Investment Strategist Team

CAPTRUST Market Intelligence

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Applying Behavioral Finance to Your Portfolio

- **June 2023**—The decision to either invest today (lump sum) or gradually over time (dollar-cost average, or DCA) encompasses a unique overlay of behavioral finance with each investor's individual preferences. We have analyzed the data to objectively compare both strategies via the two-part piece below. Choosing between the two comes down to prioritizing either higher average long-term return potential, or lower short-term volatility. While a lump sum investment historically provides excess return over DCA approximately 75% of the time, an immediate investment today does come with a wider range of return outcomes (i.e., higher realized volatility). Ultimately, while data can potentially assist in the decision of deploying cash either via a lump sum or DCA, the strategy one elects is highly personalized and must be tailored to where one places the highest premium with their investment objective.

APPLYING BEHAVIORAL FINANCE TO YOUR PORTFOLIO (PART 1)

(Lump Sum Investment vs. Dollar-Cost Averaging—1970 to 2023)

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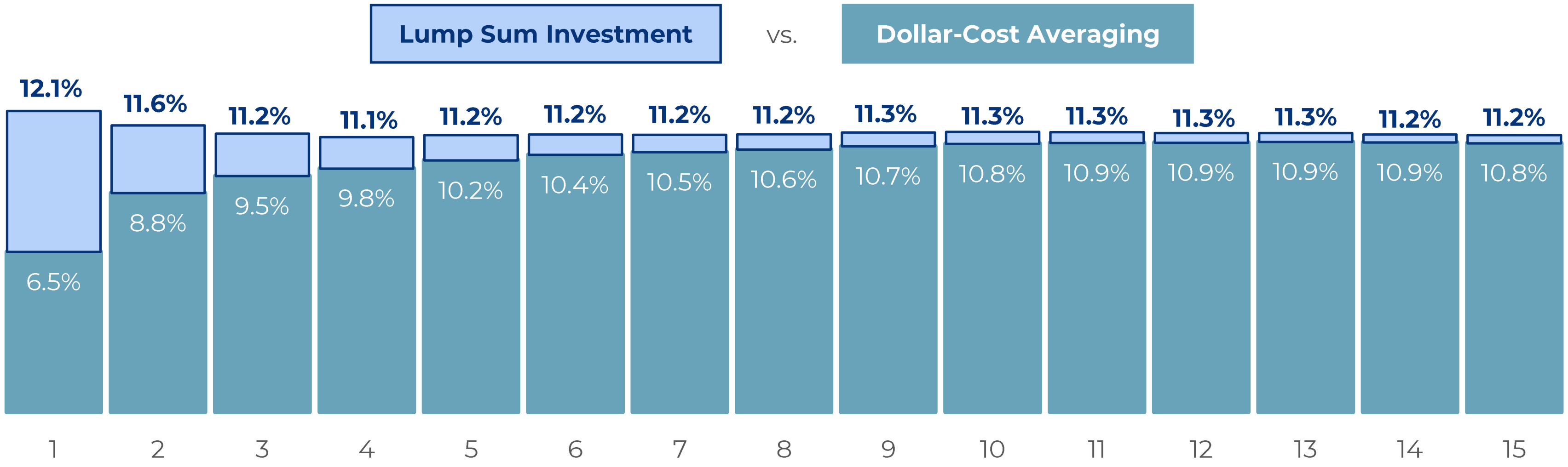
Dollar-cost averaging (DCA) is a popular investment strategy for deploying cash into risk assets, such as stocks, by buying in over a predefined time period. Of course, another route an investor can take is to invest cash immediately with a single lump sum investment.

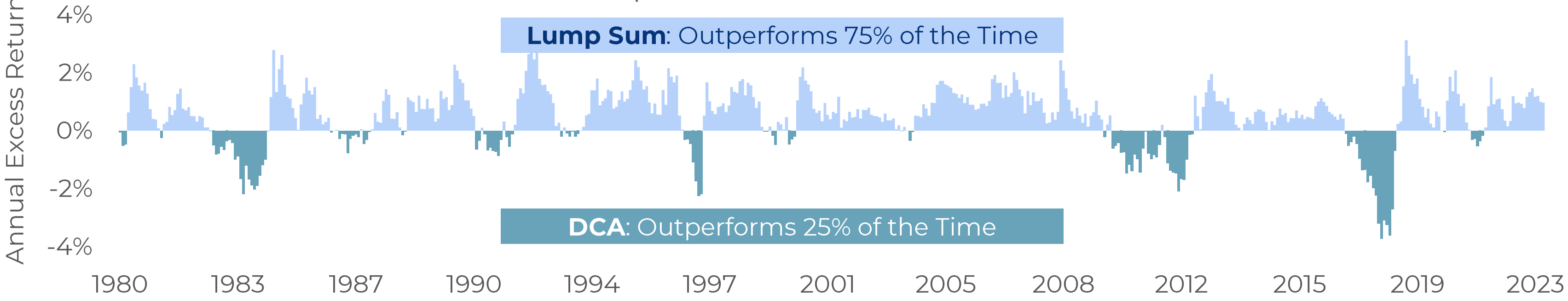
Since 1970, stocks have recorded positive returns in nearly 80% of all trailing one-year time periods. Further, the data shows, on average, a lump sum investment provides a slightly higher average return compared to a DCA approach, regardless of time horizon (top half of slide). As an example, for an investor with a 10-year time horizon, a lump sum investment historically provided more return than DCA for 75% of all trailing time periods (bottom half of slide).

However, higher absolute returns favoring a lump sum investment do not tell the whole story—the concept of DCA is more a behavioral finance-oriented strategy that aims to protect against the "loss aversion" notion with investor psychology.

Average Annualized Returns by Time Horizon (Years):



Example – **10-Year Time Horizon**:



Sources: Morningstar Direct; CAPTRUST Research. S&P 500 Index total returns (price changes + dividends) represent monthly returns from January 1970 through May 2023. Dollar-cost averaging illustration represents equally weighted monthly contributions for the first 12 months of the time period, followed by monthly compounded returns after being fully invested. Past performance is not a guarantee of future results.

APPLYING BEHAVIORAL FINANCE TO YOUR PORTFOLIO (PART 2)

(Lump Sum Investment vs. Dollar-Cost Averaging—1970 to 2023)

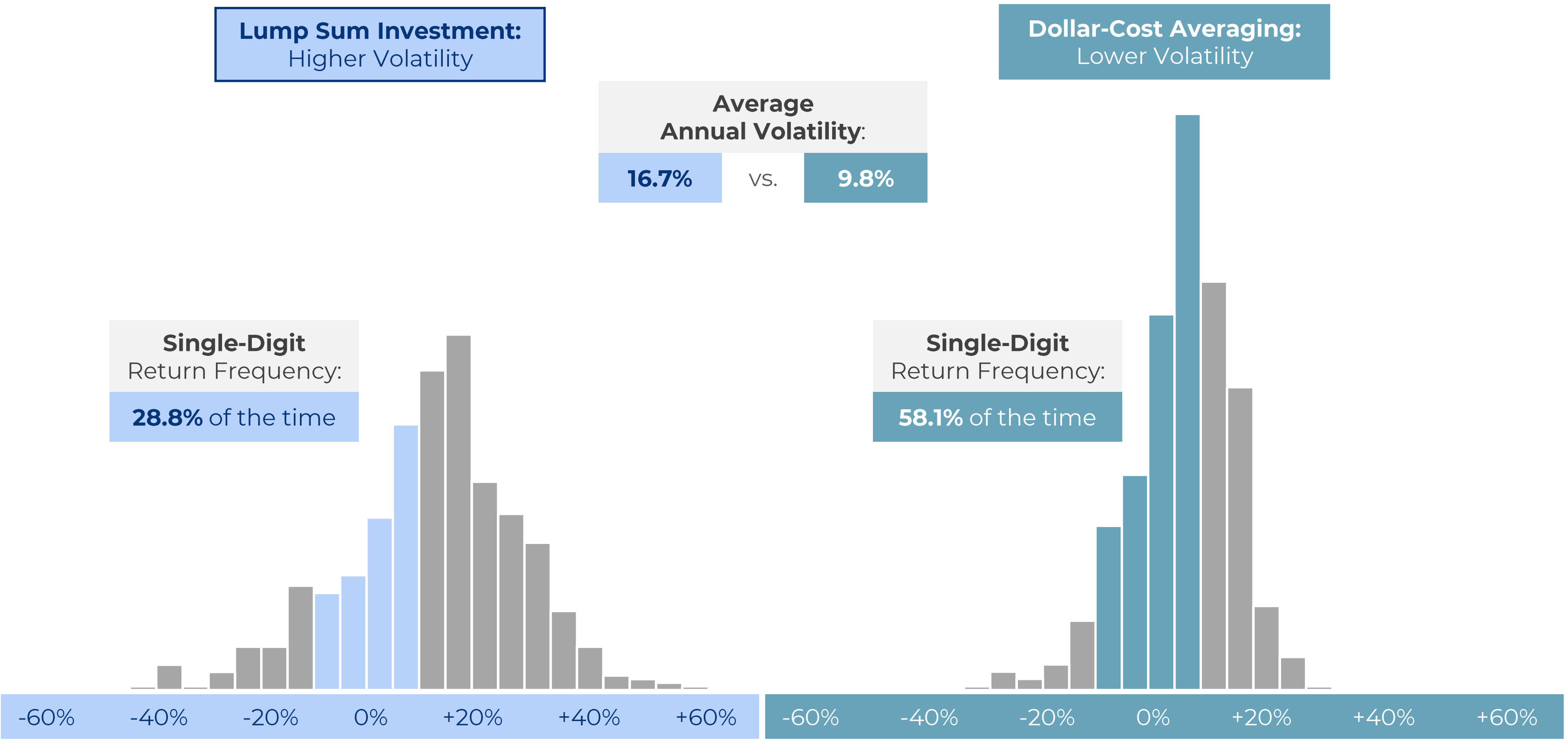
Market Intelligence:

