

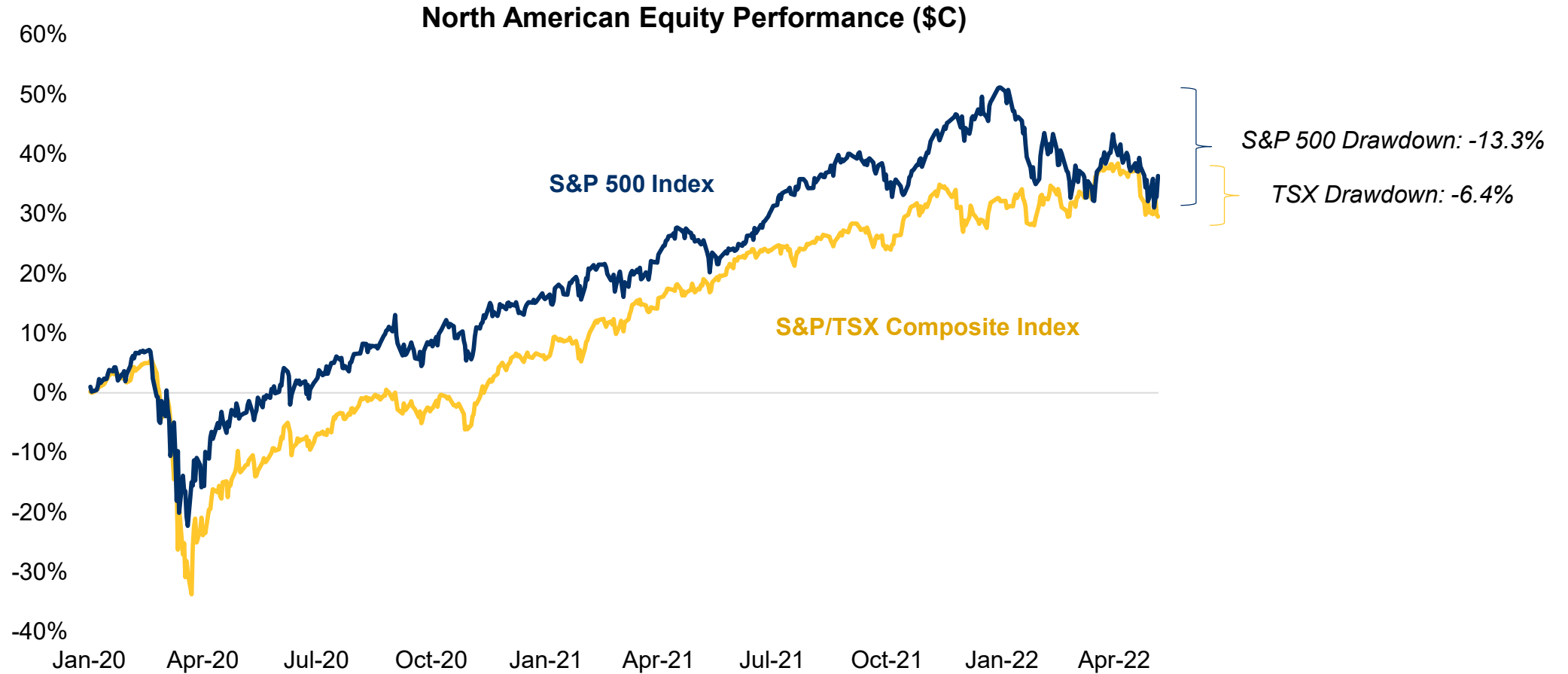
Volatility in perspective

May 2022



Equity markets

After a long run, equity markets have pulled back

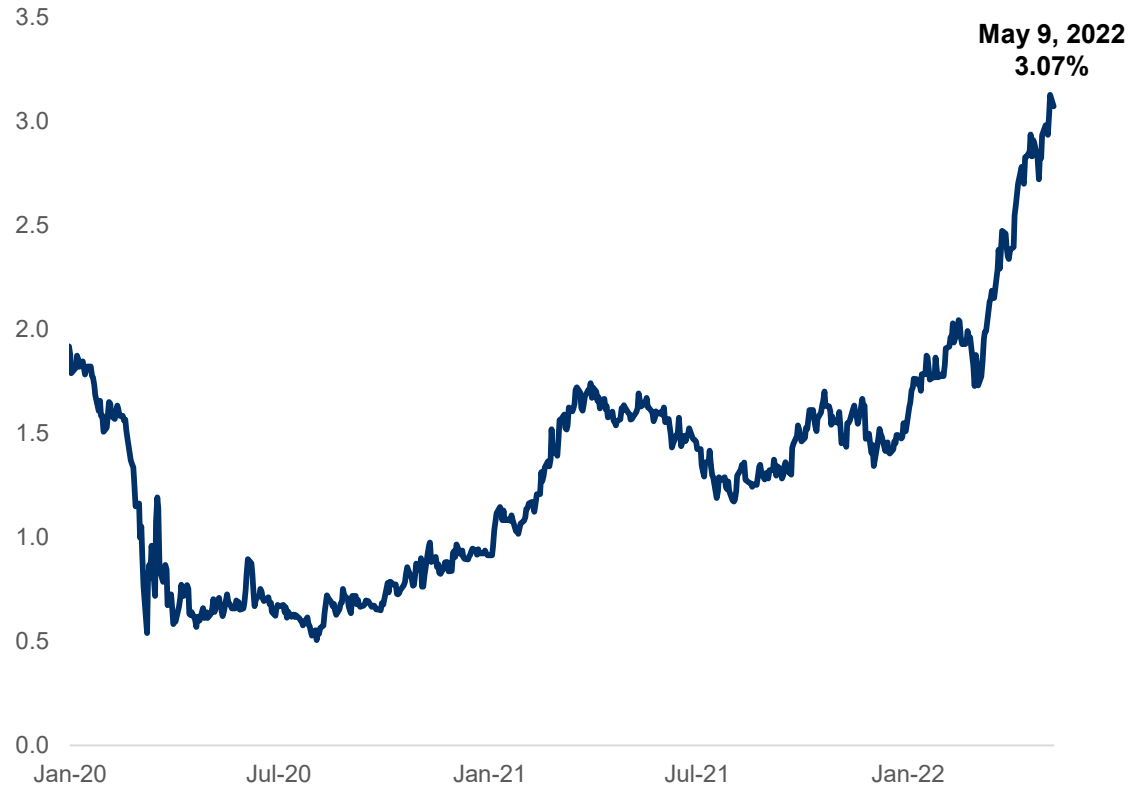


Source: Bloomberg, as of May 6, 2022. U.S. Equities = S&P 500 Index TR and Canadian Equities = S&P/TSX Composite Index TR. Returns are in Canadian dollars and represent cumulative returns from December 31, 2019. Drawdown for U.S. Equities from December 31, 2021 – May 6, 2022, Drawdown for Canadian Equities from April 4, 2022 – May 6, 2022.

