

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 our quarterly commentary, followed by the returns of stock, commodities, and bond asset classes in the US and international markets.

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The Banking System

About a month ago, I was planning on testing out ChatGPT by having it write the quarterly commentary this quarter, but the volatility in the banks upended that plan. So I guess I'll have to wait.

To understand what is happening to banks, it's vital to understand their business model. The way a bank works is that it takes in deposits and lends the money to individuals and corporations. The bank makes money by paying much less for its deposits (recently close to zero) than it receives on its loans earning the "spread"¹ between the two. For example, if it pays zero for its deposits and received 3% on a loan, it would keep the 3% difference every year.

For "demand" deposits, such as checking and savings accounts, customers can withdraw their money at any time (CDs etc. usually have some term to them but are usually short). The money banks lend, in the form of mortgages, auto loans, corporate loans, etc., get paid back over many years. Because of the timing mismatch, banks can't lend out all of their money; they need some access to cash in case depositors ask for their money. Rather than keeping large amounts of cash (which earns them nothing), they invest the money they don't loan out in marketable securities that they can sell to raise cash (or pledge to the Fed to get cash) to satisfy depositors withdrawal requests. This can get much more complicated in a lot of ways², but for the point I'm trying to make, simple is better.

Almost all of the time, this set up works out. While any individual depositor can request their money, deposits tend to be "sticky", i.e., overall balances across depositors don't change that much. But what if everyone wants to take their money out all at once? The bank, which has already loaned out a significant portion of the money, doesn't have the money to meet withdrawals. This is the classic "run on the bank" and if you've seen *It's a Wonderful Life* you know about this ("The money's not here. Well, your money is in Joe's house...").³ It's important to understand that this issue is endemic to the way the system is set up—**all banks, even profitable and**

solvent ones, would fail if faced with a bank run absent actions from the government. Banks try to guess how much access to short-term cash they are going to need, but there is almost always a mismatch where the assets (loans and securities) are longer duration than the liabilities (deposits plus debt and equity).

In an effort to ward off panic before it happens, the government set up the Federal Deposit Insurance Corporation (FDIC), which insures up to \$250,000 per account owner in any bank. The thought behind this is that if people's deposits are insured, there would be no reason to take money out of the bank, even if there were rumors of a bank run. For most individuals, that limit is sufficient. But for companies who use banks to pay bills (including payroll), they routinely have more than the insured limit in their accounts.

Another key thing the government offers banks is the ability to pledge assets for cash. The so-called Federal Reserve "discount window" allows banks to avoid being a forced seller of securities to meet redemptions. The idea here is that if banks were forced to sell large volumes of assets, the prices would be forced lower, which would increase panic among depositors. These and other mechanisms work—until they don't.

In simple terms, here's a review of what happened. It started with Silvergate, which was a regular bank until it started pivoting to focus on crypto in 2013. If you were a crypto exchange, you most likely deposited your dollars at Silvergate. In late 2022, FTX collapsed, and many people closed their crypto exchange accounts all at once. This forced Silvergate to sell its bonds to pay out depositors. But at the same time that depositors were asking for their money back, interest rates were rising dramatically (from the Fed pushing up interest rates). As interest rates rise, bond prices fall. Right when Silvergate needed the money, the value of their assets declined due to rising interest rates. The losses were so large, that the bank decided to wind down.

¹ Also known as the "net interest margin"

² Feel free to reach out to us if you want more detail.

³ Here's the scene from *It's a Wonderful Life*: <https://www.youtube.com/watch?v=iPkJH6BT7dM>.

The Banking System

(continued from page 3)

A critical insight here is that if the depositors hadn't left, the bank would have just held the bonds to maturity and had enough to pay back all depositors. There was **no credit issue** with the bonds. It was just that the **value of the bonds declined right when they needed to sell them to satisfy the withdrawals**. This is in contrast to 2008, when banks were facing credit losses associated with bad bets on mortgage-backed securities and certain derivatives. The issue here was that too many of its depositors were from the same industry (crypto), and too many of them asked for their cash at the same time.

