

# Q1

## Quarterly Market Review

First Quarter 2023

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This report features world capital market performance and a timeline of events for the past quarter. It begins with a global overview, then features the returns of stock and bond asset classes in the US and international markets. The report concludes with a quarterly topic.

## Overview:

Market Summary

World Stock Market Performance

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Emerging Markets Stocks

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Real Estate Investment Trusts (REITs)

Commodities

Fixed Income

Quarterly Topics:

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DFA Ranks & DFA vs. Industry

AFA Model Returns Analysis

# Quarterly Market Summary

## Index returns

	US Stock Market	International Developed Stocks	Emerging Markets Stocks	Global Real Estate	US Bond Market	Global Bond Market ex US
Q1 2023	STOCKS				BONDS	
	7.18%	8.02%	3.96%	1.37%	2.96%	2.86%
Since Jan. 2001						
Average Quarterly Return	2.2%	1.5%	2.5%	2.2%	0.9%	0.9%
Best Quarter	22.0%	25.9%	34.7%	32.3%	4.6%	4.6%
	<b>2020 Q2</b>	<b>2009 Q2</b>	<b>2009 Q2</b>	<b>2009 Q3</b>	<b>2001 Q3</b>	<b>2008 Q4</b>
Worst Quarter	-22.8%	-23.3%	-27.6%	-36.1%	-5.9%	-4.1%
	<b>2008 Q4</b>	<b>2020 Q1</b>	<b>2008 Q4</b>	<b>2008 Q4</b>	<b>2022 Q1</b>	<b>2022 Q1</b>

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: US Stock Market (Russell 3000 Index), International Developed Stocks (MSCI World ex USA Index [net dividends]), Emerging Markets (MSCI Emerging Markets Index [net dividends]), Global Real Estate (S&P Global REIT Index [net dividends]), US Bond Market (Bloomberg US Aggregate Bond Index), and Global Bond Market ex US (Bloomberg Global Aggregate ex-USD Bond Index [hedged to USD]). S&P data © 2023 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes. MSCI data © MSCI 2023, all rights reserved. Bloomberg data provided by Bloomberg.

# Long-Term Market Summary

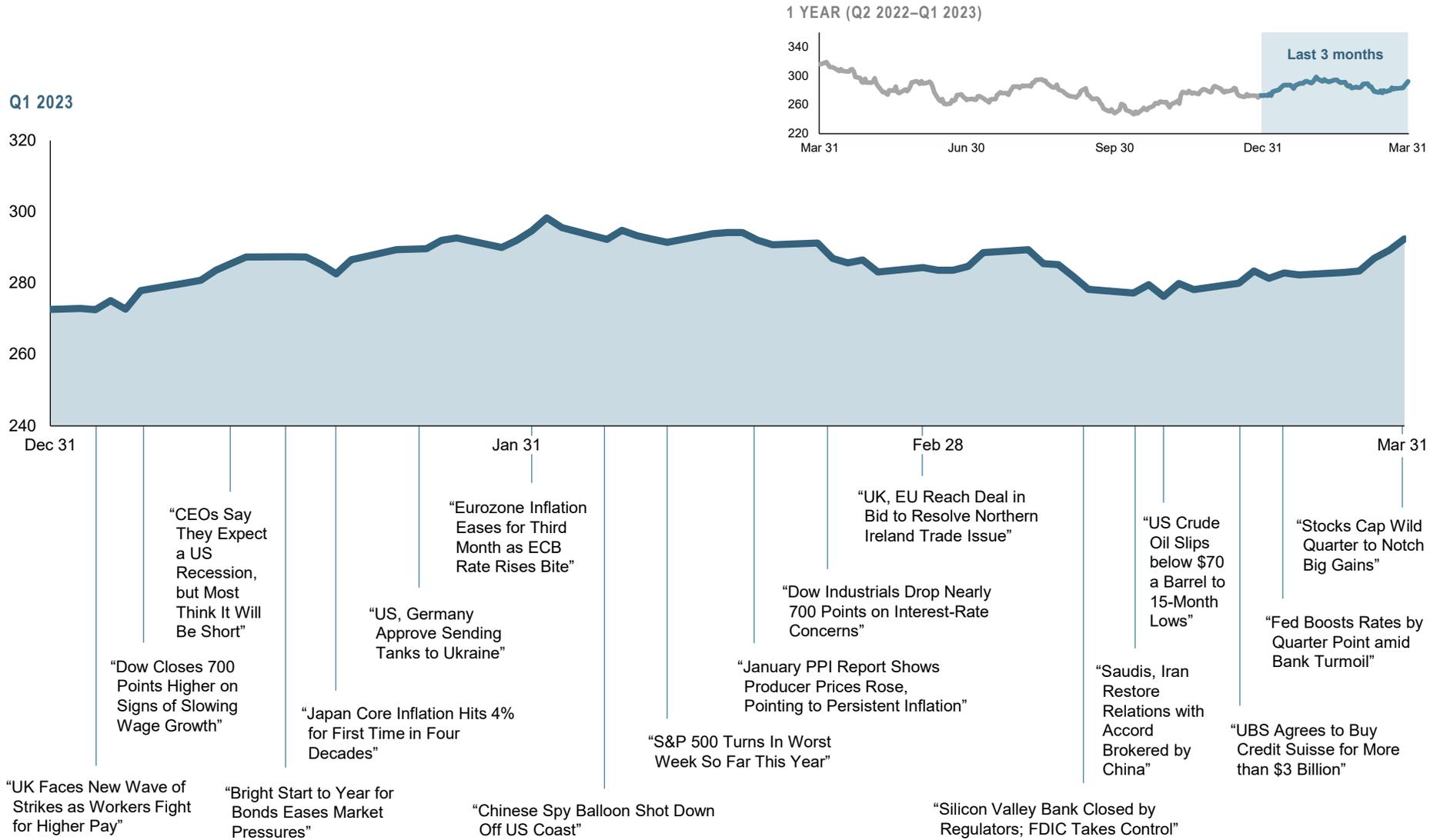
Index returns as of March 31, 2023

	US Stock Market	International Developed Stocks	Emerging Markets Stocks	Global Real Estate	US Bond Market	Global Bond Market ex US
1 Year	STOCKS				BONDS	
	-8.58%	-2.74%	-10.70%	-20.29%	-4.78%	-3.27%
5 Years						
	10.45%	3.80%	-0.91%	2.41%	0.91%	0.90%
10 Years						
	11.73%	4.91%	2.00%	3.26%	1.36%	2.28%

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# World Stock Market Performance

MSCI All Country World Index with selected headlines from Q1 2023

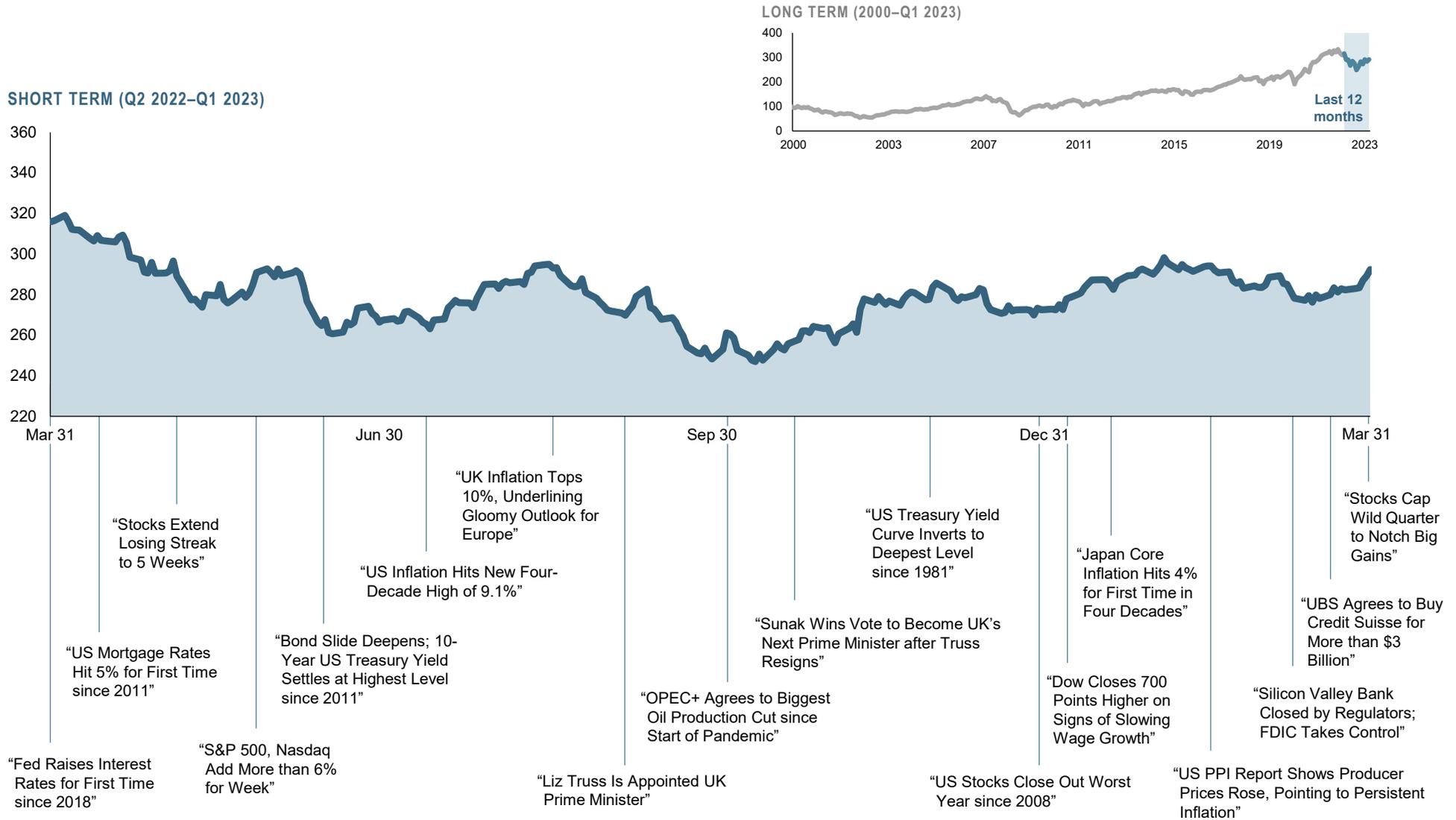


*These headlines are not offered to explain market returns. Instead, they serve as a reminder that investors should view daily events from a long-term perspective and avoid making investment decisions based solely on the news.*

Graph Source: MSCI ACWI Index (net dividends). MSCI data © MSCI 2023, all rights reserved. Index level based at 100 starting January 2000. It is not possible to invest directly in an index. Performance does not reflect the expenses associated with management of an actual portfolio. **Past performance is not a guarantee of future results.**

# World Stock Market Performance

MSCI All Country World Index with selected headlines from past 12 months



*These headlines are not offered to explain market returns. Instead, they serve as a reminder that investors should view daily events from a long-term perspective and avoid making investment decisions based solely on the news.*

Graph Source: MSCI ACWI Index (net dividends). MSCI data © MSCI 2023, all rights reserved. Index level based at 100 starting January 2000.

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# US Stocks

## First quarter 2023 index returns

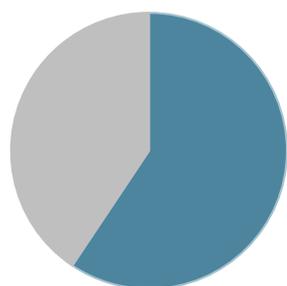
The US equity market posted positive returns for the quarter and underperformed non-US developed markets, but outperformed emerging markets.

Value underperformed growth.

Small caps underperformed large caps.

REIT indices underperformed equity market indices.

