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PIMCO

Behavioral Guidance During Market Volatility

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Behavioral Guidance During Market Volatility

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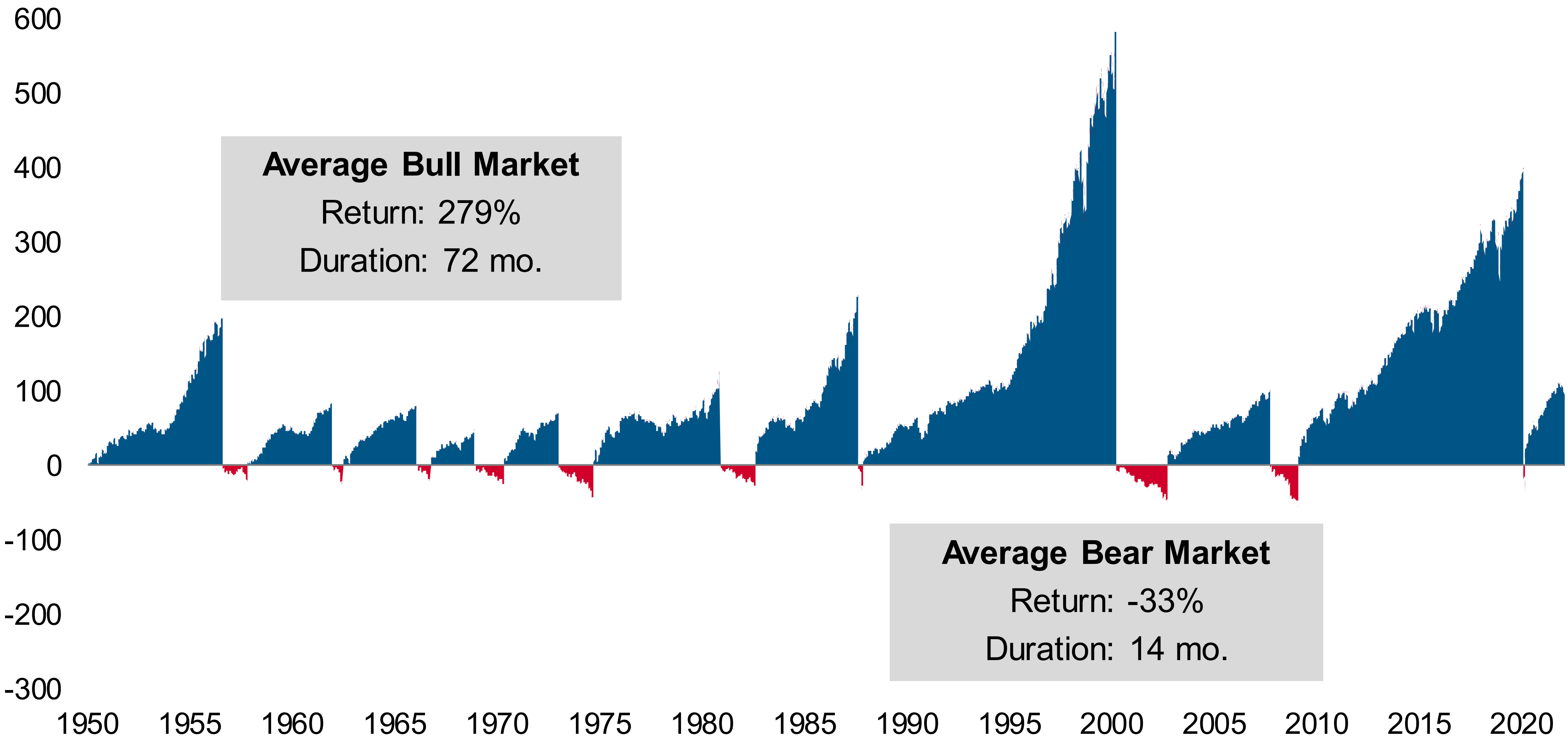
Agenda

Market landscape

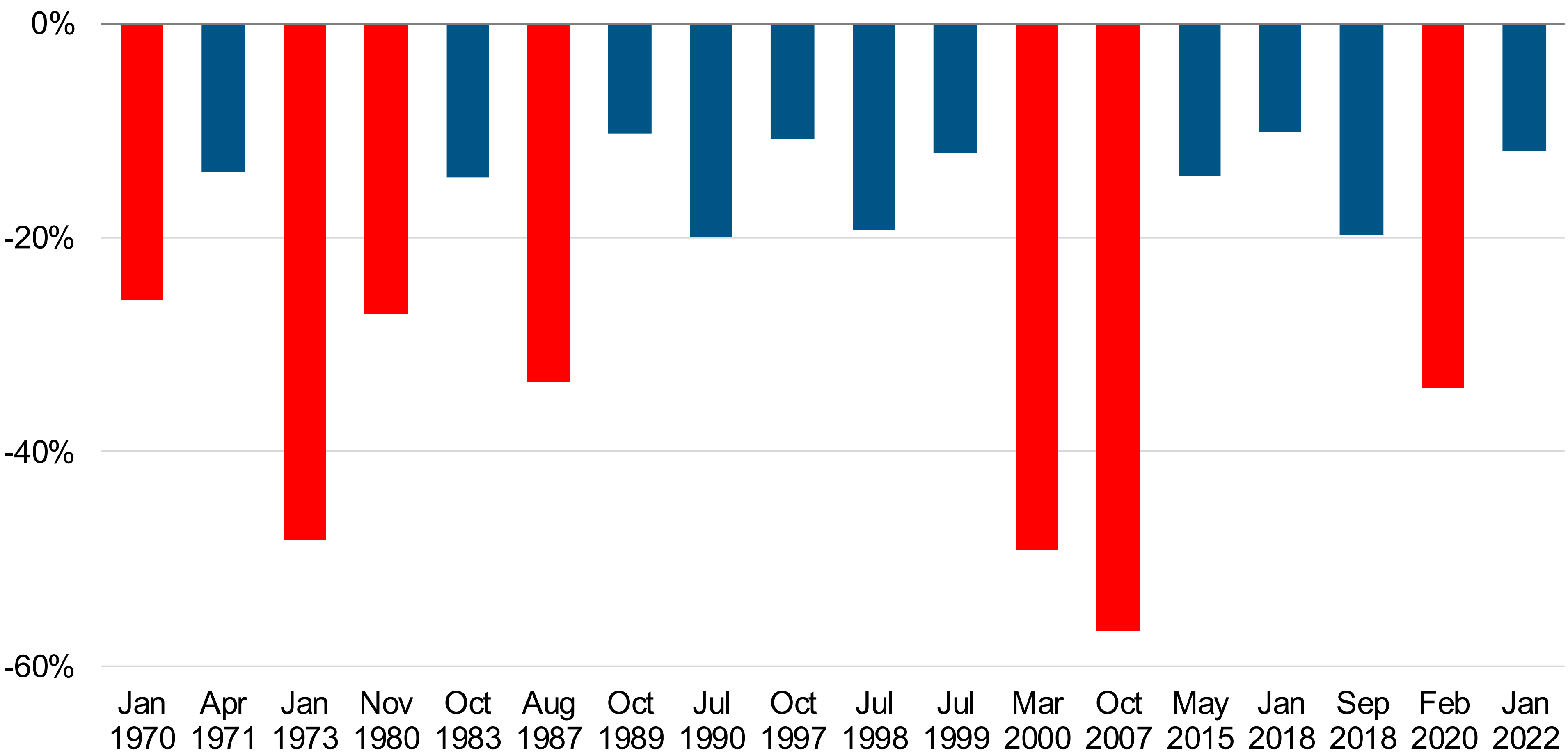
Cumulative price return of each U.S. bull and bear market (%)



For illustrative purposes only
As of 28 February 2022; Source: Bloomberg
Past performance is not a guarantee or a reliable indicator of future results.
The Q1 bear market is not included in the "average bear market" calculation. In all other periods, bear markets are peak-to-trough price declines of 20% or more in the S&P 500. Bull markets are all other periods in the S&P 500. Returns shown on a logarithmic scale. Returns are in USD. Total return is calculated by using the total return for each bull or bear period and the duration for each period to represent an average cumulative total return for each market.
Refer to Appendix for additional chart, index and risk information.