This episode didn't immediately scare anyone else because people thought it was unique to Silvergate's crypto exposure. What other bank's depositors would all want to leave at the same time? It turns out that the very next day, Silicon Valley Bank (SVB), a bank which caters to venture capital firms, attempted to raise capital to plug a hole in its balance sheet. Venture capital-backed firms are known to burn through cash, but in late 2022 these firms started having trouble raising new capital, which led to a rapid decline in deposits at SVB. As SVB saw their deposits leave quickly they were forced to sell assets at a loss due to rising interest rates, similar to Silvergate.

Because SVB catered mostly to tech companies, nearly all of its deposits were uninsured; as of December 31, SVB had \$173 billion in deposits, and only \$8 billion were insured by the FDIC (based on the \$250,000 insurance limit). Major backers of venture capital-funded companies jumped on the bandwagon, encouraging portfolio companies to leave SVB, exacerbating the problem. Another run on the bank, and this time not a crypto bank. In a couple of weeks in March, SVB's deposits had declined to less than \$60 billion, the capital raise failed, and the bank was taken over by the government.

Just like Silvergate, there were little to no credit losses in the portfolio—much of the securities they owned were US Treasuries. But since interest rates rose their value declined just when SVB needed to sell them to raise capital for deposit redemptions.⁴ If the depositors had stayed with the bank, it would likely still be around today.⁵

And if you think about it, it wasn't crazy for SVB to think that their depositors would be loyal. It invested a lot in its relationships with its depositor customers; it supported them when times were tough, it gave them loans no one else would give them, and it had good customer service. Also, apparently some of SVB's loans contained covenants requiring the recipient company to keep their deposits at SVB, so at least some of the customers couldn't leave. Nonetheless, that theory turned out to be very wrong.

In an effort to contain the possible contagion, the government decided to insure all deposits at SVB, regardless of the \$250,000 limit, in order to give people some confidence to keep deposits at the bank (and trying to imply without stating it outright that they would do it for other banks too. But no guarantee!). They also allowed banks to borrow from the government based on the par value of the bonds they own, versus the current market value.

In March, there were fears of contagion (in part by the takeover of Credit Suisse by UBS but also with banks thought to be similar to SVB, like First Republic). However, I don't foresee this being a systemic problem. Quite frankly it's probably good for the largest banks (if you are nervous, you go to what you perceive as the safest banks, which are generally the largest ones). Remember, there is no credit issue here, and the government has the means to do more if necessary. Thus far, the government seems to have contained the fallout. Many banks are having and will continue to have some issues with this; it's just likely to be temporary (for almost all of them, even if a couple more go under). If it becomes a problem, it will be because of a permanent shift away from deposits to other investments, such as money market funds. Since the Federal Reserve started raising rates, deposits in banks have declined by \$800 billion and money market accounts have increased by \$600 billion⁶. But deposit outflows from banks seem to have subsided in the last couple of weeks, and borrowings from the emergency discount window have declined as well. A more probable fallout from this is that banks are likely to pull back on lending in order to shore up their balance sheets, which could lead to a slowdown in the economy. We are already seeing some evidence of this, and we are tracking the data closely.

⁴ Indeed, I am simplifying a bit here. The SVB annual report showed that while they still had equity value under Generally Accepted Accounting Principals (GAAP), GAAP requires banks to show what equity would have been if companies mark to market their "held to maturity" portfolio of bonds. The disclosure showed SVB was nearly insolvent. While that didn't spark an immediate run on the bank, once deposits started leaving, it made other depositors nervous, and the run accelerated.

⁵ The saddest part of the story is that SVB got rid of its interest rate hedges at the end of 2022.

⁶ Slok, Torsten Dr. "Outlook for Regional Banks", Apollo, The Daily Spark, April 2, 2023

The Banking System

(continued from page 4)

There have also been some questions about Fidelity given the news reports about Schwab. The two business models are different, however. Part of Schwab's business model is to sweep all cash into the Schwab bank (paying interest rates similar to banks, meaning next to nothing), and invest the cash in higher yielding securities, just like other banks. Similar to Silicon Valley Bank, they have unrealized losses in the "held to maturity" portfolio which is causing some concern.

In contrast to Schwab, Fidelity sweeps cash to a Fidelity money market account from which they take an asset management fee. This not only has given Fidelity clients higher rates of interest on their cash (recently over 4% vs. 0.45% at Schwab), but also if someone took cash away from Fidelity, they would have to sell some mutual fund assets, but it wouldn't require them to sell any assets that they own at a loss. In addition, custody assets are required to be held in segregated accounts, which aren't comingled with corporate assets. So while you can never be 100% sure, we feel very comfortable about Fidelity being our custodian.

