfolio Manager :	Franquin/Perre
Ticker :	VTMNX	PM Tenure :	2013–2017
Inception Date :	01/04/2001	Fund Style :	IM International Multi-Cap Core Equity (MF)
Fund Assets :	\$13,331 Million	Style Benchmark :	FTSE Developed x North America Index (Net)
Portfolio Turnover :	3%		

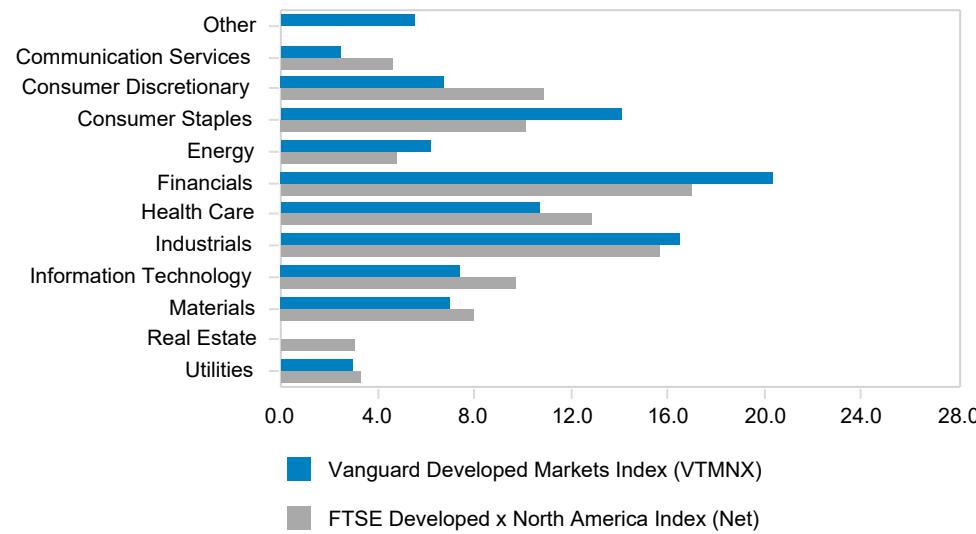
Portfolio Characteristics As of 10/31/2022

	Portfolio	Benchmark
Total Securities	4,130	1,523
Avg. Market Cap	58,712,522,302	63,574,469,100
Price/Earnings (P/E)	19.00	11.95
Price/Book (P/B)	3.39	2.39
Dividend Yield	3.55	3.44
Annual EPS	46.88	845.02
5 Yr EPS	12.60	10.93
3 Yr EPS Growth	10.38	N/A
Beta (5 Years, Monthly)	1.03	1.00

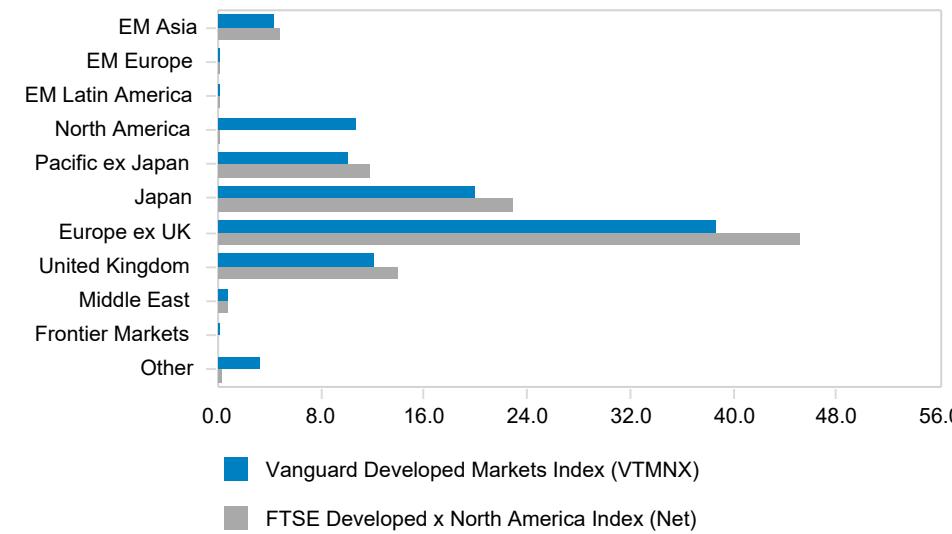
Top Ten Securities As of 10/31/2022

Vanguard Market Liquidity Fund	2.4 %
Nestle SA ORD	1.6 %
Roche Holding AG	1.3 %
Shell PLC ORD	1.1 %
Samsung Electronics Co Ltd ORD	1.1 %
ASML Holding NV ORD	1.0 %
AstraZeneca PLC ORD	1.0 %
Novo Nordisk A/S ORD	0.9 %
Toyota Motor Corp ORD	0.9 %
Novartis AG ORD	0.9 %

Sector Weights As of 10/31/2022



Region Weights As of 10/31/2022



Statistics provided by Lipper. Most recent available data shown.



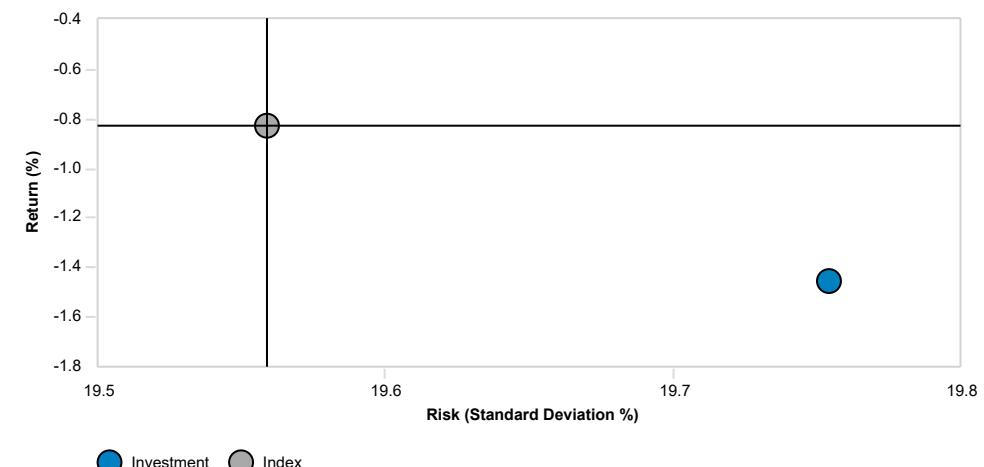
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.46	19.75	-0.01	98.69	6	101.04	6
Index	-0.83	19.56	0.02	100.00	6	100.00	6

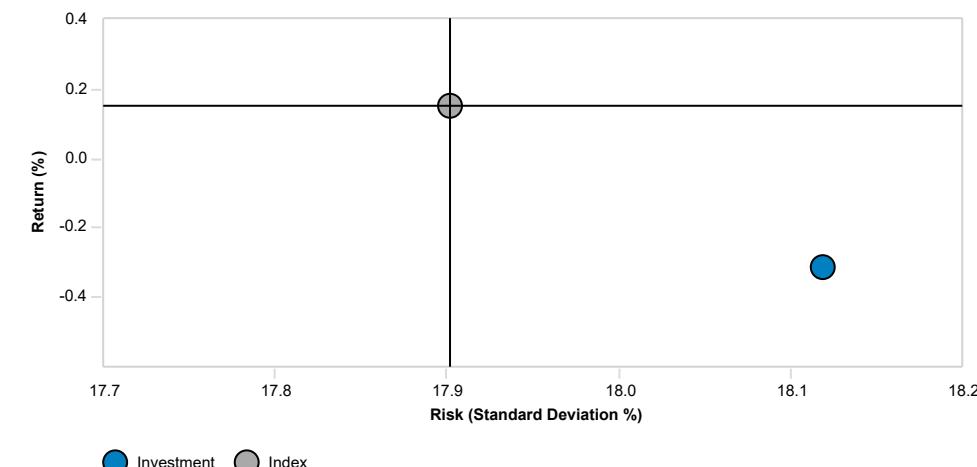
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.31	18.12	0.00	99.76	10	101.58	10
Index	0.15	17.90	0.03	100.00	10	100.00	10

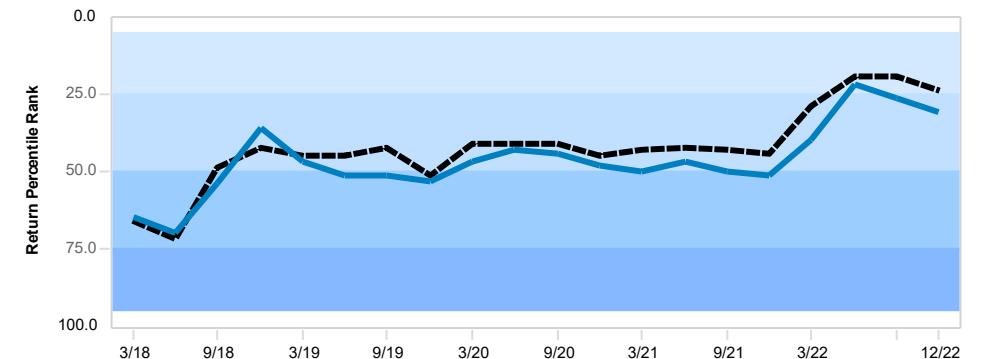
Risk and Return 3 Years



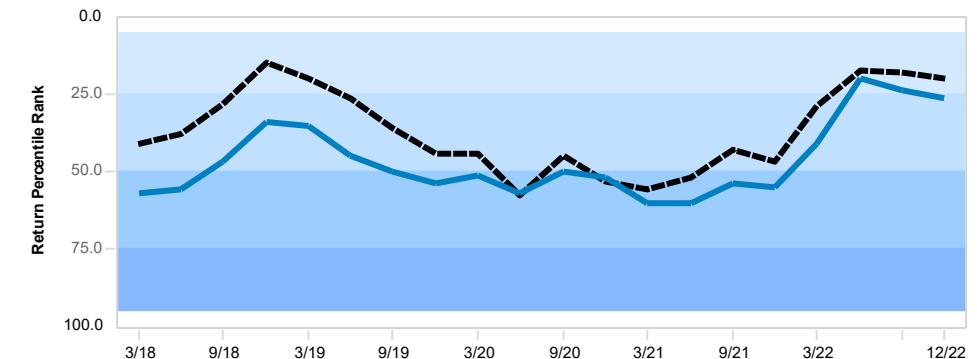
Risk and Return 5 Years



3 Year Rolling Percentile Rank IM Emerging Markets Equity (MF)



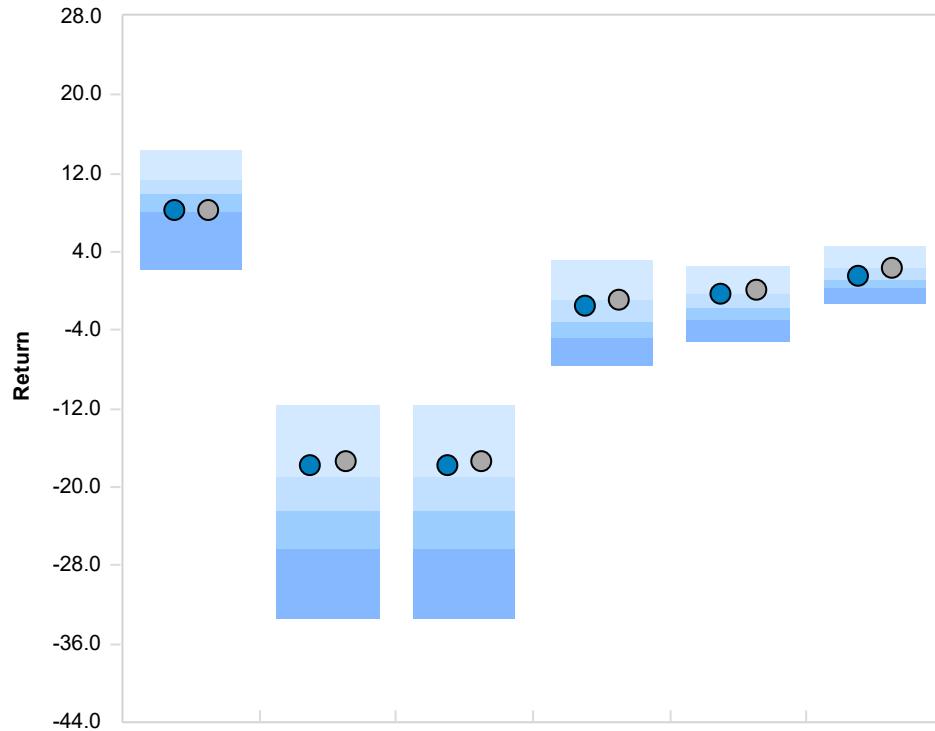
5 Year Rolling Percentile Rank IM Emerging Markets Equity (MF)