Market corrections

Since 1970, only seven market corrections have become bear markets



As of February 2022

Source: Bloomberg

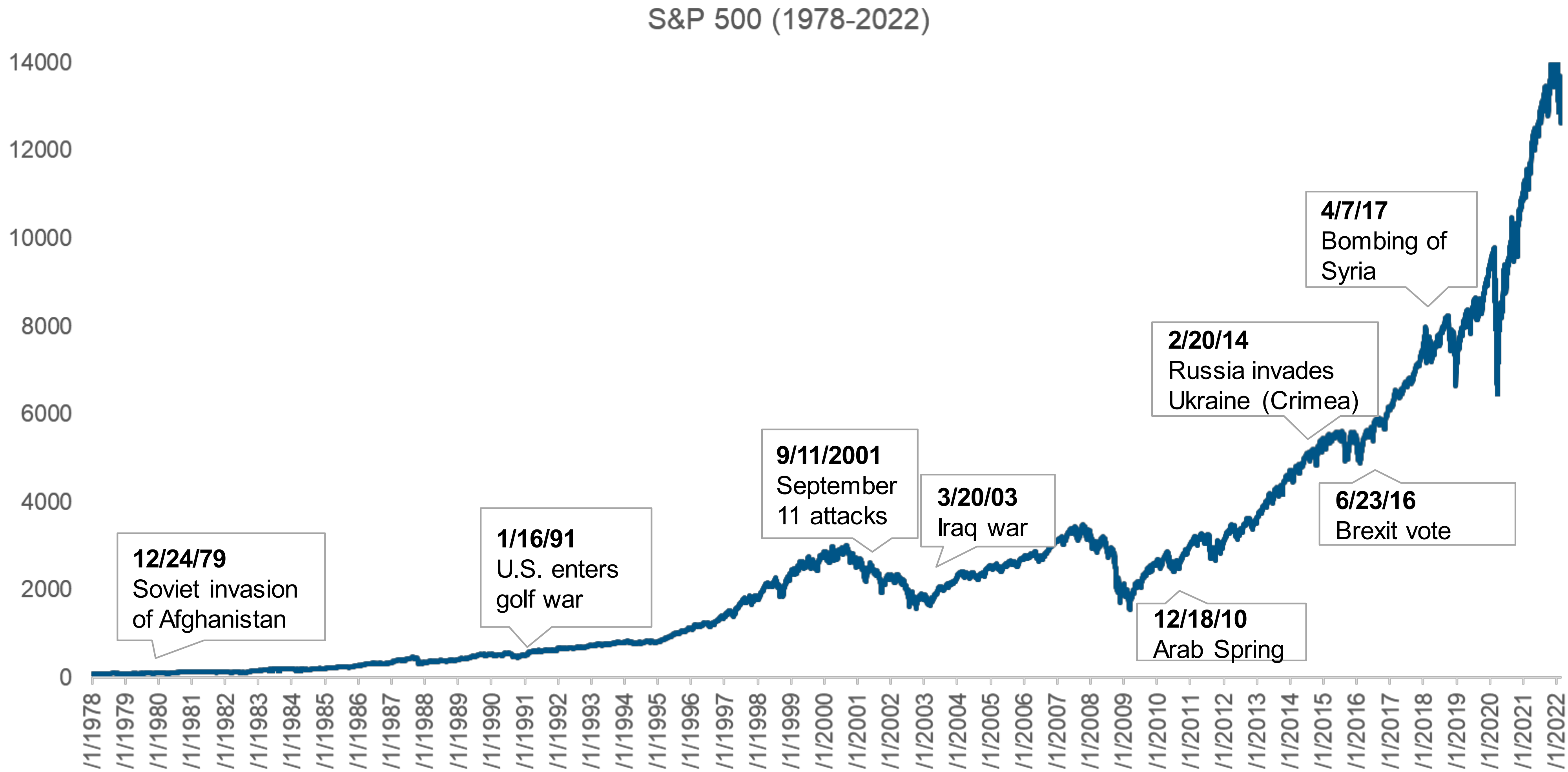
Each period listed represents the beginning month/year of either a market correction or a bear market. The general definition of a market correction is a market decline that is more than 10%, but less than 20%. A bear market is usually defined as a decline of 20% or greater. The market is represented by daily price returns of the S&P 500 Index.

Refer to Appendix for additional chart, index and risk information.

Past performance is not indicative of future results.

Market reactions to geopolitical shocks

Geopolitical sell-offs are typically short-lived



For illustrative purposes only
As of 28 February 2022
Source: Bloomberg
Refer to Appendix for additional chart, index and risk information.
Past performance is not indicative of future results.

Market reactions to geopolitical shocks

S&P 500 Index

Event	Starting date	Drawdown from event date	Drawdown length (days)	1 month forward	3 months forward	12 months forward
Bombing of Syria	4/7/17	-1.19%	6	1.86%	2.74%	12.62%
Brexit vote	6/23/16	-4.07%	4	4.44%	4.95%	19.20%
Russia invades Ukraine (Crimea)	2/20/14	0.00%	1	1.93%	3.61%	17.06%
Arab Spring	12/18/10	0.00%	0	4.10%	2.89%	0.10%
Iraq War	3/20/03	-2.93%	11	2.35%	14.28%	29.18%
September 11 attacks	9/11/01	-11.56%	10	-0.93%	4.71%	-15.50%
U.S enters Gulf War	1/16/91	0.00%	0	18.07%	22.47%	38.44%
Soviet invasion of Afghanistan	12/24/79	-2.20%	10	5.44%	-4.50%	31.41%
Mean				**3.23%**	**4.16%**	**18.13%**

For illustrative purposes only
Source: Bloomberg
Refer to Appendix for additional index and risk information.
Past performance is not indicative of future results.

Market reactions to geopolitical shocks

Bloomberg U.S. Aggregate Index

Event	Starting date	Performance during initial equity drawdown	1 month forward	3 months forward	12 months forward
Bombing of Syria	4/7/17	-0.16%	0.22%	0.85%	0.98%
Brexit vote	6/23/16	-0.19%	1.08%	1.24%	1.32%
Russia invades Ukraine (Crimea)	2/20/14	-0.11%	-0.06%	1.88%	5.07%
Arab Spring	12/18/10	-0.54%	0.50%	1.40%	8.12%
Iraq War	3/20/03	-0.45%	0.75%	3.85%	6.52%
September 11 attacks	9/11/01	0.00%	1.50%	0.47%	8.61%
U.S enters Gulf War	1/16/91	-0.03%	2.89%	3.76%	15.19%
Soviet invasion of Afghanistan	12/24/79	0.00%	0.27%	-8.54%	0.24%
Mean			**0.62%**	**1.32%**	**5.79%**

For illustrative purposes only
Source: Bloomberg
Refer to Appendix for additional index and risk information.
Past performance is not indicative of future results.