Interesting stories from the quarter.

In last quarter's commentary I told the story of receiving an email asking for \$1,500 to be honored as a Top 10 Finance Leader of 2022. Another quarter and it only got worse, this time from Banking CIO Outlook Magazine:

I am pleased to inform you that we have shortlisted Satovsky Asset Management to feature as one of the Top 10 Wealth Management Service Providers in our 7th annual edition on Wealth Management. We want to feature Satovsky Asset Management with a profile in this edition...

It'll be an excellent platform for Satovsky Asset Management to be included alongside [other industry leaders] in this annual issue...

The expense for the reprint rights of the profile mentioned above is \$3,000. Along with the print and digital rights to the reprints, we will also provide a logo and a Certificate of Honor to utilize in your client acquisition efforts...

I didn't bother responding this time.

During the NFT craze (which we wrote about in several letters last year), one entrepreneurial person, Mason Rothschild, decided to create a computer rendition of a Hermès Birkin bag, call the picture a "MetaBirkin bag", and sell it to people as an NFT. At peak, each of his hundred MetaBirkin bags were worth tens of thousands of dollars. He was unaffiliated with Hermès.

Hermès sued Rothschild, saying that he was violating Hermès's trademark. His defense?

"...his NFTs were works of art protected by the First Amendment, no different from Andy Warhol's famous silk-screen prints of Campbell's soup cans. His attorneys characterized the NFT project as an "artistic experiment" that examined how society places value on status symbols."⁷

The scary thing is that I can see how that argument has merit. But as Matt Levine states, that is Hermès's whole business model: to see how much value society will place on status symbols—the original Birkin bag being one of them! You don't need a MetaBirkin bag for that. Well, just last month, a jury determined that the NFTs were more akin to consumer products and therefore subject to strict trademark laws that protect brands, not a piece of art. Levine concludes:

In some sense anyone who does any scam is running an artistic experiment that examines how much money people are willing to give them, but that is not a defense!...Man what an embarrassing time the NFT boom was.⁸

⁷ Most of this story, including this quote is from: Levine, Matt "NFT Stuff" Bloomberg Opinion, Money Stuff, February 8, 2023

⁸ ibid

The Banking System

(continued from page 5)

If you couldn't tell from prior letters, we couldn't agree more.

In one of the dumber things I've heard in a while, World Wrestling Entertainment (WWE), the largest professional wrestling company, has held discussions with state gambling regulators in Michigan, Indiana, and Colorado to legalize betting on their matches.⁹ The problem is that all of the matches are scripted! WWE is working with Ernst & Young, to secure match results so they won't leak to the public; they don't plan to inform wrestlers who will win until hours before a match. Who wants to bet on scripted match that's so simple to fix (they are all fixed after all)! Another way to con people to part with their money. Crazy!

I recently saw this article in the Wall Street Journal¹⁰ which highlighted that the acronym TINA is now passe. For the uninitiated, TINA stands for "there is no alternative", and it referred to stocks, when bond yields were near zero. Now with rates up, Goldman Sachs has called the shift "TARA" (there are reasonable alternatives), Deutsche Bank has named it "TAPAS" (there are plenty of alternatives), and Insight Investment came up with "TIARA" (there is a realistic alternative). At SAM, we say don't get caught up in the acronym flavor of the month. Two of us attended a conference hosted by Columbia Business School¹¹ where Cliff Asness, a founder at AQR Capital Management, said

"The definition of insanity is doing the same thing over and over and expecting a different outcome. Sticking with a great investment process when it feels like it's punishing you over and over isn't 'the definition of insanity.' It's your job."

Thanks for your continued confidence in us.

