

---

# Investment Principles for Navigating Volatility

Dimensional Fund Advisors LP is an investment advisor registered with the Securities and Exchange Commission.  
**Investments involve risks including potential loss of principal and fluctuating value.**

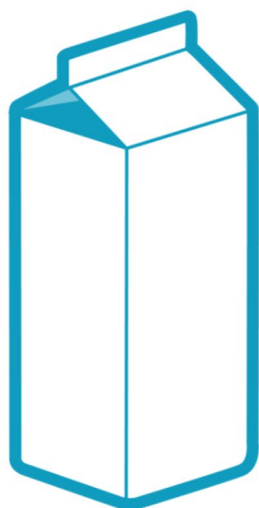
Investment products: • Not FDIC Insured • Not Bank Guaranteed • May Lose Value  
Dimensional Fund Advisors does not have any bank affiliates.

---

## Markets Have Rewarded Long-Term Investors

# Your Money Today Will Likely Buy Less Tomorrow

**1920**



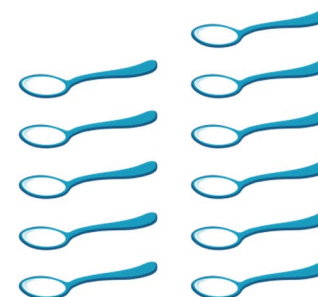
**\$0.17 = Quart of milk**

**1970**



**\$0.17 = 2 Cups of milk**

**2023**



**\$0.17 = 11 Tablespoons of milk**

In USD. Source for 1920 and 1970: Historical Statistics of the United States, Colonial Times to 1970/US Department of Commerce. Source for 2023: US Department of Labor, Bureau of Labor Statistics, Economic Statistics, Consumer Price Index—US City Average Price Data.

# Stocks and Bonds Are Conduits for Capital



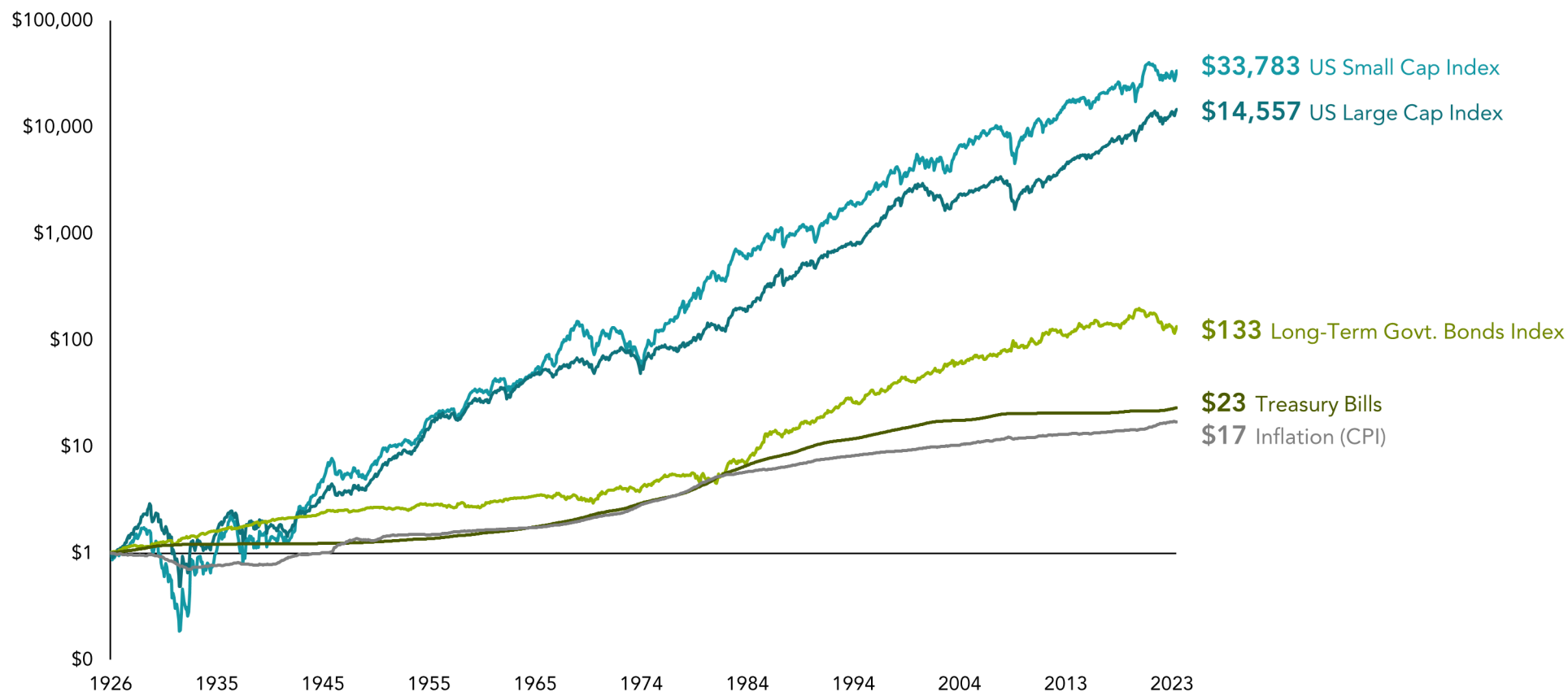
Stockholders are equity owners in the business.

Bondholders are lenders to a company.

Both expect an adequate return for the terms and risk of their investment.