Introduction to behavioral finance

Defining behavioral finance

Conventional finance (classical economics) generally ignores how real people make decisions and that people make a difference

Investors do not always process information correctly and therefore can infer incorrect probability distributions about future rates of return

Even given the correct probability distributions, they often make inconsistent or systematically suboptimal decisions

As of 28 February 2021; Source: PIMCO

Refer to Appendix for additional investment strategy and risk information.

Introduction to behavioral finance

The fight for control over decisions

System 1:
The intuitive system

Uncontrolled
Effortless
Associative
Fast
Unconscious
Skilled

System 2:
The reflective system

Controlled
Effortful
Deductive
Slow
Self-aware
Rule-following

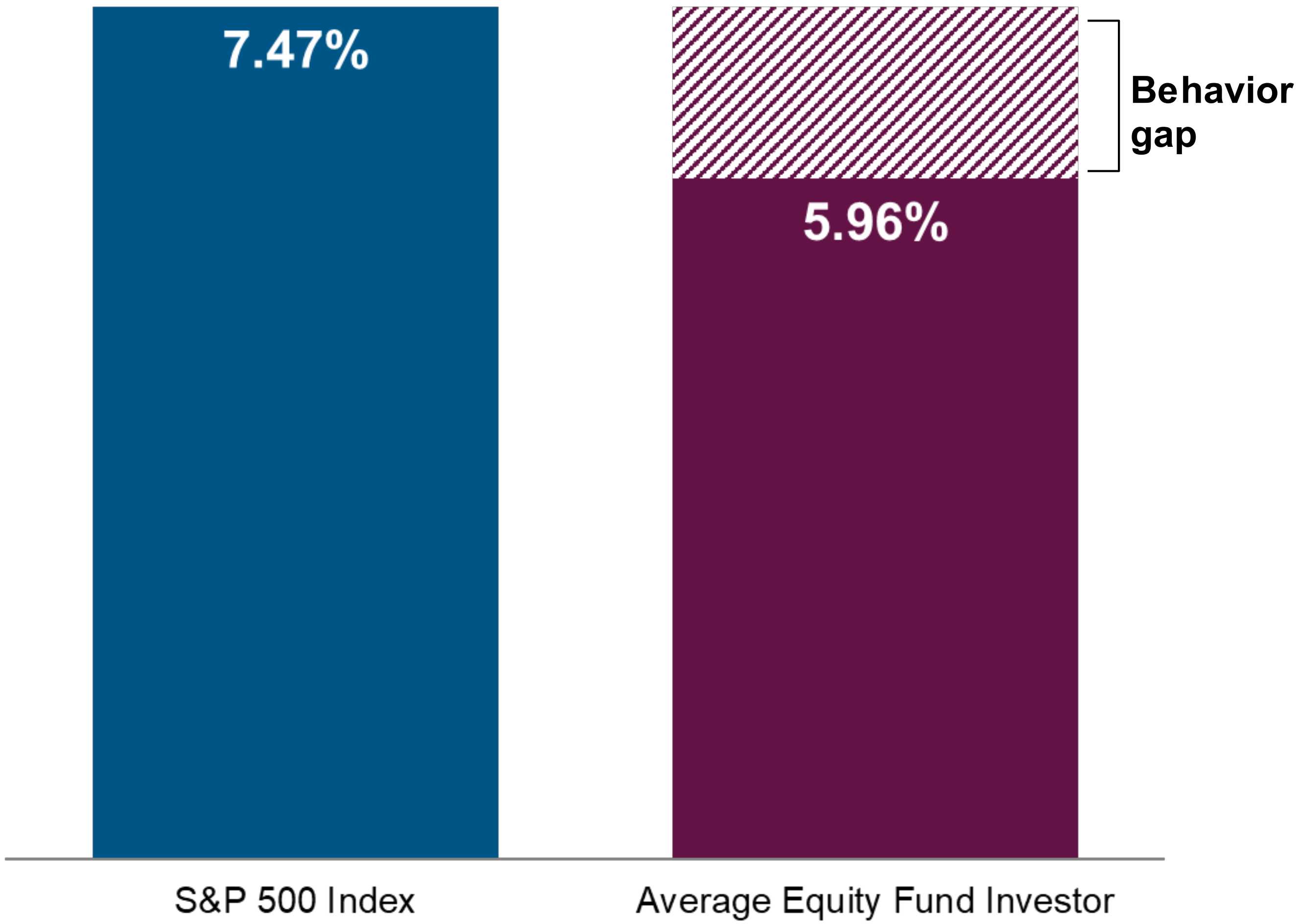
Source: *Thinking Fast and Slow*, Daniel Kahneman

Introduction to behavioral finance

The cost of bad behaviors

- Investment results are more dependent on investor behavior than on investment performance
- Investors are generally their own worst enemy
- Financial advisors can help provide behavioral coaching to investors

Market return vs. average investor return (2000-2020)



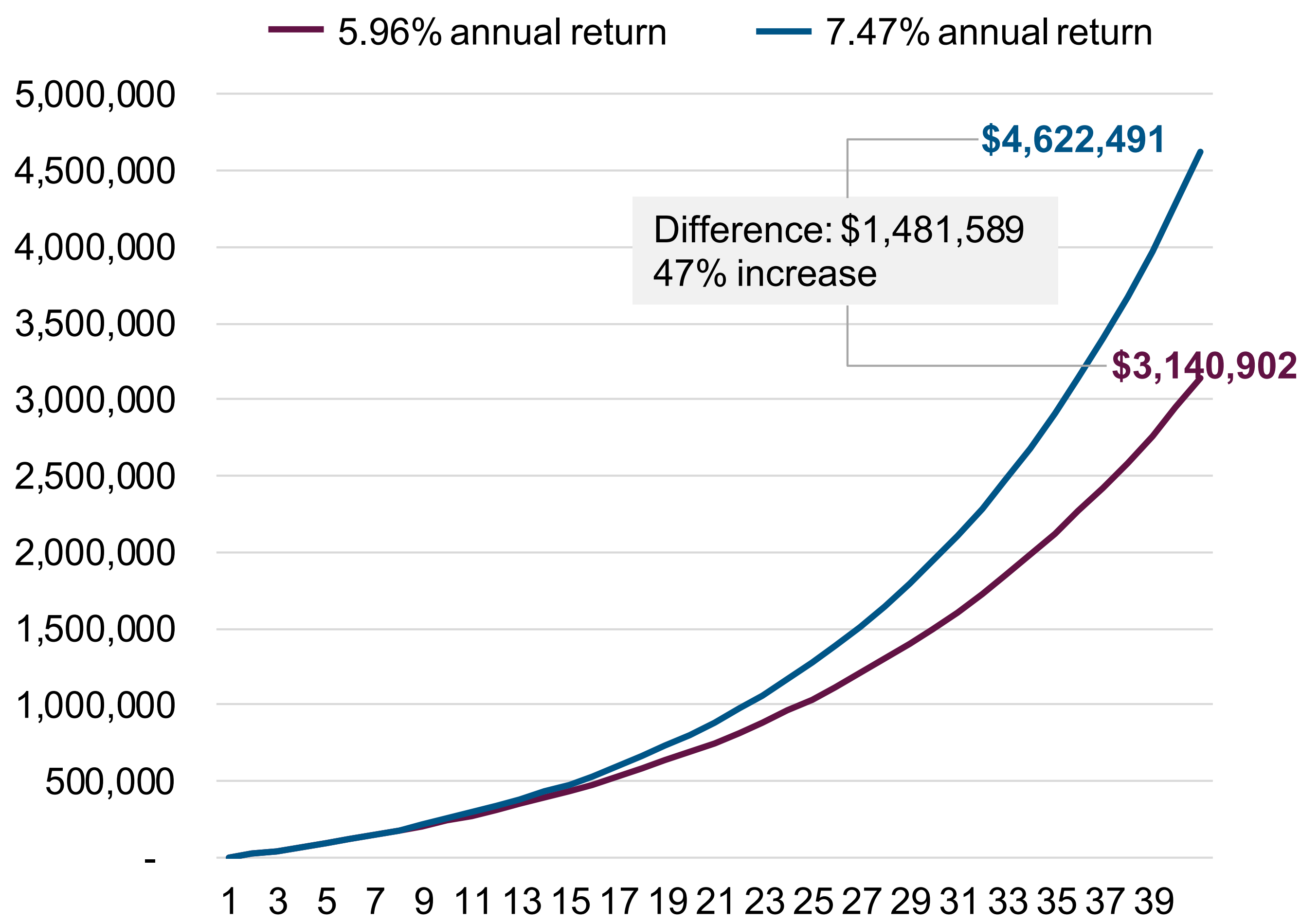
Period ended 31 December 2020
Source: Quantitative Analysis of Investor Behavior, 2021, DALBAR, Inc., dalbar.com.
Past performance is not indicative of future results.