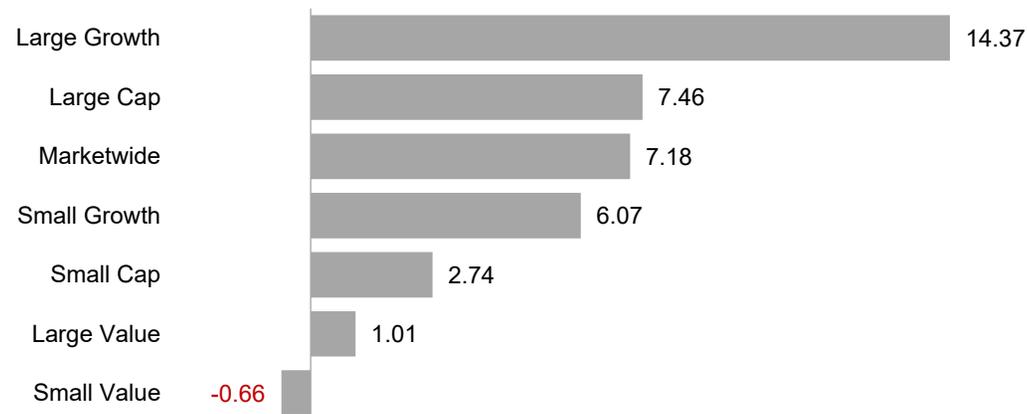
### World Market Capitalization—US



**59%**

US Market  
\$40.1 trillion

### Ranked Returns (%)



### Period Returns (%)

Asset Class	QTR	1 Year	Annualized		
			3 Years	5 Years	10 Years
Large Growth	14.37	-10.90	18.58	13.66	14.59
Large Cap	7.46	-8.39	18.55	10.87	12.01
Marketwide	7.18	-8.58	18.48	10.45	11.73
Small Growth	6.07	-10.60	13.36	4.26	8.49
Small Cap	2.74	-11.61	17.51	4.71	8.04
Large Value	1.01	-5.91	17.93	7.50	9.13
Small Value	-0.66	-12.96	21.01	4.55	7.22

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: Marketwide (Russell 3000 Index), Large Cap (Russell 1000 Index), Large Value (Russell 1000 Value Index), Large Growth (Russell 1000 Growth Index), Small Cap (Russell 2000 Index), Small Value (Russell 2000 Value Index), and Small Growth (Russell 2000 Growth Index). World Market Cap represented by Russell 3000 Index, MSCI World ex USA IMI Index, and MSCI Emerging Markets IMI Index. Russell 3000 Index is used as the proxy for the US market. Dow Jones US Select REIT Index used as proxy for the US REIT market. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes. MSCI data © MSCI 2023, all rights reserved.

# International Developed Stocks

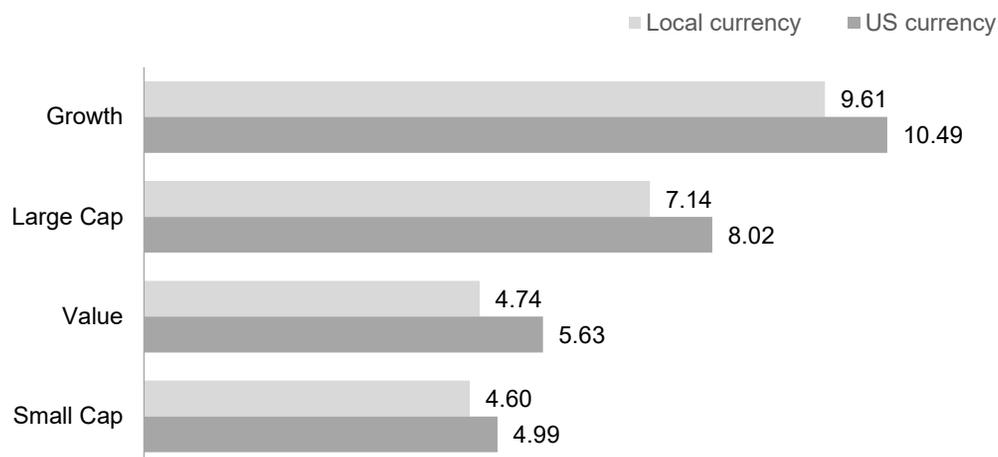
First quarter 2023 index returns

Developed markets outside of the US posted positive returns for the quarter and outperformed both US and emerging markets.

Value underperformed growth.

Small caps underperformed large caps.

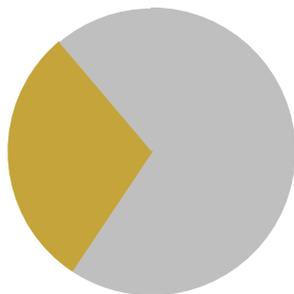
## Ranked Returns (%)



## World Market Capitalization—International Developed

29%

International Developed Market  
\$19.9 trillion



## Period Returns (%)

Asset Class	QTR	1 Year	Annualized		
			3 Years	5 Years	10 Years
Growth	10.49	-4.04	11.15	4.96	5.77
Large Cap	8.02	-2.74	13.49	3.80	4.91
Value	5.63	-1.85	15.32	2.18	3.80
Small Cap	4.99	-10.13	13.43	1.54	5.54

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: Large Cap (MSCI World ex USA Index), Small Cap (MSCI World ex USA Small Cap Index), Value (MSCI World ex USA Value Index), and Growth (MSCI World ex USA Growth Index). All index returns are net of withholding tax on dividends. World Market Cap represented by Russell 3000 Index, MSCI World ex USA IMI Index, and MSCI Emerging Markets IMI Index. MSCI World ex USA IMI Index is used as the proxy for the International Developed market. MSCI data © MSCI 2023, all rights reserved. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes.

# Emerging Markets Stocks

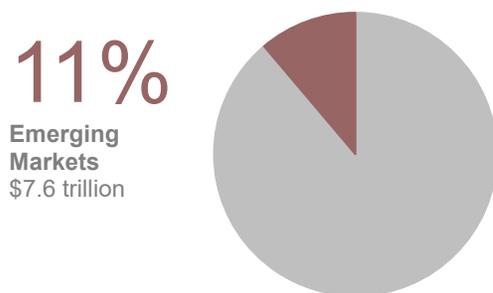
First quarter 2023 index returns

Emerging markets posted positive returns for the quarter and underperformed both US and non-US developed markets.

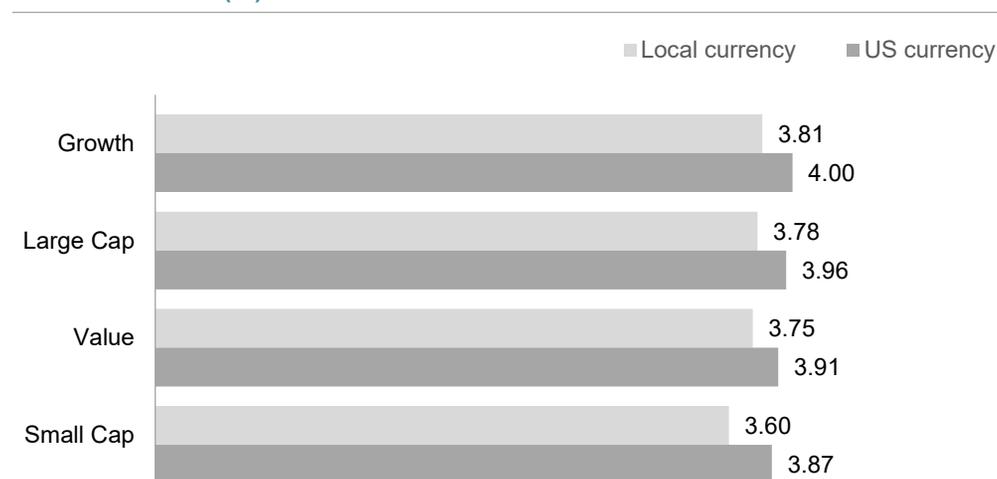
Value underperformed growth.

Small caps underperformed large caps.

## World Market Capitalization—Emerging Markets



## Ranked Returns (%)



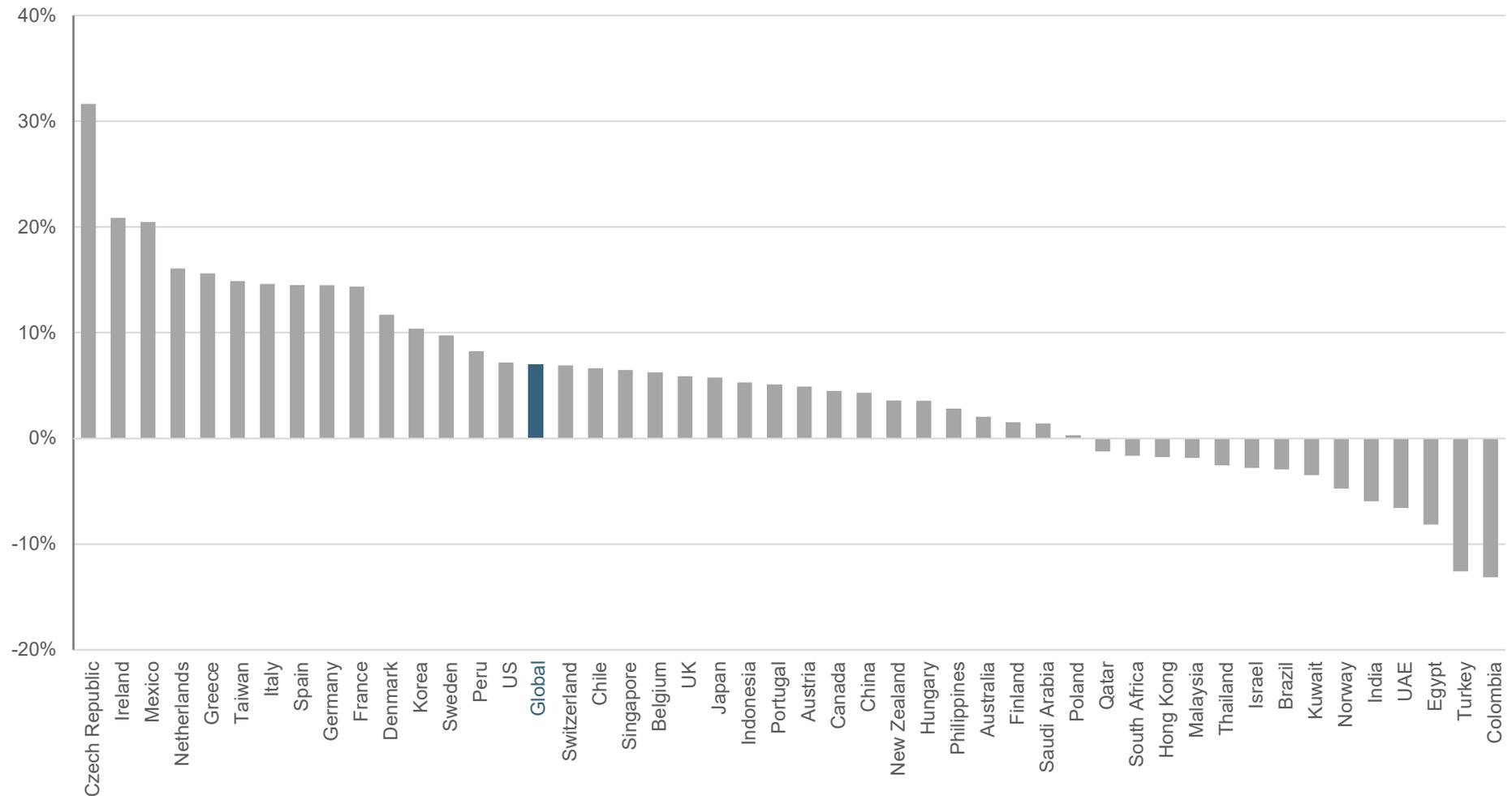
## Period Returns (%)

Asset Class	QTR	1 Year	Annualized		
			3 Years	5 Years	10 Years
Growth	4.00	-11.87	5.65	-0.79	3.18
Large Cap	3.96	-10.70	7.83	-0.91	2.00
Value	3.91	-9.44	10.04	-1.15	0.69
Small Cap	3.87	-10.99	20.68	1.80	3.18

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: Large Cap (MSCI Emerging Markets Index), Small Cap (MSCI Emerging Markets Small Cap Index), Value (MSCI Emerging Markets Value Index), and Growth (MSCI Emerging Markets Growth Index). All index returns are net of withholding tax on dividends. World Market Cap represented by Russell 3000 Index, MSCI World ex USA IMI Index, and MSCI Emerging Markets IMI Index. MSCI Emerging Markets IMI Index used as the proxy for the emerging market portion of the market. MSCI data © MSCI 2023, all rights reserved. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes.