# Capital Markets Have Rewarded Long-Term Investors

Monthly growth of wealth (\$1), 1926–2023



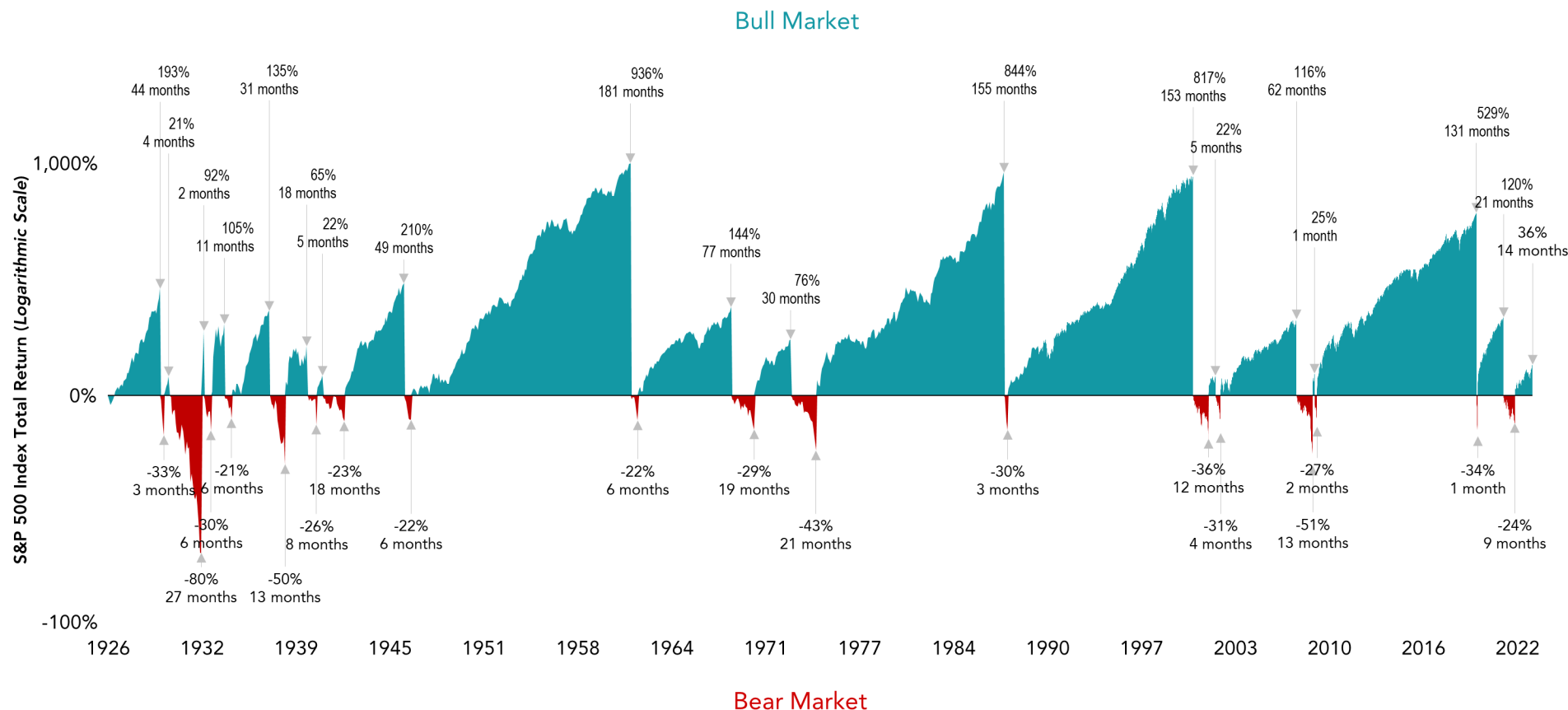
**Past performance is no guarantee of future results. In US dollars. Indices are not available for direct investment. Their performance does not reflect the expenses associated with the management of an actual portfolio.**

US Small Cap is the CRSP 6–10 Index. US Large Cap is the S&P 500 Index. US Long-Term Government Bonds is the IA SBBT US LT Govt TR USD. US Treasury Bills is the IA SBBT US 30 Day TBill TR USD. US Inflation is measured as changes in the US Consumer Price Index. CRSP data is provided by the Center for Research in Security Prices, University of Chicago. S&P data © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. US Long-term government bonds and Treasury bills data provided by Ibbotson Associates via Morningstar Direct. US Consumer Price Index data is provided by the US Department of Labor Bureau of Labor Statistics.

# A History of Market Ups and Downs

S&P 500 Index total returns in USD, January 1926–December 2023

Using a 20% threshold for downturns



**Past performance is no 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.** In USD. Chart end date is 12/31/2023, the last peak to trough return of 36% represents the return through December 2023. Due to availability of data, monthly returns are used January 1926 through December 1989; daily returns are used January 1990 through present. Periods in which cumulative return from peak is -20% or lower and a recovery of 20% from trough has not yet occurred are considered bear markets. Bull markets are subsequent rises following the bear market trough through the next recovery of at least 20%. The chart shows bear markets and bull markets, the number of months they lasted and the associated cumulative performance for each market period. Results for different time periods could differ from the results shown. Source: S&P data © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved.

---

# Foundations of Portfolio Structure

# Benefits of Diversification

Compound average annual returns: 2009–2023

MSCI All Country World  
Index (gross div.)

Excluding the top 10  
contributors each year

Excluding the top 25  
contributors each year

10.8%

8.1%

6.9%

Research shows there is no reliable way to predict top performers.

Broad diversification helps reduce unnecessary idiosyncratic risk.<sup>1</sup>

<sup>1</sup>Idiosyncratic risk is unsystematic (diversifiable) risk associated with exposure to a single stock, sector, or country.

**Past performance is no 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. Diversification neither assures a profit nor guarantees against loss in a declining market.**

In USD. "Excluding the top 10" and "Excluding the top 25" exclude the respective stocks in the MSCI All Country World Index (gross div.) with the highest contribution to the overall index return each year. Source: Dimensional, using data from Bloomberg LP. MSCI data © MSCI 2024, all rights reserved.



# Dimensions Point to Differences in Expected Returns



Academic research has identified these dimensions, which are well documented in markets around the world and across different time periods.

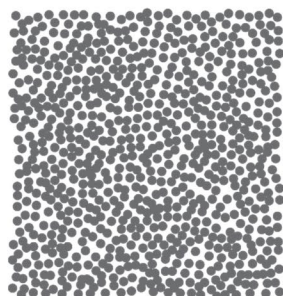
1. Relative price as measured by the price-to-book ratio; value stocks are those with lower price-to-book ratios.  
2. Profitability is a measure of current profitability, based on information from individual companies' income statements.

# Portfolios Can Be Structured to Pursue Dimensions

● Company  
 → Higher Expected Return

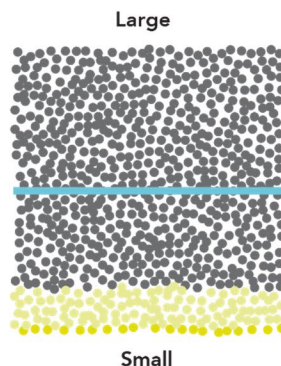
## MARKET

Beta<sup>1</sup>  
 (Equity Premium)



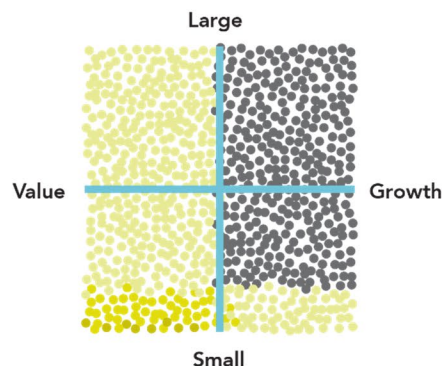
## COMPANY SIZE

Market Cap  
 (Small Cap Premium)



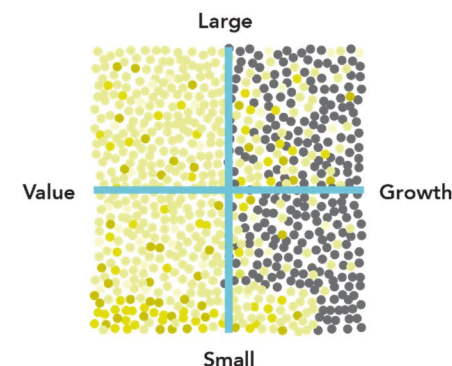
## RELATIVE PRICE

Price-to-Book<sup>2</sup>  
 (Value Premium)



## PROFITABILITY

Profitability<sup>3</sup>  
 (Profitability Premium)



Investors can pursue higher expected returns through a low-cost, well-diversified portfolio that targets these dimensions.