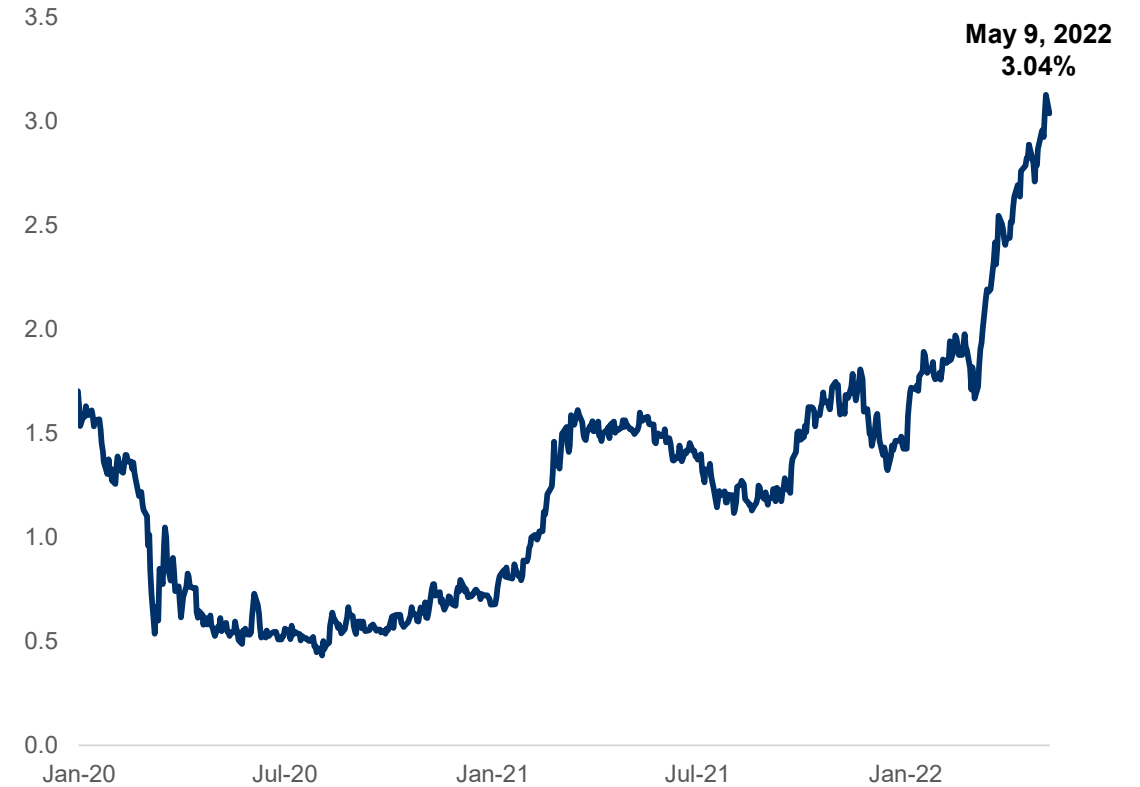
Interest rates

Bond yields have risen as investors contemplate rate hikes

U.S. 10 Year Yield



Canada 10 Year Yield



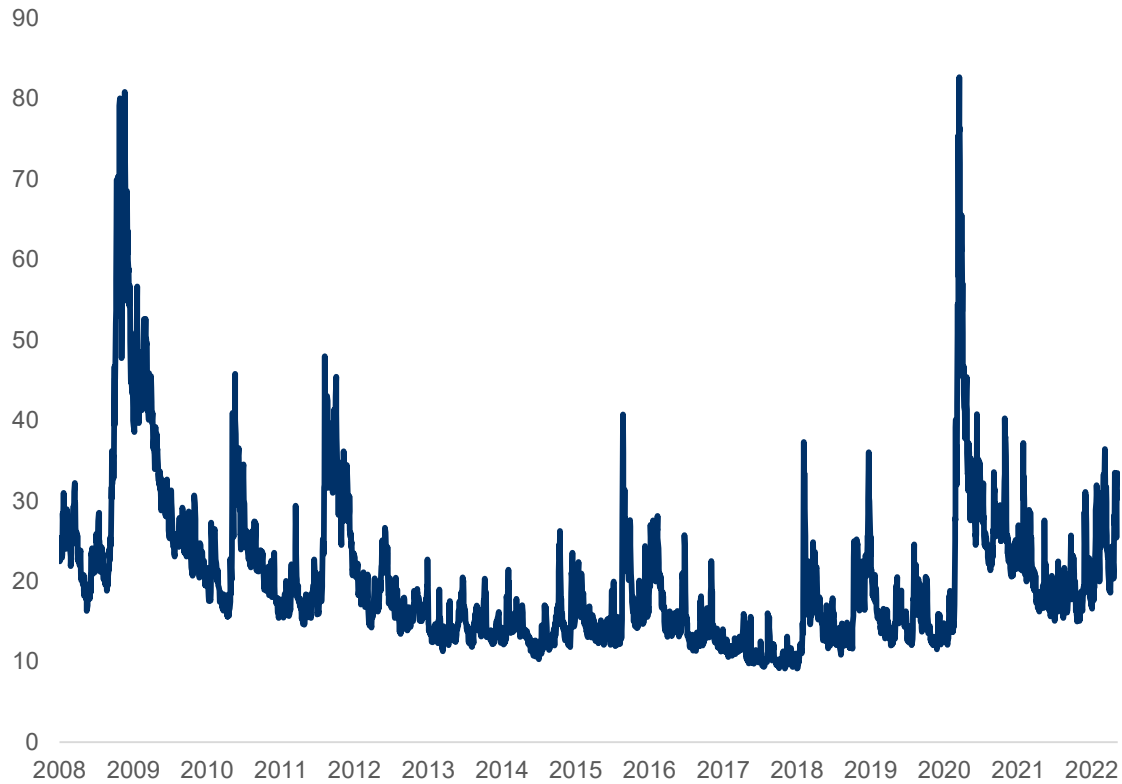
Source: Bloomberg, as of May 9, 2022.