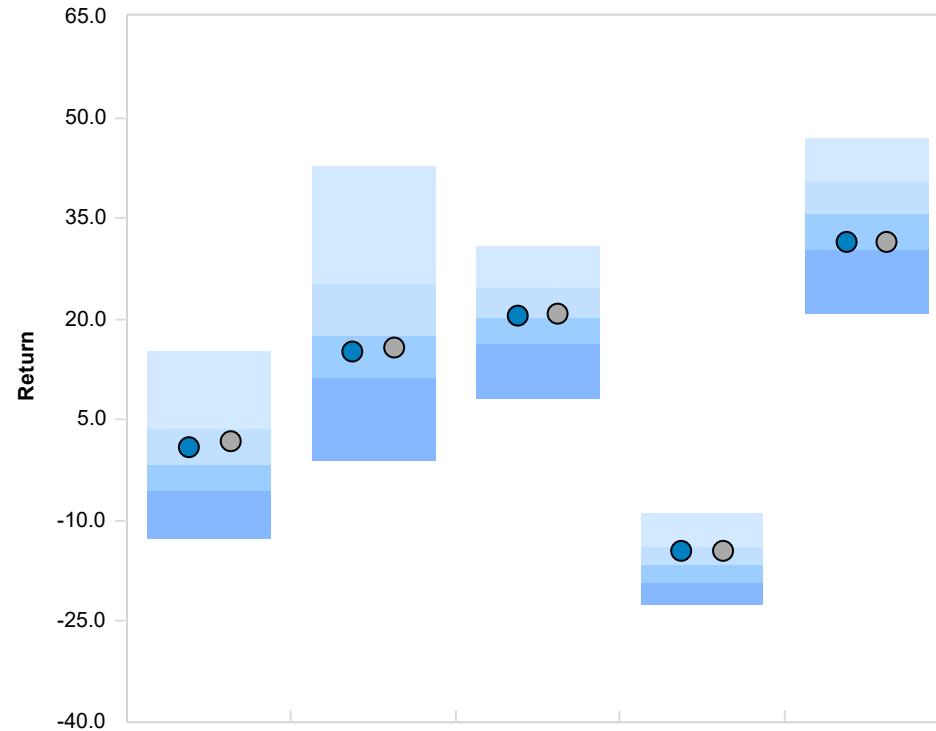
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	1 (5%)	12 (60%)	7 (35%)	0 (0%)
Index	20	3 (15%)	14 (70%)	3 (15%)	0 (0%)

	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	2 (10%)	8 (40%)	10 (50%)	0 (0%)
Index	20	5 (25%)	11 (55%)	4 (20%)	0 (0%)

Peer Group Analysis - IM Emerging Markets Equity (MF)



Peer Group Analysis - IM Emerging Markets Equity (MF)



	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Investment	8.22 (74)	-17.74 (21)	-17.74 (21)	-1.46 (31)	-0.31 (26)	1.58 (41)
Index	8.23 (73)	-17.26 (19)	-17.26 (19)	-0.83 (24)	0.15 (20)	2.43 (26)
Median	9.95	-22.44	-22.44	-3.16	-1.74	1.24

	2021	2020	2019	2018	2017
Investment	0.92 (36)	15.26 (65)	20.37 (50)	-14.54 (29)	31.43 (72)
Index	1.76 (32)	15.84 (61)	20.81 (47)	-14.49 (29)	31.46 (72)
Median	-1.62	17.66	20.17	-16.45	35.66

Financial Reconciliation Since Inception Ending December 31, 2022

	Market Value 10/01/2010	Net Flows	Return On Investment	Market Value 12/31/2022
Investment	5,147,163	3,164,289	2,395,851	10,707,303

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-10.73	-9.18	-6.24	-0.40	-6.97	5.16
Index	-9.78	-10.40	-5.42	-0.45	-6.31	5.78

Fund Information

Fund Name :	Vanguard International Equity Index Funds: Vanguard Emerging Markets Stock Index Fund; Instl Class Shares	Portfolio Assets :	\$96,285 Million
Fund Family :	Vanguard	Portfolio Manager :	Perre/Miller
Ticker :	VEMIX	PM Tenure :	2008--2016
Inception Date :	06/22/2000	Fund Style :	IM Emerging Markets Equity (MF)
Fund Assets :	\$6,598 Million	Style Benchmark :	FTSE Emerging Mkts All Cap China A Inclusion Index
Portfolio Turnover :	9%		

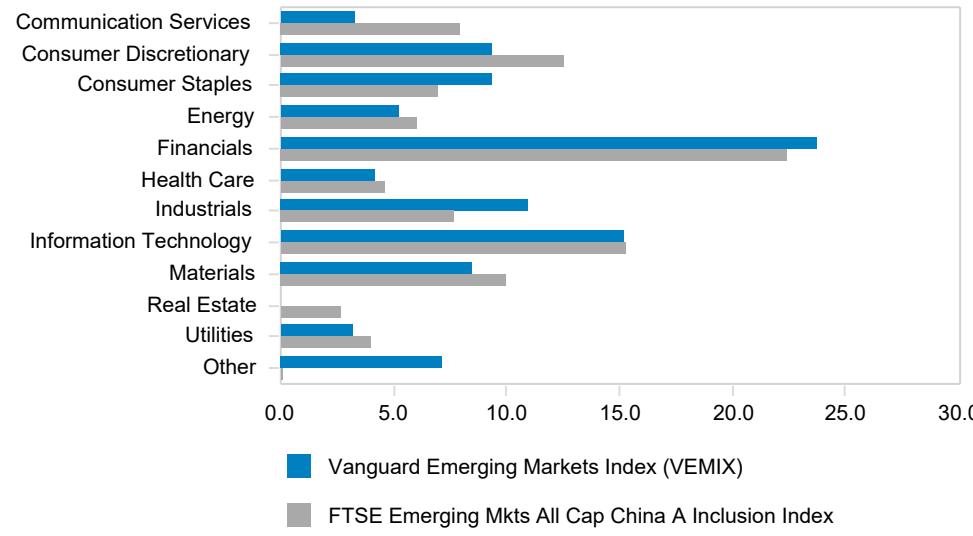
Portfolio Characteristics As of 10/31/2022

	Portfolio	Benchmark
Total Securities	4,669	4,457
Avg. Market Cap	59,225,429,140	58,135,064,000
Price/Earnings (P/E)	20.27	10.36
Price/Book (P/B)	3.69	2.51
Dividend Yield	4.29	3.80
Annual EPS	33.93	35.95
5 Yr EPS	16.01	16.43
3 Yr EPS Growth	19.12	N/A
Beta (5 Years, Monthly)	1.00	1.00

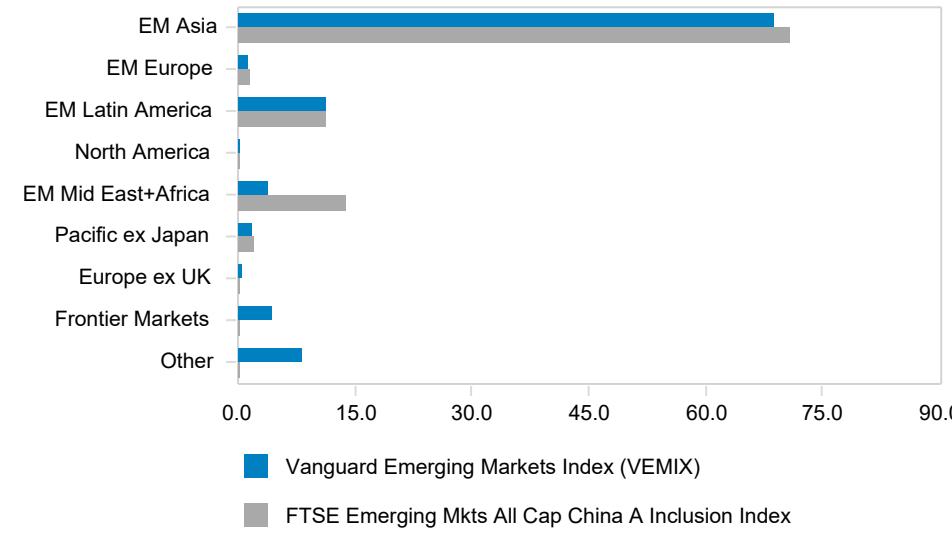
Top Ten Securities As of 10/31/2022

Taiwan Semiconductor Manufacturing	3.9 %
Vanguard Market Liquidity Fund	2.7 %
Tencent Holdings Ltd ORD	2.6 %
Alibaba Group Holding Ltd ORD	1.9 %
Reliance Industries Ltd ORD	1.7 %
Infosys Ltd ORD	1.1 %
Meituan ORD	1.1 %
Housing Development Finance Corporation	0.9 %
Vale SA ORD	0.8 %
China Construction Bank Corp ORD	0.8 %