# Country Returns

First quarter 2023 index returns



**Past performance is no guarantee of future results.**

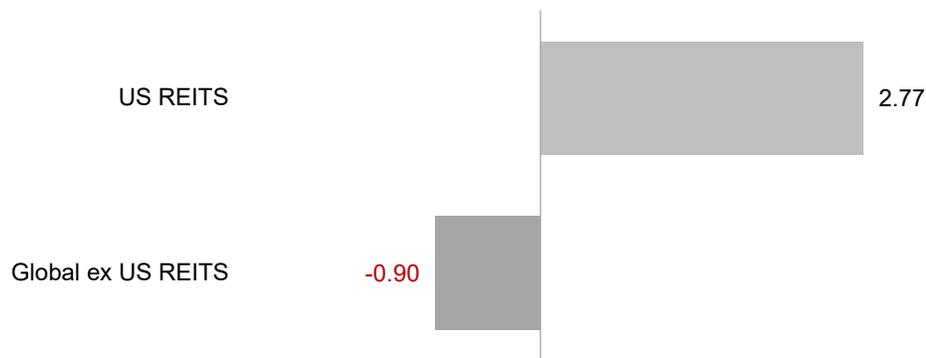
Country returns are the country component indices of the MSCI All Country World IMI Index for all countries except the United States, where the Russell 3000 Index is used instead. Global is the return of the MSCI All Country World IMI Index. MSCI index returns are net dividend. Indices are not available for direct investment. Their performance does not reflect the expenses associated with the management of an actual portfolio. Frank Russell Company is the source and owner of the trademarks, service marks and copyrights related to the Russell Indexes. MSCI data © MSCI 2023, all rights reserved.

# Real Estate Investment Trusts (REITs)

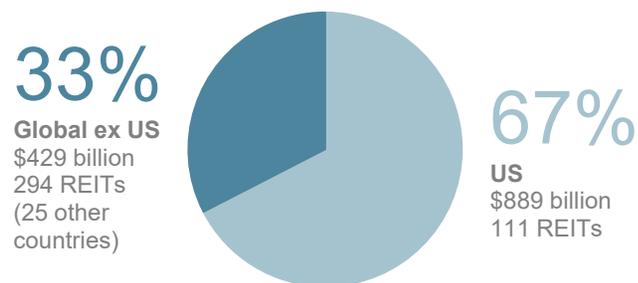
First quarter 2023 index returns

US real estate investment trusts outperformed non-US REITs during the quarter.

## Ranked Returns (%)



## Total Value of REIT Stocks



## Period Returns (%)

Asset Class	QTR	1 Year	Annualized		
			3 Years	5 Years	10 Years
US REITS	2.77	-20.98	11.32	4.66	5.31
Global ex US REITS	-0.90	-20.93	4.83	-2.06	0.79

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Number of REIT stocks and total value based on the two indices. All index returns are net of withholding tax on dividends. Total value of REIT stocks represented by Dow Jones US Select REIT Index and the S&P Global ex US REIT Index. Dow Jones US Select REIT Index used as proxy for the US market, and S&P Global ex US REIT Index used as proxy for the World ex US market. Dow Jones and S&P data © 2023 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved.

# Commodities

## First quarter 2023 index returns

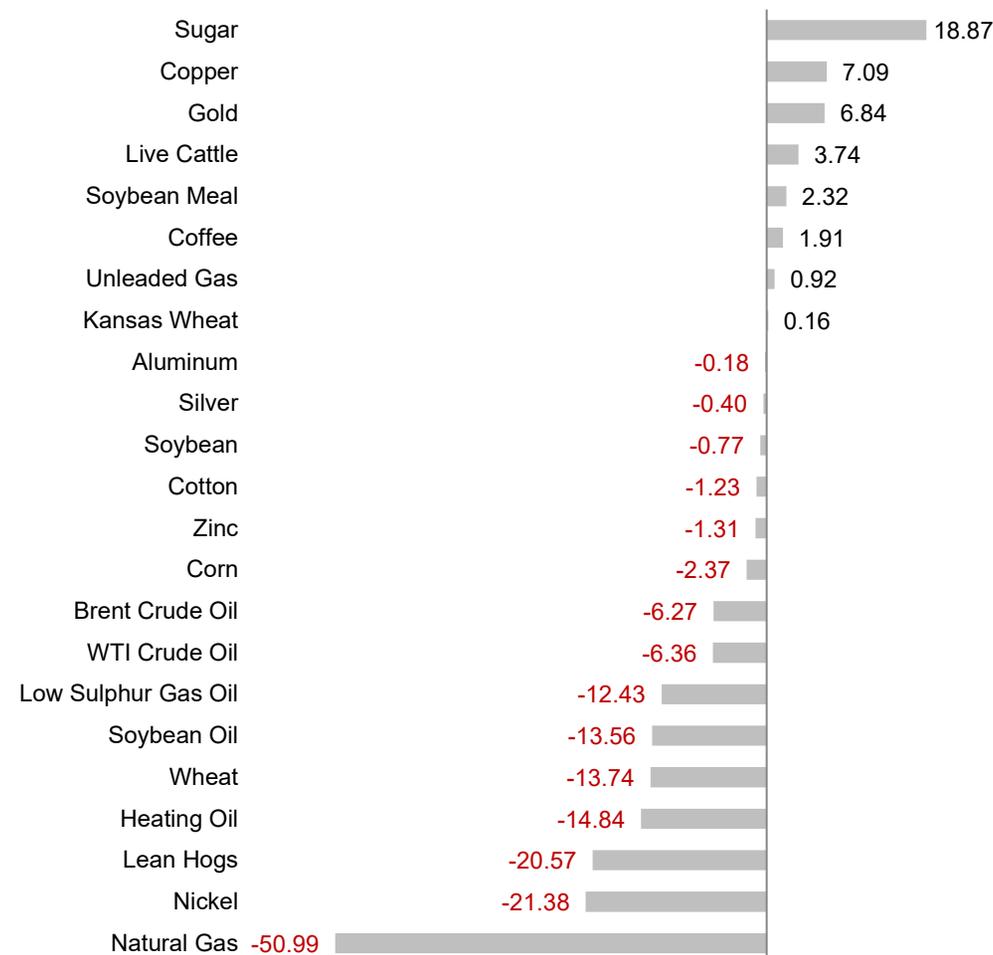
The Bloomberg Commodity Total Return Index returned -5.36% for the first quarter of 2023.

Natural Gas and Nickel were the worst performers, returning -50.99% and -21.38% during the quarter, respectively. Sugar and Copper were the best performers, returning +18.87% and +7.09% during the quarter, respectively.

### Period Returns (%)

Asset Class	QTR	1 Year	Annualized		
			3 Years	5 Years	10 Years
Commodities	-5.36	-12.49	20.82	5.36	-1.72

### Ranked Returns (%)



# Fixed Income

## First quarter 2023 index returns

Within the US Treasury market during the first quarter of 2023, interest rates generally increased in the ultrashort-term segment and decreased in the short- to long-term segment.

On the short end of the yield curve, the 1-Month US Treasury Bill yield increased 62 basis points (bps) to 4.74%, while the 1-Year US Treasury Bill yield decreased 9 bps to 4.64%. The yield on the 2-Year US Treasury Note decreased 35 bps to 4.06%.

The yield on the 5-Year US Treasury Note decreased 39 bps to 3.60%. The yield on the 10-Year US Treasury Note decreased 40 bps to 3.48%. The yield on the 30-Year US Treasury Bond decreased 30 bps to 3.67%.

In terms of total returns, short-term US treasury bonds returned +1.87% while intermediate-term US treasury bonds returned +2.27%. Short-term corporate bonds returned +1.68% and intermediate-term corporate bonds returned +2.50%.<sup>1</sup>

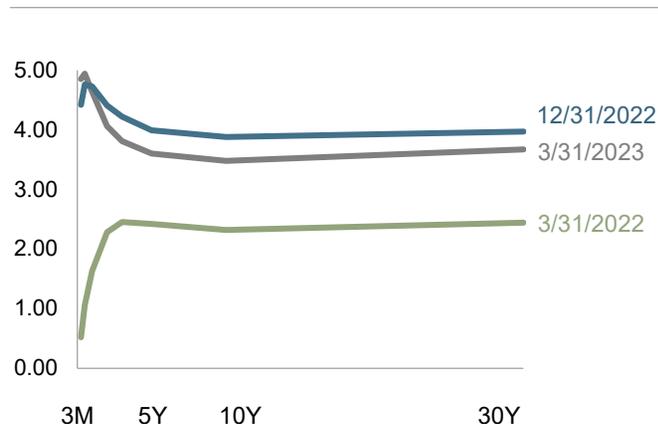
The total returns for short- and intermediate-term municipal bonds were +1.37% and +2.35%, respectively. Within the municipal fixed income market, general obligation bonds returned +2.59% while revenue bonds returned +2.96%.<sup>2</sup>

1. Bloomberg US Treasury and US Corporate Bond Indices.

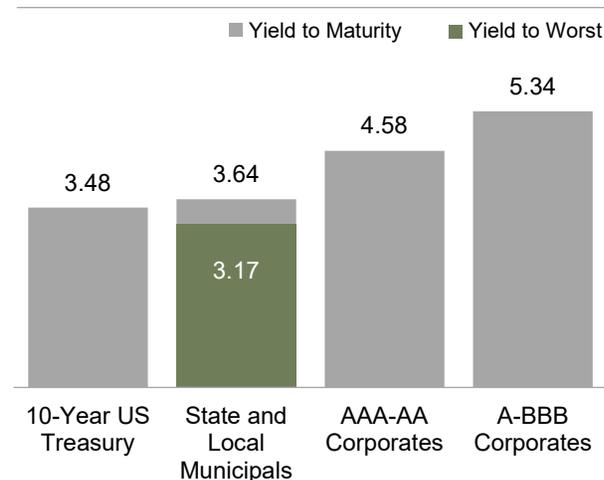
2. Bloomberg Municipal Bond Index.

One basis point (bps) equals 0.01%. **Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio.** Yield curve data from Federal Reserve. State and local bonds, and the Yield to Worst are from the S&P National AMT-Free Municipal Bond Index. AAA-AA Corporates represent the ICE BofA US Corporates, AA-AAA rated. A-BBB Corporates represent the ICE BofA Corporates, BBB-A rated. Bloomberg data provided by Bloomberg. US long-term bonds, bills, inflation, and fixed income factor data © Stocks, Bonds, Bills, and Inflation (S&BI) Yearbook™, Ibbotson Associates, Chicago (annually updated work by Roger G. Ibbotson and Rex A. Sinquefeld). FTSE fixed income indices © 2023 FTSE Fixed Income LLC, all rights reserved. ICE BofA index data © 2023 ICE Data Indices, LLC. S&P data © 2023 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. Bloomberg data provided by Bloomberg.

### US Treasury Yield Curve (%)



### Bond Yield Across Issuers (%)



### Period Returns (%)

Asset Class	QTR	1 Year	Annualized		
			3 Years	5 Years	10 Years
Bloomberg U.S. Government Bond Index Long	6.16	-15.94	-11.25	-0.36	1.44
Bloomberg U.S. High Yield Corporate Bond Index	3.57	-3.34	5.91	3.21	4.10
Bloomberg U.S. TIPS Index	3.34	-6.06	1.75	2.94	1.49
Bloomberg U.S. Aggregate Bond Index	2.96	-4.78	-2.77	0.91	1.36
Bloomberg Municipal Bond Index	2.78	0.26	0.35	2.03	2.38
FTSE World Government Bond Index 1-5 Years	2.08	-3.38	-1.99	-1.06	-0.71
FTSE World Government Bond Index 1-5 Years (hedged to USD)	1.81	-0.40	-0.89	1.06	1.14
ICE BofA 1-Year US Treasury Note Index	1.25	1.02	0.08	1.29	0.85
ICE BofA US 3-Month Treasury Bill Index	1.07	2.50	0.89	1.41	0.87

# When Headlines Worry You, Bank on Investment Principles

First quarter 2023

Dimensional Fund Advisors

On Friday, March 10, regulators took control of Silicon Valley Bank as a run on the bank unfolded. Two days later, regulators took control of a second lender, Signature Bank. With increasing anxiety, many investors are eyeing their portfolios for exposure to these and other regional banks.

Rather than rummaging through your portfolio looking for trouble when headlines make you anxious, turn instead to your investment plan. Hopefully, your plan is designed with your long-term goals in mind and is based on principles that you can stick with, given your personal risk tolerances. While every investor's plan is a bit different, ignoring headlines and focusing on the following time-tested principles may help you avoid making shortsighted missteps.