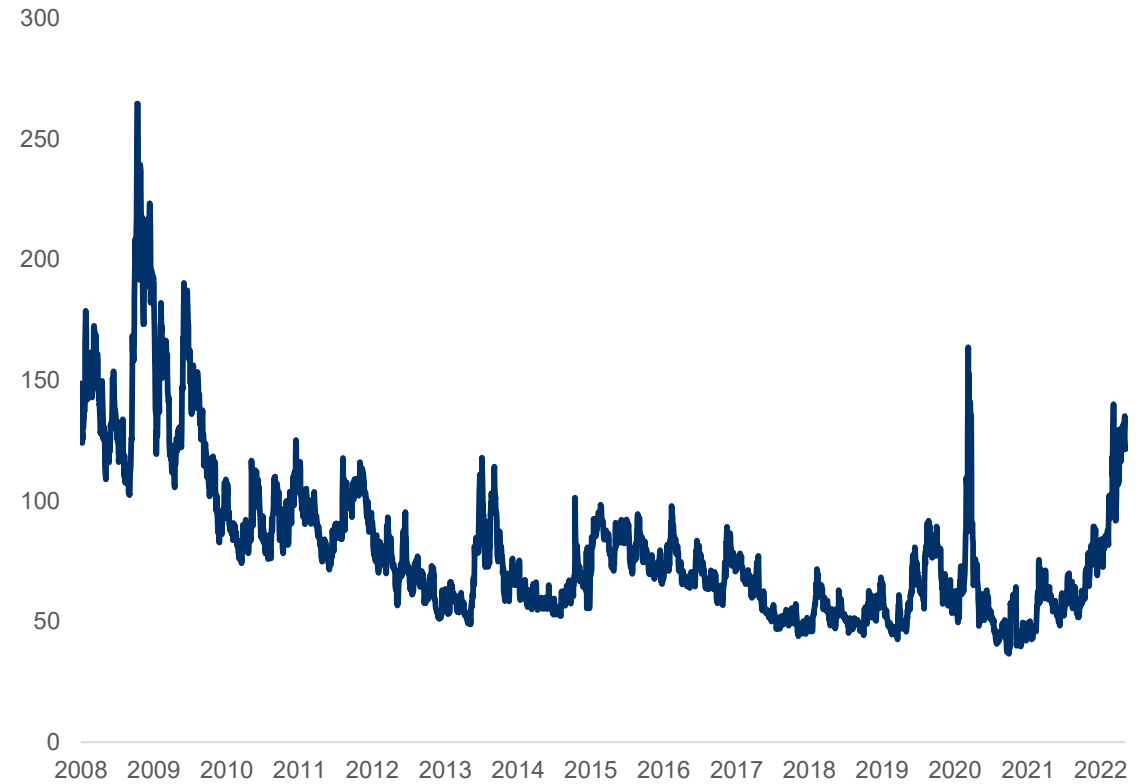
Volatility indices

Volatility is elevated, particularly in the bond market

**Equity Market Volatility
VIX Index**



**Bond Market Volatility
MOVE Index**

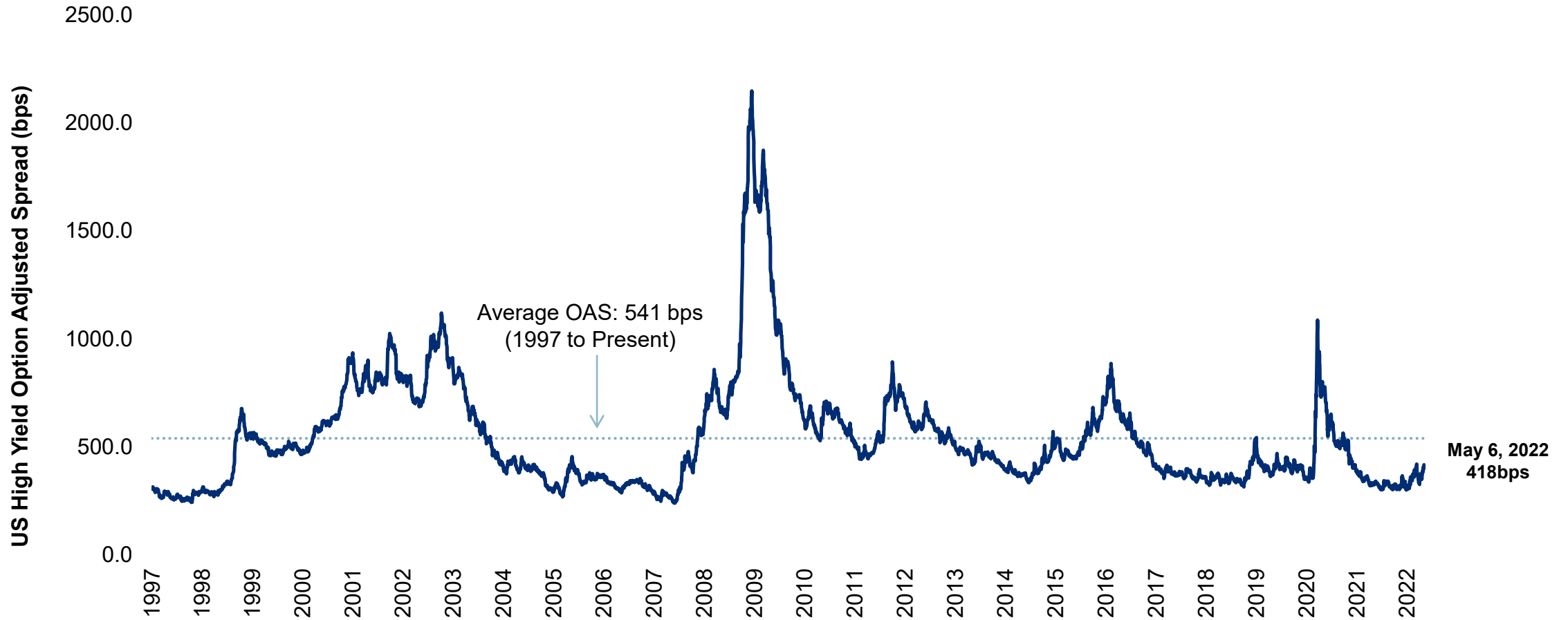


Source: Bloomberg, as of May 6, 2022. VIX Index measures expected volatility of the S&P 500 Index. MOVE Index is a measure of U.S. Treasury yield volatility.