Sector Weights As of 10/31/2022



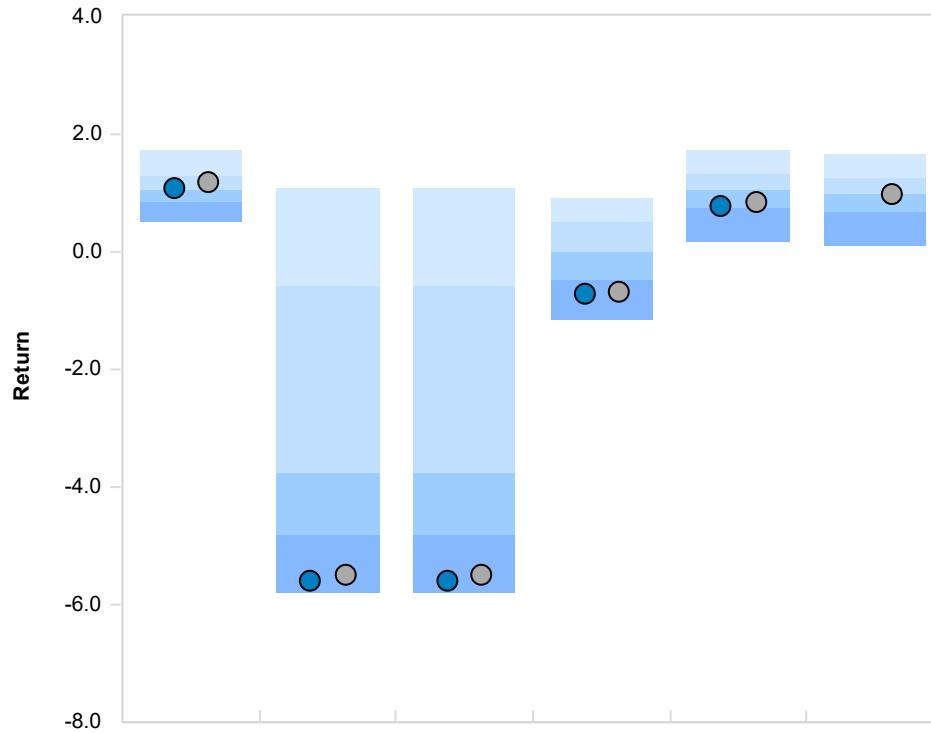
Region Weights As of 10/31/2022



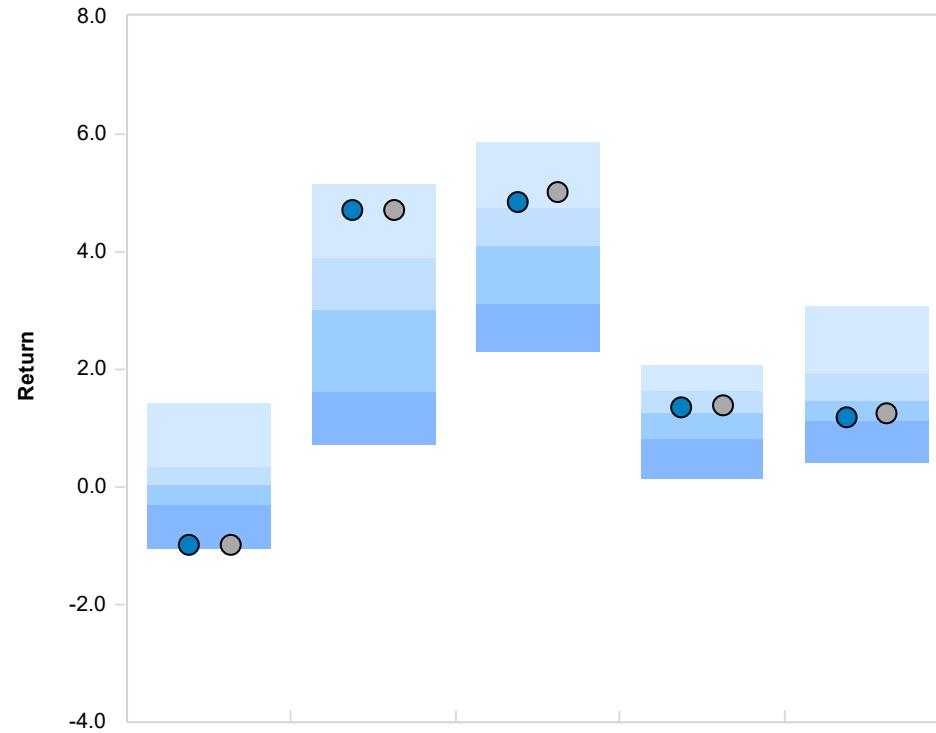
Statistics provided by Lipper. Most recent available data shown.



Peer Group Analysis - IM U.S. Short Term Investment Grade (MF)



Peer Group Analysis - IM U.S. Short Term Investment Grade (MF)



Financial Reconciliation Since Inception Ending December 31, 2022

	Market Value 04/01/2013	Net Flows	Return On Investment	Market Value 12/31/2022
Investment	10,001,804	-7,569,350	1,363,160	3,795,614

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-2.11	-1.15	-3.48	-0.68	0.00	0.30
Index	-2.16	-1.14	-3.45	-0.72	0.05	0.27

Mutual Fund Holdings Analysis
Vanguard Short Term Bond Index (VBITX)
December 31, 2022

Fund Information

Fund Name :	Vanguard Bond Index Funds: Vanguard Short-Term Bond Index Fund; Institutional Class Shares	Portfolio Assets :	\$70,284 Million
Fund Family :	Vanguard	Portfolio Manager :	Joshua C. Barrickman
Ticker :	VBITX	PM Tenure :	2013
Inception Date :	09/27/2011	Fund Style :	IM U.S. Short Term Investment Grade (MF)
Fund Assets :	\$5,733 Million	Style Benchmark :	Bloomberg U.S. Aggregate 1-3 Yrs
Portfolio Turnover :	37%		

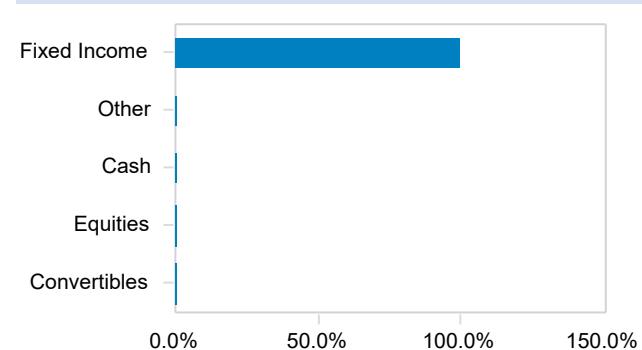
Fund Characteristics As of 09/30/2022

Avg. Coupon	N/A
Nominal Maturity	N/A
Effective Maturity	N/A
Duration	N/A
SEC 30 Day Yield	N/A
Avg. Credit Quality	AA

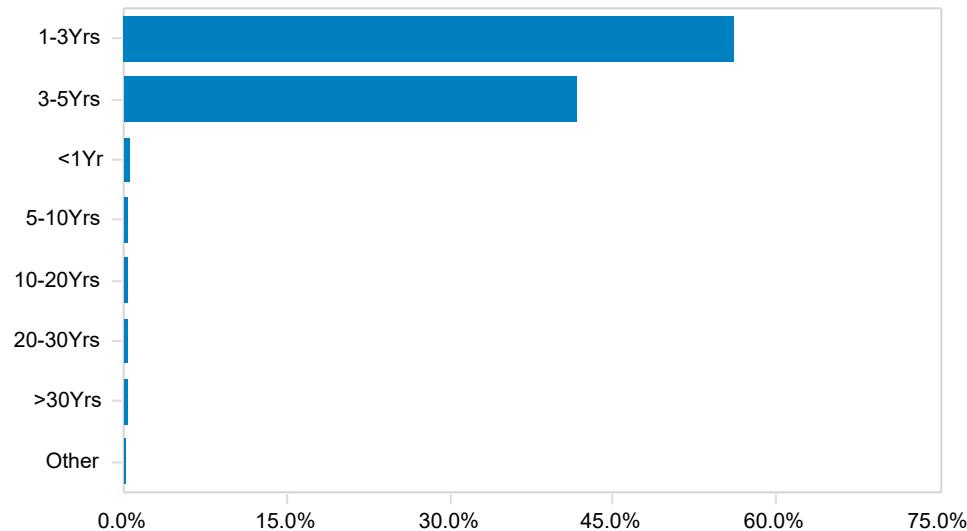
Top Ten Securities As of 09/30/2022

Government Agency Securities	34.0 %
Treasury Notes/Bonds	34.0 %
Corporate Notes/Bonds	26.3 %
Fgn. Currency Denominated Bonds	5.7 %

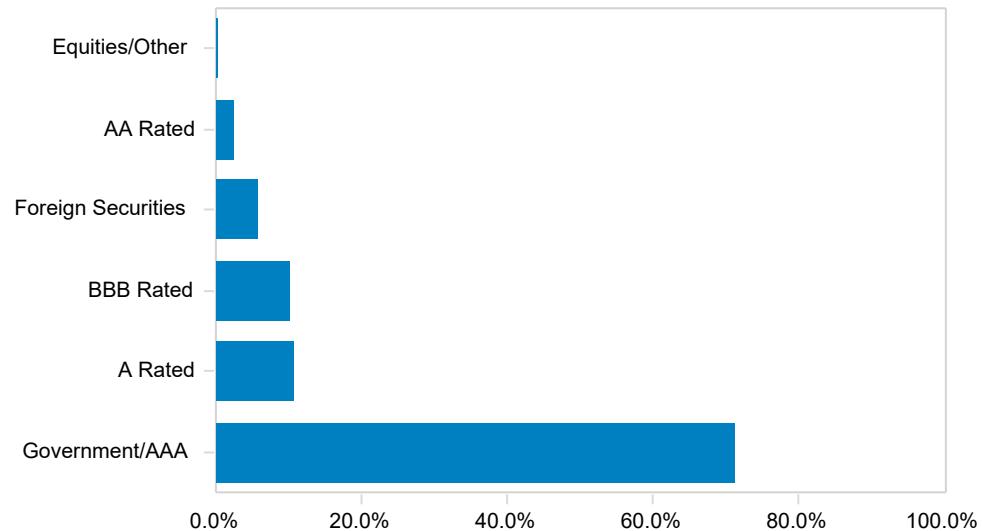
Asset Allocation As of 09/30/2022



Maturity Distribution As of 06/30/2022



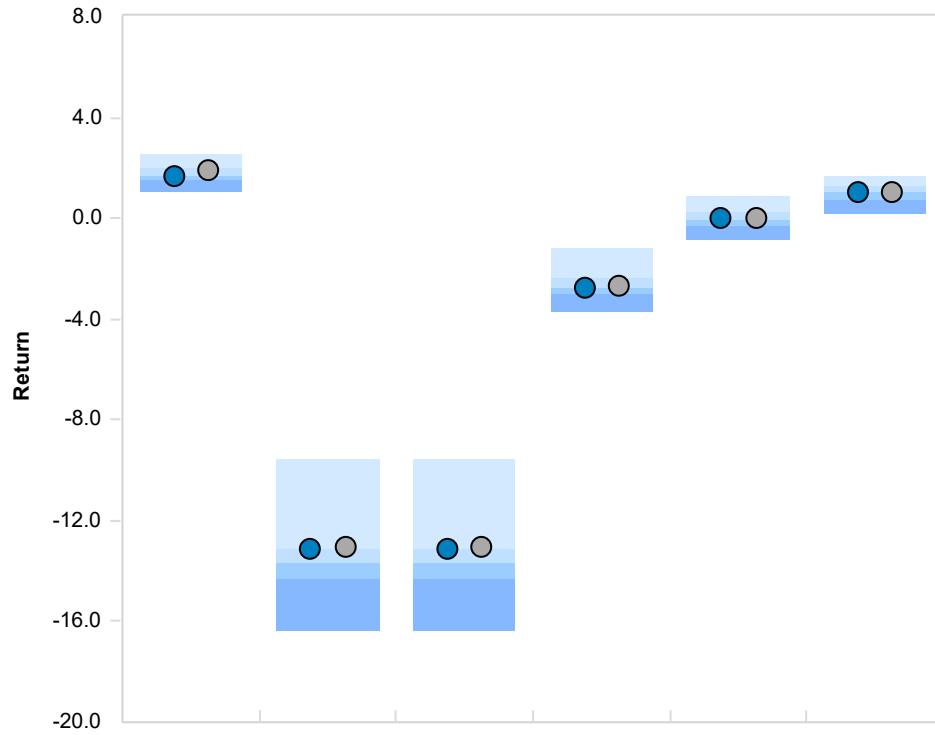
Sector/Quality Allocation As of 09/30/2022