1. Beta: A quantitative measure of the co-movement of a given stock, mutual fund, or portfolio with the overall market.

2. Price-to-Book Ratio: A company's capitalization divided by its book value. It compares the market's valuation of a company to the value of that company as indicated on its financial statements.

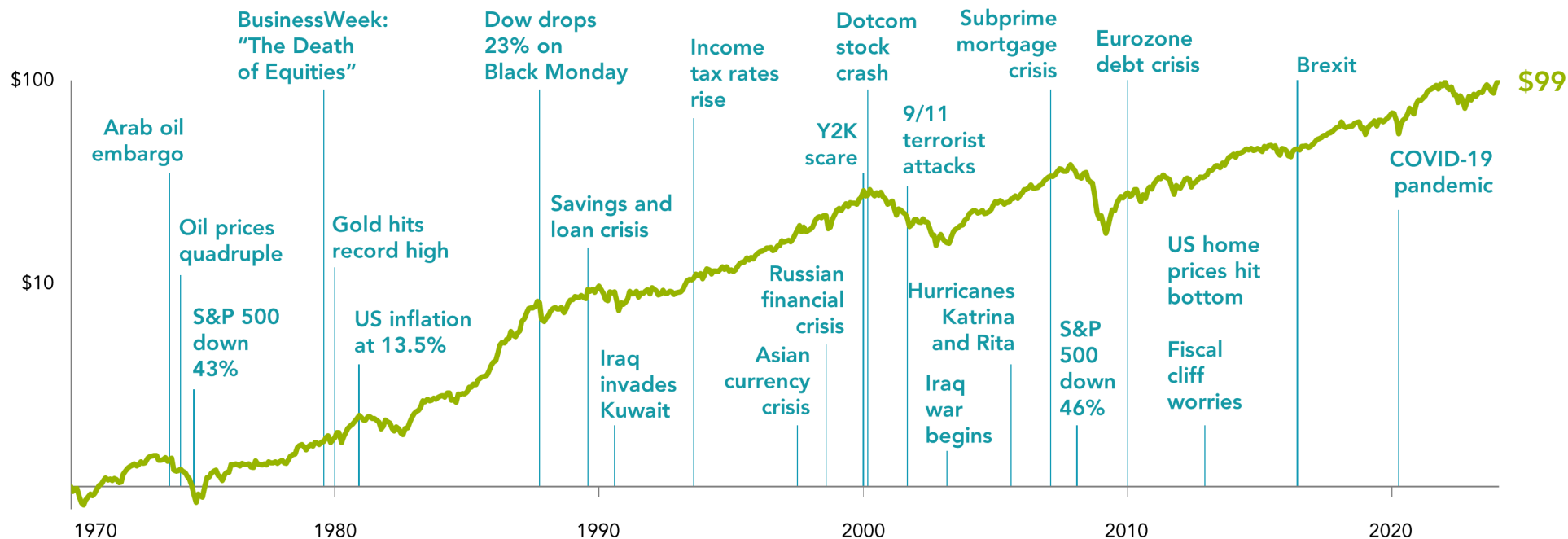
3. Profitability: A measure of a company's current profits. We define this as operating income before depreciation and amortization minus interest expense, scaled by book equity.

---

# Navigating Market Volatility

# Markets Have Rewarded Discipline

Growth of a dollar—MSCI World Index (net dividends), 1970–2023



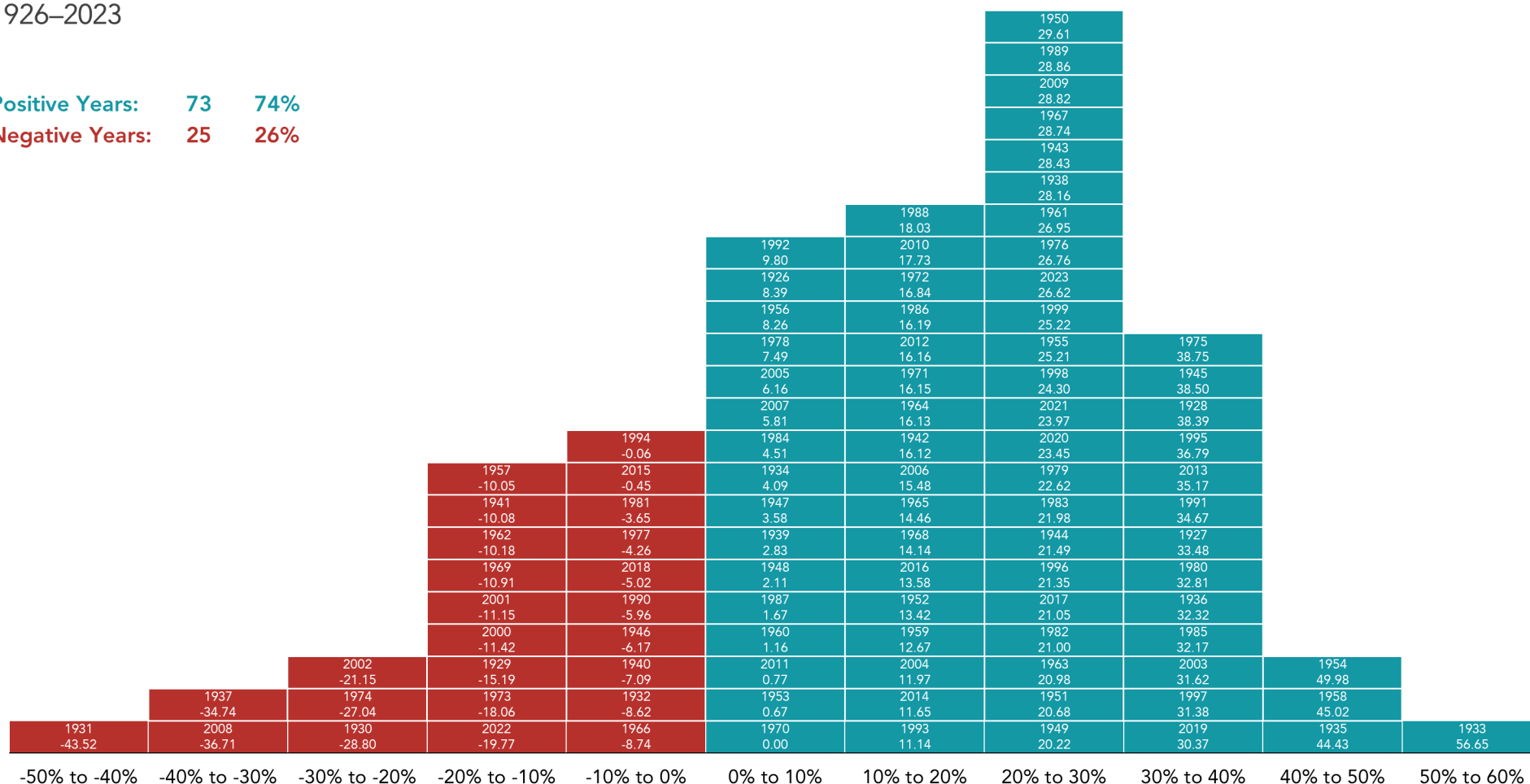
A disciplined investor looks beyond the concerns of today to the long-term growth potential of markets.