While the comparison of a single lump sum investment vs. a DCA approach is inherently subjective, it's important to note that neither strategy guarantees a profit on investments. However, DCA can be a helpful strategy for risk-averse investors during volatile markets.

The investment thesis for DCA centers around reducing the likelihood of a poorly timed entry point into stocks. For example, in the first year of a new investment from cash into stocks, DCA helps achieve nearly a 58% probability of a more stable single-digit return (whether a gain or loss), compared to just a 29% probability with an immediate lump sum, as detailed here. Additionally, average annual volatility is reduced by about 40% with DCA compared to lump sum in the first year of investing.

Historically, DCA has reduced volatility, but at the expense of potential return. Therefore, investors should assess the trade-offs between expected risk and return potential when developing their optimal investment strategy.

Example – **Year One Initial Investment**:
Return Frequency Distributions and Volatility



Sources: Morningstar Direct; CAPTRUST Research. S&P 500 Index total returns (price changes + dividends) represent monthly returns from January 1970 through May 2023. Dollar-cost averaging illustration represents equally weighted monthly contributions for the first 12 months of the time period, followed by monthly compounded returns after being fully invested. Past performance is not a guarantee of future results.

Breaking the (Tightening) Cycle?

- **May 2023**—While the next Federal Reserve meeting is not until June, the market has started to price in a potential pause (i.e., terminal rate) for future interest rate increases. The (effective) federal funds rate currently stands at 5.1%, and the latest Consumer Price Index reading sits at 4.9%. Not only does this now-positive real cost of capital offer greater sustainability in promoting a healthy U.S. economy, but bonds have historically recorded strong total returns in the year following the last interest rate hike. Moreover, the higher coupon rates today can help bonds better withstand price volatility, irrespective of the short-term direction of interest rates.

BREAKING THE (TIGHTENING) CYCLE?
(Monetary Policy's Impact on U.S. Core Bonds—1990 to 2023)

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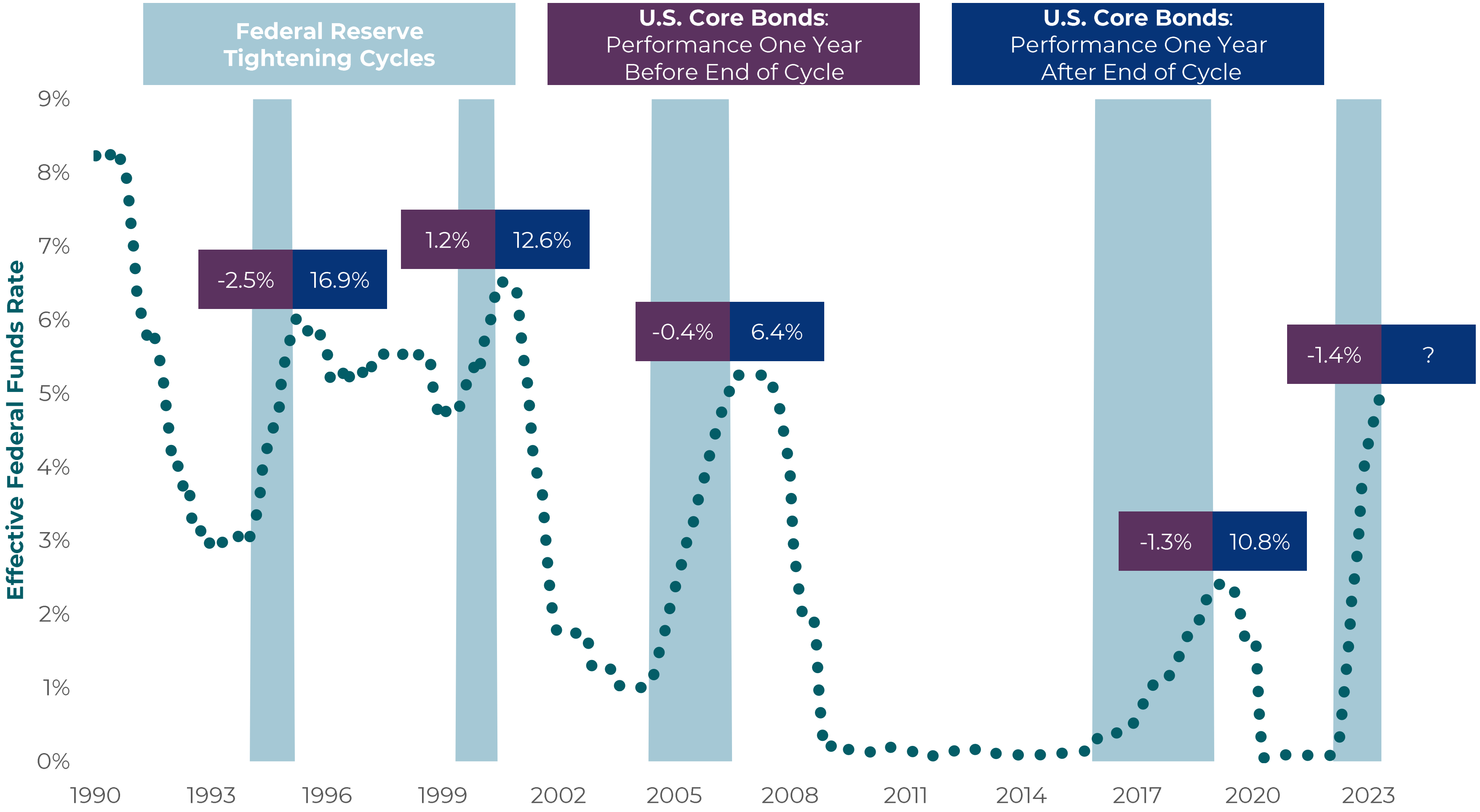
The Federal Reserve has demonstrated a relentless commitment to taming inflation pressures, most notably through raising interest rates, which began just over a year ago in March of 2022.

Over the last three decades, the Fed has conducted five different tightening cycles (shaded in light blue) to cool and balance the economy. One consequence of rising interest rates for investors, however, has been the subpar performance of bonds, due to price depreciation, with an average total return -0.9% in the year before the end of the tightening cycle (denoted in purple).

There is a silver lining as we approach the potential end of the current tightening cycle: Bonds today exhibit the highest yields since before the financial crisis. Additionally, the performance after the end of a tightening cycle historically establishes a solid future return path for bonds. On average, the total return one year following the end of a tightening cycle (denoted in dark blue) has been (an impressive) +11.7%.



Sources: Morningstar Direct; Federal Reserve Bank of St. Louis; CAPTRUST Research. Bloomberg U.S. Aggregate Bond Index total returns and Effective Federal Funds Rate data represent monthly data points from January 1990 through May 2023. Past performance is not a guarantee of future results.

Enduring Dominance of the Dollar

- **May 2023**—Since the signing of the Bretton Woods Agreement in 1944, the U.S. dollar has maintained a dominant role as the global reserve currency. Over this multi-generational time period since then, our economy has benefited from low borrowing costs with the U.S. dollar serving as the backbone of our strong and stable domestic economy. However, given concerns surrounding the debt ceiling and global trade activities being conducted with other currencies, we have examined the data (two-part piece below) to analyze why the U.S. dollar's status as the global reserve currency is unlikely to change in the near-term, given its embeddedness and prominence across global capital markets.