Avi and the SAM team







⁹ <https://www.cnbc.com/2023/03/08/ww-e-betting-scripted-match-results.html>

¹⁰ https://www.wsj.com/articles/wall-street-concedes-there-is-finally-an-alternative-to-stocks-d19aeb6?mod=hp_lead_pos4

¹¹ It was also quoted by the Wall Street Journal here: <https://columnalerts.cmail20.com/t/d-e-zdyurkt-ihjtuidjw-r/>

Quarterly Market Summary

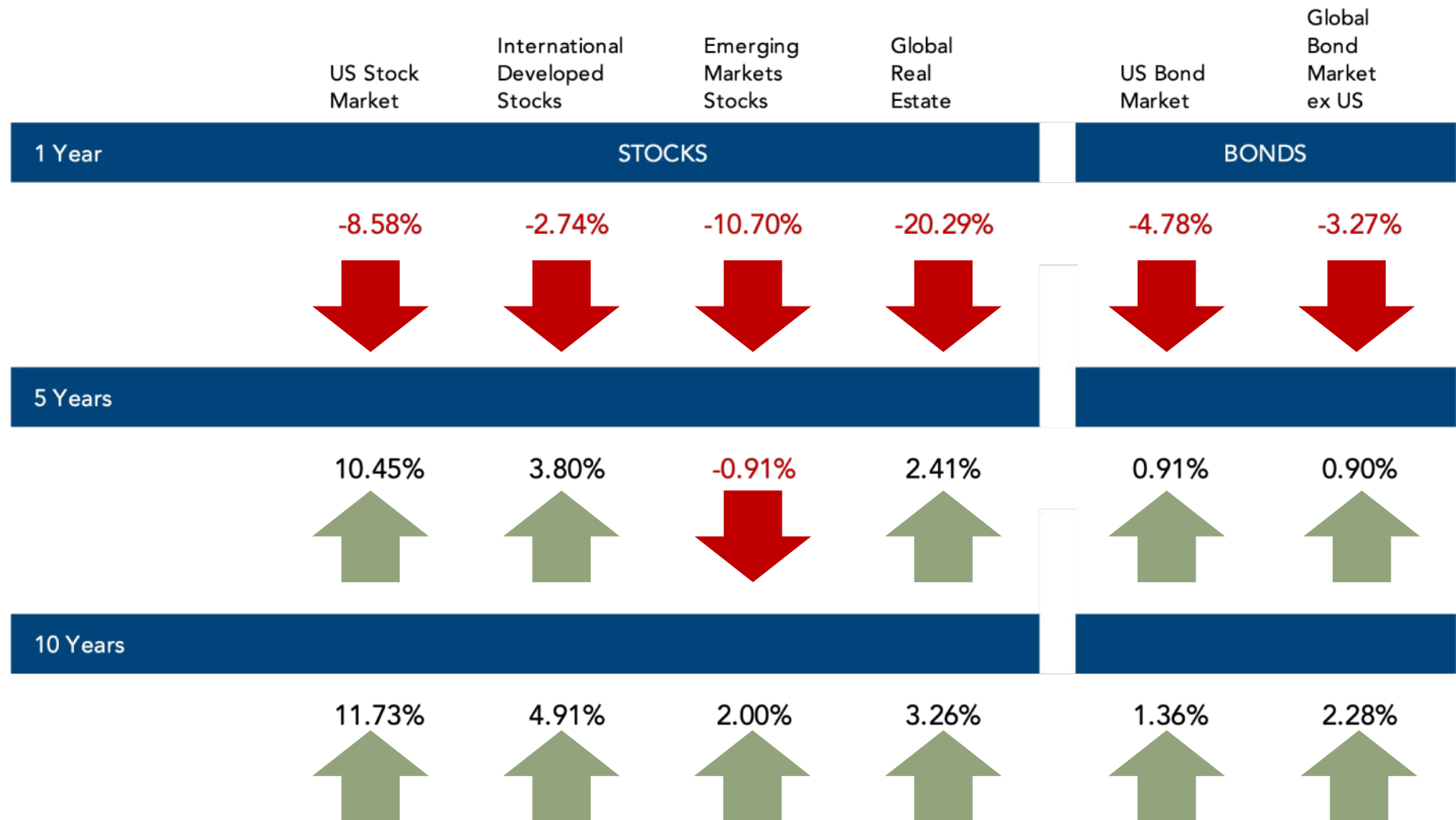
Index Returns

	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%
	2020 Q2	2009 Q2	2009 Q2	2009 Q3	2001 Q3	2008 Q4
Worst Quarter	-22.8%	-23.3%	-27.6%	-36.1%	-5.9%	-4.1%
	2008 Q4	2020 Q1	2008 Q4	2008 Q4	2022 Q1	2022 Q1