**Past performance is no guarantee of future results. Indices are not available for direct investment. Their performance does not reflect the expenses associated with the management of an actual portfolio.** In USD. MSCI data © MSCI 2024, all rights reserved. Data presented in the Growth of \$1 chart is hypothetical and assumes reinvestment of income and no transaction costs or taxes. The chart is for illustrative purposes only and is not indicative of any investment.

# Distribution of US Market Returns

CRSP 1–10 Index returns by year  
 1926–2023

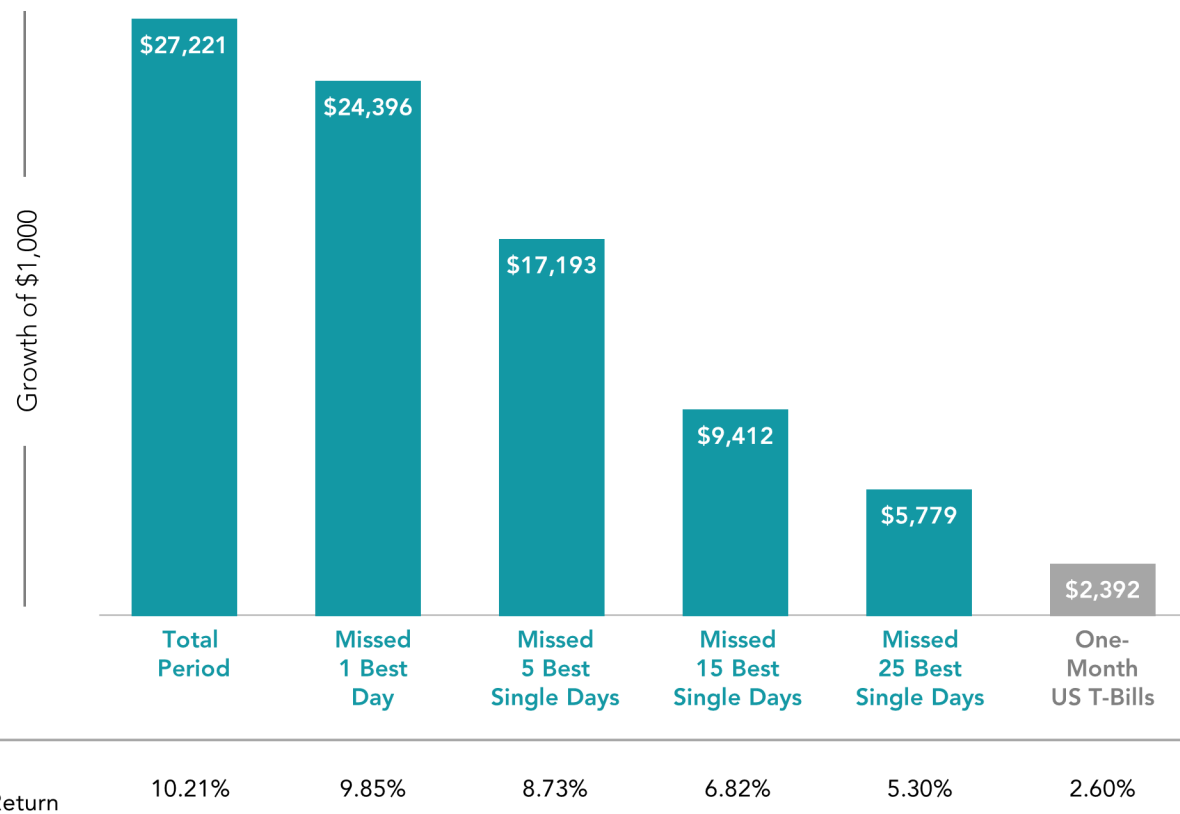
**Positive Years:** 73 74%  
**Negative Years:** 25 26%



**Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. Past performance is not a guarantee of future results.** In USD. CRSP data provided by the Center for Research in Security Prices, University of Chicago. The CRSP 1–10 Index measures the performance of the total US stock market, which it defines as the aggregate capitalization of all securities listed on the NYSE, AMEX, and NASDAQ exchanges.