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ENDURING DOMINANCE OF THE DOLLAR (PART 1)

(Historical Data Backing the Strength of the U.S. Dollar)

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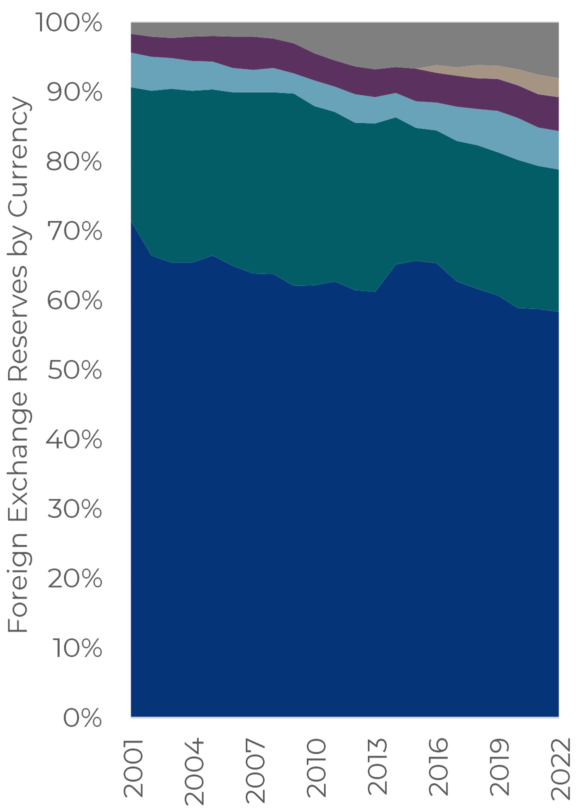
The prominent status of the U.S. dollar's role as the global reserve currency has historically benefited our domestic economy, citizens, and investors. Recently, the topic of the U.S. dollar potentially losing its long-held position as the global reserve currency has arisen due to concerns over the debt ceiling and potential default by the U.S. Government, as well as de-dollarization fears with select global trade activities being conducted absent the U.S. dollar.

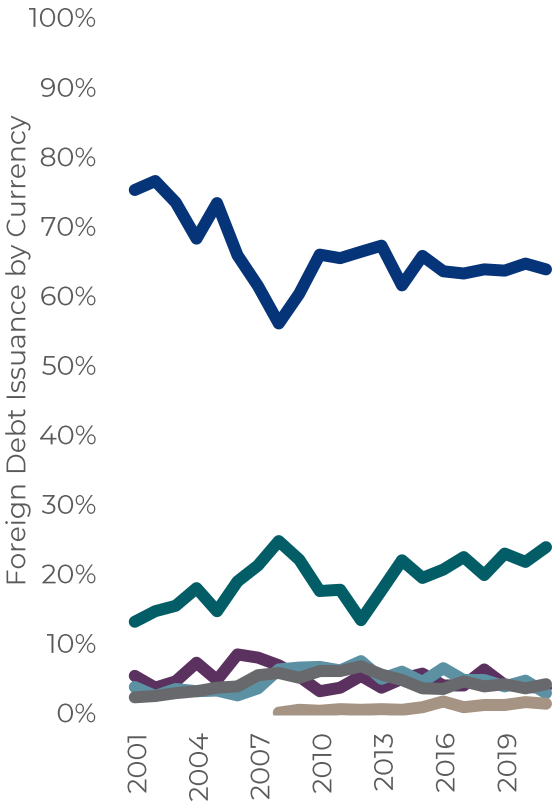
While globalization has presented potential challenges to the U.S. dollar's reign as the reserve currency, there are currently no viable alternatives for a successor in the near-term.

The U.S. dollar is highly integrated across global capital markets due to the size of our economy, role in international trade, openness and confidence in our financial markets, convertibility of our currency as a medium of exchange, and the stability of our currency as a reliable store of value, to name a few, as we illustrate here.

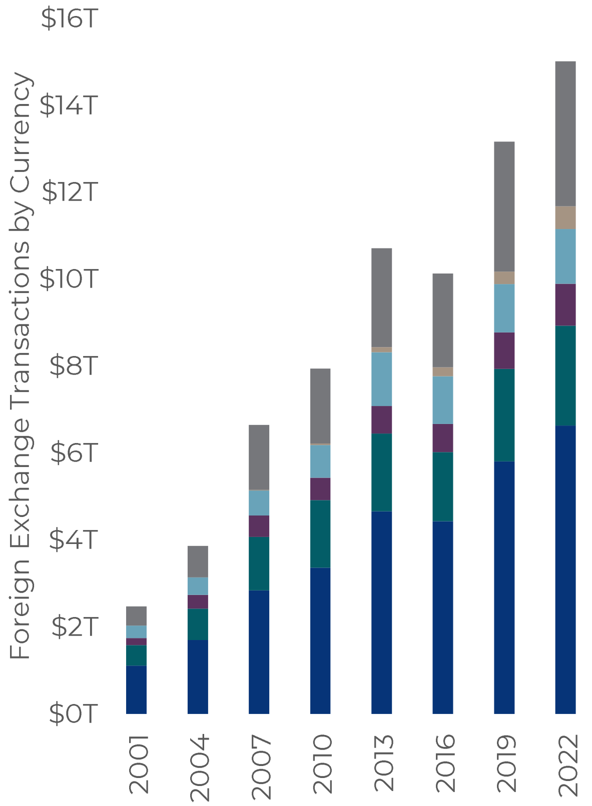
Global Confidence as a Reliable Store of Value



Preferred Currency for Global Debt Issuance by Other Countries



International Medium of Exchange for Global Trade



U.S. Dollar | Euro | Japanese Yen | British Pound | Chinese Renminbi | Other Currencies

Sources: Bloomberg; St. Louis Federal Reserve Bank; International Monetary Fund; Bank for International Settlements; Dealogic; Treasury International Capital System (U.S. Department of the Treasury); CAPTRUST Research. Data (where available) represents January 2001 through December 2022.

ENDURING DOMINANCE OF THE DOLLAR (PART 2)
(Historical Data Backing the Strength of the U.S. Dollar)

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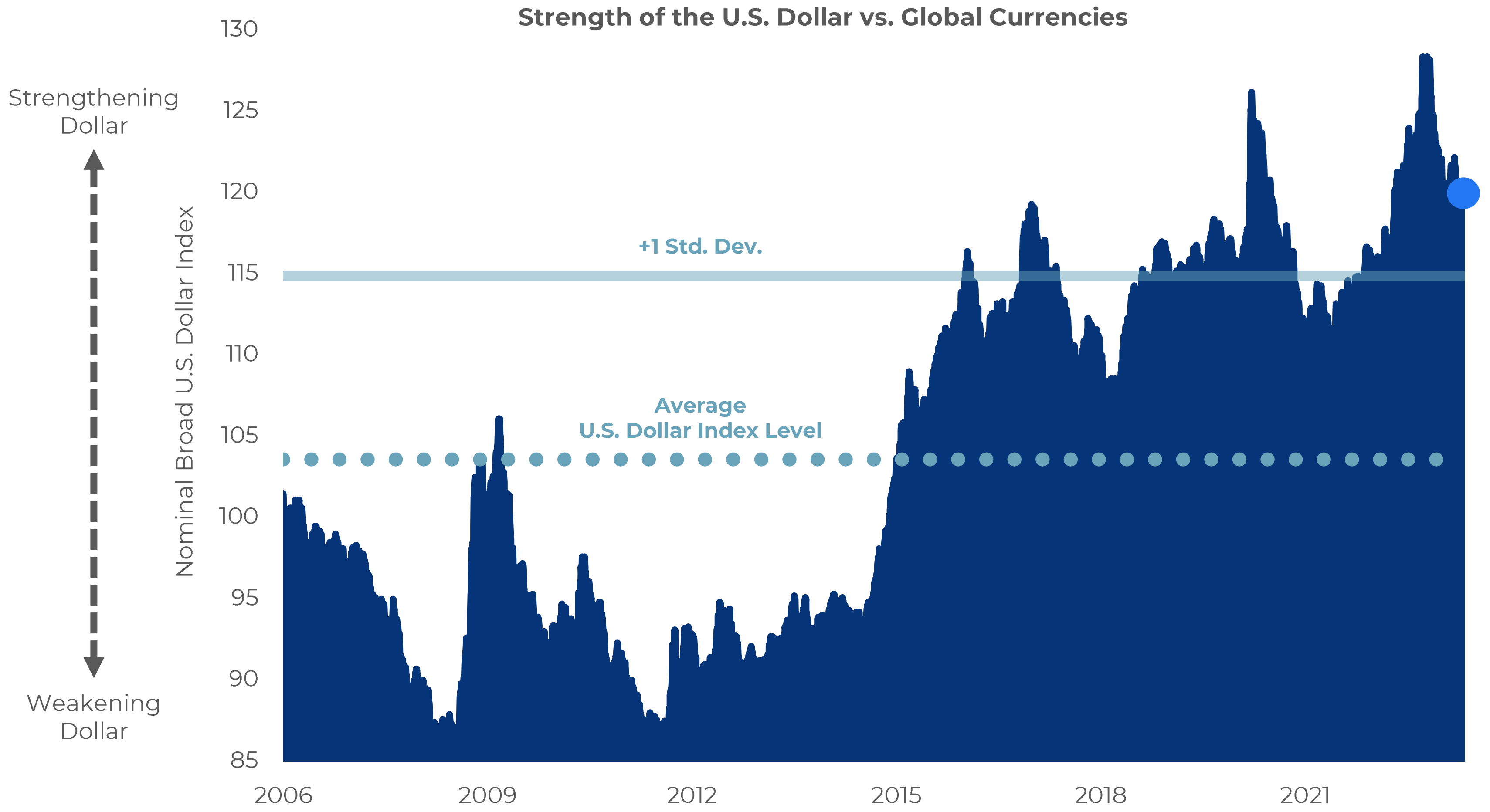
The Nominal Broad U.S. Dollar Index is used to measure the value of the U.S. dollar relative to other global currencies in terms of the competitiveness of our currency with international trade. The component foreign currencies that comprise the index are dynamic to reflect our most active global trading partners across 26 different countries/economies.