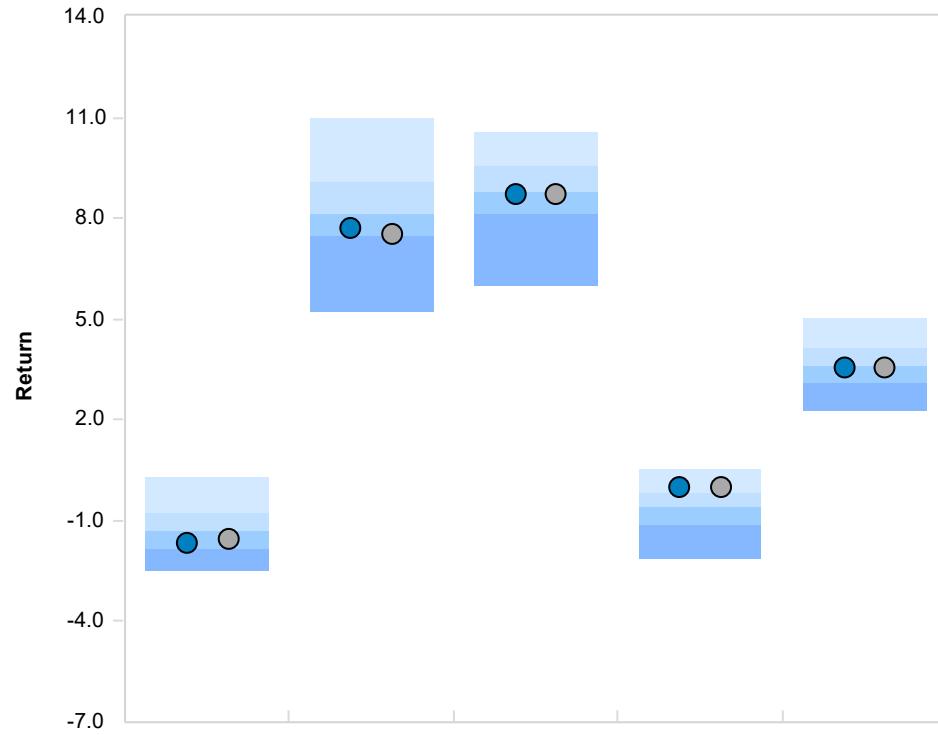
Statistics provided by Lipper. Most recent available data shown.



Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (MF)



Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (MF)



	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Investment	1.67 (56)	-13.15 (26)	-13.15 (26)	-2.73 (52)	0.01 (43)	1.02 (51)
Index	1.87 (35)	-13.01 (21)	-13.01 (21)	-2.71 (50)	0.02 (42)	1.06 (46)
Median	1.71	-13.67	-13.67	-2.72	-0.07	1.02

	2021	2020	2019	2018	2017
Investment	-1.65 (64)	7.74 (64)	8.73 (52)	-0.01 (19)	3.57 (53)
Index	-1.55 (60)	7.51 (73)	8.72 (53)	0.01 (18)	3.54 (54)
Median	-1.33	8.15	8.76	-0.62	3.60

Financial Reconciliation Since Inception Ending December 31, 2022

No data found.

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-4.65 (47)	-4.71 (17)	-5.98 (51)	-0.08 (39)	0.11 (29)	2.00 (42)
Index	-4.75 (60)	-4.69 (15)	-5.93 (47)	0.01 (21)	0.05 (45)	1.83 (64)
Median	-4.67	-5.35	-5.98	-0.14	0.03	1.94

Inception Date for VBTIX is 9/2019. Manager returns for VBTIX have been used for this report.



Fund Information

Fund Name :	Vanguard Bond Index Funds: Vanguard Total Bond Market Index Fund; Institutional Shares	Portfolio Assets :	\$283,818 Million
Fund Family :	Vanguard	Portfolio Manager :	Joshua C. Barrickman
Ticker :	VBTIX	PM Tenure :	2013
Inception Date :	09/18/1995	Fund Style :	IM U.S. Broad Market Core Fixed Income (MF)
Fund Assets :	\$41,175 Million	Style Benchmark :	Bloomberg U.S. Aggregate
Portfolio Turnover :	69%		

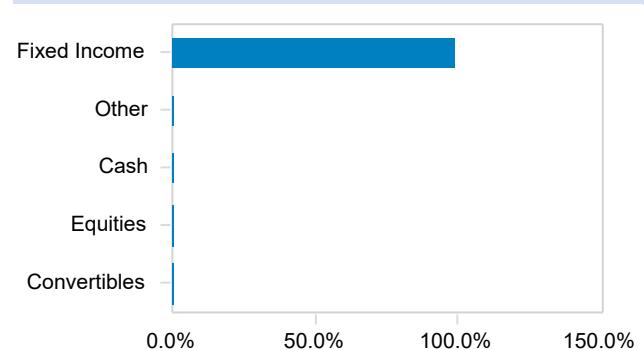
Fund Characteristics As of 06/30/2022

Avg. Coupon	2.60 %
Nominal Maturity	N/A
Effective Maturity	8.90 Years
Duration	6.70 Years
SEC 30 Day Yield	2.7
Avg. Credit Quality	AA

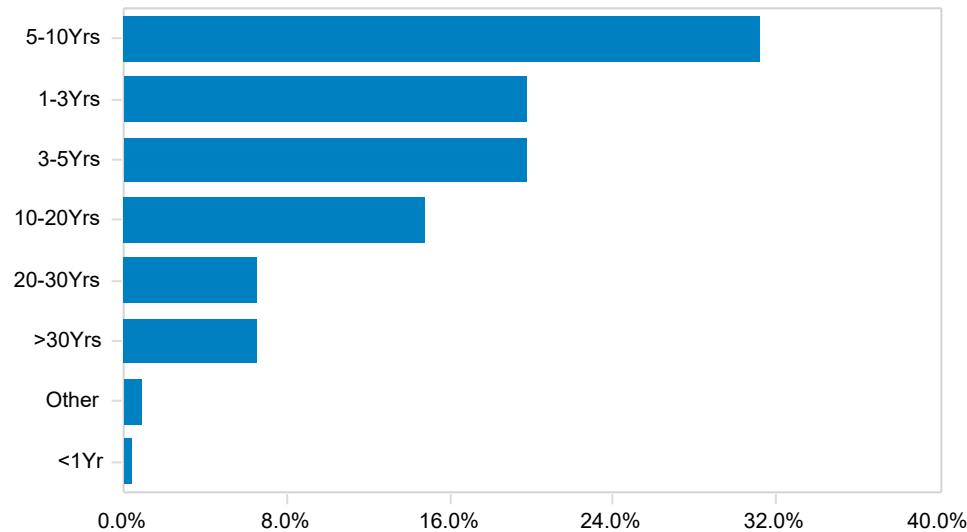
Top Ten Securities As of 06/30/2022

Corporate Notes/Bonds	26.7 %
Government Agency Securities	23.0 %
Treasury Notes/Bonds	23.0 %
GNMA and Other Mtg Backed	22.4 %
Fgn. Currency Denominated Bonds	3.7 %
Asset Backed Securities	0.4 %

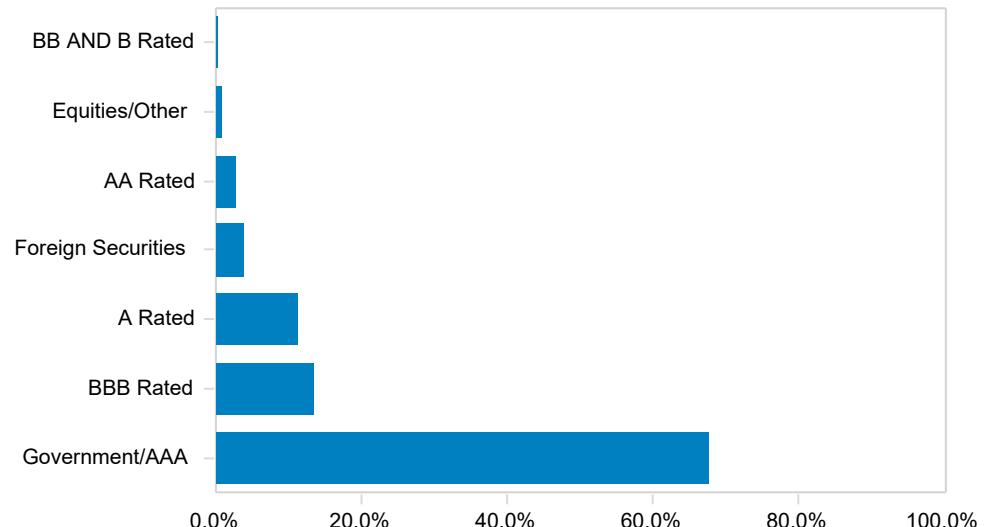
Asset Allocation As of 06/30/2022



Maturity Distribution As of 06/30/2022



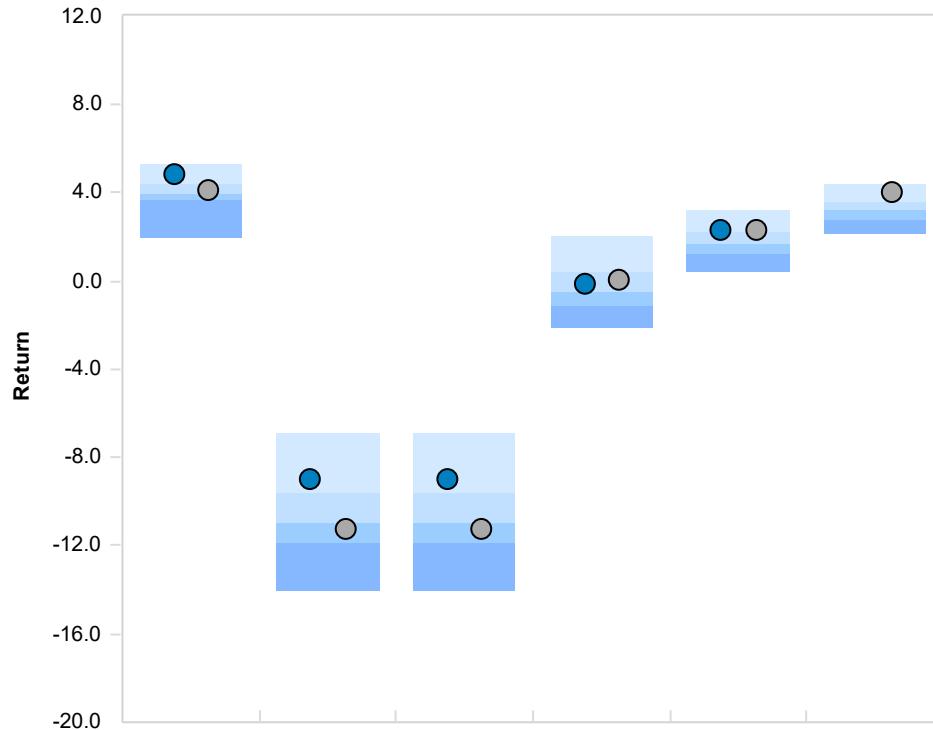
Sector/Quality Allocation As of 06/30/2022