High yield bonds spreads

Credit markets appear well-behaved amid recent volatility



Source: RBC GAM, ICE BofA HY Master II Index. As of May 6, 2022

RBC Global Asset Management

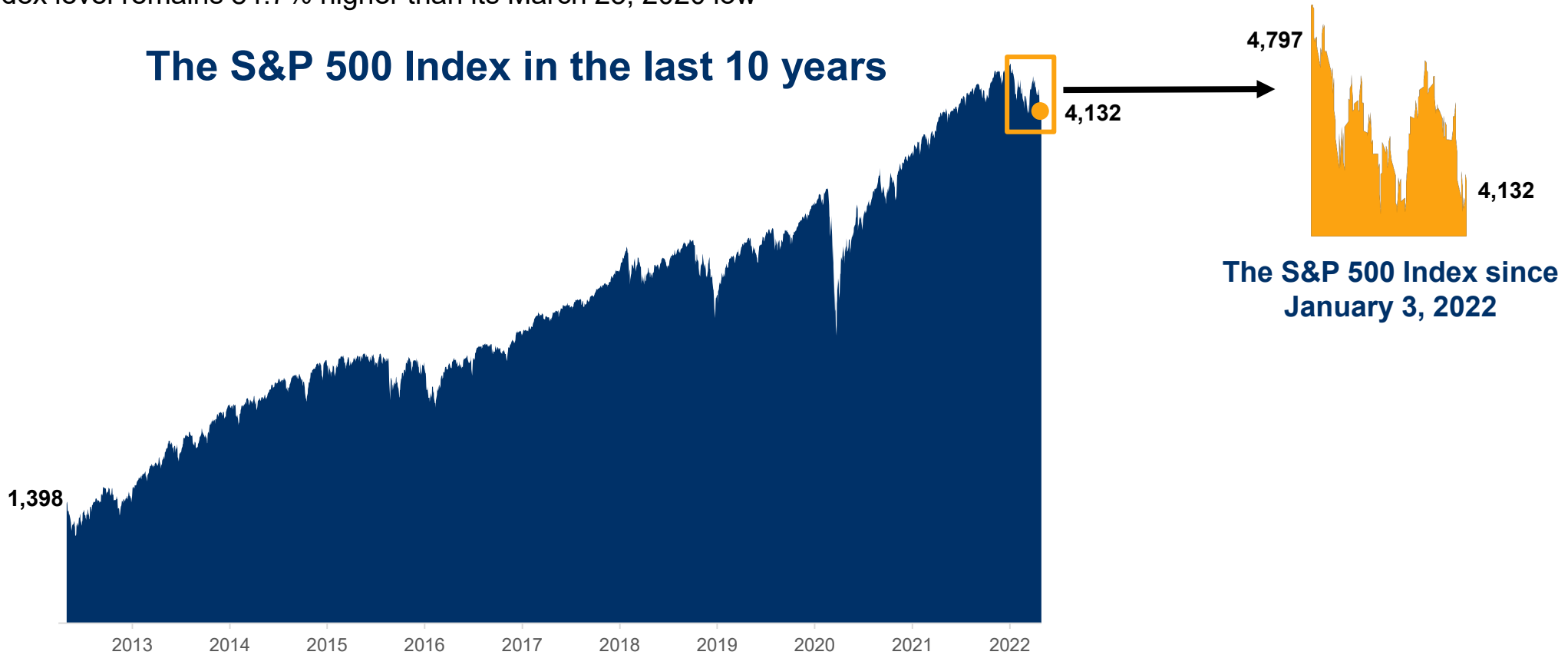


Maintaining perspective

Putting recent market moves into context for long-term investors

- While volatility has picked up in 2022, the S&P 500 Index has delivered a cumulative return of 195.6% over the last 10 years
- The Index level remains 84.7% higher than its March 23, 2020 low

The S&P 500 Index in the last 10 years



Source: Bloomberg, RBC GAM. S&P 500 Price Return Index from April 30, 2012 to April 29, 2022. Chart on right shows the 30-minute intraday intervals from January 3, 2022 to April 29, 2022. Index and returns are in US dollars.

Volatility is a normal part of investing

On average, U.S. equities experience negative monthly returns 4 times a year

Monthly returns of the S&P 500

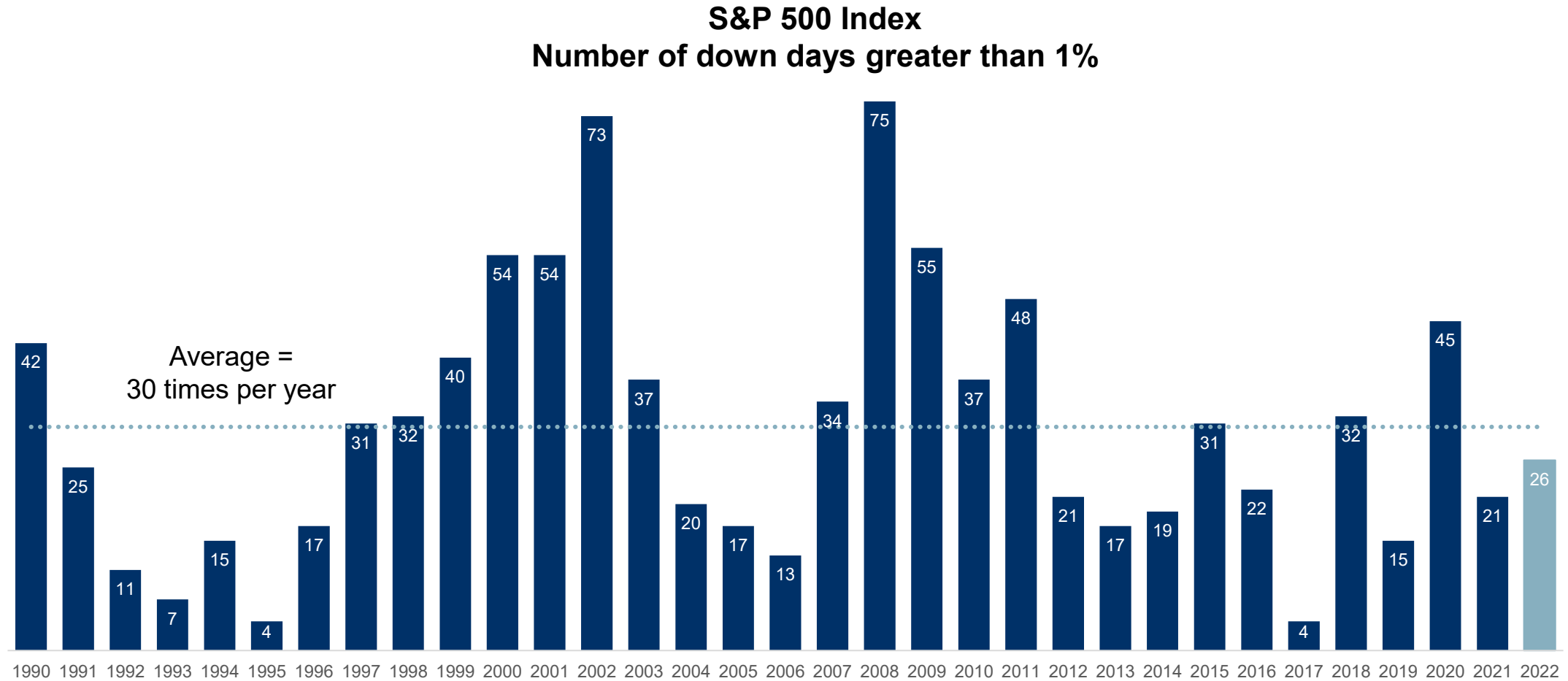
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	-5.2%	-3.0%	3.7%	-8.7%								
2021	-1.0%	2.8%	4.4%	5.3%	0.7%	2.3%	2.4%	3.0%	-4.7%	7.0%	-0.7%	4.5%
2020	0.0%	-8.2%	-12.4%	12.8%	4.8%	2.0%	5.6%	7.2%	-3.8%	-2.7%	10.9%	3.8%
2019	8.0%	3.2%	1.9%	4.0%	-6.4%	7.0%	1.4%	-1.6%	1.9%	2.2%	3.6%	3.0%
2018	5.7%	-3.7%	-2.5%	0.4%	2.4%	0.6%	3.7%	3.3%	0.6%	-6.8%	2.0%	-9.0%
2017	1.9%	4.0%	0.1%	1.0%	1.4%	0.6%	2.1%	0.3%	2.1%	2.3%	3.1%	1.1%
2016	-5.0%	-0.1%	6.8%	0.4%	1.8%	0.3%	3.7%	0.1%	0.0%	-1.8%	3.7%	2.0%
2015	-3.0%	5.8%	-1.6%	1.0%	1.3%	-1.9%	2.1%	-6.0%	-2.5%	8.4%	0.3%	-1.6%
2014	-3.5%	4.6%	0.8%	0.7%	2.4%	2.1%	-1.4%	4.0%	-1.4%	2.4%	2.7%	-0.3%
2013	5.2%	1.4%	3.8%	1.9%	2.3%	-1.3%	5.1%	-2.9%	3.1%	4.6%	3.1%	2.5%
2012	4.5%	4.3%	3.3%	-0.6%	-6.0%	4.1%	1.4%	2.3%	2.6%	-1.9%	0.6%	0.9%
2011	2.4%	3.4%	0.0%	3.0%	-1.1%	-1.7%	-2.0%	-5.4%	-7.0%	10.9%	-0.2%	1.0%
2010	-3.6%	3.1%	6.0%	1.6%	-8.0%	-5.2%	7.0%	-4.5%	8.9%	3.8%	0.0%	6.7%
2009	-8.4%	-10.7%	8.8%	9.6%	5.6%	0.2%	7.6%	3.6%	3.7%	-1.9%	6.0%	1.9%
2008	-6.0%	-3.3%	-0.4%	4.9%	1.3%	-8.4%	-0.8%	1.5%	-8.9%	-16.8%	-7.2%	1.1%
2007	1.5%	-2.0%	1.1%	4.4%	3.5%	-1.7%	-3.1%	1.5%	3.7%	1.6%	-4.2%	-0.7%
2006	2.7%	0.3%	1.2%	1.3%	-2.9%	0.1%	0.6%	2.4%	2.6%	3.3%	1.9%	1.4%
2005	-2.4%	2.1%	-1.8%	-1.9%	3.2%	0.1%	3.7%	-0.9%	0.8%	-1.7%	3.8%	0.0%
2004	1.8%	1.4%	-1.5%	-1.6%	1.4%	1.9%	-3.3%	0.4%	1.1%	1.5%	4.1%	3.4%
2003	-2.6%	-1.5%	1.0%	8.2%	5.3%	1.3%	1.8%	2.0%	-1.1%	5.7%	0.9%	5.2%
2002	-1.5%	-1.9%	3.8%	-6.1%	-0.7%	-7.1%	-7.8%	0.7%	-10.9%	8.8%	5.9%	-5.9%
2001	3.6%	-9.1%	-6.3%	7.8%	0.7%	-2.4%	-1.0%	-6.3%	-8.1%	1.9%	7.7%	0.9%
2000	-5.0%	-1.9%	9.8%	-3.0%	-2.1%	2.5%	-1.6%	6.2%	-5.3%	-0.4%	-7.9%	0.5%
1999	4.2%	-3.1%	4.0%	3.9%	-2.4%	5.6%	-3.1%	-0.5%	-2.7%	6.3%	2.0%	5.9%
1998	1.1%	7.2%	5.1%	1.0%	-1.7%	4.1%	-1.1%	-14.5%	6.4%	8.1%	6.1%	5.8%
1997	6.3%	0.8%	-4.1%	6.0%	6.1%	4.5%	8.0%	-5.6%	5.5%	-3.3%	4.6%	1.7%
1996	3.4%	0.9%	1.0%	1.5%	2.6%	0.4%	-4.4%	2.1%	5.6%	2.8%	7.6%	-2.0%
1995	2.6%	3.9%	3.0%	2.9%	4.0%	2.3%	3.3%	0.3%	4.2%	-0.4%	4.4%	1.9%
1994	3.4%	-2.7%	-4.4%	1.3%	1.6%	-2.5%	3.3%	4.1%	-2.5%	2.3%	-3.6%	1.5%
1993	0.8%	1.4%	2.1%	-2.4%	2.7%	0.3%	-0.4%	3.8%	-0.8%	2.1%	-1.0%	1.2%
1992	-1.9%	1.3%	-1.9%	2.9%	0.5%	-1.5%	4.1%	-2.1%	1.2%	0.4%	3.4%	1.2%
1991	4.4%	7.2%	2.4%	0.2%	4.3%	-4.6%	4.7%	2.4%	-1.7%	1.3%	-4.0%	11.4%
1990	-6.7%	1.3%	2.7%	-2.5%	9.8%	-0.7%	-0.3%	-9.0%	-4.9%	-0.4%	6.5%	2.8%
1989	7.3%	-2.5%	2.3%	5.2%	4.1%	-0.6%	9.0%	2.0%	-0.4%	-2.3%	2.0%	2.4%
1988	4.2%	4.7%	-3.1%	1.1%	0.9%	4.6%	-0.4%	-3.4%	4.3%	2.8%	-1.4%	1.7%
1987	13.5%	4.0%	2.9%	-0.9%	0.9%	5.1%	5.1%	3.7%	-2.2%	-21.5%	-8.2%	7.6%