While the U.S. dollar has weakened in recent months compared to other currencies (that have strengthened), the relative decline has been a modest pullback of -6.9% from the peak in September ‘22. For historical perspective, while the U.S. dollar has been exceptionally strong for the last decade-plus, a balance in currency strength is truly optimal in the long-term. A strong—but not too strong—U.S. dollar promotes stability, reduces economic uncertainty for stakeholders, fosters international trade, and supports economic growth as the global reserve currency for all participants in capital markets, ranging across investors, businesses, and consumers.

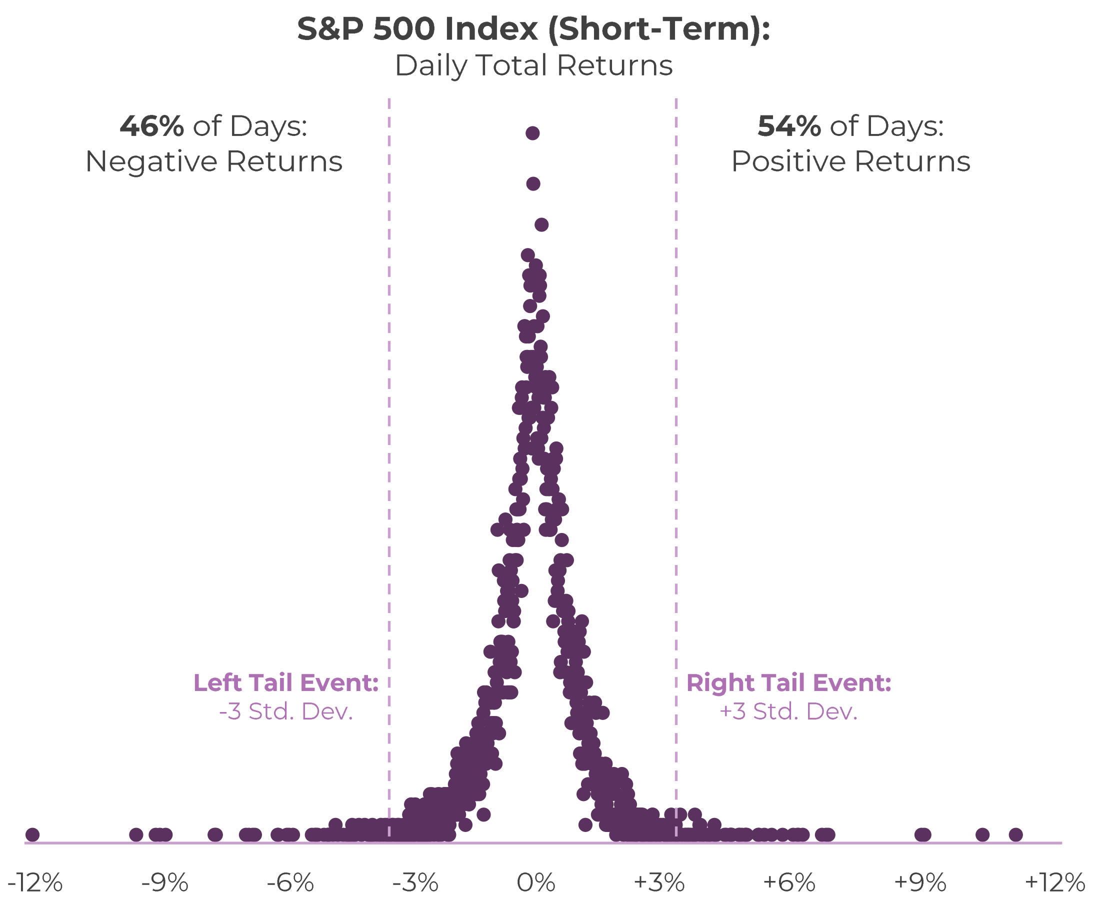


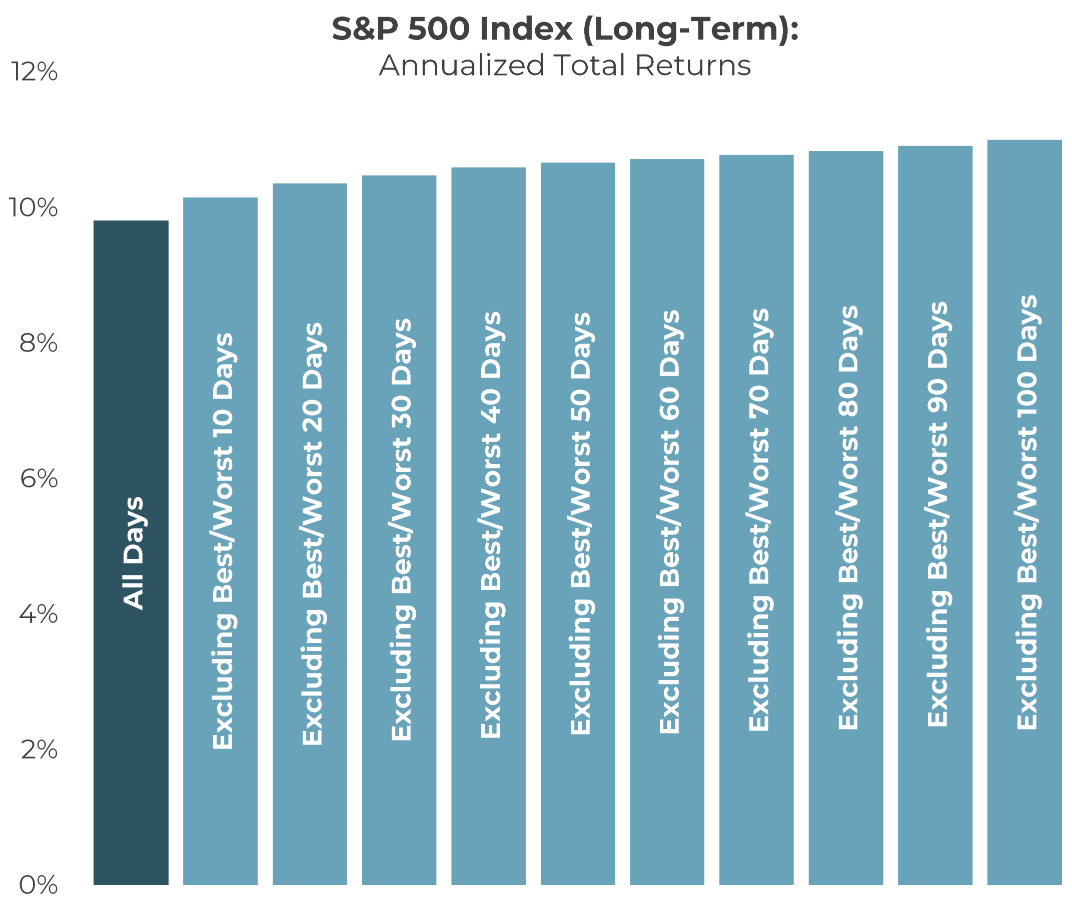
Sources: Bloomberg; CAPTRUST Research. Data represents January 2006 through April 2023.