# Reacting Can Hurt Performance

Performance of the S&P 500 Index, 1990–2023

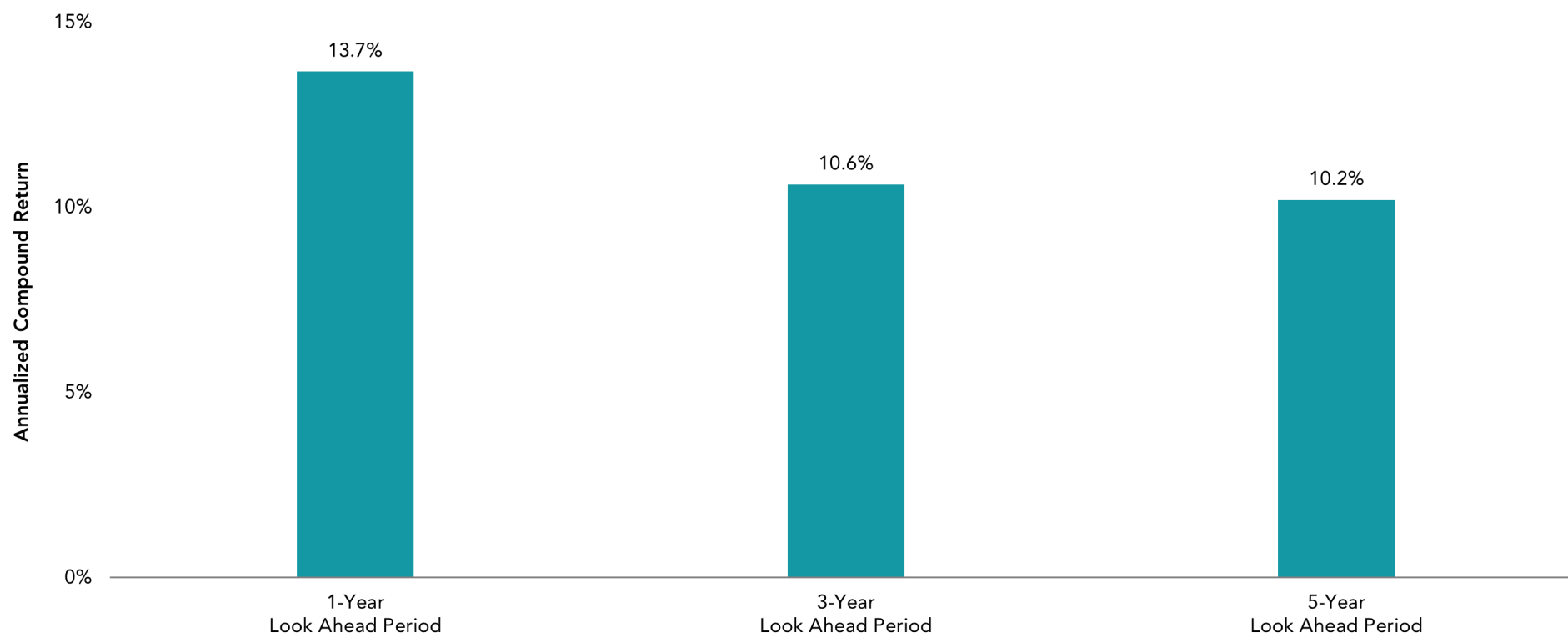


Missing only a few days of strong returns can drastically impact overall performance.

**Past performance is not a guarantee of future results. Indices are not available for direct investment. Their performance does not reflect the expenses associated with the management of an actual portfolio.** In USD. For illustrative purposes. The missed best day(s) examples assume that the hypothetical portfolio fully divested its holdings at the end of the day before the missed best day(s), held cash for the missed best day(s), and reinvested the entire portfolio in the S&P 500 at the end of the missed best day(s). Annualized returns for the missed best day(s) were calculated by substituting actual returns for the missed best day(s) with zero. S&P data © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. "One-Month US T-Bills" is the IA SBBI US 30 Day TBILL TR USD, provided by Ibbotson Associates via Morningstar Direct. Data is calculated off rounded daily index values.

# Average Annualized Returns After New Market Highs

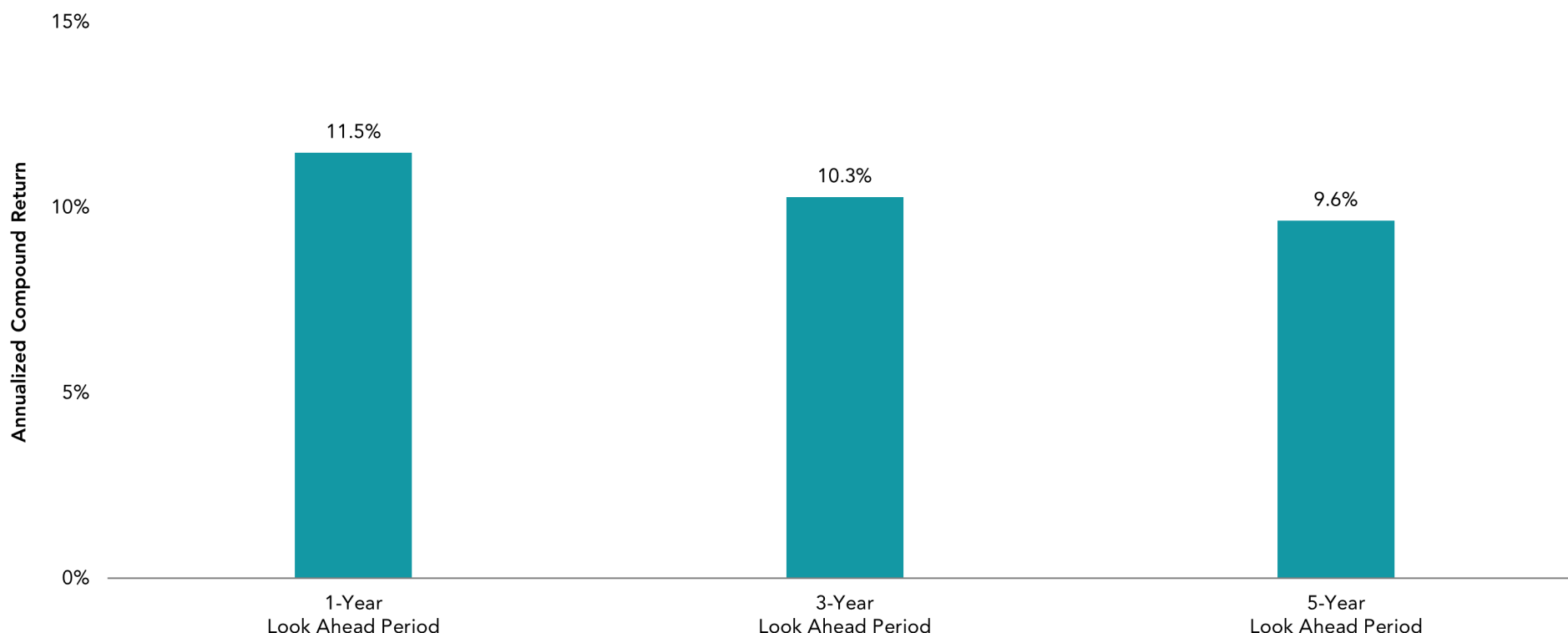
S&P 500, January 1926–December 2023



**Past performance is no guarantee of future results. Indices are not available for direct investment. Their performance does not reflect the expenses associated with the management of an actual portfolio.** In USD. New market highs are defined as months ending with the market above all previous levels for the sample period. Annualized compound returns are computed for the relevant time periods subsequent to new market highs and averaged across all new market high observations. There were 1,164 observation months in the sample. January 1990–present: S&P 500 Total Returns Index. S&P data © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. January 1926–December 1989; S&P 500 Total Return Index, Stocks, Bonds, Bills and Inflation Yearbook™, Ibbotson Associates, Chicago. For illustrative purposes only. There is always a risk that an investor may lose money.

# Average Annualized Returns After Market Decline of More Than 10%

S&P 500, January 1926–December 2023



**Past performance is no guarantee of future results. Indices are not available for direct investment. Their performance does not reflect the expenses associated with the management of an actual portfolio.** In USD. Declines are defined as months ending with the market below the previous market high by at least 10%. Annualized compound returns are computed for the relevant time periods after each decline

observed and averaged across all declines for the cutoff. There were 1,164 observation months in the sample. January 1990–present: S&P 500 Total Returns Index. S&P data © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. January 1926–December 1989; S&P 500 Total Return Index, Stocks, Bonds, Bills and Inflation Yearbook™, Ibbotson Associates, Chicago. For illustrative purposes only. There is always a risk that an investor may lose money.