Introduction to behavioral finance

The impact of bad behaviors

Assumptions

- Annual contribution: $20,500
- 40 years
- Investor return: 5.96%
- Investment return: 7.47%



Source: PIMCO

For illustrative purposes only. Charts are provided for illustrative purposes and are not indicative of the past or future performance of any PIMCO product.

Refer to Appendix for additional investment strategy and risk information.

Past performance is not indicative of future results.

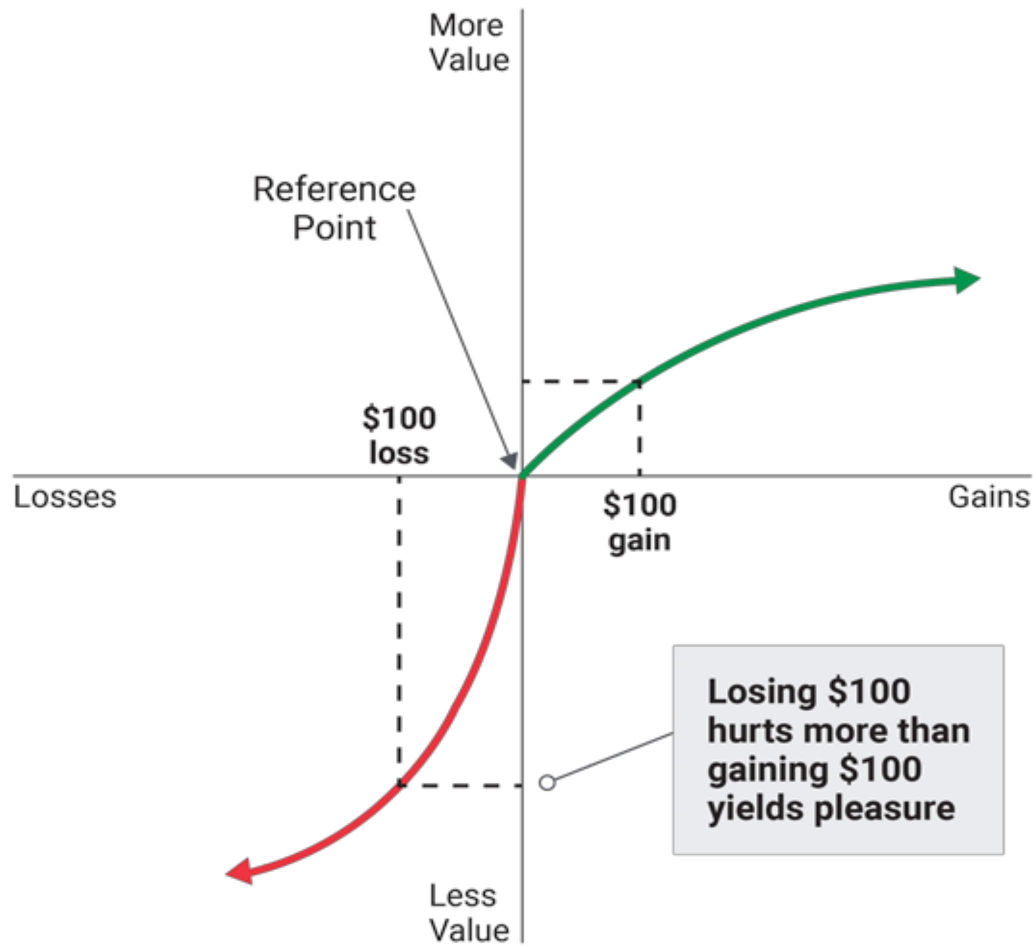
Common biases

Cognitive	Emotional
• Anchoring • Confirmation • Framing • Mental accounting	• Loss aversion • Recency • Overconfidence • Status quo

Source: PIMCO

Loss aversion

- The pain of losses is twice as painful as the pleasure of gains
- Prevents investors from unloading unprofitable investments (also known as "get-even-itis")
- Causes investors to take additional risk to avoid pain from losses



Source: Daniel Kahneman and Amos Tversky (1979) "Prospect Theory: An Analysis of Decision under Risk," Econometrica, XLVII (1 979), 263-291. **For illustrative purposes only.**