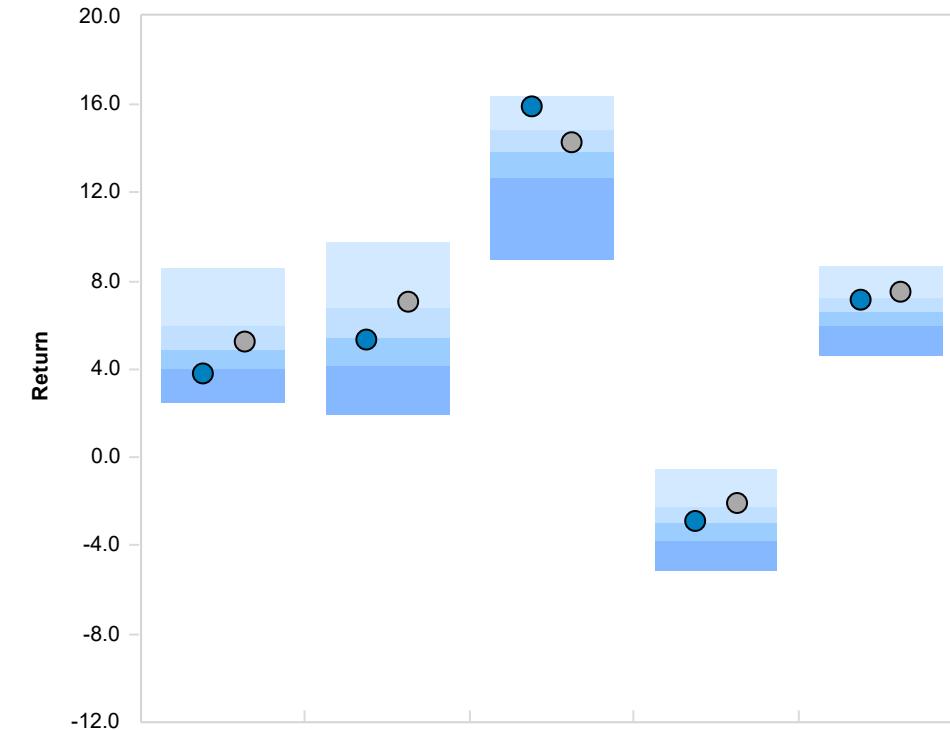
Statistics provided by Lipper. Most recent available data shown.



Peer Group Analysis - IM U.S. High Yield Bonds (MF)



Peer Group Analysis - IM U.S. High Yield Bonds (MF)



	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Investment	4.88 (9)	-8.97 (18)	-8.97 (18)	-0.15 (39)	2.31 (22)	N/A
Index	4.17 (35)	-11.19 (57)	-11.19 (57)	0.05 (34)	2.31 (22)	4.03 (12)
Median	3.96	-10.94	-10.94	-0.49	1.70	3.21

	2021	2020	2019	2018	2017
Investment	3.78 (79)	5.38 (51)	15.90 (9)	-2.87 (46)	7.13 (31)
Index	5.28 (42)	7.11 (20)	14.32 (38)	-2.08 (22)	7.50 (21)
Median	4.93	5.43	13.83	-2.97	6.63

Financial Reconciliation Since Inception Ending December 31, 2022

	Market Value 12/01/2014	Net Flows	Return On Investment	Market Value 12/31/2022
Investment	12,642,764	5,350,000	5,116,886	23,109,650

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-0.85	-8.62	-4.20	0.53	0.88	2.42
Index	-0.65	-9.83	-4.84	0.71	0.89	2.74



Mutual Fund Holdings Analysis
Vanguard High Yield Bond Fund (VWEAX)
December 31, 2022

Fund Information

Fund Name :	Vanguard Fixed Income Securities Funds: Vanguard High-Yield Corporate Fund; Admiral Shares	Portfolio Assets :	\$23,355 Million
Fund Family :	Vanguard	Portfolio Manager :	Hong/Shortsleeve/Chang
Ticker :	VWEAX	PM Tenure :	2008--2022--2022
Inception Date :	11/12/2001	Fund Style :	IM U.S. High Yield Bonds (MF)
Fund Assets :	\$20,350 Million	Style Benchmark :	FTSE High Yield Market Index
Portfolio Turnover :	31%		

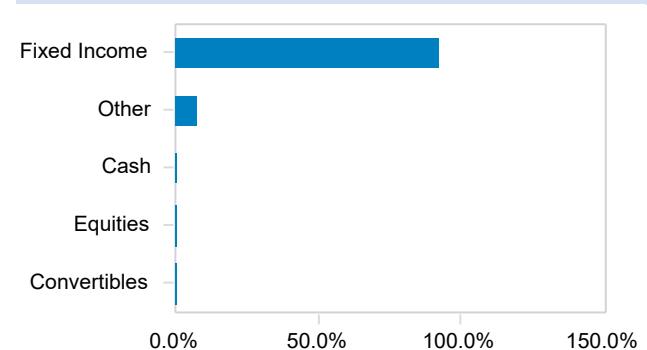
Fund Characteristics As of 09/30/2022

Avg. Coupon	N/A
Nominal Maturity	N/A
Effective Maturity	N/A
Duration	N/A
SEC 30 Day Yield	6.5
Avg. Credit Quality	BB

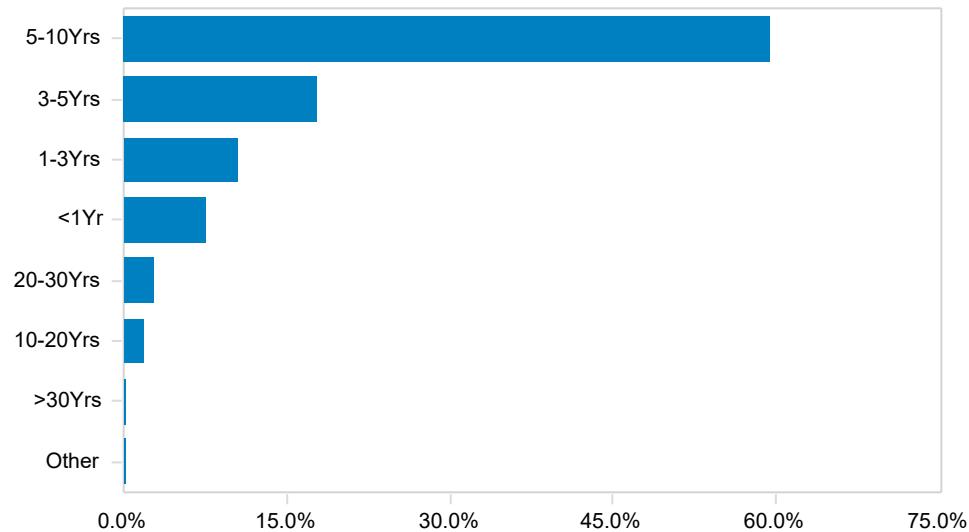
Top Ten Securities As of 09/30/2022

Corporate Notes/Bonds	88.2 %
Government Agency Securities	2.0 %
Treasury Notes/Bonds	2.0 %
Fgn. Currency Denominated Bonds	0.2 %

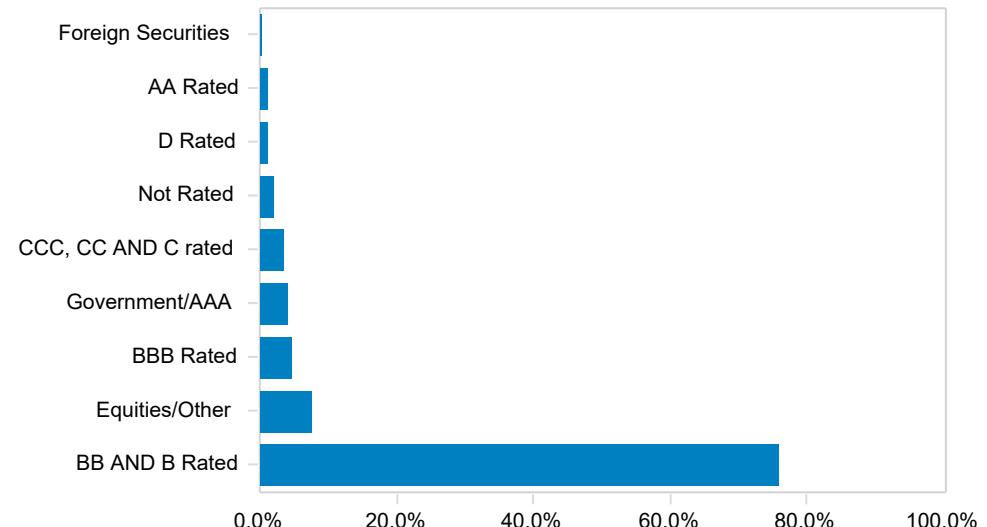
Asset Allocation As of 09/30/2022



Maturity Distribution As of 06/30/2022



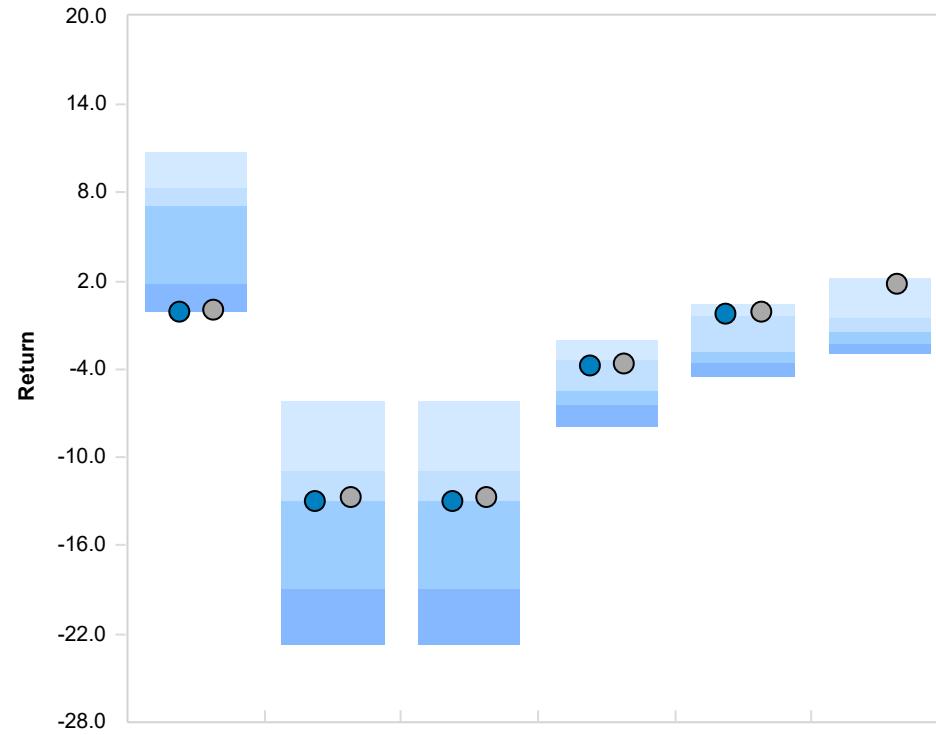
Sector/Quality Allocation As of 09/30/2022