## 1. Uncertainty Is Unavoidable

Remember that uncertainty is nothing new and investing comes with risks. Consider the events of the last three years alone: a global pandemic, the Russian invasion of Ukraine, spiking inflation, and ongoing recession fears. In other words, it may have seemed as if there were plenty of reasons to panic. Despite these concerns, for the three years ending February 28, 2023, the Russell 3000 Index (a broad market-capitalization-weighted index of public US companies) returned an annualized 11.79%, slightly

outpacing its average annualized returns of 11.65% since inception in January 1979. The past three years certainly make a case for weathering short-term ups and downs and sticking with your plan.

## 2. Market Timing Is Futile

Inevitably, when events turn bleak and headlines warn of worse to come, some investors' thoughts turn to market timing. The idea of using short-term strategies to avoid near-term pain without missing out on long-term gains is seductive, but research repeatedly demonstrates that timing strategies are not effective. The impact of miscalculating your timing strategy can far outweigh the perceived benefits.

## 3. "Diversification Is Your Buddy"

Nobel laureate Merton Miller famously used to say, "Diversification is your buddy." Thanks to financial innovations over the last century in the form of mutual funds, and later ETFs, most investors can access broadly diversified investment strategies at very low costs. While not all risks—including a systemic risk such as an economic recession—can be diversified away (see Principle 1 above), diversification is still an incredibly effective tool for reducing many risks investors face.

# When Headlines Worry You, Bank on Investment Principles

(continued from page 15)

In particular, diversification can reduce the potential pain caused by the poor performance of a single company, industry, or country.<sup>1</sup> As of February 28, Silicon Valley Bank (SIVB) represented just 0.04% of the Russell 3000, while regional banks represented approximately 1.70%.<sup>2</sup> For investors with globally diversified portfolios, exposure to SIVB and other US-based regional banks likely was significantly smaller. If buddying up with diversification is part of your investment plan, headline moments can help drive home the long-term benefits of your approach.

When the unexpected happens, many investors feel like they should be doing something with their portfolios. Often, headlines and pundits stoke these sentiments with predictions of more doom and gloom. For the long-term investor, however, planning for what can happen is far more powerful than trying to predict what will happen.

1. Consider that a study of single stock performance in the US from 1927 to 2020 illustrated that the survival of any given stock is far from guaranteed. The study found that on average for 20-year rolling periods, about 18% of US stocks went through a “bad” delisting. The authors note that delisting events can be “good” or “bad” depending on the experience for investors. For example, a stock delisting due to a merger would be a good delist, as the shareholders of that stock would be compensated during the acquisition. On the other hand, a firm that delists due to its deteriorating financial condition would be a bad delist since it is an adverse outcome for investors. Given these results, there is a good case to avoid concentrated exposure to a single company. Source: “Singed Out: Historical Performance of Individual Stocks” (Dimensional Fund Advisors, 2022).

2. Regional banks weight reflects the weight of the “Regional Banks” GICS Sub-Industry. GICS was developed by and is the exclusive property of MSCI and S&P Dow Jones Indices LLC, a division of S&P Global.

**Investments involve risks. The investment return and principal value of an investment may fluctuate so that an investor’s shares, when redeemed, may be worth more or less than their original value. Past performance is not a guarantee of future results. There is no guarantee strategies will be successful. Diversification neither assures a profit nor guarantees against loss in a declining market. Past performance is not a guarantee of future results. Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio.**

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\$200,000 Net Withdrawal  
24% Federal Tax Bracket  
**\$263,158 Gross Withdrawal**

**True Cost = \$289,724 in Lost Distributions Over 20 years**  
**45% Premium Paid**

\$200,000 Net Withdrawal  
32% Federal Tax Bracket  
**\$294,188 Gross Withdrawal**

**True Cost = \$323,886 in Lost Distributions Over 20 years**  
**62% Premium Paid**

It is AFA's philosophy that passive is a more prudent way to invest assets. Based on numerous studies, we hypothesize that 70% of active managers fail to beat their respective benchmark. As such, we would expect the passive, asset class funds we use to fall somewhere around the 33rd percentile of their peer rankings. Each quarter, we compile this spreadsheet in an attempt to validate our theories. Our "goal" is for the longer-term figures to fall solidly around the 30% delineation expected. We tend not to focus too greatly on the one year figure as almost anything can happen over such a short time frame. However, we feel that truths are borne out over the long haul.

We also utilize outside, third-party research pieces to verify the data. We frequently use the "S&P INDICES VERSUS ACTIVE FUNDS (SPIVA) SCORECARD" created on a semi-annual basis by Standard & Poor's. This document can be found at <https://www.spindices.com/documents/spiva/spiva-us-year-end-2018.pdf>

<b>Investment Category Rank As of 3.31.23*</b>	<b>1 Year</b>	<b>3 Year</b>	<b>5 Year</b>	<b>10 Year</b>	<b>15 Years</b>
DFA Emerging Markets	51%	26%	32%	29%	24%
DFA 5 Year Global	4%	38%	54%	67%	77%
DFA Inflation Protected	48%	52%	20%	28%	10%
DFA Intermediate Government	29%	87%	19%	22%	12%
DFA World Ex US Government	94%	100%	98%	56%	na
DFA International Core Equity	53%	7%	49%	14%	18%
DFA International Small Company	25%	16%	30%	17%	21%
DFA International Value	31%	3%	32%	11%	43%
DFA Real Estate	34%	64%	21%	19%	29%
DFA US Core Equity	31%	8%	56%	39%	18%
DFA US Large Value	49%	31%	79%	33%	34%
DFA US Small Cap	22%	13%	30%	19%	12%
<b>AVERAGE</b>	<b>39%</b>	<b>37%</b>	<b>43%</b>	<b>30%</b>	<b>27%</b>

\* Source: Morningstar Advisor Workstation 2.0. The lower the number, the better the rank.

# Dimensional vs. the Industry

Percentage of US-domiciled equity and fixed income funds that outperformed their benchmark as of December 31, 2022

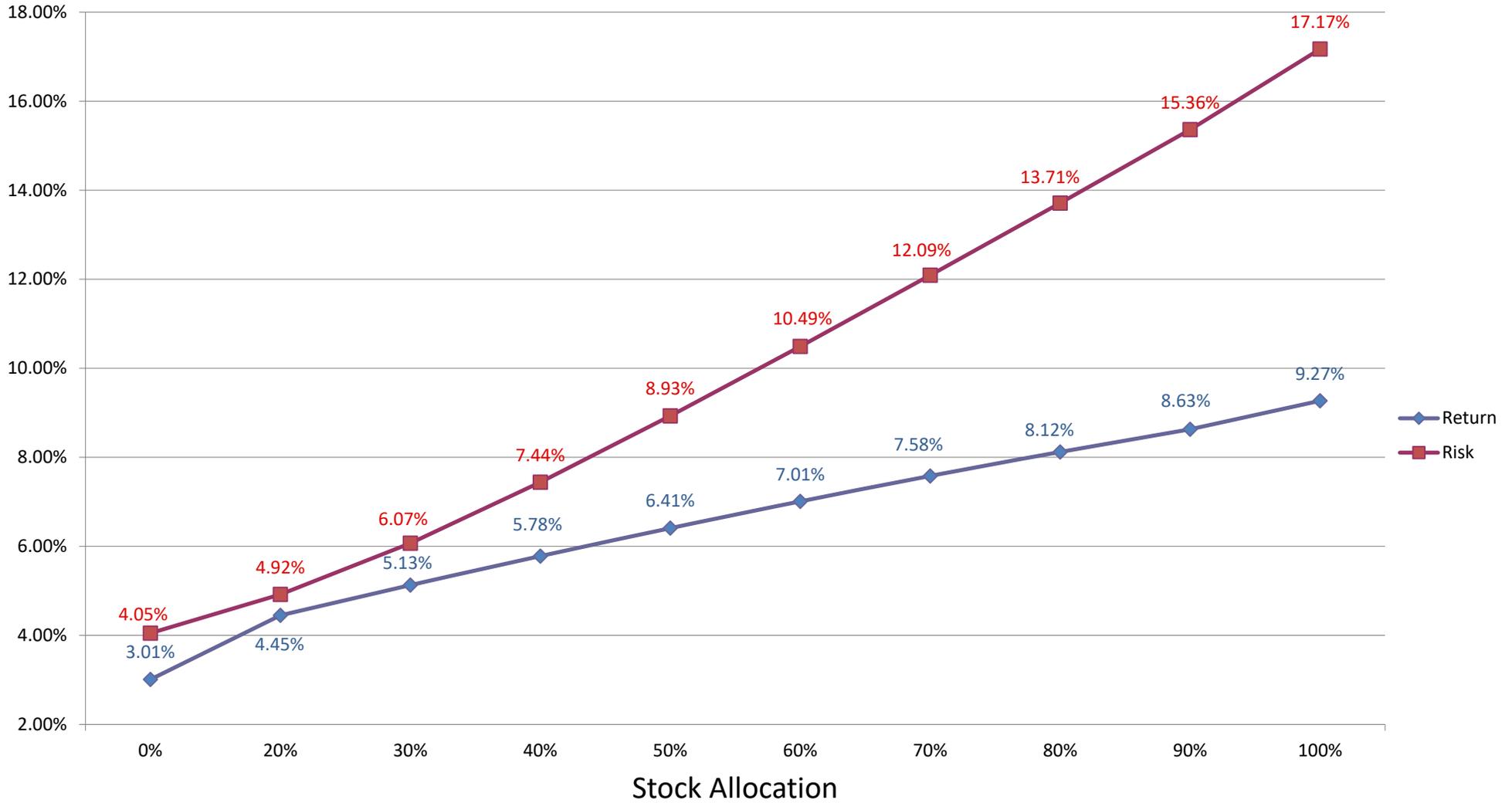


**Performance data shown represents past performance and is no guarantee of future results.** The sample includes funds at the beginning of each respective period ending December 31, 2022. Survivors are funds that had returns for every month in the sample period. Outperformers (winner funds) are funds that survived the sample period and whose cumulative net return over the period exceeded that of their respective benchmark. Each fund is evaluated relative to its respective primary prospectus benchmark. Where the full series of primary prospectus benchmark returns is unavailable, funds are instead evaluated relative to their Morningstar category index. See "Dimensional vs. the Industry Appendix" for more information.

1. US-domiciled, USD-denominated open-end and exchange-traded fund data is provided by Morningstar.

2. Dimensional fund data provided by the fund accountant. Dimensional funds or sub-advised funds whose access is or previously was limited to certain investors are excluded.

AFA Investment Model Historical Risk and Return 2003-2022  
Standard U.S. Equity Allocation



"Returns are not guarantees and do not reflect actual client experience. Returns shown do not include advisory fees. Past performance does not indicate future returns. Actual returns may be higher or lower than those shown here."

# Performance Summary Statistics

Monthly: 1/1/2003 - 12/31/2022

Rates of Return (%)							
	AFA 0.5	AFA 20.5	AFA 30.5	AFA 40.5	AFA 50.5	AFA 60.5	AFA 70.5
1-Year Total Return	-12.75	-12.65	-12.63	-12.64	-12.66	-12.71	-12.77
3-Year Annualized Return	-2.50	-0.79	0.02	0.79	1.52	2.21	2.86
5-Year Annualized Return	0.07	1.17	1.67	2.14	2.58	2.98	3.34
10-Year Annualized Return	0.87	2.47	3.24	4.00	4.73	5.45	6.14
20-Year Annualized Return	3.01	4.45	5.13	5.78	6.41	7.01	7.58
Annualized Return	3.01	4.45	5.13	5.78	6.41	7.01	7.58
Annualized Standard Deviation*	4.05	4.92	6.07	7.44	8.93	10.49	12.09
Growth of Wealth	1.81	2.39	2.72	3.08	3.47	3.88	4.31
Highest 1-Year Return	10.71	18.08	23.91	29.95	36.22	42.70	49.42
	(11/08-10/09)	(3/09-2/10)	(3/09-2/10)	(3/09-2/10)	(3/09-2/10)	(3/09-2/10)	(3/09-2/10)
Lowest 1-Year Return	-13.47	-14.48	-16.80	-22.26	-27.45	-32.36	-37.02
	(10/21-9/22)	(10/21-9/22)	(3/08-2/09)	(3/08-2/09)	(3/08-2/09)	(3/08-2/09)	(3/08-2/09)
Highest 3-Year Annualized Return	7.68	11.19	13.41	15.63	17.83	20.01	22.17
	(11/08-10/11)	(3/09-2/12)	(3/09-2/12)	(3/09-2/12)	(3/09-2/12)	(3/09-2/12)	(3/09-2/12)
Lowest 3-Year Annualized Return	-3.06	-1.54	-1.74	-3.99	-6.23	-8.47	-10.69
	(10/19-9/22)	(10/19-9/22)	(3/06-2/09)	(3/06-2/09)	(3/06-2/09)	(3/06-2/09)	(3/06-2/09)

\*Annualized number is presented as an approximation by multiplying the monthly number by the square root of the number of periods in a year. Please note that the number computed from annual data may differ materially from this estimate.