Loss aversion

Examples

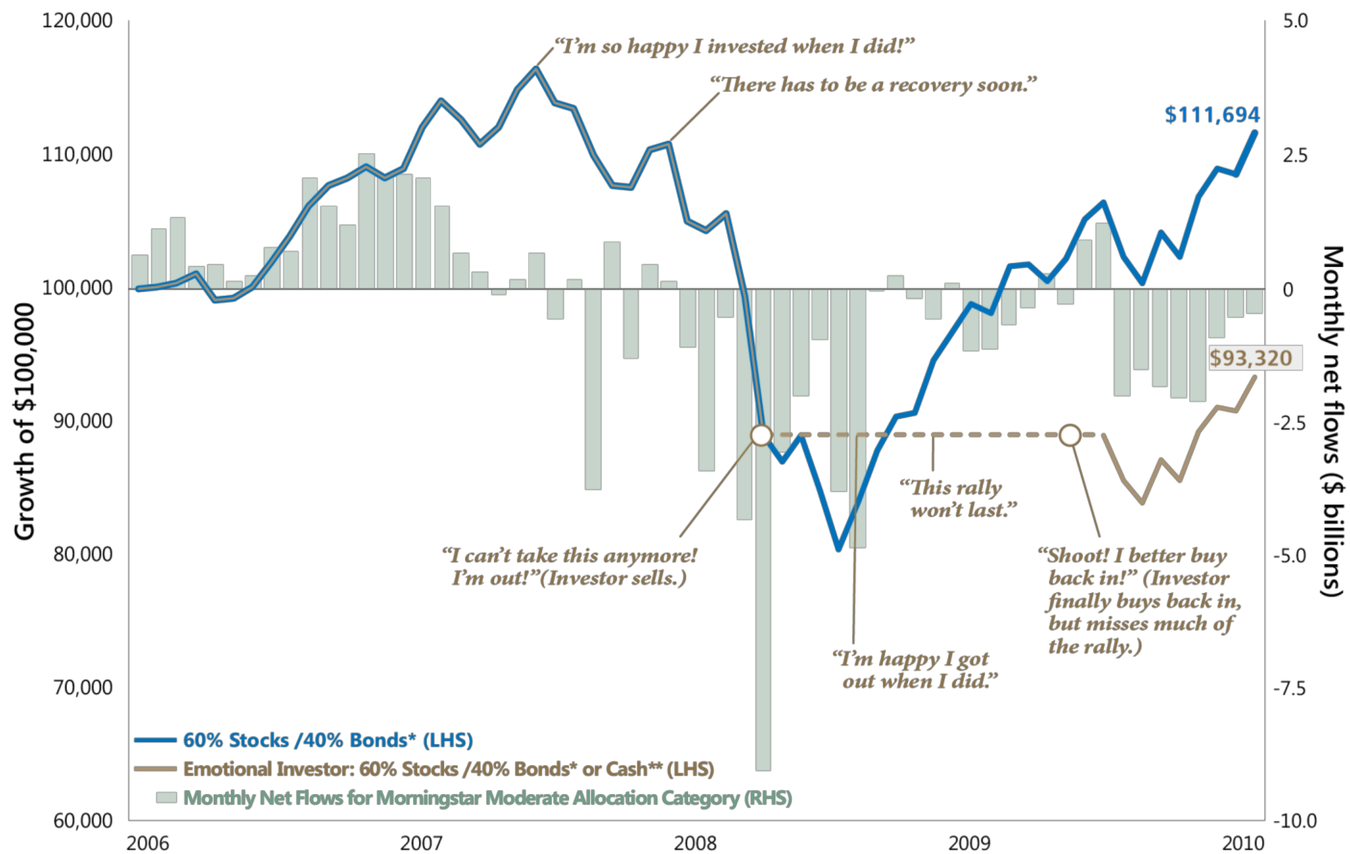
- Investing only in perceived safe investments with low returns, reducing future purchasing power
- Holding a stock below purchase price solely to avoid taking a loss
- The unwillingness to sell a home for less than it was purchased for
- Focusing only on positions that are underwater while ignoring total portfolio holdings
- Holding the belief that an investment loss doesn't exist until it's sold
- Selling winning positions instead of losing investments to avoid accepting defeat

Source: PIMCO

Recency bias – trend chasing

Investor's behavior and thoughts during a volatile market (2006–2010)

- Investors often look at recent returns when making important financial decisions
- It's easier to emotionally validate a choice when we follow a trend
- Causes investors to chase performance, buy high, sell low



January 2006 to December 2010. Source: Morningstar, Bloomberg, PIMCO

Hypothetical example for illustrative purposes only. Not indicative of the past or future performance of any PIMCO product.

* Stocks are represented by S&P 500 Index. Bonds are represented by Bloomberg U.S. Aggregate Index. It is not possible to invest in an unmanaged index.

** These results are based on hypothetical modeling and are intended for illustrative purposes only. Emotional Investor is assumed to move to cash on 10/31/2008 and back to 60% Stocks /40% Bonds on 30 April 2010.

Refer to Appendix for additional hypothetical example, index, investment strategy and risk information.

Best practices to mitigate behavioral biases

1	Identify behavioral risk framework
2	Create an investment policy statement
3	Enroll in automated investment programs
4	Diversify to reduce portfolio volatility
5	Consider asset bucketing
6	Encourage a long-term perspective
7	Rebalance portfolios regularly

Source: PIMCO

Defining risk effectively

Risk is abstract

Risks are often expressed in the form of probabilities.
But for many people, probabilities are less important than **consequences** and **exposure**.

Source: Investments & Wealth Institute RMA Curriculum textbook, 6th Edition, 2017

Strategy
Identify behavioral risk

Discovery questions

- How has the recent volatility affected you? Has it changed any of your personal goals?
- Are you comfortable with your current allocation and holdings?
  What specific changes are you considering?
- How do you define risk? How do you measure it? How do you try to manage it?
- What risk is causing you the greatest concern today?
- If you received new funds today, how would you invest them?
- What's more important to you now: regaining the value recently lost, or protecting the capital you have today?
- What action would you take if your portfolio increased 10% next month?
  Declined 10% next month?
- What would be more disturbing: holding securities that continue to decline in value, or selling securities that eventually rise?
- Which would you prefer: a portfolio with lower volatility and lower returns, or one with higher returns and greater volatility?

Source: PIMCO

Create an investment policy statement

An investment policy statement can help

- Implement selected guidelines and methodology
- Maintain asset allocation
- Confirm benchmarks for performance monitoring
- Provide a disciplined approach during periods of volatility
- Reduce behavioral tendencies
- Manage risk

Source: PIMCO

Strategy
Enroll in automated investment programs

Dollar cost averaging at $100 per month

Rising market

	When the share price is:	You buy:
January	$10	10.00 shares
February	$15	6.67 shares
March	$20	5.00 shares
April	$25	4.00 shares

- Avg. cost per share: **$15.58** ($400/25.67 shares)
- Avg. market price per share: **$17.50** ($70/4 purchases)

Declining market

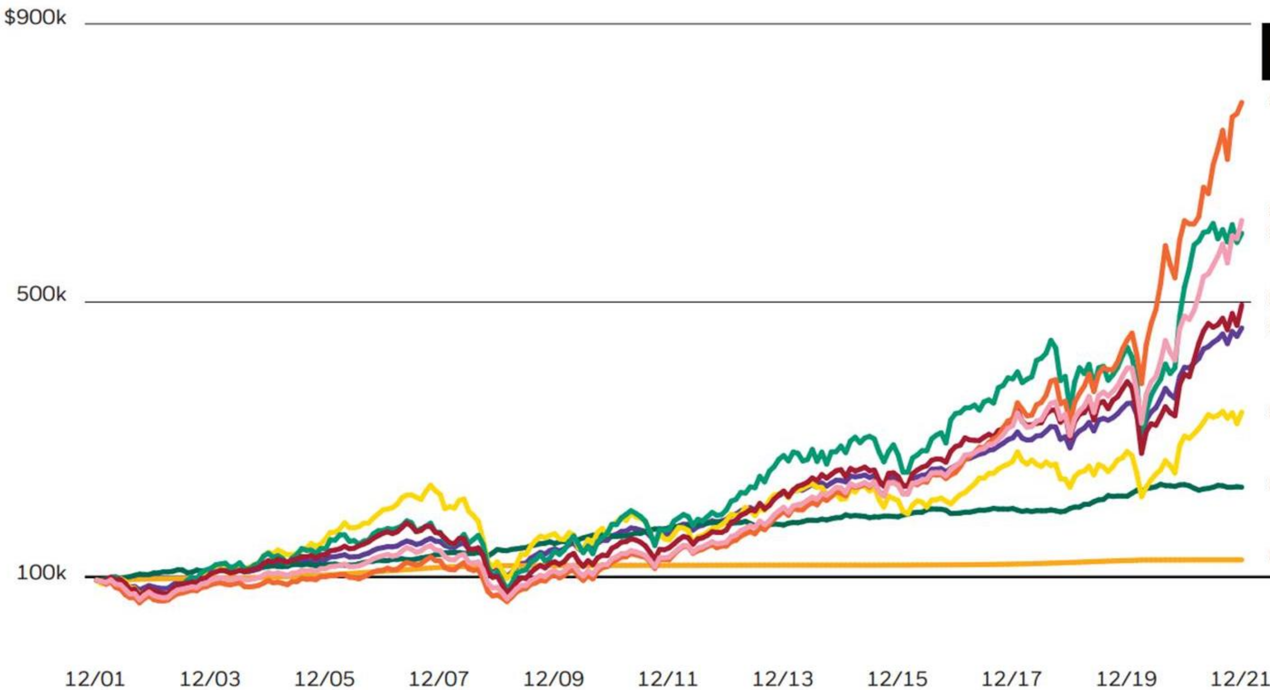
	When the share price is:	You buy:
January	$25	4.00 shares
February	$20	5.00 shares
March	$10	10.00 shares
April	$5	20.00 shares