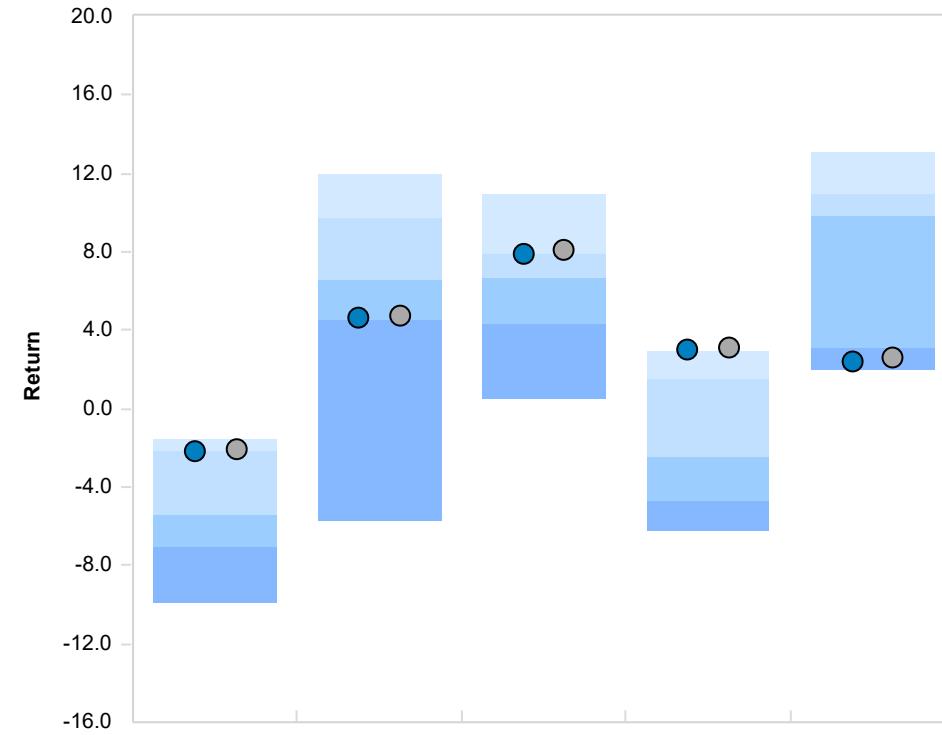
Statistics provided by Lipper. Most recent available data shown.



Peer Group Analysis - IM International Fixed Income (MF)



Peer Group Analysis - IM International Fixed Income (MF)



Financial Reconciliation Since Inception Ending December 31, 2022

	Market Value 06/01/2015	Net Flows	Return On Investment	Market Value 12/31/2022
Investment	9,329,282	-2,425,000	896,753	7,801,035

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-3.25	-5.19	-4.98	-0.18	0.03	0.30
Index	-3.09	-5.23	-5.04	-0.12	-0.01	0.26
Median	-3.09	-5.23	-5.04	-0.12	-0.01	0.26



Fund Information

Fund Name :	Vanguard Charlotte Funds: Vanguard Total International Bond Index Fund; Institutional Class Shares	Portfolio Assets :	\$81,676 Million
Fund Family :	Vanguard	Portfolio Manager :	Barrickman/Talone
Ticker :	VTIFX	PM Tenure :	2013-2022
Inception Date :	05/31/2013	Fund Style :	IM International Fixed Income (MF)
Fund Assets :	\$11,293 Million	Style Benchmark :	FTSE Non-U.S. World Government Bond
Portfolio Turnover :	25%		

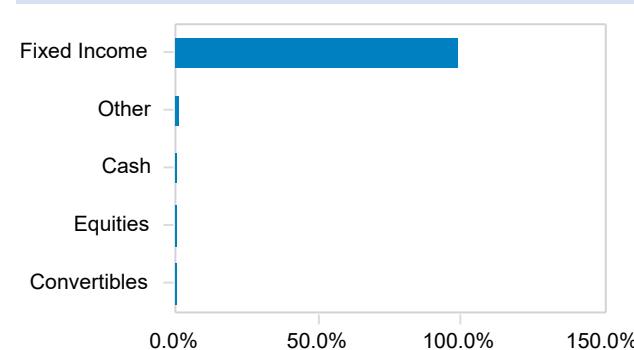
Fund Characteristics As of 09/30/2022

Avg. Coupon	N/A
Nominal Maturity	N/A
Effective Maturity	N/A
Duration	N/A
SEC 30 Day Yield	N/A
Avg. Credit Quality	N/A

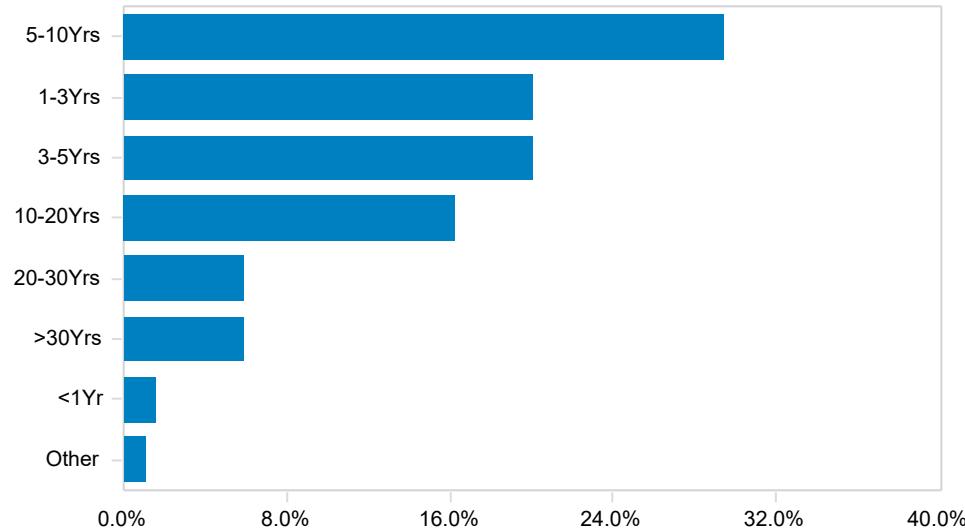
Top Ten Securities As of 06/30/2022

Fgn. Currency Denominated Bonds	80.1 %
Corporate Notes/Bonds	14.0 %
Asset Backed Securities	4.8 %

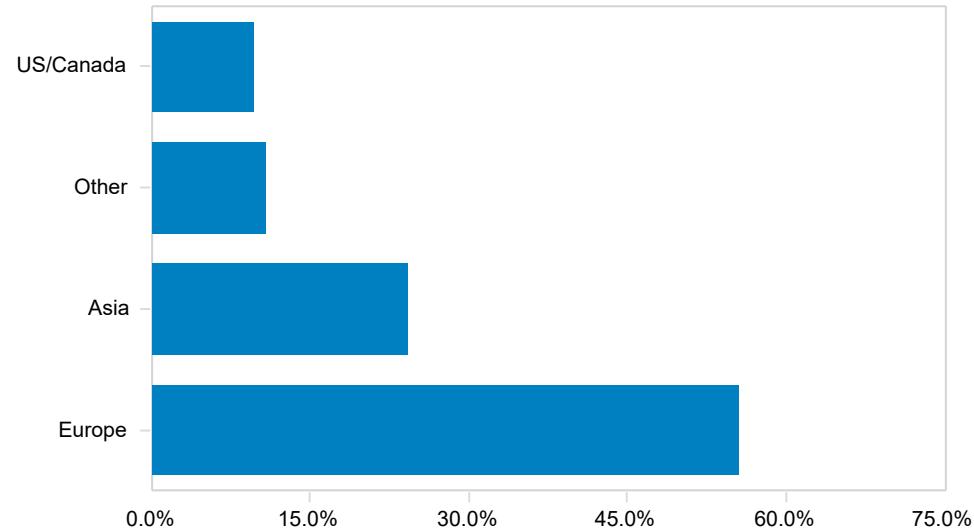
Asset Allocation As of 06/30/2022



Maturity Distribution As of 06/30/2022



Sector/Quality Allocation As of 06/30/2022



Statistics provided by Lipper. Most recent available data shown.



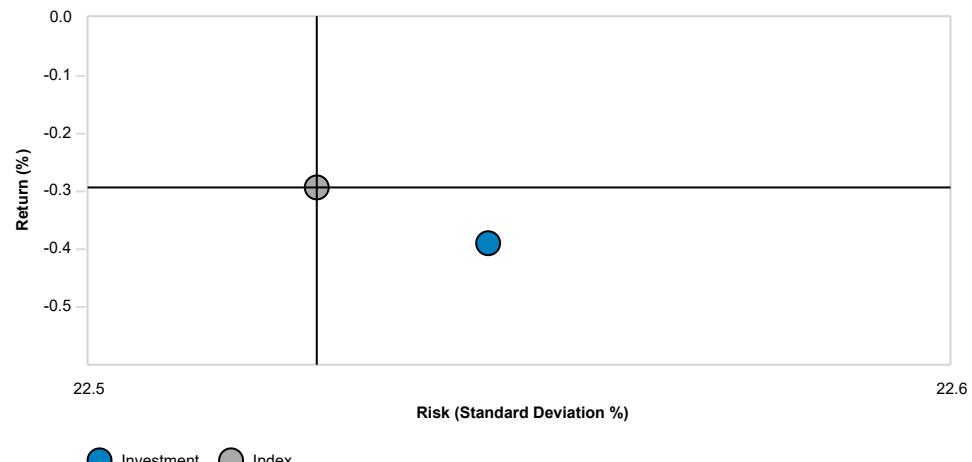
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.39	22.55	0.07	99.89	8	100.18	4
Index	-0.29	22.53	0.07	100.00	8	100.00	4

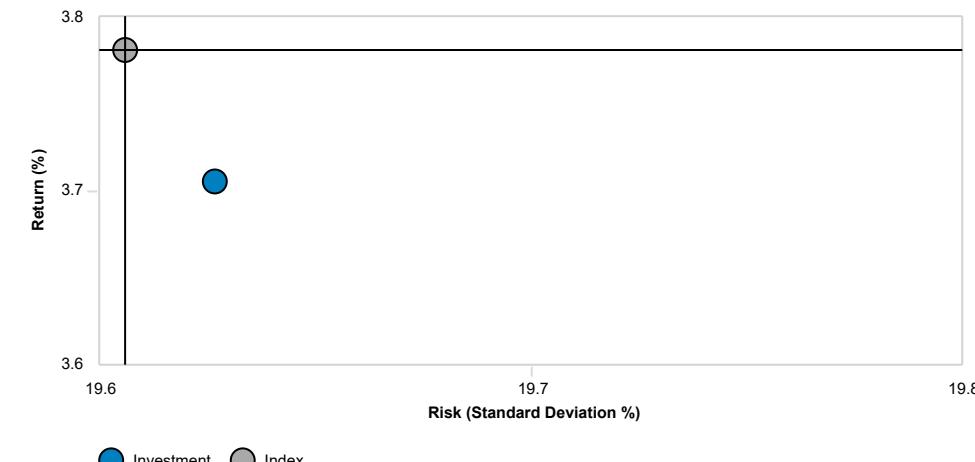
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	3.71	19.63	0.22	99.89	14	100.16	6
Index	3.78	19.61	0.23	100.00	14	100.00	6