# Bears of All Shapes and Sizes

US stock market declines of 20% or greater, 1929–2023

Start of Decline	Max Decline	Trading Days to Max Decline	Trading Days from Bottom to Recovery
September 3, 1929	-83.9%	845	3,725
May 29, 1946	-28.2%	273	712
July 15, 1957	-20.6%	70	191
December 12, 1961	-27.7%	135	234
February 9, 1966	-20.6%	167	104
November 29, 1968	-36.8%	369	233
January 11, 1973	-48.4%	436	567
August 11, 1981	-20.1%	254	39
August 25, 1987	-33.2%	71	364
July 16, 1990	-20.8%	62	84
July 17, 1998	-21.9%	58	53
March 24, 2000	-49.6%	637	1,017
October 9, 2007	-54.7%	355	760
September 20, 2018	-20.5%	65	81
February 19, 2020	-34.3%	23	94
November 16, 2021	-25.9%	229	300

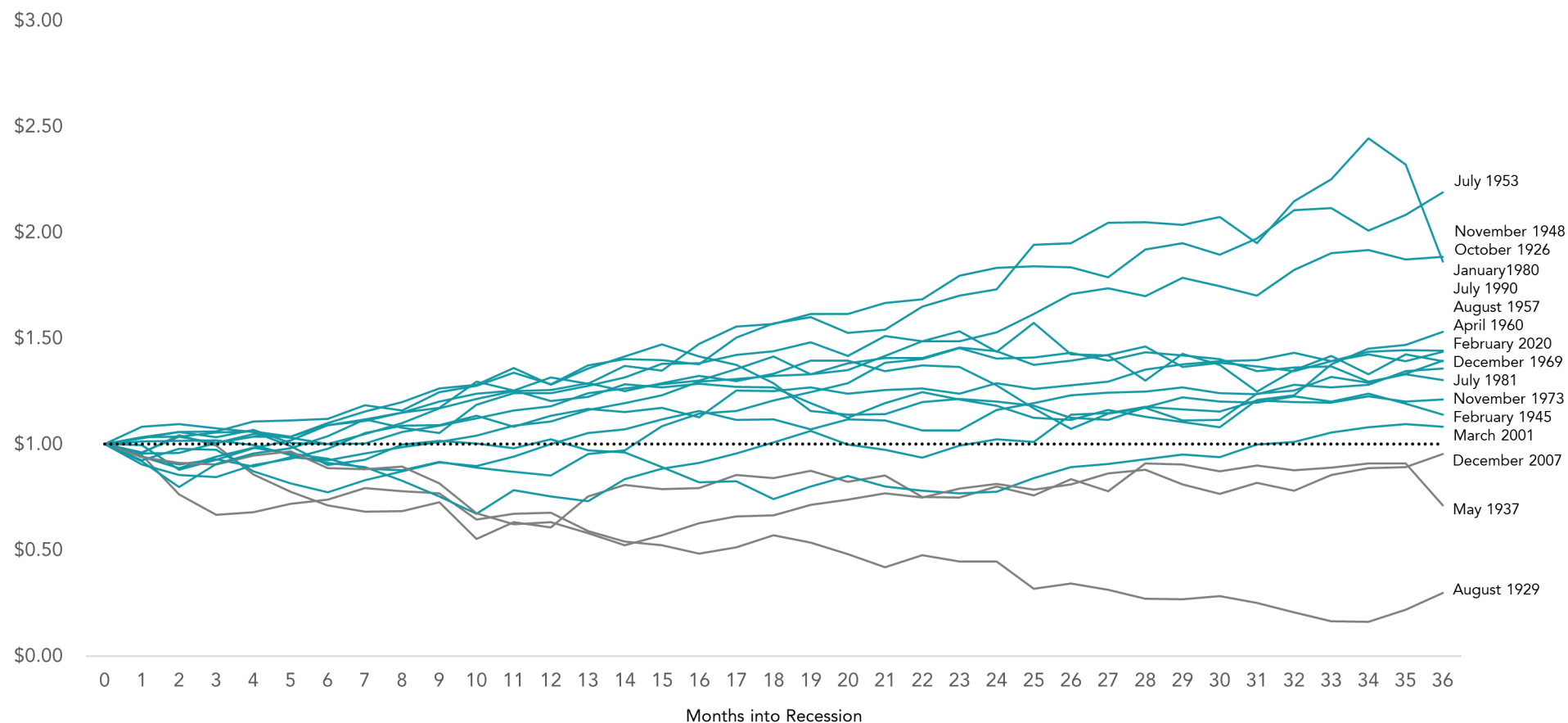
**No one can reliably predict the magnitude of a market decline or the time to a recovery. Rather than guessing, sticking to a plan and resisting the urge to sell amid a decline often allows investors to capture the rebound when it occurs.**

In nine out of the 16 bear markets since 1929, investors who stayed the course made back their losses within a year.

**Past performance is no guarantee of future results. Actual returns may be lower.** In USD. The Fama/French Indices represent academic concepts that may be used in portfolio construction and are not available for direct investment or for use as a benchmark. Index returns are not representative of actual portfolios and do not reflect costs and fees associated with an actual investment. See "Index Descriptions" in the appendix for descriptions of the Fama/French index data. Includes any decline of 20% or more beginning the day after a new all-time high for the market. Recovery is defined as the first day when the cumulative return since the previous market high is no longer negative. US stock market represented by the Fama/French Total US Market Index. Eugene Fama and Ken French are members of the Board of Directors of the general partner of, and provide consulting services to, Dimensional Fund Advisors LP.

# Past Recessions and Growth of Wealth

Growth of a dollar for US stocks over 3-year period beginning from first month of recession



## Past performance is no guarantee of future results. Actual returns may be lower.

In USD. Each line shows the growth of \$1 for a hypothetical investment in the Fama/French Total US Market Research Index over the 36 months starting the month after the relevant Recession Start Date. Data presented in Growth of \$1 chart is hypothetical and assumes reinvestment of income and no transaction costs or taxes. The chart is for illustrative purposes only and is not indicative of any investment. The Fama/French Indices represent academic concepts that may be used in portfolio construction and are not available for direct investment or for use as a benchmark. Index returns are not representative of actual portfolios and do not reflect costs and fees associated with an actual investment. See "Index Descriptions" in the appendix for descriptions of Fama/French index data. For additional information on the methodology, see "Markets Have Often Been Up in Recessions: Appendix" for more details.