- Avg. cost per share: **$10.26** ($400/39 shares)
- Avg. market price per share: **$15.00** ($60/4 purchases)

Source: PIMCO
For Illustrative Purposes Only.
Refer to Appendix for additional investment strategy and risk information.
Past performance is not indicative of future results.

Strategy
Diversify to reduce portfolio volatility

Growth of a hypothetical $100,000 investment over the last 20 years (2002-2021)



Grew to	Asset Class	Avg Ann Returns (%)	Standard Deviation (%)*
$786,575	Large Cap Growth	10.9	15.3
$617,143	Large Cap Core	9.5	14.6
$598,454	Small Cap	9.4	19.5
$495,521	Large Cap Value	8.3	15.3
$462,408	Diversified Portfolio	8.0	9.7
$341,572	International	6.3	16.5
$233,606	Fixed Income	4.3	3.4
$129,145	Cash	1.3	0.4

As of 31 December 2021

*Standard deviation is calculated using monthly returns.

For illustrative purposes only.

Source: Informa Investment Solutions

Cash is represented by the ICE BofA 3-month Treasury Bill Index. **Diversified portfolio** is composed of 35% of the Bloomberg U.S. Aggregate Bond Index, 10% of the MSCI EAFE Index, 10% of the Russell 2000 Index, 22.5% of the Russell 1000 Growth Index and 22.5% of the Russell 1000 Value Index. **Fixed income** is represented by the Bloomberg U.S. Aggregate Bond Index. **International** is represented by the Morgan Stanley Capital International (MSCI) EAFE Index. **Large cap core** is represented by the S&P 500 Index. **Large cap growth** is represented by the Russell 1000 Growth Index. **Large cap value** is represented by the Russell 1000 Value Index. **Small cap** is represented by the Russell 2000 Index.

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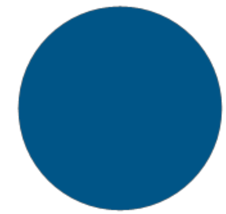
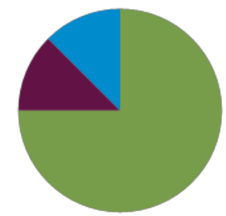
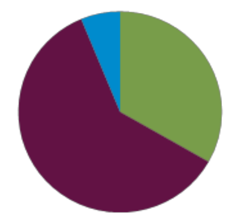
Refer to Appendix for additional index and risk information.

Strategy
Consider asset bucketing

Goal	Time horizon	Dollar amount	Priority level	Strategy
Purchase second home	6 months	$1.5 million	High	
Education for four children	4 years each; 5 years out	$1.0 million	High	
Lifestyle	25 years out	$2.5 million	Low	
Bequest for children	50 years out	$2.0 million	Low	

■ Cash ■ Fixed income ■ Equities ■ Alternatives

Sample for illustrative purposes only.
Source: PIMCO
Refer to Appendix for additional investment strategy and risk information.
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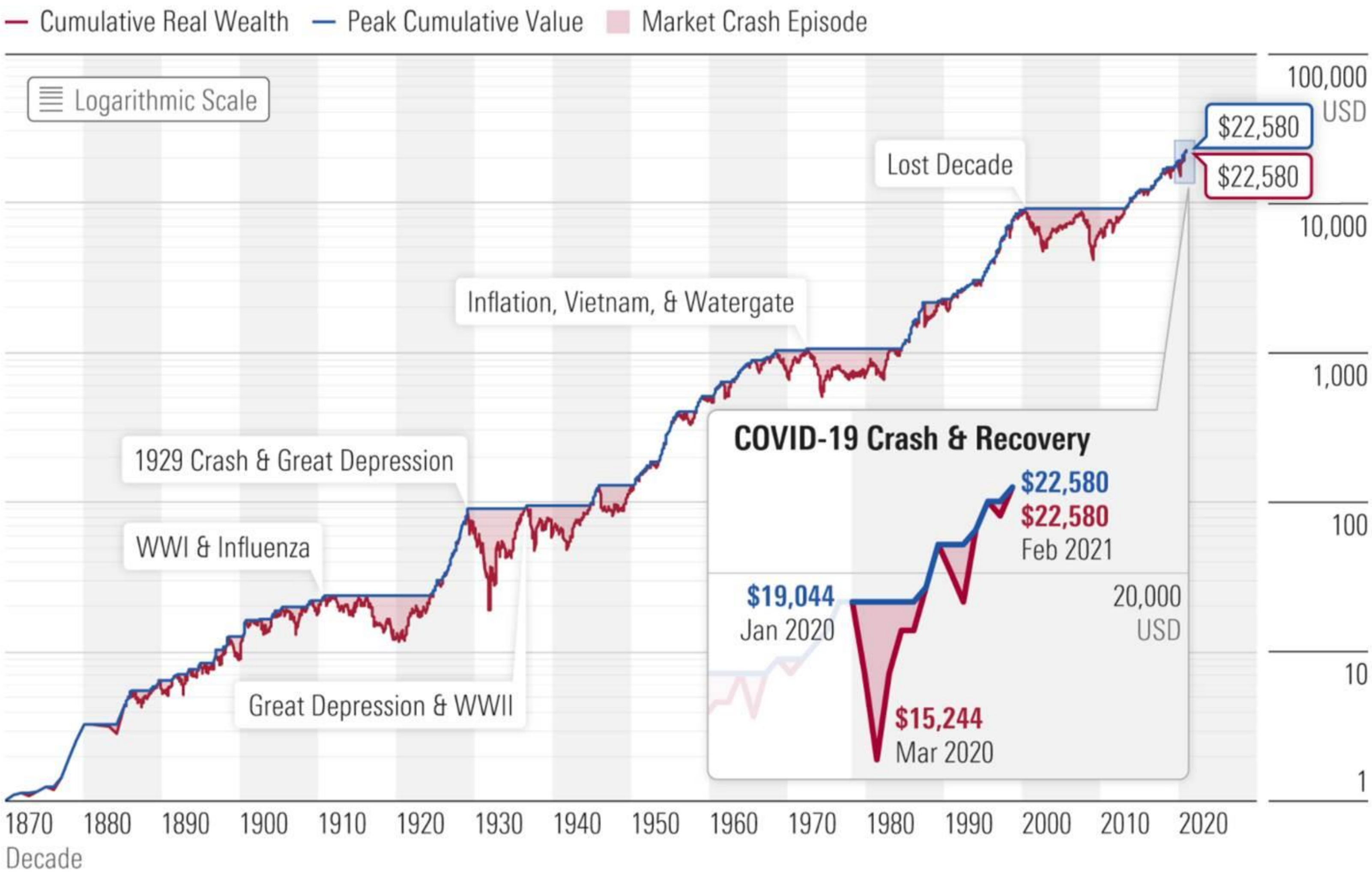
Strategy
Encourage a long-term perspective

Market crash timeline: Growth of $1 and the U.S. stock market's real peak values



Data as of Feb. 28, 2021.