Source: RBC GAM, Morningstar. Monthly Returns in the S&P 500 TR (USD) Index since January 1990. "U.S. equities" refers to the S&P 500 Index.



Volatility is a normal part of investing

The market averages about 30 days each year where it's down more than 1%



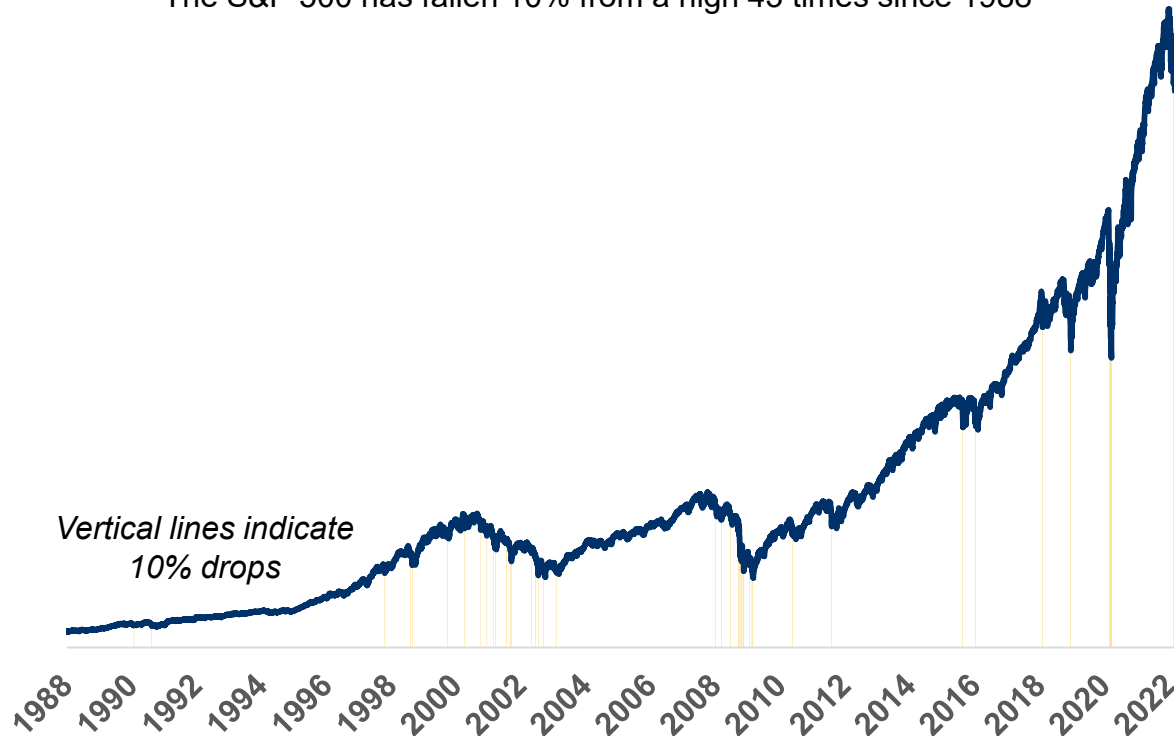
Source: RBC Global Asset Management, Bloomberg. Based on S&P 500 Index TR in U.S. dollars data as of January 25, 2022. An investment cannot be made directly into an index. The graph does not reflect transaction costs, investment management fees or taxes. If such costs and fees were reflected, returns would be lower. Past performance is not a guarantee of future results.