# S&P 500 Total Return Index Highs

Percent of cases where index is higher after monthly closing high vs. any monthly closing level  
 January 1926–December 2023

Look-Ahead Period	After New High		After Any Previous Level	
	Percent of Cases Where Index Was Higher	Average Return	Percent of Cases Where Index Was Higher	Average Annualized Return
1 year	80.3%	13.7%	75.3%	12.3%
3 years	83.4%	10.6%	84.6%	10.8%
5 years	81.4%	10.2%	88.4%	10.3%

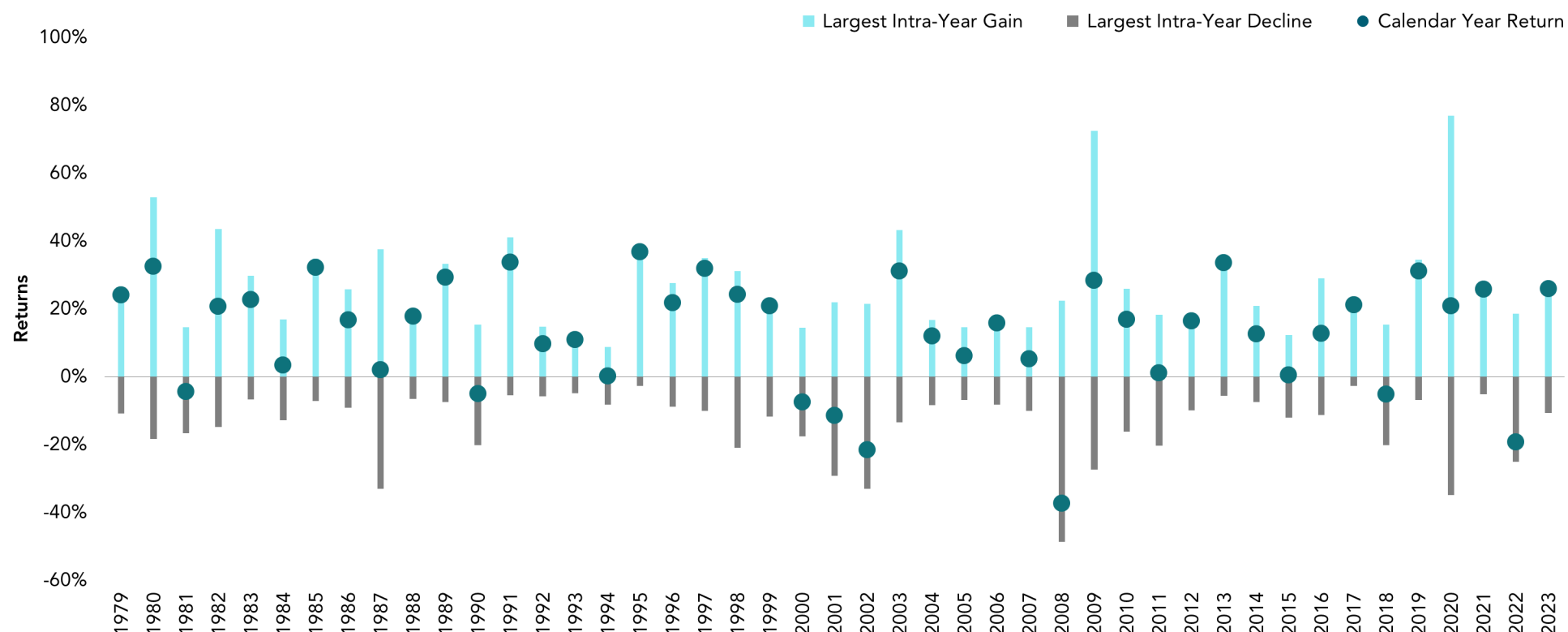
- 30% of monthly observations were new closing highs.
- Average returns were similar after a new monthly closing high or any previous monthly closing level.
- The percent of cases where the index was higher was similar after a new monthly closing high and after any previous monthly closing level.

**Past performance is no guarantee of future results. Index is not available for direct investment; therefore, its performance does not reflect the expenses associated with the management of an actual portfolio.**

For illustrative purposes only. In USD. Annualized compound returns are computed for the relevant time periods subsequent to new market highs and averaged across all new market highs observations. There were 1,175 observation months in the sample. January 1990–Present: S&P 500 Total Return Index, S&P data © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. January 1926–December 1989: S&P 500 Total Return Index, Stocks, Bonds, Bills and Inflation Yearbook™, Ibbotson Associates, Chicago.

# US Market Intra-year Gains and Declines vs. Calendar Year Returns

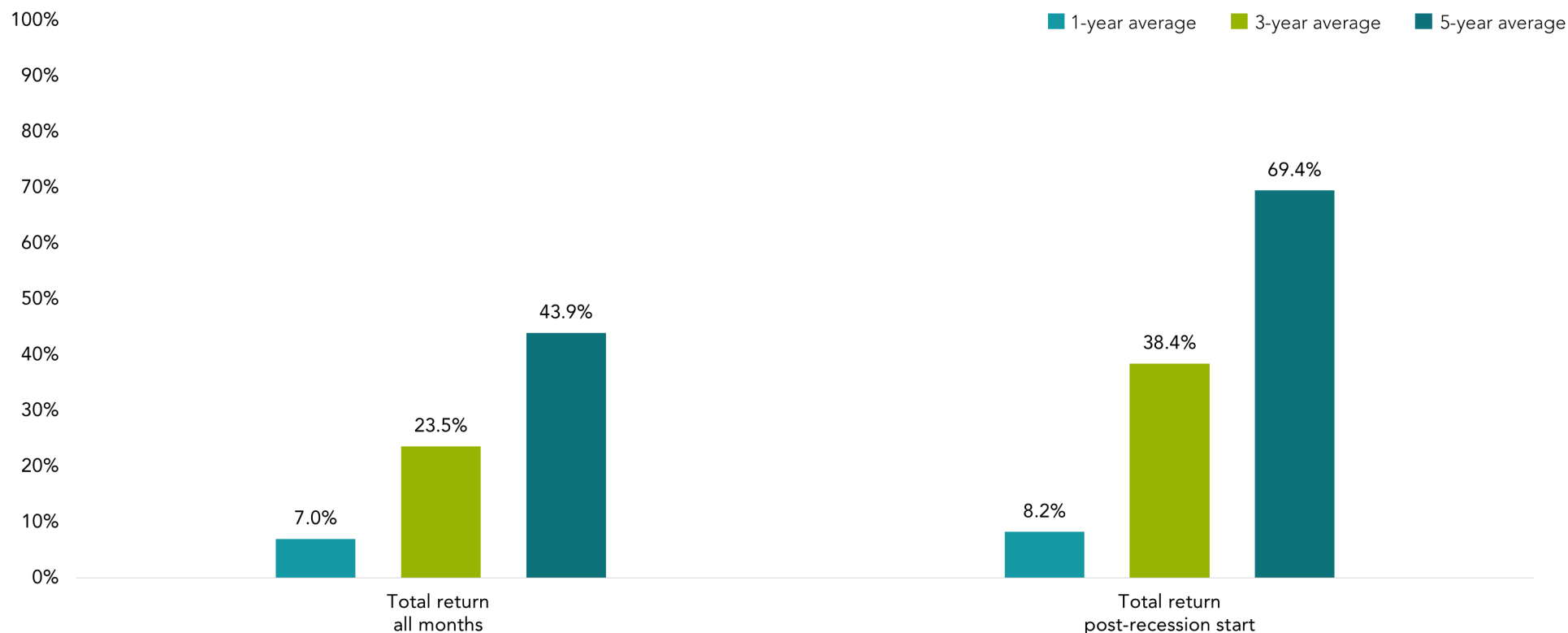
1979–2023



**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.** In USD. Data is calculated off rounded daily returns. US Market is the Russell 3000 Index. Largest Intra-Year Gain refers to the largest market increase from trough to peak during the year. Largest Intra-Year Decline refers to the largest market decrease from peak to trough during the year. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes.