Sources: Kaplan et al. (2009); Ibbotson (2020); Morningstar Direct; Goetzmann, Ibbotson, and Peng (2000); Pierce (1982); econ.yale.edu/shiller/data.htm, Ibbotson Associates SBBI US Large-Cap Stock Inflation Adjusted Total Return Extended Index.

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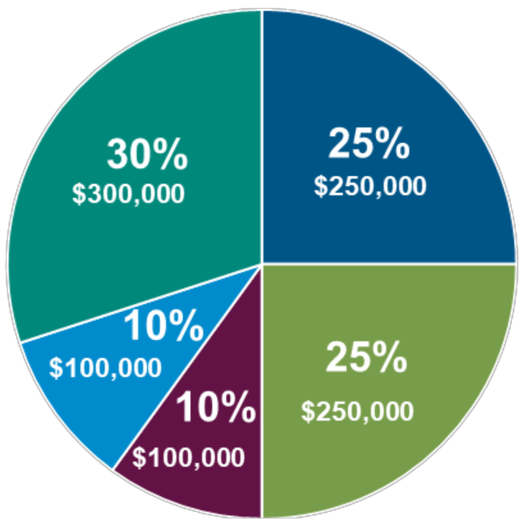
Refer to Appendix for additional index and risk information.

Strategy
Portfolio rebalancing after market decline

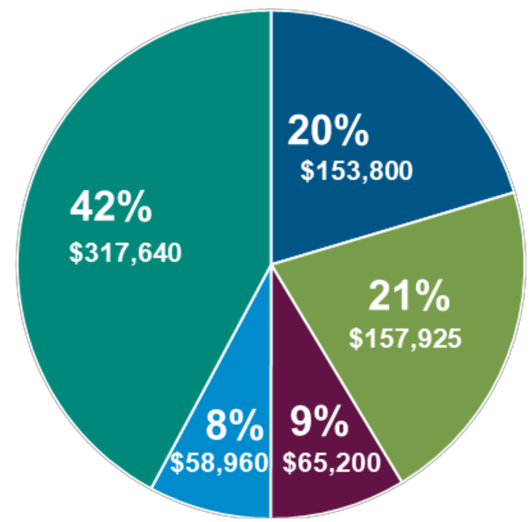
Initial allocation January 2008
$1,000,000



→ **Performance 2008** →

Large growth	-38.48%
Large value	-36.83%
Small cap	-34.80%
International	-41.04%
Fixed income	+5.88%

Allocation January 2009
$753,525



	2009 portfolio →	Target allocation →	Required change
Large growth	$153,800	$188,381	+$34,581
Large value	$157,925	$188,381	+$30,456
Small cap	$65,200	$75,353	+$10,153
International	$58,960	$75,353	+$16,393
Fixed income	$317,640	$226,057	-$91,583

Source: PIMCO; Large growth = Russell 1000 Growth Index, Large value = Russell 1000 Value Index, Small Cap = Russell 2000 Index; International = MSCI EAFE; Fixed Income = Bloomberg US Aggregate Bond Index.
For illustrative purposes only. No representation is being made that any account, product, or strategy will or is likely to achieve profits, losses, or results similar to those shown.
Refer to Appendix for additional index and risk information.
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Glossary

Anchoring	Tendency to rely too heavily on one piece of information as a reference point when making a decision.
Behavioral Finance	The integration of classical economics and finance with psychology and the decision-making sciences that seeks to describe how people really behave and make decisions.
Cognitive Dissonance	Mental discomfort felt by an individual simultaneously holding two contradictory beliefs.
Confirmation Bias	Only acknowledging information that confirms one's opinions or beliefs.
Familiarity Bias	Preference to invest in what is familiar instead of what is new.
Framing	Presenting information in such a way to achieve a desired outcome. People tend to reach conclusions based on the way the scenario is presented, or framed.
Herd Bias	Tendency to follow a course of action because others are also doing it.
Hindsight Bias	Gives a false sense of security and can lead to excessive risk-taking. Tendency to view events as having been more predictable, and thus actions more correct or incorrect, than was apparent as the situation was unfolding.
Home Bias	Tendency to overweight exposure to their domestic market or industry sector and invest less in foreign markets or other sectors.

Source: PIMCO

Glossary

Information Overload	Increasing choices results in greater indecision.
Loss Aversion	Tendency to strongly prefer avoiding losses to acquiring gains.
Mental Accounting	Dividing assets into separate groups based on where the originated or are located and assigning different levels of utility.
Overconfidence	Overestimating one's own abilities and knowledge. People acquire too much confidence from the information that is available to them, and they think they are right more often than they actually are.
Prospect Theory	People choose between probabilistic alternatives that involve risk, where probabilities of outcomes are unknown.
Recency Bias	Using only recent data to make future decisions.
Self attribution	Take credit for good outcomes and pass on blame for bad outcomes.
Status quo	Tendency to stay with current investments, faced with an array of options, select the one that keeps conditions the same.
Substitution	Process of subconsciously replacing, or substituting, a complex scenario or judgment with a more straightforward scenario that is easier to comprehend.

Source: PIMCO

Resources

- *The Behavior Gap,* Carl Richards
- *Why Smart People Make Big Money Mistakes,* Gilovich and Belsky
- *The Behavioral Investor,* Daniel Crosby
- *Nudge,* Richard Thaler
- *Predictably Irrational,* Dan Ariely
- *Thinking Fast and Slow,* Daniel Kahneman

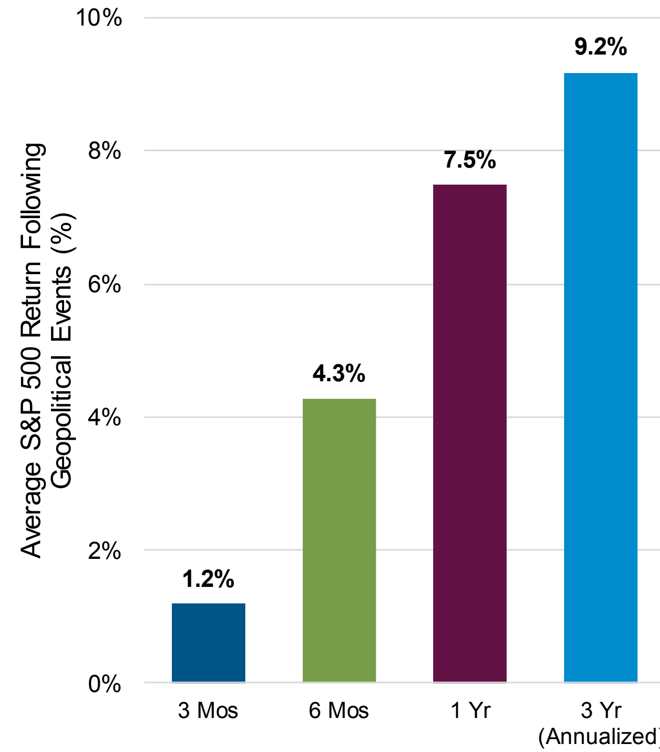
Source: PIMCO

Appendix

Equity market reaction to major geopolitical events

As shocks begin to fade, equity market performance historically has turned largely positive