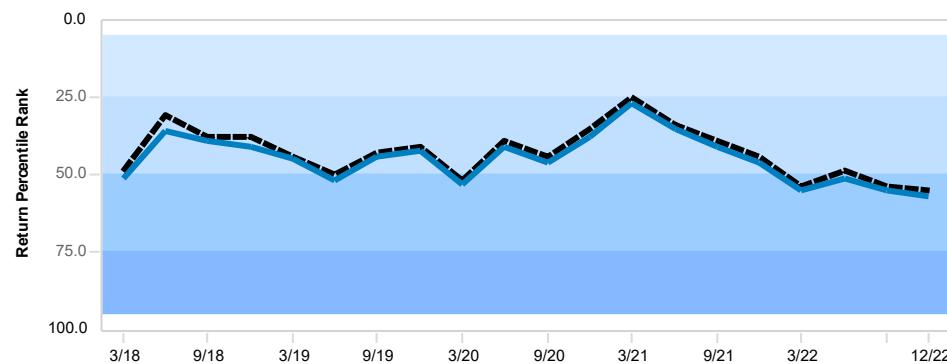
Risk and Return 3 Years



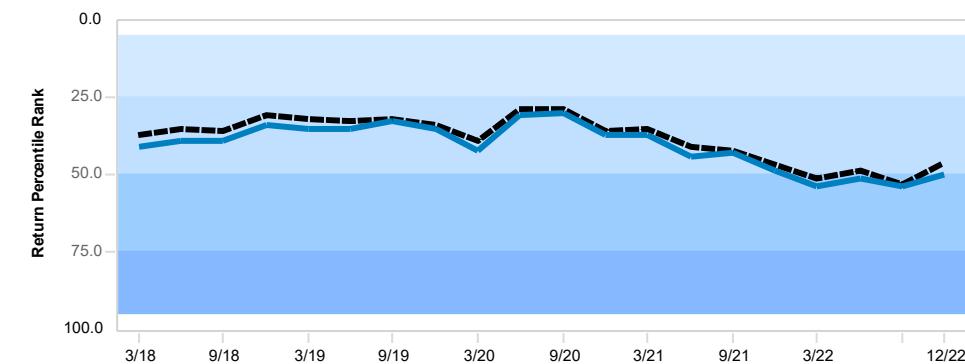
Risk and Return 5 Years



3 Year Rolling Percentile Rank IM Real Estate Sector (MF)



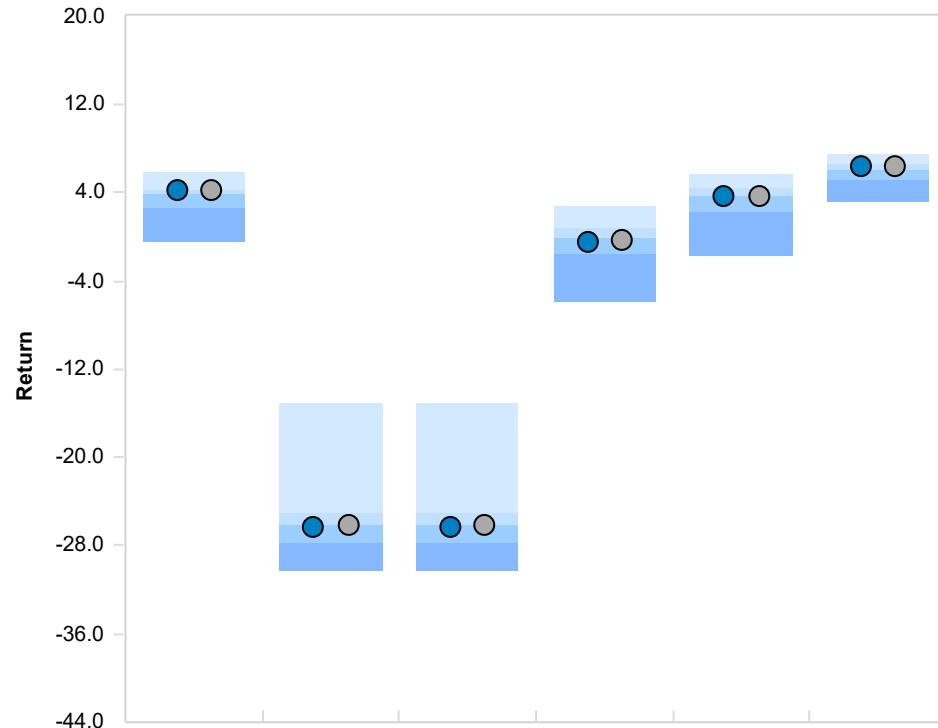
5 Year Rolling Percentile Rank IM Real Estate Sector (MF)



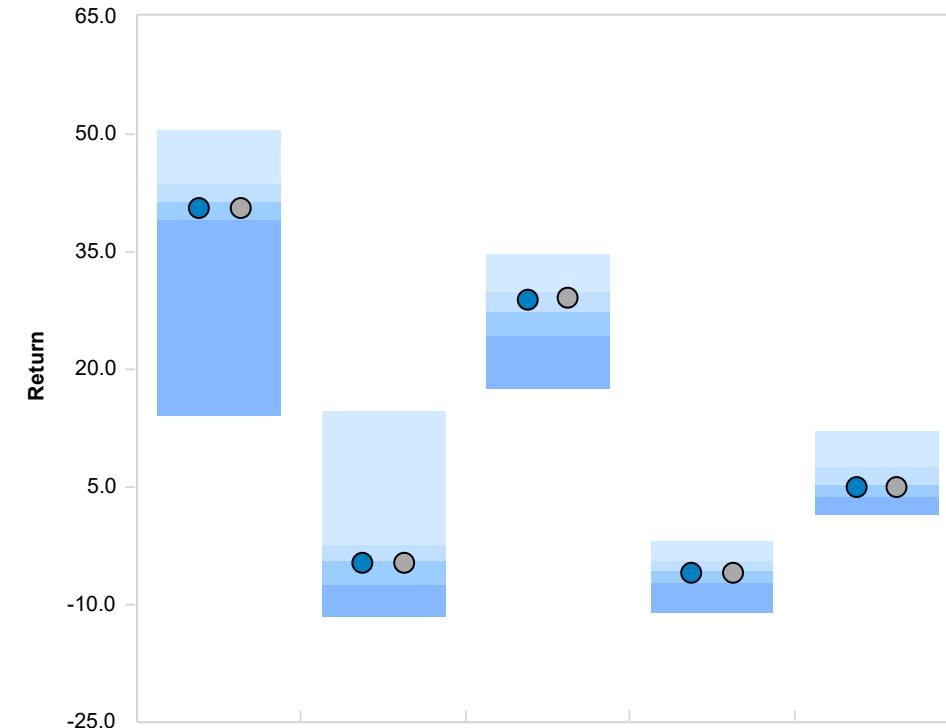
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	13 (65%)	7 (35%)	0 (0%)
Index	20	1 (5%)	15 (75%)	4 (20%)	0 (0%)

	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	17 (85%)	3 (15%)	0 (0%)
Index	20	0 (0%)	18 (90%)	2 (10%)	0 (0%)

Peer Group Analysis - IM Real Estate Sector (MF)



Peer Group Analysis - IM Real Estate Sector (MF)



Financial Reconciliation Since Inception Ending December 31, 2022

	Market Value 10/01/2010	Net Flows	Return On Investment	Market Value 12/31/2022
Investment	4,801,552	-1,776,630	9,399,590	12,424,512

Comparative Performance

	1 Qtr Ending Sep-2022	1 Qtr Ending Jun-2022	1 Qtr Ending Mar-2022	1 Qtr Ending Dec-2021	1 Qtr Ending Sep-2021	1 Qtr Ending Jun-2021
Investment	-11.01 (66)	-15.48 (42)	-5.97 (64)	14.96 (66)	0.67 (64)	11.67 (69)
Index	-10.98 (63)	-15.43 (38)	-5.95 (61)	14.94 (66)	0.70 (62)	11.69 (69)
Median	-10.74	-15.81	-5.29	15.66	1.07	12.08



Mutual Fund Holdings Analysis
Vanguard Real Estate Index Fund (VGSNX)
December 31, 2022

Fund Information

Fund Name :	Vanguard Specialized Funds: Vanguard Real Estate Index Fund; Institutional Class Shares	Portfolio Assets :	\$69,172 Million
Fund Family :	Vanguard	Portfolio Manager :	O'Reilly/Nejman
Ticker :	VGSNX	PM Tenure :	2003--2016
Inception Date :	12/02/2003	Fund Style :	IM Real Estate Sector (MF)
Fund Assets :	\$10,201 Million	Style Benchmark :	Vanguard Spliced REIT Index
Portfolio Turnover :	7%		

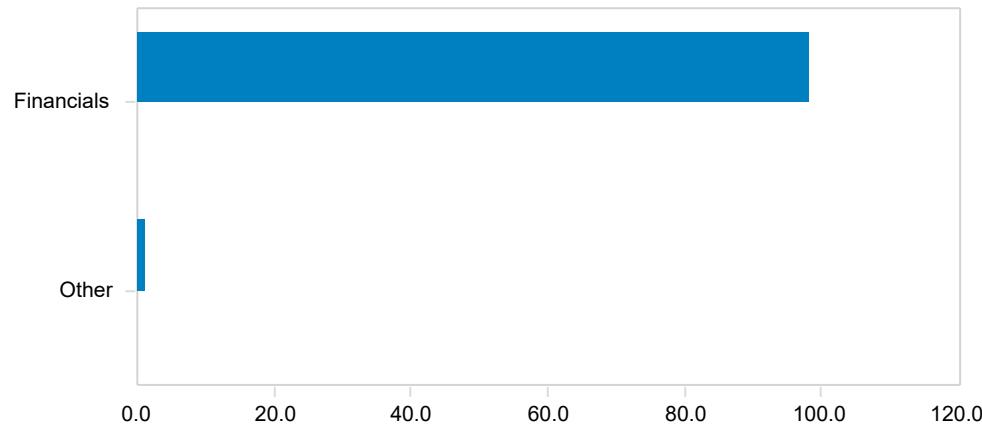
Portfolio Characteristics As of 10/31/2022

	Portfolio	Benchmark
Total Securities	169	N/A
Avg. Market Cap	38,187,516,616	-
Price/Earnings (P/E)	37.93	N/A
Price/Book (P/B)	5.06	N/A
Dividend Yield	4.16	N/A
Annual EPS	53.84	N/A
5 Yr EPS	8.73	N/A
3 Yr EPS Growth	14.92	N/A
Beta (5 Years, Monthly)	1.00	1.00

Top Ten Securities As of 10/31/2022

Vanguard Real Estate II Index Fund;Insti	11.9 %
Prologis Inc ORD	7.3 %
American Tower Corp ORD	6.7 %
Crown Castle Inc ORD	4.1 %
Equinix Inc ORD	3.7 %
Public Storage ORD	3.5 %
Realty Income Corp ORD	2.7 %
Simon Property Group Inc ORD	2.5 %
SBA Communications Corp ORD	2.1 %
Digital Realty Trust Inc ORD	1.9 %

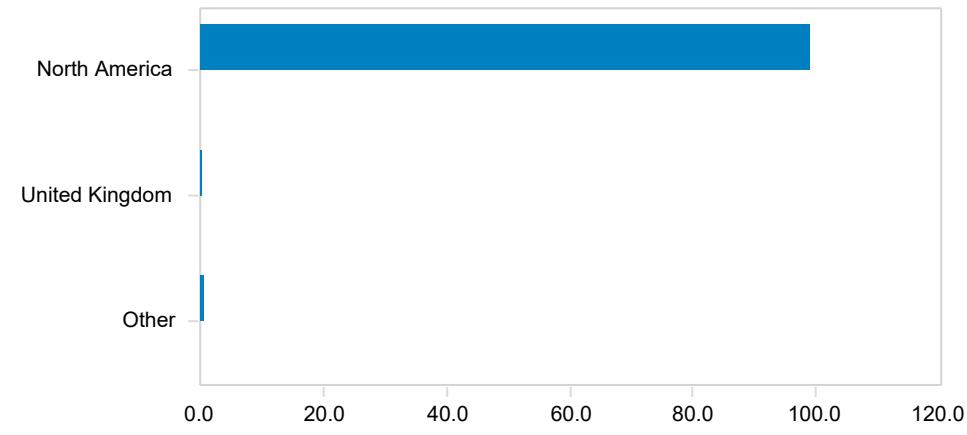
Sector Weights As of 10/31/2022



█ Vanguard Real Estate Index Fund (VGSNX)

█ Vanguard Spliced REIT Index

Region Weights As of 10/31/2022



█ Vanguard Real Estate Index Fund (VGSNX)

█ Vanguard Spliced REIT Index

Statistics provided by Lipper. Most recent available data shown.