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# Performance Summary Statistics

Monthly: 1/1/2003 - 12/31/2022

Rates of Return (%)			
	AFA 80.5	AFA 90.5	AFA 100.5
1-Year Total Return	-12.86	-12.97	-13.15
3-Year Annualized Return	3.48	4.04	4.44
5-Year Annualized Return	3.67	3.96	4.02
10-Year Annualized Return	6.81	7.46	7.85
20-Year Annualized Return	8.12	8.63	9.27
Annualized Return	8.12	8.63	9.27
Annualized Standard Deviation*	13.71	15.36	17.17
Growth of Wealth	4.76	5.23	5.89
Highest 1-Year Return	56.38	63.57	73.02
	(3/09-2/10)	(3/09-2/10)	(3/09-2/10)
Lowest 1-Year Return	-41.44	-45.61	-49.66
	(3/08-2/09)	(3/08-2/09)	(3/08-2/09)
Highest 3-Year Annualized Return	24.75	27.67	31.90
	(4/03-3/06)	(4/03-3/06)	(4/03-3/06)
Lowest 3-Year Annualized Return	-12.91	-15.12	-17.19
	(3/06-2/09)	(3/06-2/09)	(3/06-2/09)

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# Periodic Performance

Monthly: 1/1/2003 - 12/31/2022

Rates of Return (%)									
	1 Year	3 Years	5 Years	10 Years	Report Date Range	Since First Full Month	St.Dev Report Range	First Full Month	Currency
AFA 0.5	-12.75	-2.50	0.07	0.87	3.01	4.09	4.05	3/1997	USD
AFA 20.5	-12.65	-0.79	1.17	2.47	4.45	5.00	4.92	3/1997	USD
AFA 30.5	-12.63	0.02	1.67	3.24	5.13	5.41	6.07	3/1997	USD
AFA 40.5	-12.64	0.79	2.14	4.00	5.78	5.79	7.44	3/1997	USD
AFA 50.5	-12.66	1.52	2.58	4.73	6.41	6.14	8.93	3/1997	USD
AFA 60.5	-12.71	2.21	2.98	5.45	7.01	6.46	10.49	3/1997	USD

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# Periodic Performance

Monthly: 1/1/2003 - 12/31/2022

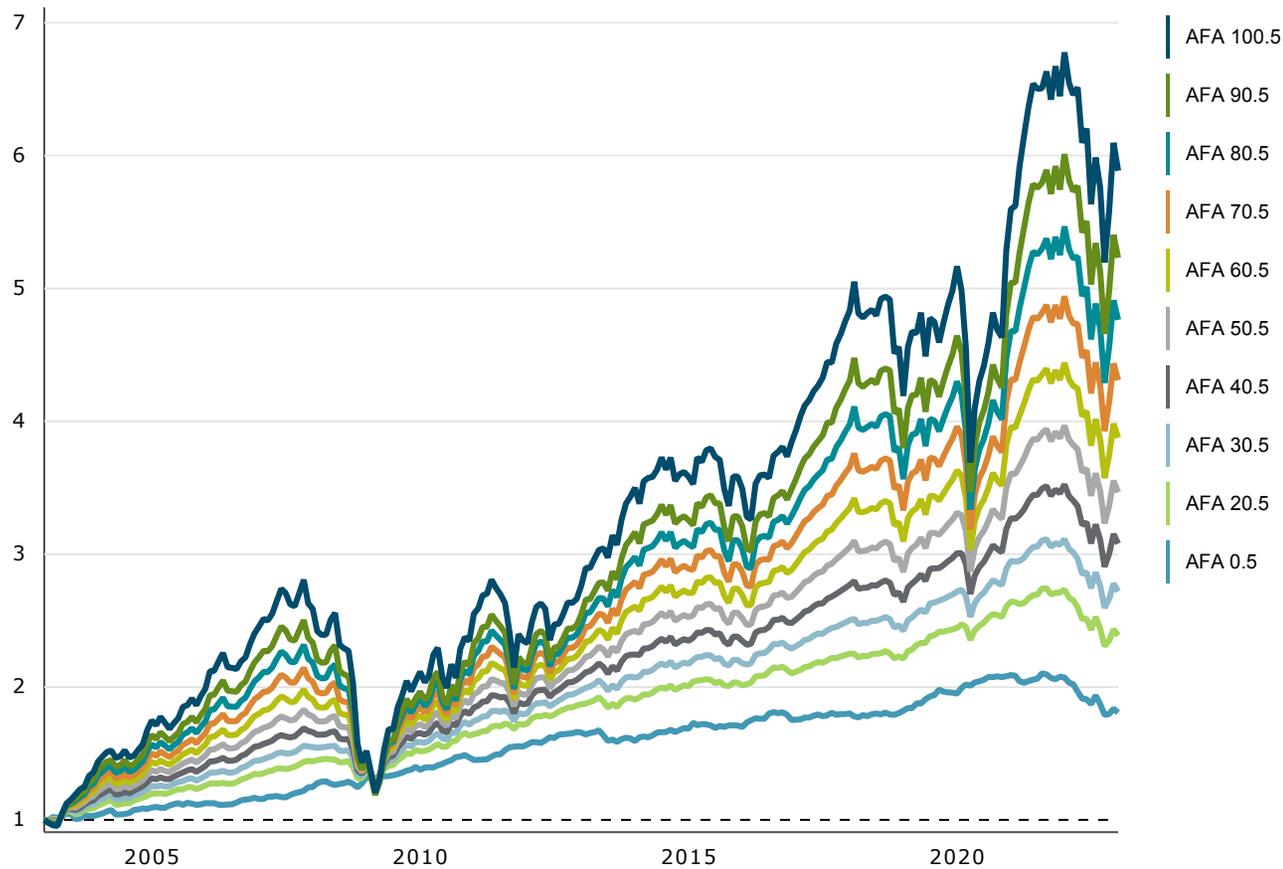
Rates of Return (%)									
	1 Year	3 Years	5 Years	10 Years	Report Date Range	Since First Full Month	St.Dev Report Range	First Full Month	Currency
AFA 70.5	-12.77	2.86	3.34	6.14	7.58	6.74	12.09	3/1997	USD
AFA 80.5	-12.86	3.48	3.67	6.81	8.12	7.00	13.71	3/1997	USD
AFA 90.5	-12.97	4.04	3.96	7.46	8.63	7.22	15.36	3/1997	USD
AFA 100.5	-13.15	4.44	4.02	7.85	9.27	7.67	17.17	10/1996	USD

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# Growth Of Wealth

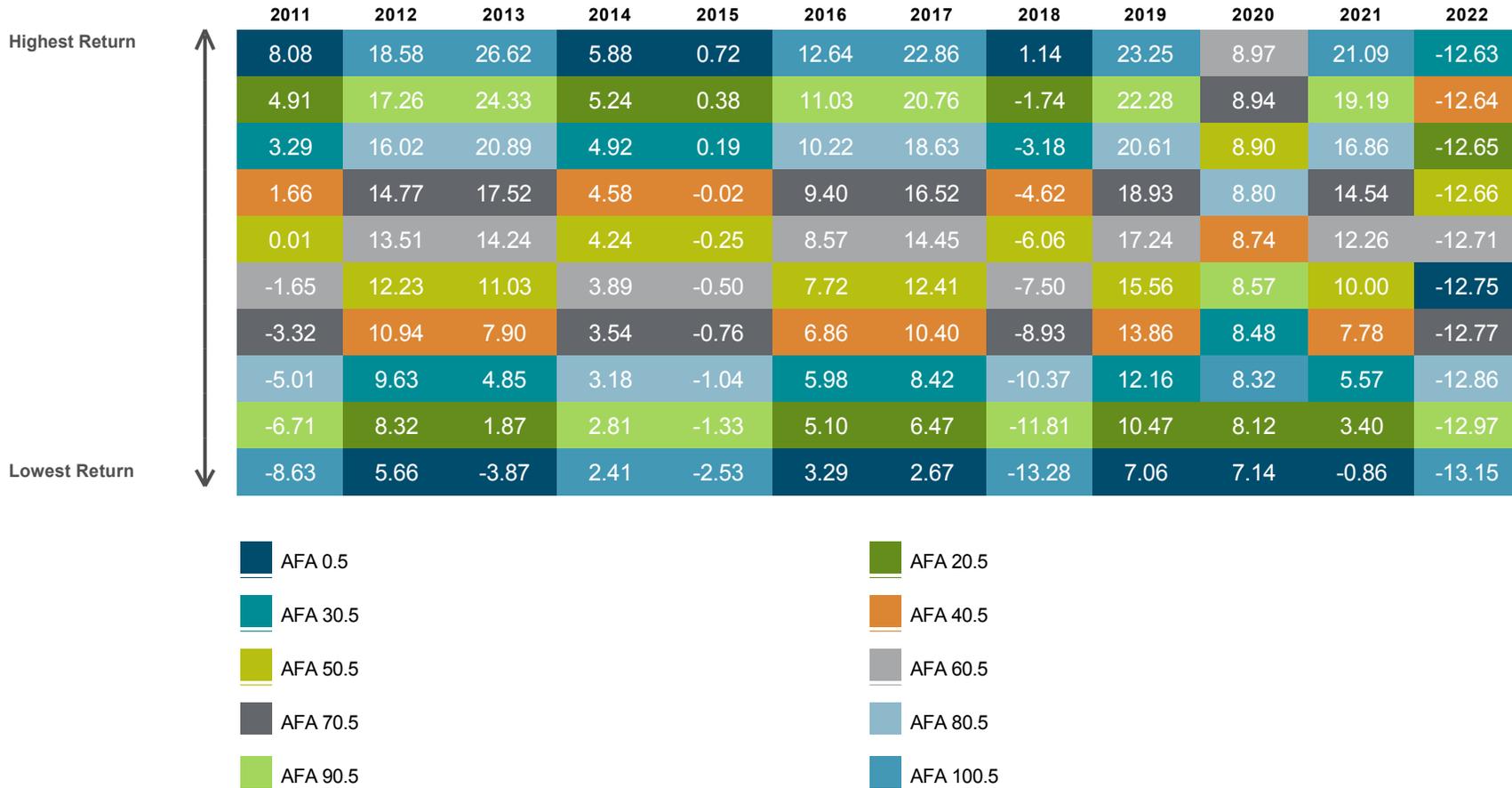
Monthly: 1/1/2003 - 12/31/2022



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# Randomness of Returns

Calendar Year: 1998 - 2022

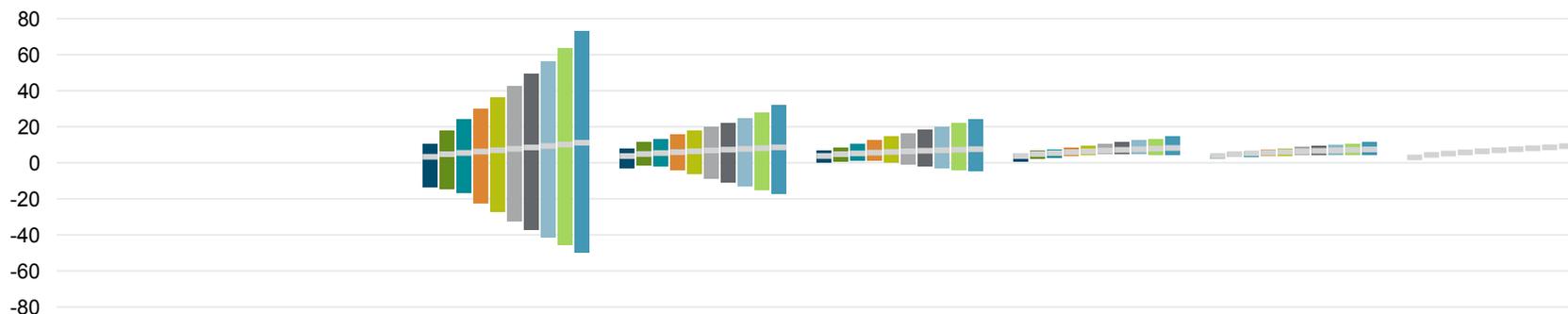


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# Best and Worst

Monthly: 1/1/2003 - 12/31/2022

## Average Annualized Rolling Returns (%)



	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years
<b>AFA 0.5</b>	3.37	3.79	3.85	3.78	3.84	3.01
Best Return (start date)	10.71 (11/2008)	7.68 (11/2008)	6.72 (6/2007)	5.18 (1/2003)	4.24 (8/2005)	3.01 (1/2003)
Worst Return (start date)	-13.47 (10/2021)	-3.06 (10/2019)	-0.01 (10/2017)	0.83 (10/2012)	2.50 (1/2008)	3.01 (1/2003)
<b>AFA 20.5</b>	4.79	4.91	4.81	4.91	4.80	4.45
Best Return (start date)	18.08 (3/2009)	11.19 (3/2009)	8.48 (3/2009)	6.59 (4/2003)	5.58 (2/2003)	4.45 (1/2003)
Worst Return (start date)	-14.48 (10/2021)	-1.54 (10/2019)	0.80 (10/2017)	2.26 (10/2012)	3.30 (10/2007)	4.45 (1/2003)