Geopolitical Events and S&P 500 Reactions		Before Event			After Event					
Event	Event Date	3 Mos	1 Mo	1 Week	1 Week	1 Mo	3 Mos	6 Mos	1 Yr	3 Yr (Ann.)
Pearl Harbor Attack	12/7/1941	-7.37	-2.41	2.19	-6.33	-0.99	-10.23	-7.23	7.25	18.44
North Korea Invades South Korea	6/25/1950	10.89	2.41	0.90	-5.38	-7.84	3.87	9.45	20.55	15.44
Hungarian Uprising	10/23/1956	-5.64	-0.07	-1.07	0.54	-2.12	-1.79	0.77	-8.19	11.03
Suez Crisis	10/29/1956	-4.58	2.32	0.37	2.59	-4.35	-2.73	0.34	-8.84	11.36
Cuban Missile Crisis	10/16/1962	-0.40	-2.20	-0.21	-6.29	5.40	14.41	23.27	32.09	20.69
Kennedy Assassination	11/22/1963	-1.99	-4.59	-3.79	5.20	6.71	12.53	17.89	27.79	7.96
Gulf of Tonkin Incident	8/2/1964	4.52	0.70	-0.34	-1.59	-1.05	3.11	6.92	5.89	8.25
Six-Day War	6/5/1967	0.95	-6.36	-2.28	4.08	4.12	7.37	9.33	16.57	-1.54
Tet Offensive	1/30/1968	-1.20	-3.71	-0.82	-1.07	-3.80	5.92	6.88	13.87	4.62
Munich Olympics	9/5/1972	2.95	0.96	0.98	-2.48	-1.87	6.48	2.75	-3.10	-4.77
Yom Kippur War	10/6/1973	9.31	4.73	1.31	1.45	-4.17	-9.11	-13.78	-40.87	2.04
Iranian Revolution	1/7/1978	-3.21	-0.79	-3.66	-2.11	-0.98	-0.26	6.35	14.09	20.02
Reagan Shooting	3/30/1981	0.42	2.29	-1.04	0.12	-0.30	-0.67	-10.83	-11.82	11.49
Iraq's Invasion of Kuwait	8/2/1990	6.03	-2.03	-1.15	-3.13	-7.86	-10.44	-0.60	14.02	12.03
9/11 Terrorist Attacks	9/11/2001	-12.62	-8.10	-3.54	-5.44	0.59	4.42	7.69	-15.50	2.66
Madrid Bombing	3/11/2004	3.77	-4.24	-4.12	1.42	3.03	3.07	2.38	10.34	10.21
London Subway Bombing	7/5/2005	2.46	0.89	0.31	1.47	1.91	-0.24	6.68	7.46	3.56
Boston Marathon Bombing	4/15/2013	6.01	-0.41	-0.67	0.66	7.09	8.96	10.56	21.23	12.58
Bombing of Syria	4/7/2017	3.98	-0.36	-0.24	-1.11	1.94	3.48	9.32	12.72	6.19
North Korea Missile Crisis	7/28/2017	4.21	1.42	0.00	0.23	-0.92	4.91	17.32	16.24	11.35
Saudi Aramco Drone Strike	9/14/2019	4.69	6.09	1.02	-0.49	-1.25	5.87	-8.99	14.66	?
Iranian General Killed in Airstrike	1/3/2020	11.67	4.75	-0.12	0.98	0.53	-22.68	-2.28	18.21	?
Russian Invasion of Ukraine	2/24/2022	-8.47	-2.61	-2.07	1.79	?	?	?	?	?



As of 9 March 2022. SOURCE: PIMCO, Bloomberg
Geopolitical events selected based on commonly recognized market moving crises that took place from 7 December 1941 to presen t.
Past performance is not a guarantee or a reliable indicator of future results.
Refer to Appendix for additional index and risk information.

Appendix

Past performance is not a guarantee or a reliable indicator of future results.

CHART

Performance results for certain charts and graphs may be limited by date ranges specified on those charts and graphs; different time periods may produce different results. Charts are provided for illustrative purposes and are not indicative of the past or future performance of any PIMCO product.

HYPOTHETICAL EXAMPLE

HYPOTHETICAL PERFORMANCE RESULTS HAVE MANY INHERENT LIMITATIONS, SOME OF WHICH ARE DESCRIBED BELOW. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. IN FACT, THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS AND THE ACTUAL RESULTS SUBSEQUENTLY ACHIEVED BY ANY PARTICULAR TRADING PROGRAM.

ONE OF THE LIMITATIONS OF HYPOTHETICAL PERFORMANCE RESULTS IS THAT THEY ARE GENERALLY PREPARED WITH THE BENEFIT OF HINDSIGHT. IN ADDITION, HYPOTHETICAL TRADING DOES NOT INVOLVE FINANCIAL RISK, AND NO HYPOTHETICAL TRADING RECORD CAN COMPLETELY ACCOUNT FOR THE IMPACT OF FINANCIAL RISK IN ACTUAL TRADING. FOR EXAMPLE, THE ABILITY TO WITHSTAND LOSSES OR TO ADHERE TO A PARTICULAR TRADING PROGRAM IN SPITE OF TRADING LOSSES ARE MATERIAL POINTS WHICH CAN ALSO ADVERSELY AFFECT ACTUAL TRADING RESULTS. THERE ARE NUMEROUS OTHER FACTORS RELATED TO THE MARKETS IN GENERAL OR TO THE IMPLEMENTATION OF ANY SPECIFIC TRADING PROGRAM WHICH CANNOT BE FULLY ACCOUNTED FOR IN THE PREPARATION OF HYPOTHETICAL PERFORMANCE RESULTS AND ALL OF WHICH CAN ADVERSELY AFFECT ACTUAL TRADING RESULTS.

INVESTMENT STRATEGY

There is no guarantee that these investment strategies will work under all market conditions or are appropriate for all investors and each investor should evaluate their ability to invest long-term, especially during periods of downturn in the market. No representation is being made that any account, product, or strategy will or is likely to achieve profits, losses, or results similar to those shown.

INDEX

It is not possible to invest directly in an unmanaged index.

RISK

All investments contain risk and may lose value. Investing in the **bond market** is subject to risks, including market, interest rate, issuer, credit, inflation risk, and liquidity risk. The value of most bonds and bond strategies are impacted by changes in interest rates. Bonds and bond strategies with longer durations tend to be more sensitive and volatile than those with shorter durations; bond prices generally fall as interest rates rise, and low interest rate environments increase this risk. Reductions in bond counterparty capacity may contribute to decreased market liquidity and increased price volatility. Bond investments may be worth more or less than the original cost when redeemed. **Equities** may decline in value due to both real and perceived general market, economic and industry conditions.

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Appendix

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