Performance after a pullback

Corrections of 10% are common and historically markets have recovered fairly quickly

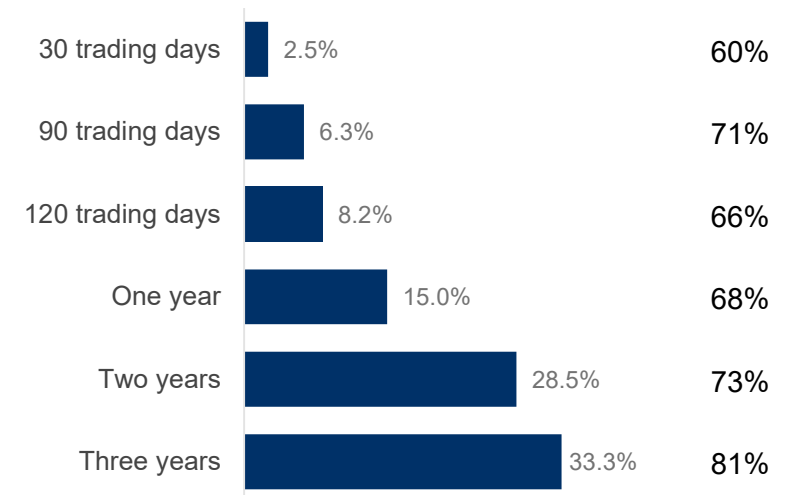
S&P 500 Index

The S&P 500 has fallen 10% from a high 43 times since 1988



**After market declines 10%,
the subsequent return is
historically positive...**

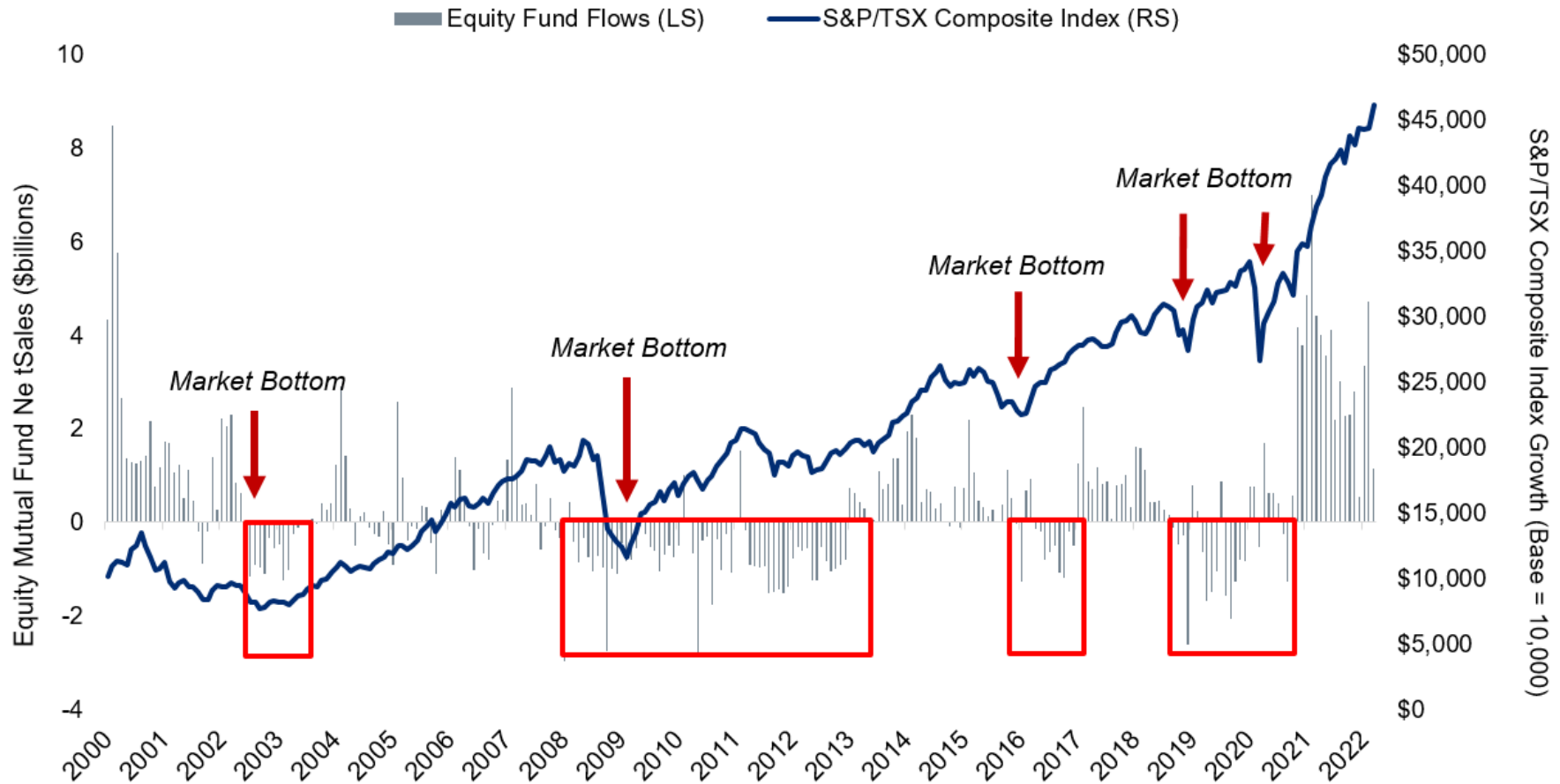
**...with greater than
50% probability**



S&P 500 TR index (USD) from Jan 1, 1988 to May 9, 2022. One year represented by its average of 252 trading days. 10% drop is from an all-time high or the end of a previous drop. An investment cannot be made directly into an index. The graph does not reflect transaction costs, investment management fees or taxes. If such costs and fees were reflected, returns would be lower. Past performance is not a guarantee of future results. The peak is measured at the highest level of the index during the year and the trough is its lowest level following the peak.