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# Best and Worst

Monthly: 1/1/2003 - 12/31/2022

Average Annualized Rolling Returns (%)										
	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years				
<b>AFA 30.5</b>	5.52	5.44	5.25	5.43	5.23	5.13				
Best Return (start date)	23.91 (3/2009)	13.41 (3/2009)	10.45 (3/2009)	7.33 (4/2003)	6.39 (2/2003)	5.13 (1/2003)				
Worst Return (start date)	-16.80 (3/2008)	-1.74 (3/2006)	1.15 (10/2017)	2.95 (10/2012)	3.57 (10/2007)	5.13 (1/2003)				
<b>AFA 40.5</b>	6.26	5.94	5.66	5.92	5.64	5.78				
Best Return (start date)	29.95 (3/2009)	15.63 (3/2009)	12.42 (3/2009)	8.09 (3/2009)	7.17 (2/2003)	5.78 (1/2003)				
Worst Return (start date)	-22.26 (3/2008)	-3.99 (3/2006)	0.92 (3/2004)	3.62 (10/2012)	3.81 (10/2007)	5.78 (1/2003)				
<b>AFA 50.5</b>	7.01	6.43	6.04	6.38	6.01	6.41				
Best Return (start date)	36.22 (3/2009)	17.83 (3/2009)	14.38 (3/2009)	9.20 (3/2009)	7.92 (2/2003)	6.41 (1/2003)				
Worst Return (start date)	-27.45 (3/2008)	-6.23 (3/2006)	0.03 (3/2004)	4.27 (10/2012)	4.01 (10/2007)	6.41 (1/2003)				
<b>AFA 60.5</b>	7.78	6.89	6.39	6.81	6.35	7.01				
Best Return (start date)	42.70 (3/2009)	20.01 (3/2009)	16.33 (3/2009)	10.29 (3/2009)	8.65 (2/2003)	7.01 (1/2003)				
Worst Return (start date)	-32.36 (3/2008)	-8.47 (3/2006)	-0.88 (3/2004)	4.86 (6/2007)	4.17 (10/2007)	7.01 (1/2003)				

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# Best and Worst

Monthly: 1/1/2003 - 12/31/2022

Average Annualized Rolling Returns (%)										
		1 Year	3 Years	5 Years	10 Years	15 Years	20 Years			
	<b>AFA 70.5</b>	8.56	7.32	6.72	7.21	6.65	7.58			
	Best Return (start date)	49.42 (3/2009)	22.17 (3/2009)	18.27 (3/2009)	11.37 (3/2009)	9.36 (2/2003)	7.58 (1/2003)			
	Worst Return (start date)	-37.02 (3/2008)	-10.69 (3/2006)	-1.81 (3/2004)	4.80 (3/2006)	4.30 (10/2007)	7.58 (1/2003)			
	<b>AFA 80.5</b>	9.35	7.73	7.01	7.57	6.93	8.12			
	Best Return (start date)	56.38 (3/2009)	24.75 (4/2003)	20.20 (3/2009)	12.42 (3/2009)	10.03 (2/2003)	8.12 (1/2003)			
	Worst Return (start date)	-41.44 (3/2008)	-12.91 (3/2006)	-2.78 (3/2004)	4.69 (3/2006)	4.39 (10/2007)	8.12 (1/2003)			
	<b>AFA 90.5</b>	10.16	8.12	7.28	7.91	7.16	8.63			
	Best Return (start date)	63.57 (3/2009)	27.67 (4/2003)	22.11 (3/2009)	13.46 (3/2009)	10.68 (2/2003)	8.63 (1/2003)			
	Worst Return (start date)	-45.61 (3/2008)	-15.12 (3/2006)	-3.76 (3/2004)	4.54 (3/2006)	4.44 (10/2007)	8.63 (1/2003)			
	<b>AFA 100.5</b>	11.16	8.60	7.60	8.25	7.47	9.27			
	Best Return (start date)	73.02 (3/2009)	31.90 (4/2003)	24.12 (3/2009)	14.52 (3/2009)	11.58 (2/2003)	9.27 (1/2003)			
	Worst Return (start date)	-49.66 (3/2008)	-17.19 (3/2006)	-4.42 (3/2004)	4.40 (3/2006)	4.45 (10/2007)	9.27 (1/2003)			

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# Periodic Returns

Annual: 12/1998 - 12/2022

Rates of Return (%)									
	AFA 0.5	AFA 20.5	AFA 30.5	AFA 40.5	AFA 50.5	AFA 60.5	AFA 70.5	AFA 80.5	
12/1998	8.57	9.72	10.23	10.69	11.10	11.46	11.76	12.00	
12/1999	1.33	5.33	7.37	9.43	11.52	13.63	15.76	17.92	
12/2000	10.73	7.64	6.10	4.57	3.05	1.53	0.02	-1.49	
12/2001	7.05	3.92	2.32	0.72	-0.90	-2.53	-4.17	-5.82	
12/2002	12.17	6.84	4.20	1.57	-1.03	-3.62	-6.18	-8.72	
12/2003	3.95	10.82	14.38	18.02	21.76	25.57	29.48	33.47	
12/2004	5.21	8.23	9.76	11.29	12.84	14.40	15.97	17.55	
12/2005	2.97	5.00	6.01	7.01	8.02	9.03	10.03	11.03	
12/2006	2.74	6.68	8.69	10.73	12.78	14.87	16.97	19.10	
12/2007	7.85	7.29	6.99	6.67	6.34	5.99	5.63	5.25	
12/2008	5.91	-5.06	-10.23	-15.20	-19.97	-24.55	-28.95	-33.15	
12/2009	4.19	10.78	14.09	17.42	20.74	24.07	27.40	30.71	
12/2010	5.39	8.57	10.10	11.60	13.06	14.47	15.85	17.18	
12/2011	8.08	4.91	3.29	1.66	0.01	-1.65	-3.32	-5.01	
12/2012	5.66	8.32	9.63	10.94	12.23	13.51	14.77	16.02	
12/2013	-3.87	1.87	4.85	7.90	11.03	14.24	17.52	20.89	

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# Periodic Returns

Annual: 12/1998 - 12/2022

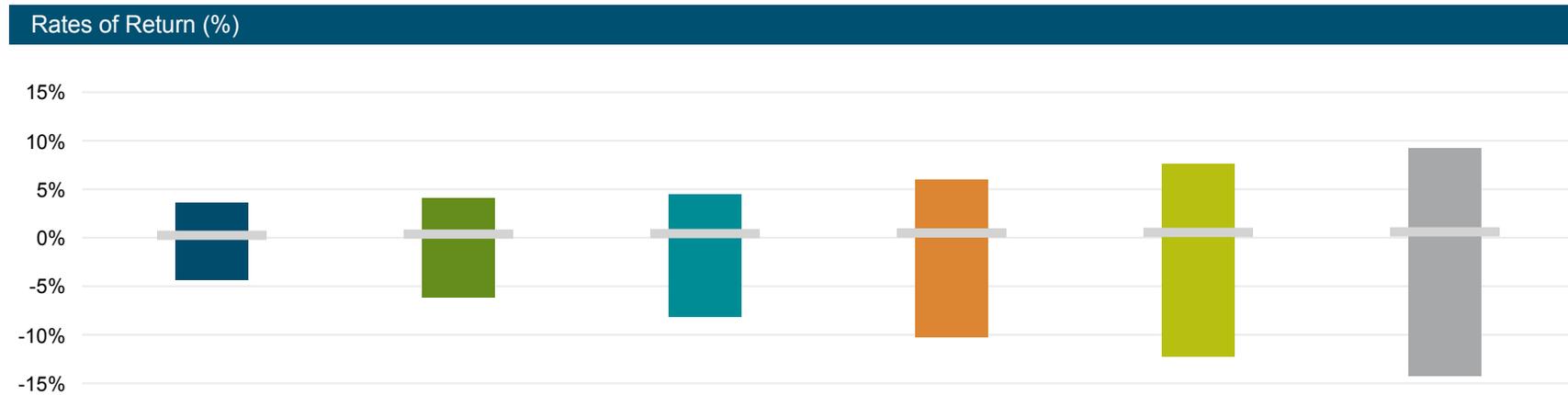
Rates of Return (%)								
	AFA 0.5	AFA 20.5	AFA 30.5	AFA 40.5	AFA 50.5	AFA 60.5	AFA 70.5	AFA 80.5
12/2014	5.88	5.24	4.92	4.58	4.24	3.89	3.54	3.18
12/2015	0.72	0.38	0.19	-0.02	-0.25	-0.50	-0.76	-1.04
12/2016	3.29	5.10	5.98	6.86	7.72	8.57	9.40	10.22
12/2017	2.67	6.47	8.42	10.40	12.41	14.45	16.52	18.63
12/2018	1.14	-1.74	-3.18	-4.62	-6.06	-7.50	-8.93	-10.37
12/2019	7.06	10.47	12.16	13.86	15.56	17.24	18.93	20.61
12/2020	7.14	8.12	8.48	8.74	8.90	8.97	8.94	8.80
12/2021	-0.86	3.40	5.57	7.78	10.00	12.26	14.54	16.86
12/2022	-12.75	-12.65	-12.63	-12.64	-12.66	-12.71	-12.77	-12.86

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# Range of Returns

Monthly: 1/1/2003 - 12/31/2022



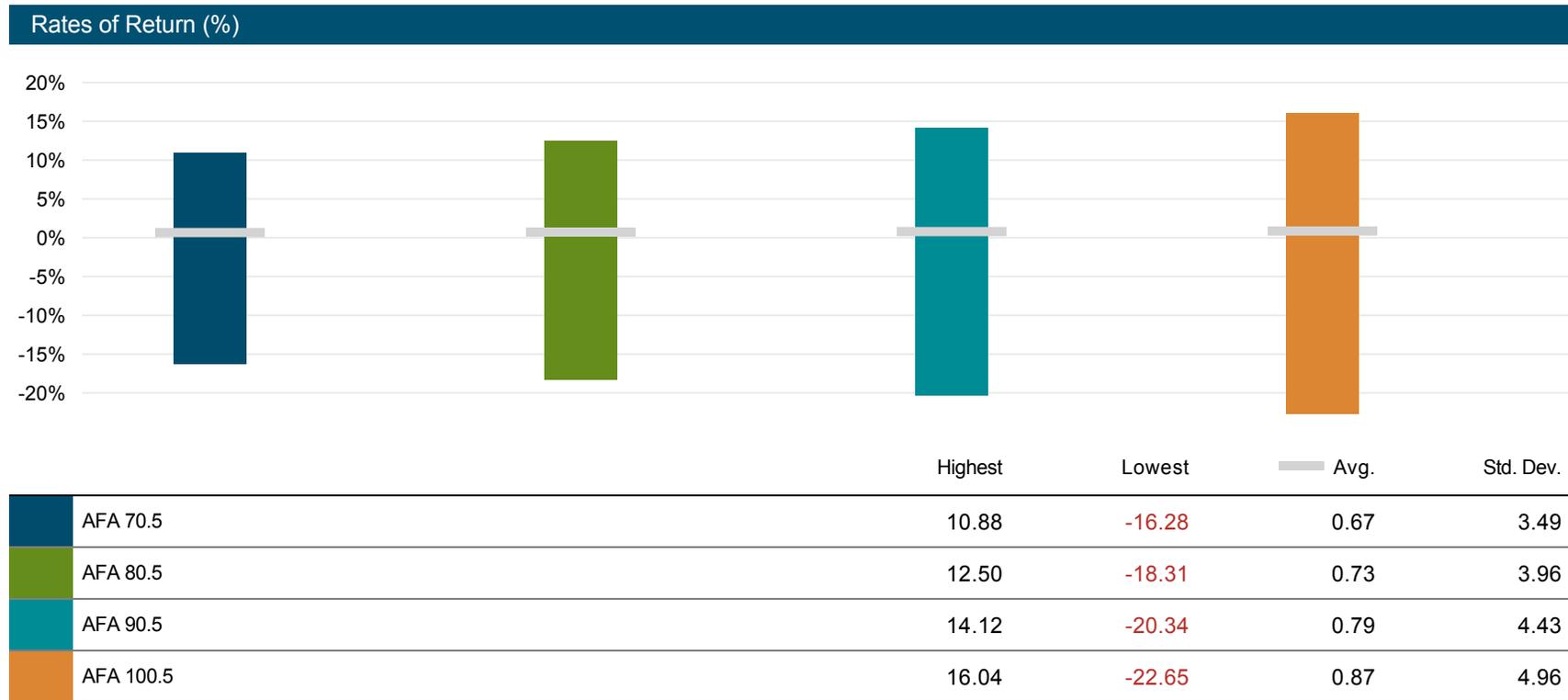
		Highest	Lowest	Avg.	Std. Dev.
AFA 0.5		3.59	-4.39	0.25	1.17
AFA 20.5		4.08	-6.15	0.37	1.42
AFA 30.5		4.47	-8.18	0.43	1.75
AFA 40.5		6.02	-10.20	0.49	2.15
AFA 50.5		7.64	-12.23	0.55	2.58
AFA 60.5		9.26	-14.26	0.61	3.03