Tuning Out the Noise of Volatility

- **April 2023**—On any given trading day, it is essentially a coin toss whether stocks will go up or down. Over the long-run, the S&P 500 Index has been negative for 46% of trading days and positive for 54% of days. Additionally, for 74% of all trading days, the daily return is between just -1.0% and +1.0%. However, what deters many investors are the extremely volatile days—the infrequent tail events (i.e., +/- 3 std. dev. moves) on the left-hand side of the chart below. Nevertheless, the data indicates that investors can potentially ignore the noise caused by volatility. If one had stayed the course with investing over this time period, the annualized total return would have been nearly 10%. Perhaps more importantly, however, is even if we exclude the best and worst most volatile days, the result is consistently the same outcome—positive double-digit long-term performance (right-hand side of the chart). Market timing is a game where the odds are not in your favor, especially given the unpredictability of these tail events, which represent just 1.6% of all trading days. To position your investment strategy to be both durable and successful, ignore the noise of volatility with big market swings.

TUNING OUT THE NOISE OF VOLATILITY
(S&P 500 Index Daily Total Returns—1990 to 2023)





Sources: Morningstar Direct; CAPTRUST Research. S&P 500 Index total returns (price changes + dividends) based on daily data from January 1, 1990, through April 24, 2023.
Past performance is not a guarantee of future results.

Rolling with the Long-Term Returns

- **April 2023**—Rolling returns provide a comprehensive measure of historical performance outcomes for investing in capital markets. As one's time horizon for investing extends, the probability of achieving a positive outcome increases significantly, as we illustrate below. Over the last 30+ years, the dispersion between the best and worst scenarios for a 1-year time horizon is exceptionally wide. However, as time elapses for subsequent scenarios, such as investors with 5-, 10-, or 15-year time horizons, the probability of achieving higher and positive rates of return increases materially. Additionally, while many investors often fixate on market timing with capital deployment, the entry point for buying risk assets becomes less relevant with a longer time horizon. Ultimately, for long-term investors, the range of potential performance outcomes narrows (highlighted by the 15-year rolling returns, marked in green), making it more likely to achieve positive results, positioning the odds in your favor for wealth creation.

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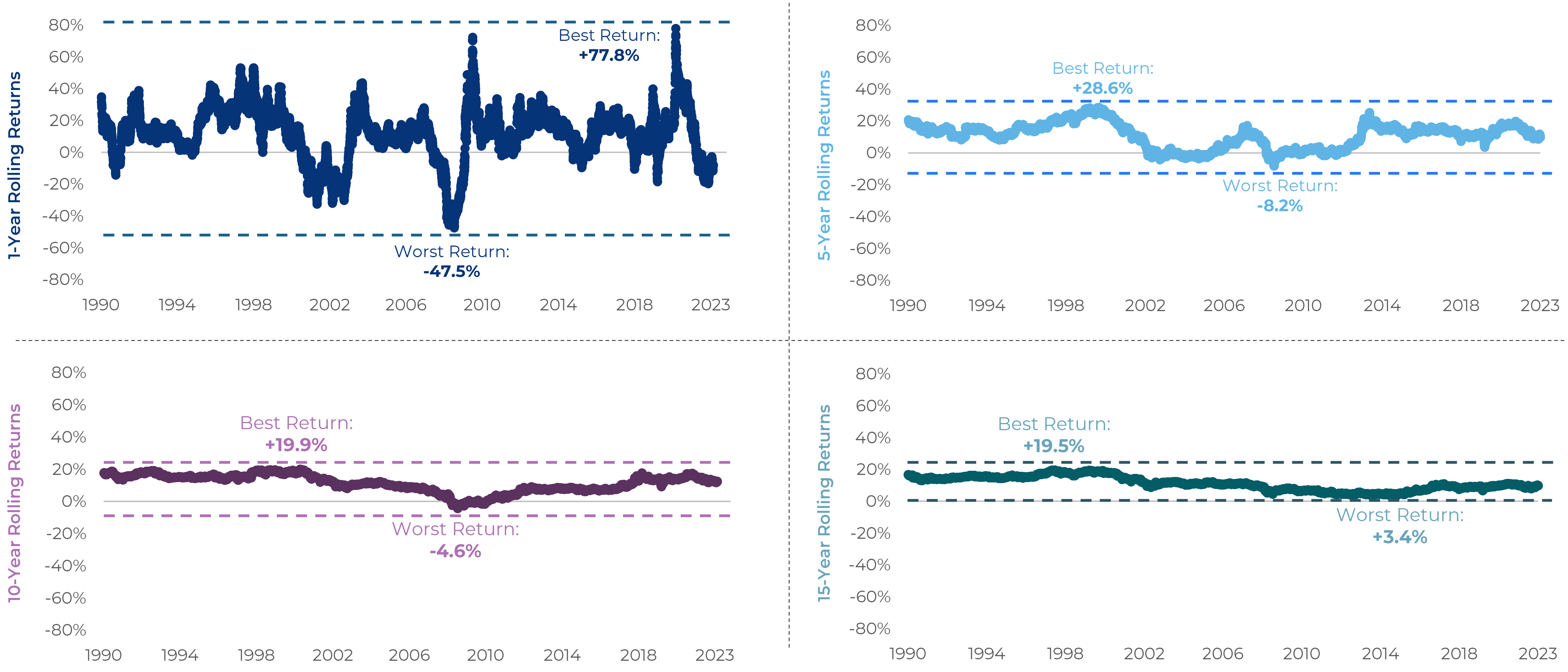
ROLLING WITH THE LONG-TERM RETURNS

(S&P 500 Index Daily Rolling Returns—1990 to 2023)



Sources: Morningstar Direct; CAPTRUST Research. S&P 500 Index total returns (price changes + dividends) based on trailing annualized performance for all daily ending time periods from January 1, 1990, through April 10, 2023. Past performance is not a guarantee of future results.

The Road to Recovery

- **March 2023**—When the price of a financial asset declines, the required gain to recover from the loss increases by a larger relative magnitude. For instance, a price decline of -25% requires a subsequent gain of +33% to break even. A more severe drop of -40%, however, requires a significantly greater return of +67% to fully recover. Below are the historical drawdown levels for the S&P 500 Index since 1970, ranging from -15% to -50% (+/- 2.5% for each level). We have also included the required gains and average time (measured in months) to fully recover from the drawdown. As the drawdown becomes deeper, the road to recovery not only gets longer, but also more volatile. While in retrospect it's easy to look back and say that one should have bought low at the market bottom, it's challenging to do so in reality, as we never know if the market will rebound—or continue to decline. Fortunately, the recovery rate for U.S. stocks has been 100%, so if history serves as a guide for the future, it's most prudent for equity investors to align their portfolio's asset allocation with their time horizon.

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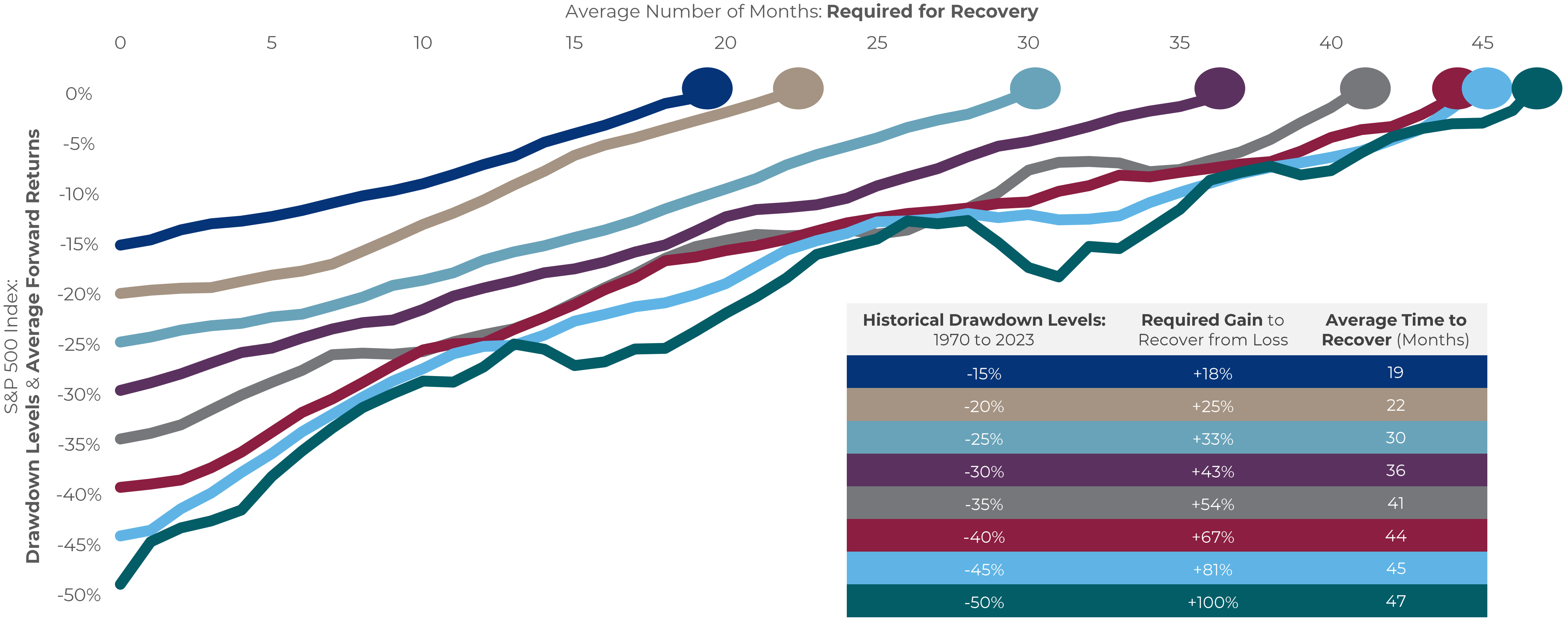
THE ROAD TO RECOVERY