Returns and fund flows

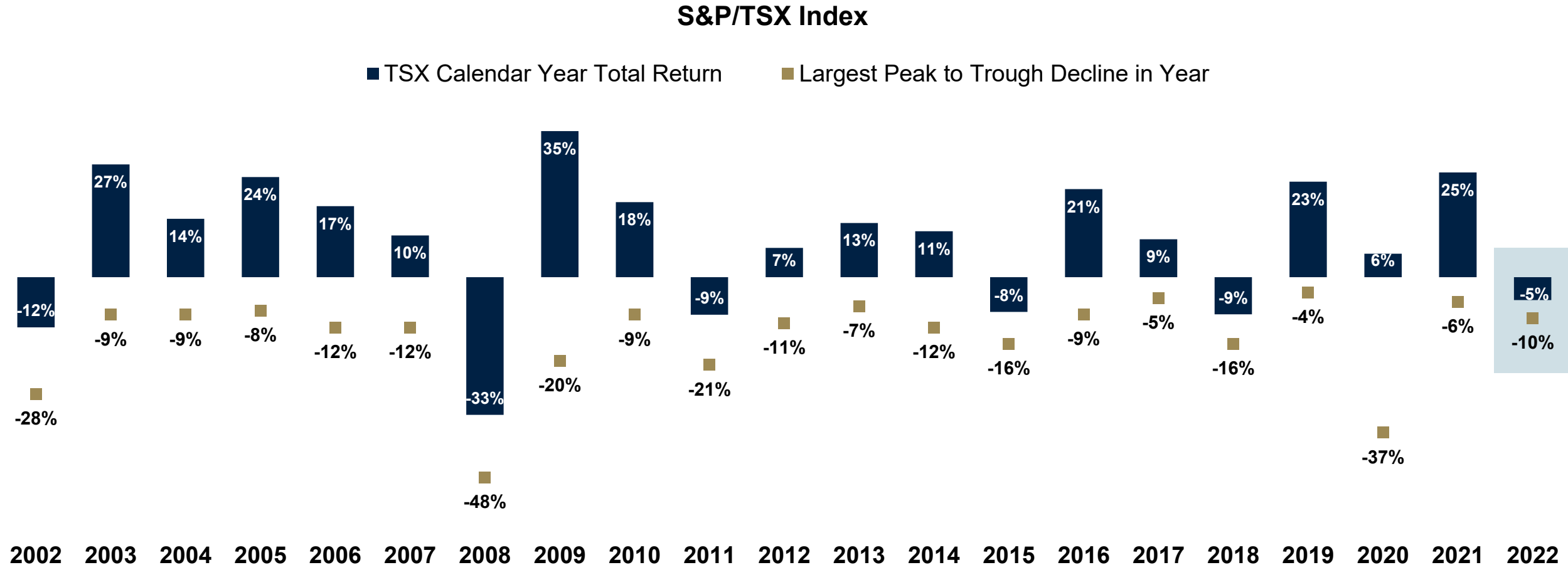
Investors often redeem at the worst times



*Includes net equity mutual fund flows. Source: RBC GAM, IFIC, Bloomberg. As of March 31, 2022. An investment cannot be made directly into an index. The graph does not reflect transaction costs, investment management fees or taxes. If such costs and fees were reflected, returns would be lower. Past performance is not a guarantee of future results. The peak is measured at the highest level of the index during the year and the trough is its lowest level following the peak.

The S&P/TSX has experienced a drawdown of almost 5% so far this year

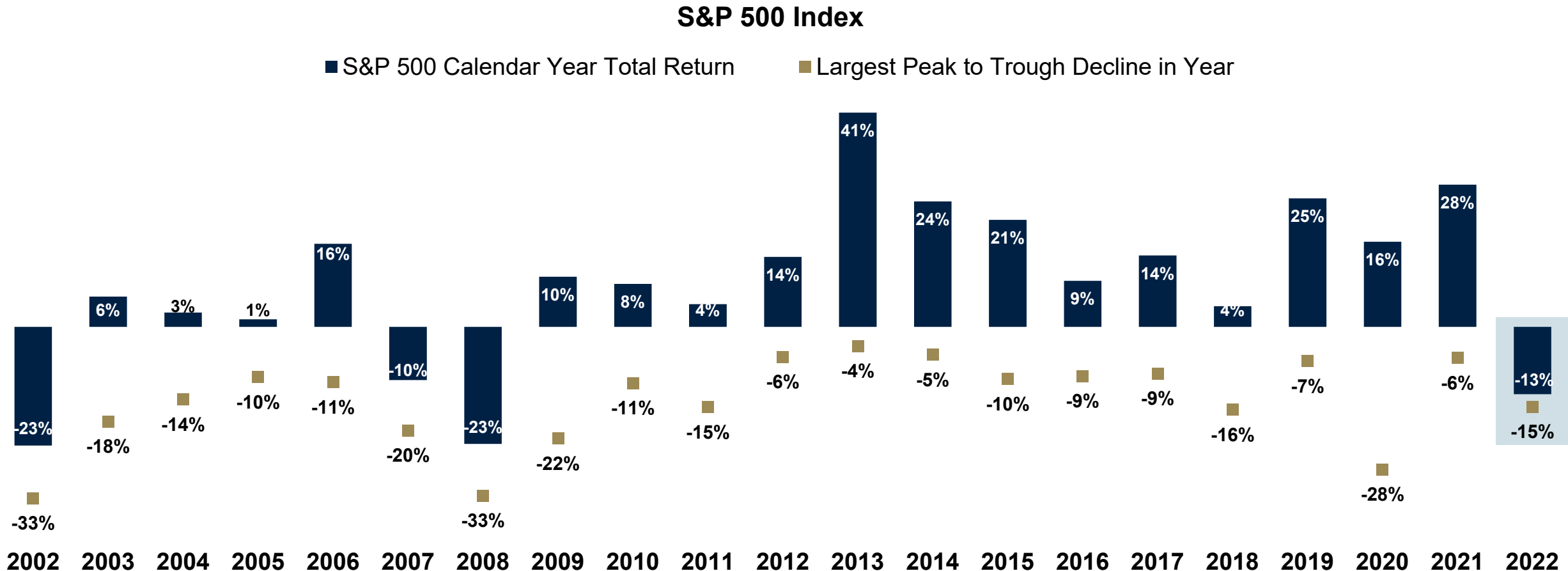
11 of the past 20 years have seen drawdowns of 10%



Source: Bloomberg & Morningstar Direct. Performance reflective of S&P/TSX Composite Index, denoted in Canadian dollars. Performance data for 2022 as of May 10, 2022. An investment cannot be made directly into an index. The graph does not reflect transaction costs, investment management fees or taxes. If such costs and fees were reflected, returns would be lower. Past performance is not a guarantee of future results. The peak is measured at the highest level of the index during the year and the trough is its lowest level following the peak.