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# Range of Returns

Monthly: 1/1/2003 - 12/31/2022

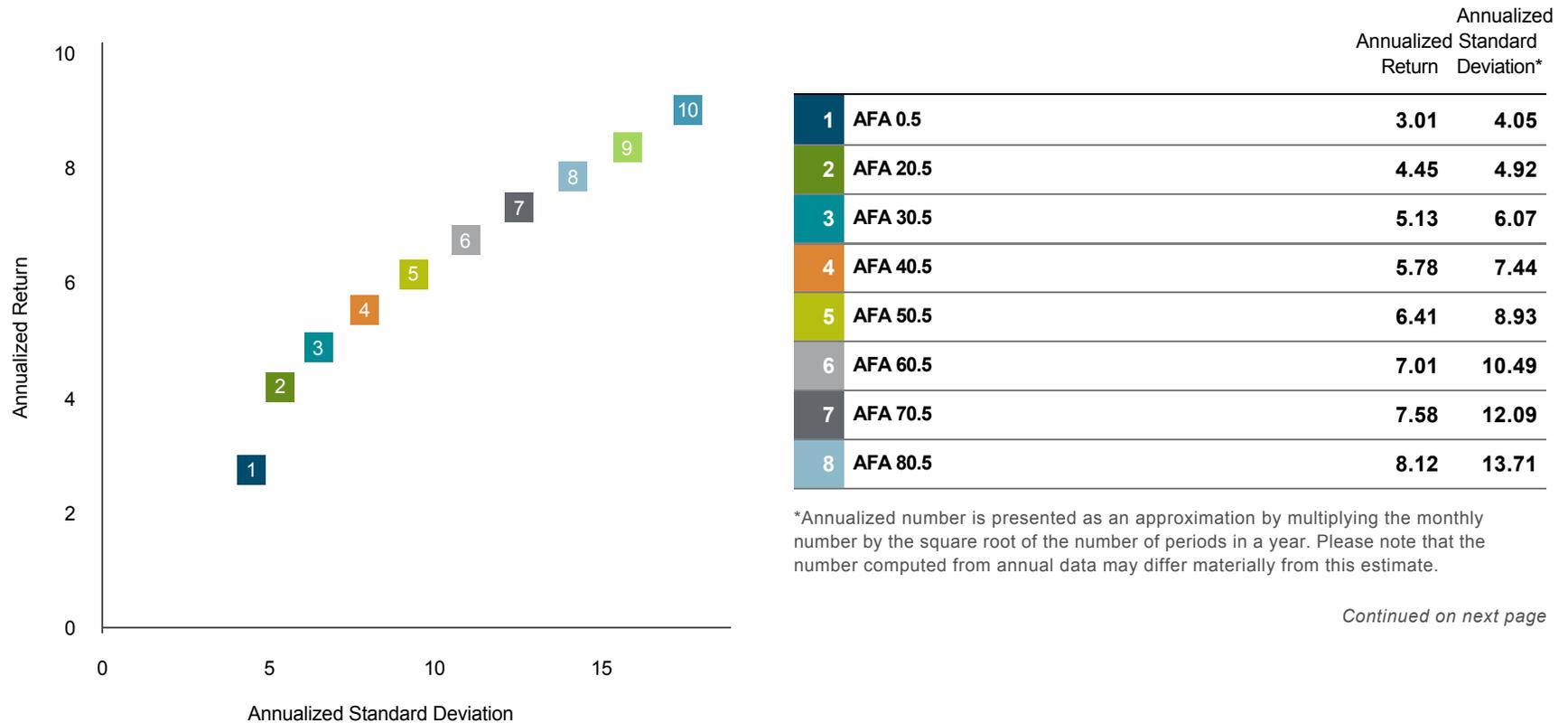


Performance data shown represents past performance. Past performance is no guarantee of future results and current performance may be higher or lower than the performance shown. The investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Average annual total returns include reinvestment of dividends and capital gains. To obtain performance data current to the most recent month-end access our website at [us.dimensionalfund.com](http://us.dimensionalfund.com). See Standardized Performance Data and Disclosures. Performance for periods greater than one year are annualized unless specified otherwise. Selection of funds, indices and time periods presented chosen by advisor. Indices are not available for direct investment and performance does not reflect expenses of an actual portfolio. This report and the information contained herein are subject to the terms of the End User License Agreement for Returns Program.

# Return-Standard Deviation Chart

Monthly: 1/1/2003 - 12/31/2022

Rates of Return (%) and Standard Deviation (%)



\*Annualized number is presented as an approximation by multiplying the monthly number by the square root of the number of periods in a year. Please note that the number computed from annual data may differ materially from this estimate.

*Continued on next page*

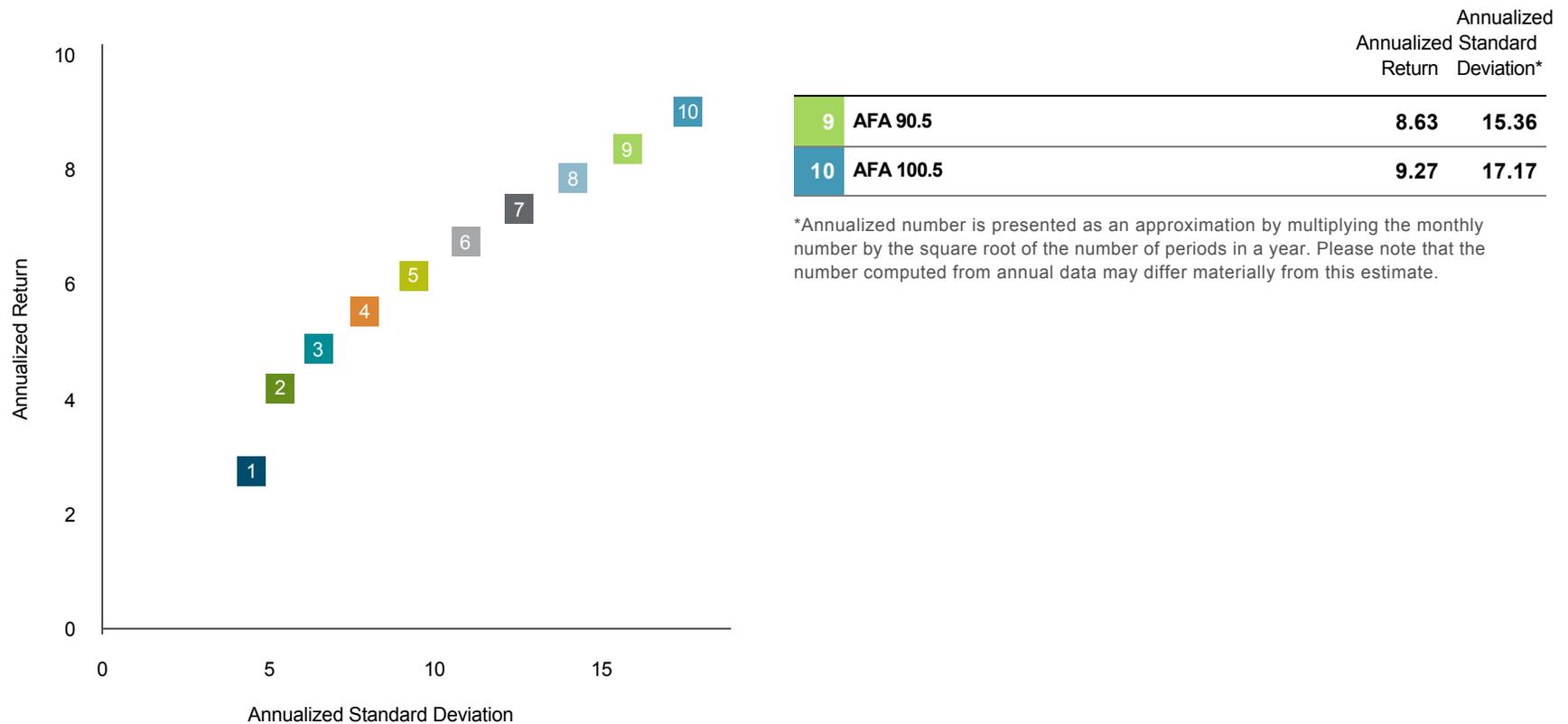
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See Standardized Performance Data and Disclosures. Performance for periods greater than one year are annualized unless specified otherwise. Selection of funds, indices and time periods presented chosen by advisor. Indices are not available for direct investment and performance does not reflect expenses of an actual portfolio. This report and the information contained herein are subject to the terms of the End User License Agreement for Returns Program.

# Return-Standard Deviation Chart

Monthly: 1/1/2003 - 12/31/2022

## Rates of Return (%) and Standard Deviation (%)



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# Standard Performance Data and Disclosures

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**Dimensional Fund Advisors LP is an investment advisor registered with the Securities and Exchange Commission. Consider the investment objectives, risks, and charges and expenses of the Dimensional funds carefully before investing. For this and other information about the Dimensional funds, please read the prospectus carefully before investing. Prospectuses are available by calling Dimensional Fund Advisors collect at (512) 306-7400 or by visiting [us.dimensional.com](http://us.dimensional.com). This report and the information contained herein are subject to the terms of the End User License Agreement for Returns Program.**

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Prior to April 1, 2002, the following reimbursement fees may have been charged to purchasers of the respective portfolios: International Small Company Portfolio 0.675%; Continental Small Company Portfolio 1.00%; Japanese Small Company Portfolio 0.50%; Pacific Rim Small Company Portfolio 1.00%; International Small Cap Value Portfolio 0.675%; Emerging Markets Small Cap Portfolio 1.00%; Emerging Markets Value Portfolio 0.50%; Emerging Markets Portfolio 0.50%. Prior to April 1998, the reimbursement fee for the International Small Company Portfolio was 0.70% and the reimbursement fee for the International Small Cap Value Portfolio was 0.70%. Prior to July 1995, the reimbursement fees were as follows: International Small Cap Value Portfolio 1.00%; Continental Small Company Portfolio 1.50%; Japanese Small Company Portfolio 1.00%; Pacific Rim Small Company Portfolio 1.50%; UK Small Company Portfolio 1.50%; Emerging Markets Portfolio 1.50%. Returns for these portfolios are presented net of these reimbursement fees.

All reimbursement fees are based on the net asset value of the shares purchased. The standardized returns presented reflect deduction, where applicable, of the reimbursement fees for the portfolios. Non-standardized performance data reported by Dimensional Fund Advisors LP. does not reflect deduction of the reimbursement fee. If reflected, the fee would reduce the performance quoted.