(S&P 500 Index Drawdown Levels and Recovery Times—1970 to 2023)



Historical Drawdown Levels: 1970 to 2023	**Required Gain** to Recover from Loss	**Average Time to Recover** (Months)
-15%	+18%	19
-20%	+25%	22
-25%	+33%	30
-30%	+43%	36
-35%	+54%	41
-40%	+67%	44
-45%	+81%	45
-50%	+100%	47

Sources: Morningstar Direct; CAPTRUST Research. S&P 500 Index price returns based on daily data for historical drawdowns from January 1970 through March 2023. Drawdown ranges are assessed within bands of +/- 2.5% from outlined levels above. S&P 500 Index cumulative performance based on forward monthly total returns (price changes + dividends) from drawdown range bands of +/- 2.5%. Total returns are used for forward performance to simulate a long-term investor's portfolio. Past performance is not a guarantee of future results. Data as of 3.27.2023.

Decade-by-Decade Stock Market Returns

- **March 2023**—Since 1990, U.S. stocks have averaged +9.8% per year, but that performance path has exhibited highs and lows. The 1990s and 2010s witnessed strong double-digit returns. However, for historical context, we should not forget the "lost decade" of the 2000s, during which stocks lost -9.1% cumulatively (-0.9% annually) over ten years. The volatility of stock market returns underscores the need for a discussion about the sequence of return risk. The order of returns can significantly impact overall portfolio performance, especially when taking cash flows into account. Although future capital market performance is always uncertain, there are levers investors can pull to better control their financial picture. These include diversifying the portfolio's asset allocation to align with one's time horizon, and adjusting the withdrawal rate from the portfolio during periods of market volatility. Despite headwinds posed by a global pandemic, persistent inflation pressures, drastic shifts in monetary policy, geopolitical risks, and bank failures, among others—U.S. stocks have still averaged +8.0% per year since 2020.

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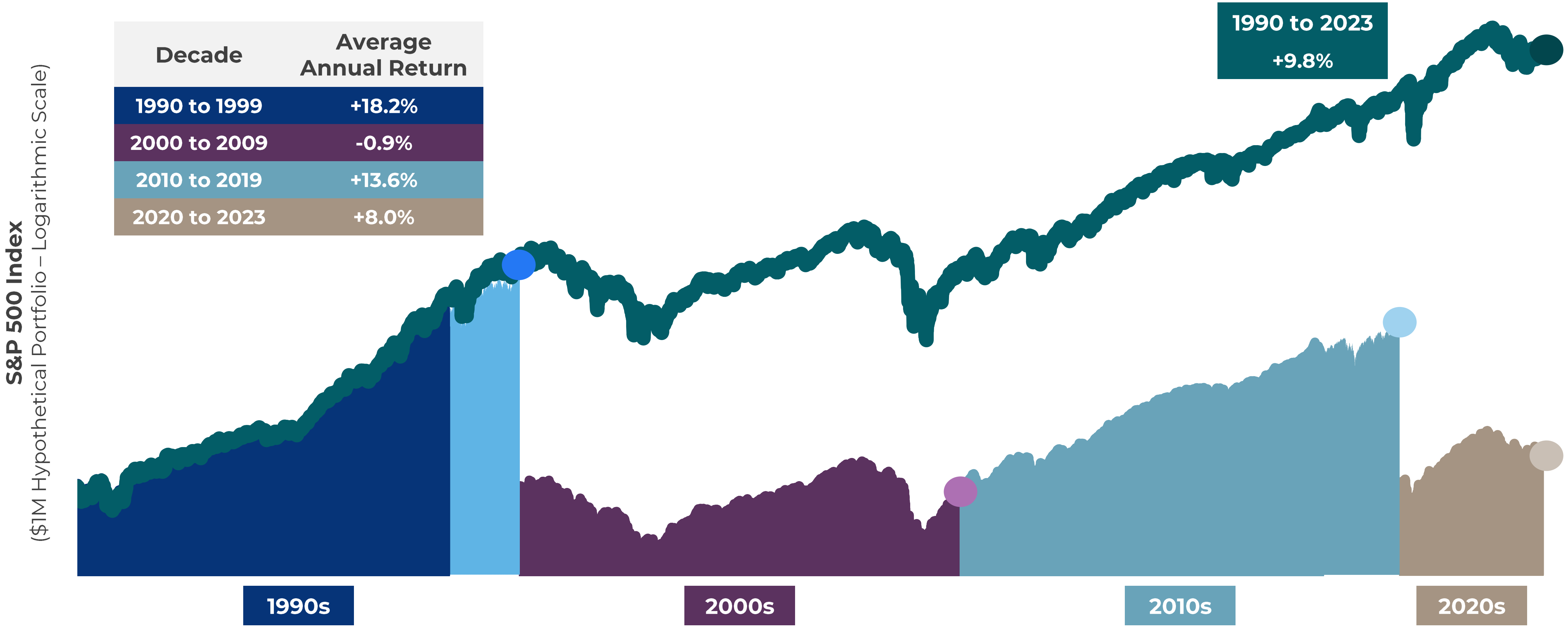
DECADE-BY-DECADE STOCK MARKET RETURNS

(S&P 500 Index—1990 to 2023)



Decade	Average Annual Return
1990 to 1999	+18.2%
2000 to 2009	-0.9%
2010 to 2019	+13.6%
2020 to 2023	+8.0%

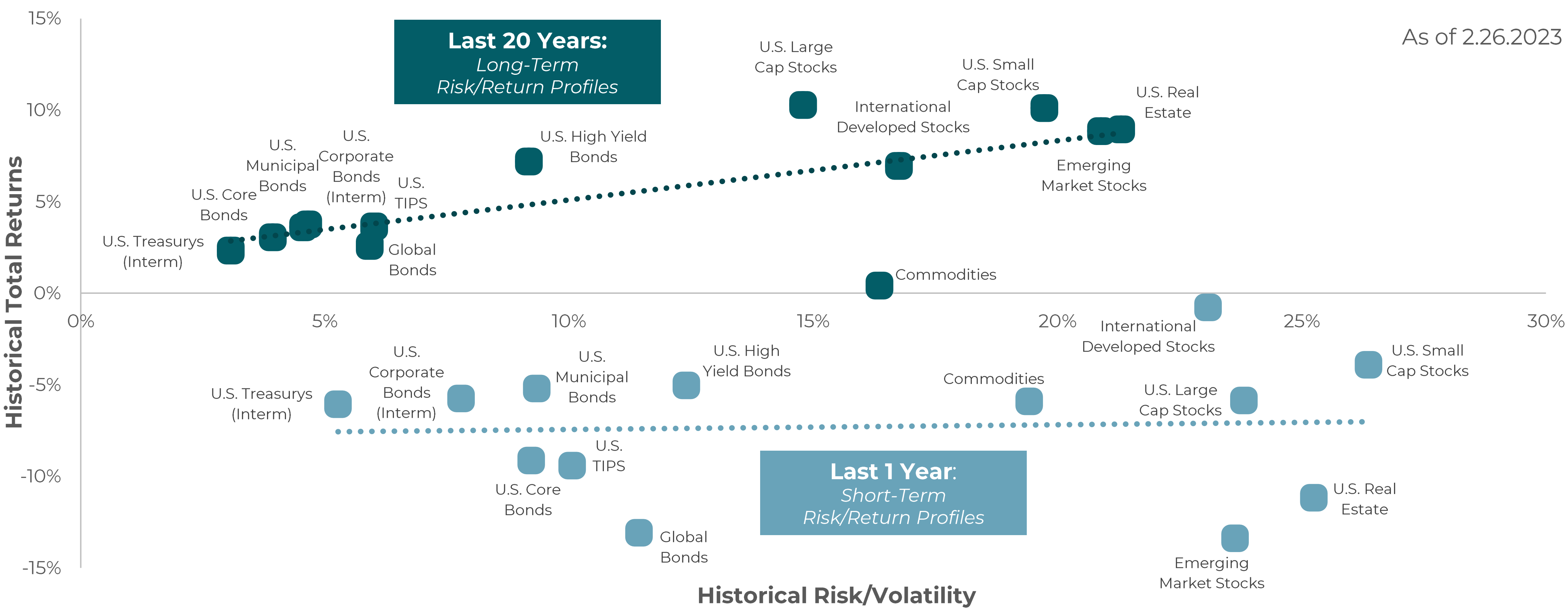
Sources: Morningstar Direct; CAPTRUST Research. S&P 500 Index total returns (price changes + dividends) represent daily performance with a starting (hypothetical) portfolio value of $1,000,000. Each individual decade time period represents a starting value of $1,000,000. Each individual decade time period, and the full time period from 1990 through 2023, are using a logarithmic scale to illustrate compounding. Data from 1.1.1990 through 3.14.2023.