Total Fund Policy			
Allocation Mandate	Weight (%)	Allocation Mandate	Weight (%)
Jan-1979		Jul-2014	
Russell 1000 Growth Index	20.00	CRSP U.S. Large Cap Value TR Index	8.00
Russell 1000 Value Index	20.00	CRSP U.S. Large Cap Growth TR Index	8.00
MSCI EAFE (Net) Index	10.00	CRSP U.S. Mid Cap TR Index	10.00
Bloomberg Intermediate US Govt/Credit Idx	40.00	CRSP U.S. Small Cap TR Index	5.00
Russell 2000 Index	10.00	Vanguard Spliced Emerging Markets Index (Net)	4.00
90 Day U.S. Treasury Bill	0.00	Vanguard Spliced Developed ex U.S. Index (Net)	9.00
Jun-2010		Blmbg. U.S. Gov/Credit: 5-10 Yr	7.50
Russell 1000 Value Index	15.00	Bloomberg U.S. TIPS Index	7.50
MSCI US Prime Market Growth	15.00	Bloomberg 1-5 Year Gov/Credit Idx	7.50
MSCI US Mid Cap 450 Index	10.00	Bloomberg US TIPS 0-5 Year Index	7.50
Russell 2000 Index	10.00	Vanguard Spliced REIT Index	10.00
MSCI EAFE (Net) Index	10.00	90 Day U.S. Treasury Bill	1.00
MSCI Emerging Markets (Net) Index	5.00	S&P 500 Index	15.00
Blmbg. U.S. Gov/Credit: 5-10 Yr	15.00		
Bloomberg U.S. TIPS Index	15.00		
Vanguard Spliced REIT Index	5.00		
Jun-2013			
CRSP U.S. Large Cap Value TR Index	15.00		
CRSP U.S. Large Cap Growth TR Index	15.00		
CRSP U.S. Mid Cap TR Index	10.00		
CRSP U.S. Small Cap TR Index	10.00		
Vanguard Spliced Emerging Markets Index (Net)	5.00		
Vanguard Spliced Developed ex U.S. Index (Net)	10.00		
Blmbg. U.S. Gov/Credit: 5-10 Yr	7.50		
Bloomberg U.S. TIPS Index	7.50		
Bloomberg 1-5 Year Gov/Credit Idx	7.50		
Bloomberg US TIPS 0-5 Year Index	7.50		
Vanguard Spliced REIT Index	4.00		
90 Day U.S. Treasury Bill	1.00		

Allocation Mandate	Weight (%)	Allocation Mandate	Weight (%)
Jun-2015		Oct-2019	
CRSP U.S. Large Cap Value TR Index	5.00	S&P 500 Index	15.00
CRSP U.S. Large Cap Growth TR Index	5.00	CRSP U.S. Large Cap Value TR Index	5.00
CRSP U.S. Mid Cap TR Index	10.00	CRSP U.S. Large Cap Growth TR Index	5.00
CRSP U.S. Small Cap TR Index	5.00	S&P MidCap 400 Index	10.00
Vanguard Spliced Emerging Markets Index (Net)	5.00	S&P SmallCap 600 Index	5.00
Vanguard Spliced Developed ex U.S. Index (Net)	10.00	FTSE Developed All Cap ex-U.S. Index	10.00
Blmbg. U.S. Gov/Credit: 5-10 Yr	7.50	FTSE Emerging Mkts All Cap China A Inclusion Index	5.00
Bloomberg U.S. TIPS Index	5.00	Blmbg. U.S. Aggregate Index	20.00
Bloomberg 1-5 Year Gov/Credit Idx	7.50	Bloomberg 1-5 Year Gov/Credit Idx	2.50
Bloomberg US TIPS 0-5 Year Index	5.00	Blmbg. U.S. Corp High Yield	10.00
Vanguard Spliced REIT Index	5.00	Blmbg. Global Agg ex-USD Flt Adj RIC Cpd (H)	5.00
90 Day U.S. Treasury Bill	2.50	Vanguard Spliced REIT Index	5.00
S&P 500 Index	15.00	90 Day U.S. Treasury Bill	2.50
Blmbg. U.S. Corp High Yield	7.50		
Blmbg. Global Agg ex-USD Flt Adj RIC Cpd (H)	5.00		
Dec-2018		Mar-2020	
CRSP U.S. Large Cap Value TR Index	5.00	S&P 500 Index	15.00
CRSP U.S. Large Cap Growth TR Index	5.00	CRSP U.S. Large Cap Value TR Index	5.00
S&P MidCap 400 Index	10.00	CRSP U.S. Large Cap Growth TR Index	5.00
S&P SmallCap 600 Index	5.00	S&P MidCap 400 Index	10.00
Vanguard Spliced Emerging Markets Index (Net)	5.00	S&P SmallCap 600 Index	5.00
Vanguard Spliced Developed ex U.S. Index (Net)	10.00	FTSE Developed All Cap ex-U.S. Index	7.50
Blmbg. U.S. Gov/Credit: 5-10 Yr	7.50	FTSE Emerging Mkts All Cap China A Inclusion Index	5.00
Bloomberg U.S. TIPS Index	5.00	FTSE Global ex U.S. Small Cap Index (Net)	2.50
Bloomberg 1-5 Year Gov/Credit Idx	7.50	Blmbg. U.S. Aggregate Index	20.00
Bloomberg US TIPS 0-5 Year Index	5.00	Bloomberg 1-5 Year Gov/Credit Idx	2.50
Vanguard Spliced REIT Index	5.00	Blmbg. U.S. Corp High Yield	10.00
90 Day U.S. Treasury Bill	2.50	Blmbg. Global Agg ex-USD Flt Adj RIC Cpd (H)	5.00
S&P 500 Index	15.00	Vanguard Spliced REIT Index	5.00
Blmbg. U.S. Corp High Yield	7.50	90 Day U.S. Treasury Bill	2.50
Blmbg. Global Agg ex-USD Flt Adj RIC Cpd (H)	5.00		

Mid Cap Index Policy	
Allocation Mandate	Weight (%)
Oct-2010	
Vanguard Spliced Mid Cap Index	100.00
Dec-2018	
S&P MidCap 400 Index	100.00

Small Cap Index Policy	
Allocation Mandate	Weight (%)
Jul-2009	
Vanguard Spliced Small Cap Index	100.00
Dec-2018	
S&P SmallCap 600 Index	100.00

Vanguard Spliced REIT Index History

MSCI US REIT Index adjusted to include a 2% cash position (Lipper Money Market Average) through April 30, 2009

MSCI US REIT Index through February 1, 2018

MSCI US Investable Market Real Estate 25/50 Transition Index through July 24, 2018

MSCI US Investable Market Real Estate 25/50 Index thereafter



Active Return	- Arithmetic difference between the manager's performance and the designated benchmark return over a specified time period.
Alpha	- A measure of the difference between a portfolio's actual performance and its expected return based on its level of risk as determined by beta. It determines the portfolio's non-systemic return, or its historical performance not explained by movements of the market.
Beta	- A measure of the sensitivity of a portfolio to the movements in the market. It is a measure of the portfolio's systematic risk.
Consistency	- The percentage of quarters that a product achieved a rate of return higher than that of its benchmark. Higher consistency indicates the manager has contributed more to the product's performance.
Distributed to Paid In (DPI)	- The ratio of money distributed to Limited Partners by the fund, relative to contributions. It is calculated by dividing cumulative distributions by paid in capital. This multiple shows the investor how much money they got back. It is a good measure for evaluating a fund later in its life because there are more distributions to measure against.
Down Market Capture	- The ratio of average portfolio performance over the designated benchmark during periods of negative returns. A lower value indicates better product performance
Downside Risk	- A measure similar to standard deviation that utilizes only the negative movements of the return series. It is calculated by taking the standard deviation of the negative quarterly set of returns. A higher factor is indicative of a riskier product.
Excess Return	- Arithmetic difference between the manager's performance and the risk-free return over a specified time period.
Excess Risk	- A measure of the standard deviation of a portfolio's performance relative to the risk free return.
Information Ratio	- This calculates the value-added contribution of the manager and is derived by dividing the active rate of return of the portfolio by the tracking error. The higher the Information Ratio, the more the manager has added value to the portfolio.
Public Market Equivalent (PME)	- Designs a set of analyses used in the Private Equity Industry to evaluate the performance of a Private Equity Fund against a public benchmark or index.
R-Squared	- The percentage of a portfolio's performance that can be explained by the behavior of the appropriate benchmark. A high R-Squared means the portfolio's performance has historically moved in the same direction as the appropriate benchmark.
Return	- Compounded rate of return for the period.
Sharpe Ratio	- Represents the excess rate of return over the risk free return divided by the standard deviation of the excess return. The result is an absolute rate of return per unit of risk. A higher value demonstrates better historical risk-adjusted performance.
Standard Deviation	- A statistical measure of the range of a portfolio's performance. It represents the variability of returns around the average return over a specified time period.
Total Value to Paid In (TVPI)	- The ratio of the current value of remaining investments within a fund, plus the total value of all distributions to date, relative to the total amount of capital paid into the fund to date. It is a good measure of performance before the end of a fund's life
Tracking Error	- This is a measure of the standard deviation of a portfolio's returns in relation to the performance of its designated market benchmark.
Treynor Ratio	- Similar to Sharpe ratio but utilizes beta rather than excess risk as determined by standard deviation. It is calculated by taking the excess rate of return above the risk free rate divided by beta to derive the absolute rate of return per unit of risk. A higher value indicates a product has achieved better historical risk-adjusted performance.
Up Market Capture	- The ratio of average portfolio performance over the designated benchmark during periods of positive returns. A higher value indicates better product performance.

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