The S&P 500 has experienced a drawdown of more than 10% this year

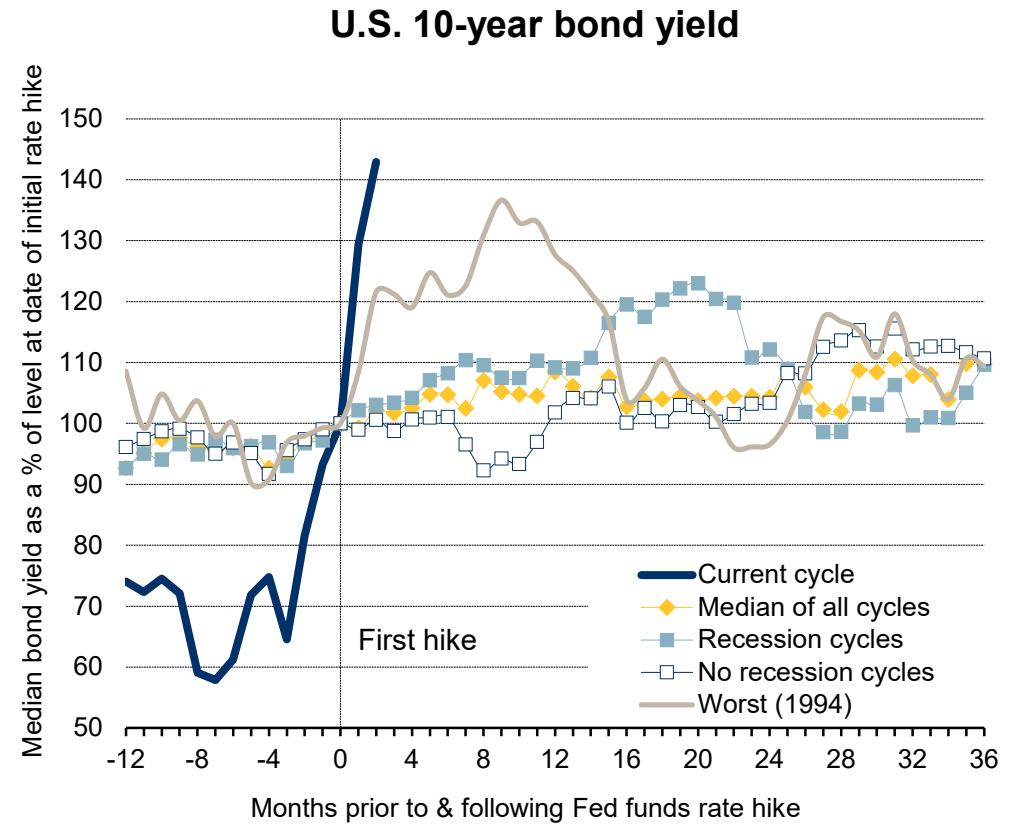
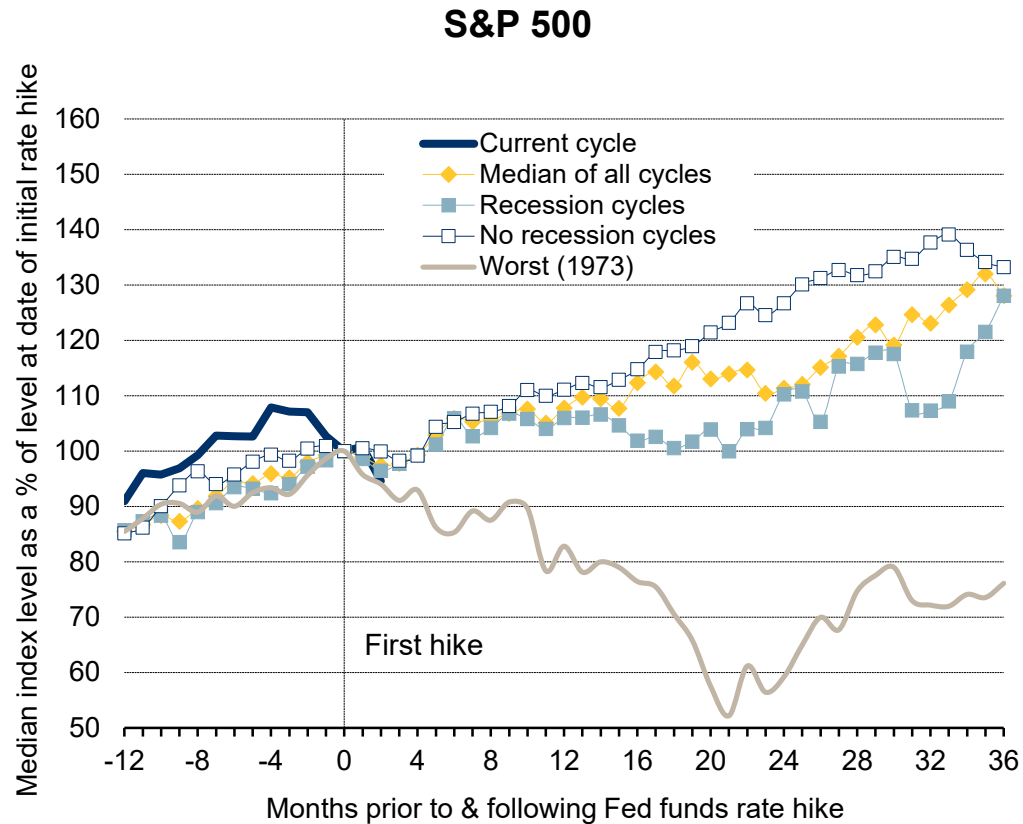
9 of the past 20 years have seen drawdowns of 15% or more



Source: Bloomberg & Morningstar Direct. Performance reflective of S&P 500 TR Index, denoted in Canadian dollars. 2022 data as of May 10, 2022. An investment cannot be made directly into an index. The graph does not reflect transaction costs, investment management fees or taxes. If such costs and fees were reflected, returns would be lower. Past performance is not a guarantee of future results. The peak is measured at the highest level of the index during the year and the trough is its lowest level following the peak.

Financial markets and the Fed funds rate hike

Implications for current cycle, following first rate hike



Source: RBC GAM. As of May 6, 2022.

Negative quarters: What comes after?

S&P 500 Total Return Index USD

Subsequent return (cumulative)

Largest quarterly pullbacks in the past 20 years	Performance	1 year	3 years	5 years
Q4 2008	-21.9%	26.5%	48.6%	128.2%
Q1 2020	-19.6%	56.4%	?	?
Q3 2002	-17.3%	24.4%	59.0%	105.1%
Q3 2011	-13.9%	30.2%	86.1%	113.4%
Q4 2018	-13.5%	31.5%	100.4%	?
Q2 2002	-13.4%	0.3%	27.0%	66.3%
Q2 2010	-11.4%	30.7%	66.2%	122.5%
Q1 2009	-11.0%	49.8%	88.0%	161.1%
Q1 2008	-9.4%	-38.1%	7.2%	32.6%
Q3 2008	-8.4%	-6.9%	3.7%	61.2%
Q3 2015	-6.4%	15.4%	61.4%	93.8%
Q1 2022	-4.6%	?	?	?
Q4 2007	-3.3%	-37.0%	-8.3%	8.6%
Q1 2003	-3.1%	35.1%	61.1%	71.0%
Q2 2012	-2.8%	20.6%	61.4%	97.9%

Source: RBC GAM, Morningstar. As of March 31, 2022. The table does not reflect transaction costs, investment management fees or taxes. If such costs and fees were reflected, returns would be lower. An investment cannot be made directly into an index.

Disclosure

This information has been provided by RBC Global Asset Management Inc. (RBC GAM) and is for informational purposes, as of the date noted only. It is not intended to provide legal, accounting, tax, investment, financial or other advice and such information should not be relied upon for providing such advice. RBC GAM takes reasonable steps to provide up-to-date, accurate and reliable information, and believes the information to be so when printed. Past performance is no guarantee of future results. Interest rates, market conditions, tax rulings and other investment factors are subject to rapid change which may materially impact analysis that is included in this document. You should consult with your advisor before taking any action based upon the information contained in this document. RBC GAM reserves the right at any time and without notice to change, amend or cease publication of the information.

Any investment and economic outlook information contained in this report has been compiled by RBC GAM from various sources. Information obtained from third parties is believed to be reliable, but no representation or warranty, express or implied, is made by RBC GAM, its affiliates or any other person as to its accuracy, completeness or correctness. RBC GAM and its affiliates assume no responsibility for any errors or omissions.

Publication date: May 11, 2022

® / ™ Trademark(s) of Royal Bank of Canada. Used under licence. © RBC Global Asset Management Inc., 2022