Navigating Investment Risks and Returns

- **February 2023**—The efficient frontier guides investors to properly assess the tradeoffs between risk and return for investment opportunities. As we illustrate below, the past year (represented by blue dots) has been an anomaly for capital markets, not only with returns across the board being negative, but the volatility profiles being elevated for every single asset class compared to long-term historical results. Fortunately, the last 20 years (represented by green dots) have showcased long-term stability for public markets, with all asset classes demonstrating a better balance between risk and return. Moreover, in today's environment, with the risk-free rate (U.S. Treasury bills) at 5%, which is the highest since 2007, the premium that investors demand (and earn) for allocating capital to risky assets is subsequently increased. This increase in premium ideally allows for more prudent risk-taking by investors in the years ahead.

NAVIGATING INVESTMENT RISKS AND RETURNS

(Efficient Frontier for Individual Asset Classes—Last 20 Years vs. 1 Year)



Sources: Morningstar Direct; CAPTRUST Research. U.S. Large Cap Stocks (S&P 500 TR USD); U.S. Small Cap Stocks (Russell 2000 TR USD); International Developed Stocks (MSCI EAFE NR USD); Emerging Market Stocks (MSCI EM NR USD); U.S. Core Bonds (Bloomberg U.S. Agg Bond TR USD); Global Bonds (Bloomberg Global Aggregate TR USD); U.S. Treasurys (Interm) (Bloomberg Intermediate Treasury TR USD); U.S. Corporate Bonds (Interm) (Bloomberg Interm Corp TR USD); U.S. Municipal Bonds (Bloomberg Municipal TR USD); High Yield U.S. Corporate Bonds (Bloomberg High Yield Corporate TR USD); U.S. TIPS (Bloomberg U.S. Treasury U.S. TIPS TR USD); U.S. Real Estate (DJ U.S. Real Estate TR USD); Commodities (Bloomberg Commodity TR USD). Market index total returns (price changes + dividends) represent daily performance and volatility (average standard deviation). Data from 2.27.2003 through 2.26.2023.

Real vs. Nominal Investment Returns

- **February 2023**—Inflation has caused significant stress for both consumers and corporations in the past two years. And for investors, despite the market rally to start the year and inflation easing (directionally), the results over the last year have not only been negative nominal returns (across nearly all investable asset classes in public markets), but deeply negative real, inflation-adjusted returns. Looking through a wider lens, however, investments in capital markets have proven to be a formidable defense against continuous U.S. Dollar depreciation and the gradual loss of purchasing power for goods and services. Over the last 30 years inflation pressures have averaged 2.5% annually (and 6.5% year-over-year for the last 2 years), while every single asset class has outpaced the Consumer Price Index on a real basis (as we illustrate below). The lone exception is, not surprisingly, cash, which highlights the long-term opportunity cost of not investing, and conversely, the wealth creation potential of capital markets.

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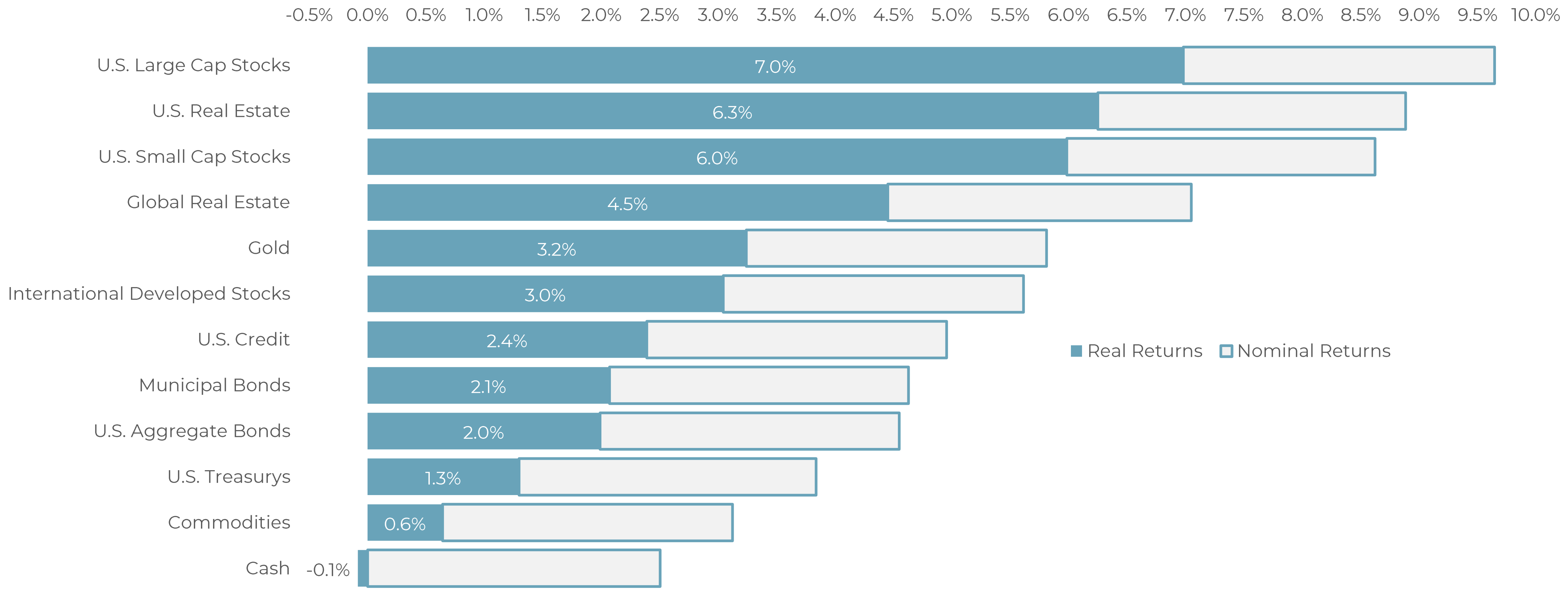
REAL VS. NOMINAL INVESTMENT RETURNS

(Inflation-Adjusted Returns by Asset Class—Last 30 Years)



Sources: Morningstar Direct; Federal Reserve Economic Data; CAPTRUST Research. U.S. Large Cap Stocks (S&P 500 TR USD); U.S. Real Estate (DJ U.S. Real Estate TR USD); U.S. Small Cap Stocks (Russell 2000 TR USD); Global Real Estate (DJ Global World Real Estate TR USD); Gold (LBMA Gold Price AM USD); International Developed Stocks (MSCI EAFE NR USD); U.S. Credit (Intermediate) (Bloomberg U.S. Interm Credit TR USD); U.S. Municipal Bonds (Bloomberg Municipal TR USD); U.S. Aggregate Bond Index (Bloomberg U.S. Agg Bond TR USD); U.S. Treasurys (Intermediate) (Bloomberg Intermediate Treasury TR USD); Commodities (Bloomberg Commodity TR USD); Cash (Bloomberg U.S. Treasury Bills TR USD). Real, inflation-adjusted, returns are monthly total returns (price changes + dividends) minus the Consumer Price Index month-over-month percentage changes as a measure of inflation. Data from 2.1.1993 through 1.31.2023.