## Model Constructions

Model portfolios are constructed in the Returns Program using past data of funds or indices as of a specific date, assigning weights to those funds or indices to equal 100%. The model portfolios constructed are hypothetical and are not representative of actual portfolios. Their performance is hypothetical, for illustrative purposes only and is subject to limitations. Unless otherwise specified by the user, the hypothetical performance is gross of fees and is rebalanced monthly. The performance presented does not replace an advisor's actual model portfolio performance. Past and hypothetical results are no guarantee of future results.

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The model performance is based on model/back tested asset allocations. The performance was achieved with the retroactive application of a model designed with the benefit of hindsight; it does not represent actual investment performance. Back-tested model performance is hypothetical (does not reflect trading in actual portfolios) and may not reflect the impact that economic and market factors may have had on advisor's decision-making if the advisor were actually managing client money. Material is not to be considered a recommendation or investment advice to buy or sell any security.

## Dimensional Wealth Models

Performance shown is hypothetical and for illustrative purposes only. The performance is based on model asset allocations using actual, historical underlying fund data and is based on net asset value returns for underlying mutual funds and exchange-traded funds. The performance was achieved with the retroactive application of a model designed with the benefit of hindsight; it does not represent actual investment performance and it does not take into account any individual investor circumstances. Hypothetical model performance does not reflect trading in actual portfolios and may not reflect the impact that economic and market factors may have had on decision-making if managing actual client money. Actual performance of any fund or strategy may vary significantly from the hypothetical performance presented due to assumptions regarding fees, transactions costs, liquidity or other market factors. Actual historical allocations could have differed, perhaps significantly. Advisory fees paid to underlying component funds are reflected in the performance results. Advisory fees to a financial advisor, custodian fees, trading costs and transaction costs that may be applicable in the management of an overall portfolio are not reflected.

Hypothetical performance for Dimensional Wealth Models reflects changes in the underlying fund allocations, if any, since the model's inception. Performance results prior to the Dimensional Model's inception are computed using the inception fund weights and component fund performance back to the inception of the youngest component fund. The Dimensional Models do not include an allocation to cash or cash equivalents, except indirectly through a Dimensional Fund.

## Dimensional Indices

These indices have been retrospectively calculated by Dimensional Fund Advisors LP and did not exist prior to their index inception dates. Accordingly, results shown during the periods prior to each index's index inception date do not represent actual returns of the index. Other periods selected may have different results, including losses. Back-tested index performance is hypothetical and is provided for informational purposes only to indicate historical performance had the index been calculated over the relevant time periods. Back-tested performance results assume the reinvestment of dividends and capital gains.

## Principal Risks

The principal risks of investing in the Dimensional funds may include one or more of the following: market risk, small companies risk, risk of concentrating in the real estate industry, foreign securities and currencies risk, emerging markets risk, banking concentration risk, foreign government debt risk, interest rate risk, risk of investing for inflation protection, credit risk, risk of municipal securities, derivatives risk, securities lending risk call risk, liquidity risk, income risk, value investment risk, investment strategy risk, and/or fund of funds risk. To more fully understand the risks related to an investment in the funds, investors should carefully read each fund's prospectus.

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Investments in foreign issuers are subject to certain considerations that are not associated with investments in US public companies. Investments of the International Equity, Emerging Markets Equity and the Global Fixed Income Portfolios will be denominated in foreign currencies. Changes in the relative values of these foreign currencies and the US dollar, therefore, will affect the value of investments in the Portfolios. However, the Global Fixed Income Portfolios may utilize forward currency contracts to attempt to protect against uncertainty in the level of future foreign currency rates (if applicable), to hedge against fluctuations in currency exchange rates or to transfer balances from one currency to another.

Foreign securities prices may decline or fluctuate because of: (a) economic or political actions of foreign governments, and/or (b) less regulated or liquid securities markets.

## **Additionally**

The DFA Real Estate Securities Portfolio, DFA International Real Estate Securities Portfolio, and the DFA Global Real Estate Securities Portfolio (collectively, the “Real Estate Securities Portfolios”) are each concentrated in the real estate industry. The exclusive focus by Real Estate Securities Portfolios on the real estate industry will cause the Real Estate Securities Portfolios to be exposed to the general risks of direct real estate ownership. The value of securities in the real estate industry can be affected by changes in real estate values and rental income, property taxes, and tax and regulatory requirements.

Also, the value of securities in the real estate industry may decline with changes in interest rates. Investing in REITs and REIT-like entities involves certain unique risks in addition to those risks associated with investing in the real estate industry in general. REITs and REIT-like entities are dependent upon management skill, may not be diversified, and are subject to heavy cash flow dependency and self-liquidation. REITs and REIT-like entities also are subject to the possibility of failing to qualify for tax free pass-through of income. Also, many foreign REIT-like entities are deemed for tax purposes as passive foreign investment companies (PFICs), which could result in the receipt of taxable dividends to shareholders at an unfavorable tax rate. Also, because REITs and REIT-like entities typically are invested in a limited number of projects or in a particular market segment, these entities are more susceptible to adverse developments affecting a single project or market segment than more broadly diversified investments. The performance of Real Estate Securities Portfolios may be materially different from the broad equity market.

## **Fixed Income Portfolios**

The net asset value of a fund that invests in fixed income securities will fluctuate when interest rates rise. An investor can lose principal value investing in a fixed income fund during a rising interest rate environment.

## **Commodity Portfolio**

Commodities investments include increased risks, such as political, economic, and currency instability, and may not be suitable for all investors. The Portfolio may be more volatile than a diversified fund because the Portfolio invests its assets in a smaller number of issuers and commodity sectors. The Portfolio’s investment in commodity-linked derivative instruments may subject it to greater volatility than investments in traditional securities, particularly if the instruments involve leverage. There can be no assurance that the Portfolio’s use of leverage will be successful.

## **Tax-managed Portfolios**

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Tax-managed strategies consider tax implications of investment decisions, which may affect fund holdings when compared to non-tax-managed strategies, and they may perform differently than non-tax-managed strategies.

## Sustainability and Social Portfolios

Sustainability and Social portfolios are subject to risks that environmental and social screens, respectively, may limit investment opportunities for the fund.

## Risk of Banking Concentration

Focus on the banking industry would link the performance of the DFA One-Year Fixed Income and/or the Two-Year Global Fixed Income Portfolios to changes in performance of the banking industry generally. For example, a change in the market's perception of the riskiness of banks compared to non-banks would cause the Portfolio's values to fluctuate.

## Inflation Protected Securities Portfolio

Inflation-protected securities are expected to be protected from long-term inflationary trends, short-term increases in inflation may lead to a decline in the Portfolio's value. If interest rates rise due to reasons other than inflation, the Portfolio's investment in these securities may not be protected to the extent that the increase is not reflected in the securities' inflation measures. The Portfolio may also suffer a loss during periods of sustained deflation.

## Short Term Muni Bond Portfolio

Municipal Bonds may be subject to income risk, which is the risk that falling interest rates will cause the Portfolio's income to decline, and interest rate risk, which is the risk that bond prices overall will decline over short or even long periods because of rising interest rates. The Portfolio may also be affected by: call risk, which is the risk that during periods of falling interest rates, a bond issuer will call or repay a higher-yielding bond before its maturity date; credit risk, which is the risk that a bond issuer will fail to pay interest and principal in a timely manner; and tax liability risk, which is the risk of noncompliant conduct by a bond issuer, resulting in distributions by the Portfolio being taxable to share-holders as ordinary income. Finally, there is legislative or regulatory risk, which is the risk that new federal or state legislation may adversely affect the tax-exempt status of securities held by the Portfolio, or that there could be an adverse interpretation by the Internal Revenue Service or by state tax authorities.

## Global Equity, Global 60/40, Global 25/75 Portfolios

### Fund of Funds Risk

The investment performance of each Portfolio is affected by the investment performance of the Underlying Funds in which the Portfolio invests. The ability of a Portfolio to achieve its investment objective depends on the ability of the Underlying Funds to meet their investment objectives and on the Advisor's decisions regarding the allocation of the Portfolio's assets among the Underlying Funds. There can be no assurance that the investment objective of any Portfolio or Underlying Fund will be achieved. Through their investments in the Underlying Funds, the Portfolios are subject to the risks of the Underlying Funds investments. The risks of the Underlying Funds may include Market Risk, Small Company Risk, Risks of Concentrating in the Real Estate Industry, Emerging Markets Risk, Interest Rate Risk, Credit Risk, and Risks of Banking Concentration.

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## Definitions of Statistical Terms

**Average Returns** (arithmetic mean) is a measure of the “middle performance” of the fund, computed by adding up all the returns and dividing by the number of periods.

**Standard Deviation** measures how different the actual fund returns are from its average performance (see above). The closer the actual returns are to the average, the smaller the standard deviation. Standard deviation is a measure of volatility, generally associated with the risk of investments.

**Correlation** measures the degree to which the performance of two funds moves in tandem, and the direction of their association (one goes up, the other goes up as well – positive correlation). Correlation plays an important part in diversification.

**Auto-correlation** is a specific application of correlation (see above). In this case, the comparison is not between two different funds, but rather returns of the same fund between different periods. For example, an auto-correlation of two periods would show the correlation in returns two periods apart (March-January, April-February, May-March, etc).

**Covariance** measures the trend of common movement in returns between two funds. A positive covariance shows the fund's returns moving in the same direction, whereas a negative covariance shows the funds moving in opposite direction (when one goes up, the other one goes down). Covariance plays a role in determining portfolio volatility.

**Regression** analysis examines the statistical connection between a variable of interest and one or more factors used to explain its variation. For example, if the variable of interest is student test scores, regression could be used to show the connection to factors such as time spent studying or IQ.

**R-squared** is used in regression analysis to determine to what degree the variation in the changing series of interest is explained by the factors used to explain it. R-squared ranges from 0 (no explanatory power), to 1 (virtually all variation is explained by the analysis). In the example above, if test scores is the variable of interest, while IQ and study time are the factors used to explain it, then an R-squared of .9 would indicate that 90% of the variation in test scores can be explained by these two factors.

**Standard Error** is a measure of precision when calculating various statistical terms. Generally, the higher the standard error, the lower the statistical strength of that estimation.

**T-statistic** examines the statistical precision of various estimations by comparing the value of the calculation to the standard error (see above). Generally, a t-stat value of 2 or higher shows enough statistical precision to have confidence in the estimate being different from zero.

**Turnover** is a measure of the fund's trading activity, and loosely represents the portion of a fund's holdings that have changed over a year. A lower turnover ratio indicates a more passive strategy.

**Tracking Error** shows how different are each period's returns of a given fund from the returns of a reference “benchmark” (generally commercial indexes). For example, if fund A's returns in two subsequent periods are 10% and 20%, while the benchmark's returns are 5% and 25% for the same periods, the average is the same (15%), but there is tracking error since there was a difference in period by period returns (period 1: 10% versus 5%, period 2: 20% versus 25%).

**Alpha** measures the difference between the fund's average performance and what would be expected based its compensating risk level, such as beta (see below). For example, if the fund's average return was 10%, but the expectation based on its beta was 9%, then the alpha would show as 1%.

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**Beta** measures the degree to which the returns of a fund change with the market movements. Generally, the higher the scale of fund movements (up or down) relative to the market, the greater the beta. This is considered to be compensating risk for investors, i.e. the more risk (higher beta), the higher the investors' expected returns versus the market.

**Three Factor Model** explains the source of performance variation among investment portfolios, and it is an extension of previous Nobel Prize winning work. The model specifies that differences in portfolio returns can be attributed to (1) stocks/fixed income mix – riskier stocks have a higher potential return, (2) market capitalization of portfolio – smaller capitalization stocks are riskier and therefore have higher expected returns, and (3) market price relative to accounting measures of the firm, such as book value – stocks with higher book value to market ratios are riskier and have higher expected returns. This model was first published in major academic journals but has gained wide spread acceptance among investment professionals.

**SMB** stands for Small Minus Big, and shows the difference in performance between the returns of small cap stocks and large cap stocks, and it is one of the factors used in the model described above. When used in regression analysis its computed coefficient (s) illustrates to what degree the portfolio captures the returns of small cap or large cap stocks.

**HML** stands for High Book-to-Market(BtM) Minus Low Book-to-Market (BtM), and shows the difference in performance between the stocks with high BtM ratios (value stocks) and stocks with low BtM ratios (growth stocks), and it is one of the factors used in the model described above. When used in regression analysis its computed coefficient (h) illustrates to what degree the portfolio captures the returns value or growth stocks.