# Average Returns after Recessions Have Been Positive

Bloomberg U.S. Aggregate Bond Index cumulative return, January 1, 1976–December 31, 2022



**Past performance is no guarantee of future results. Short-term performance results should be considered in connection with longer term performance results. Indices are not available for direct investment. Their performance does not reflect the expenses associated with the management of an actual portfolio.**

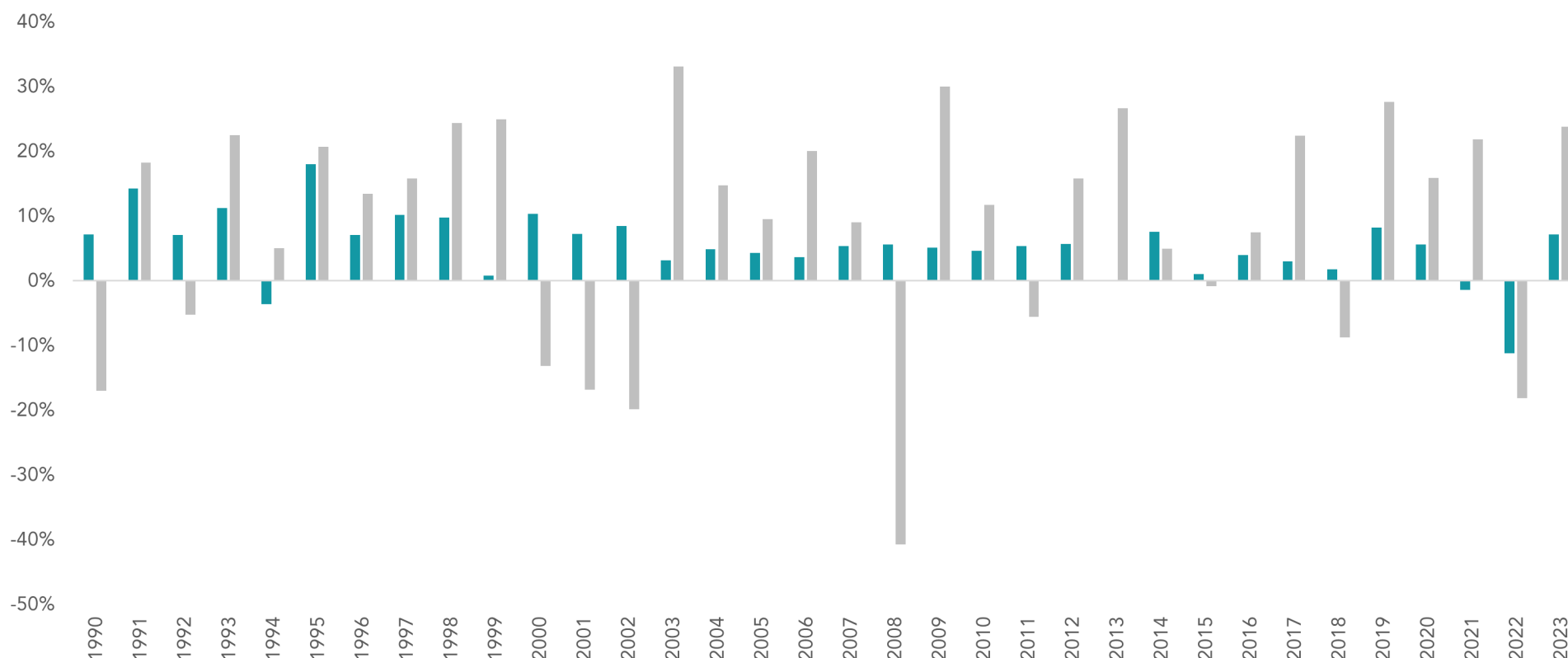
In USD. Returns data based on monthly Bloomberg U.S. Aggregate Bond Index returns from January 1976 to December 2022. Total returns are calculated for the 1-, 3-, and 5-year look-ahead periods for all months and post-recession start months. Business cycle recession dates sourced from the National Bureau of Economic Research (NBER). There are 6, 5, and 5 observations for 1-, 3-, and 5-year post-recession periods, respectively. Bloomberg index data provided by Bloomberg.

# Bonds as a Buffer: Fixed Income + Stocks

January 1990–December 2023

## Annual Return

■ Bloomberg Global Aggregate Bond Index (hedged to USD) ■ MSCI World Index (net div.)



**Past performance is no 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.** In USD. Global Bonds are represented by the Bloomberg Global Aggregate Bond Index (Hedged to USD) and Equities are represented by the MSCI World Index (net div., USD). Bloomberg data provided by Bloomberg. MSCI data © MSCI 2024, all rights reserved.

---

# Appendix

# Markets Have Often Been Up in Recessions: Appendix

Growth of wealth shows the growth of a hypothetical investment of \$1 in the securities in the Fama/French Total US Market Research Index over the 36 months starting the month after the relevant Recession Start Date.

Index data presented in the growth of wealth chart is hypothetical and assumes reinvestment of income and no transaction costs or taxes. Sample includes 16 US recessions as identified by the National Bureau of Economic Research (NBER) from October 1926 to December 2021. NBER defines recessions as starting at the peak of a business cycle. A business cycle is a description of the various stages of economic output.

Regarding the Fama/French Total US Market Research Index, results shown during periods prior to each index's index inception date do not represent actual returns of the respective index. Other periods selected may have different results, including losses. Backtested 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. Backtested performance results assume the reinvestment of dividends and capital gains. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Eugene Fama and Ken French are members of the Board of Directors of the general partner of, and provide consulting services to, Dimensional Fund Advisors LP.



# Index Descriptions

**Fama/French Total US Market Research Index:** July 1926–present: Fama/French Total US Market Research Factor + One-Month US Treasury Bills. Source: Ken French Website.

Results shown during periods prior to each Index's index inception date do not represent actual returns of the respective index. Other periods selected may have different results, including losses. Backtested 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. Backtested performance results assume the reinvestment of dividends and capital gains. Profitability is measured as operating income before depreciation and amortization minus interest expense, scaled by book. Eugene Fama and Ken French are members of the Board of Directors of the general partner of, and provide consulting services to, Dimensional Fund Advisors LP.