Diversification: Standing the Test of Time

- **January 2023**—The long-term performance for a balanced portfolio of 50% stocks and 50% bonds has averaged (an impressive) 9.8% per year. However, both asset classes suffered from double-digit drawdowns in 2022, resulting in the 50/50 portfolio recording negative performance for only the 7th time in nearly the last 50 years. But perhaps even more important is that consecutive negative calendar year returns (shaded below in red) are quite rare for a balanced portfolio, with performance historically rebounding 5 of the 6 following calendar years (shaded in green). This January started the year off strong with a balanced portfolio returning 4.7% to investors. While we are anticipating an exceedingly wide range of outcomes for 2023—as there are more headwinds than tailwinds for capital markets—bonds should provide a level diversification (that they failed to do last year) in the event that risk assets fall out of favor.

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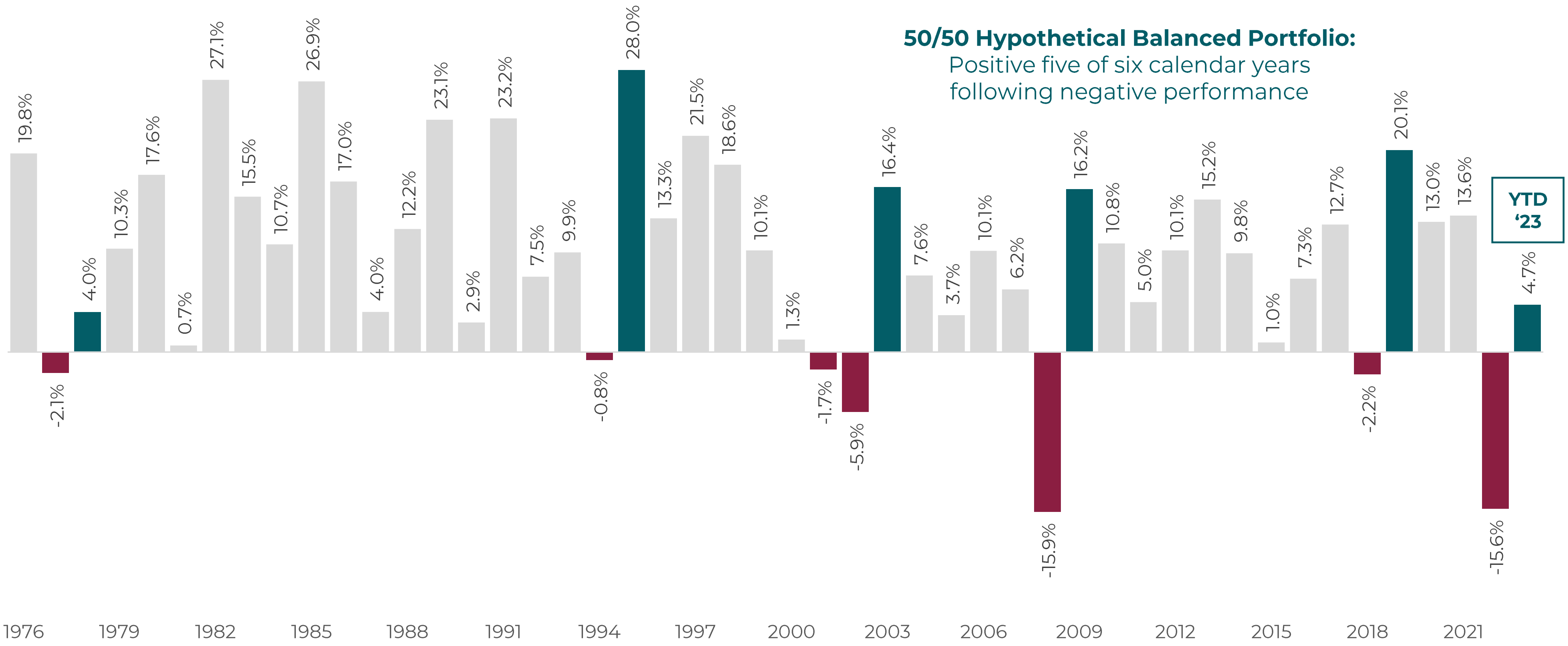
DIVERSIFICATION: STANDING THE TEST OF TIME

(Consecutive Negative Returns for a Balanced Portfolio are Rare—1976 to 2023)



Sources: Morningstar Direct; CAPTRUST Research. Balanced portfolio is a hypothetical model comprised of 50% stocks (S&P 500 Index) and 50% bonds (Bloomberg U.S. Aggregate Bond Index) based on calendar year total returns (price changes + dividends). Investors cannot invest directly in an index. Data as of 1.31.2023.

Not All Cash Accounts Are the Same

- **January 2023**—At the beginning of 2022, it didn't make much of a difference whether you held your cash in a checking account or in a short-dated U.S. Treasury. However, after one year and 4.25% of Fed rate hikes, the choice is important as investment instruments that price off the front end of the yield curve are offering the highest rates in 20+ years. Of course, there are tradeoffs to holding cash vs. investing cash, which we outline below.

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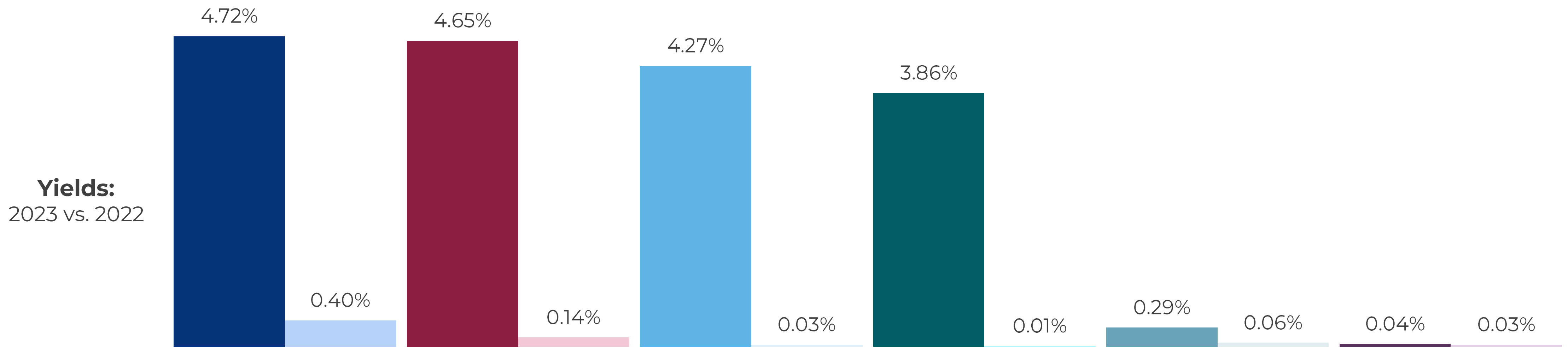
NOT ALL CASH ACCOUNTS ARE THE SAME

(Maximize Return Potential for Short-Term Capital—2023 vs. 2022)



Account Types	U.S. Treasury (Direct) (1-Year Maturity)	Certificates of Deposit (1-Year Maturity)	Prime Money Market Funds	Short-Term U.S. Treasurys ETF	Money Market Accounts	Checking Accounts
Descriptions	Debt securities issued by the U.S. government with fixed maturities	Individual commercial notes issued by banks with fixed maturities	Collection of financial instruments with very short maturities via a mutual fund structure	Collection of short-term U.S. government debt securities via the ETF structure	FDIC-insured savings account with modest yields and higher minimums	FDIC-insured checking account with very limited yields and lower minimums
Time Horizon Considerations	May receive less than face value (price movements) if sold on secondary market prior to maturity date if interest rates rise	May receive less than face value (due to penalty) if redeemed prior to maturity	Typically, all performance is derived from interest income; daily liquid without penalties, but is not FDIC-insured	May receive less than face value (price movements) if sold on secondary market if interest rates rise	All performance is derived from interest income (no price movements); daily liquid without penalties and FDIC-insured	All performance is derived from interest income (no price movements); daily liquid without penalties and FDIC-insured

Sources: Morningstar Direct; U.S. Department of the Treasury; Charles Schwab; Federal Deposit Insurance Corporation; CAPTRUST Research. Yields depicted include comparisons from January 2022 vs. January 2023; The standard FDIC insurance amount is $250,000 per depositor, per insured bank, for each account ownership category.