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

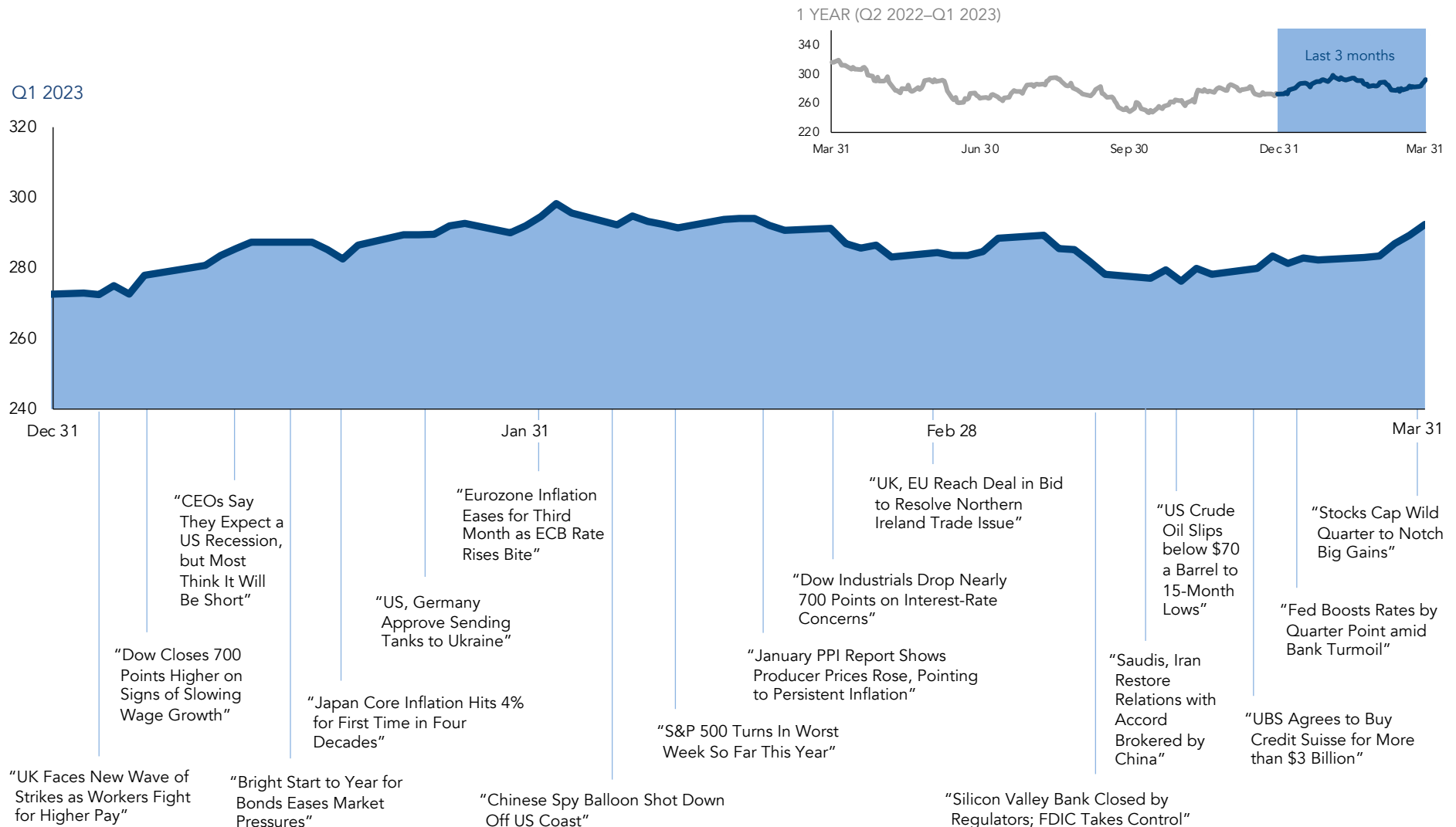
Index returns as of March 31, 2023



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.

World Stock Market Performance

MSCI All Country World Index with selected headlines from Q1 2023



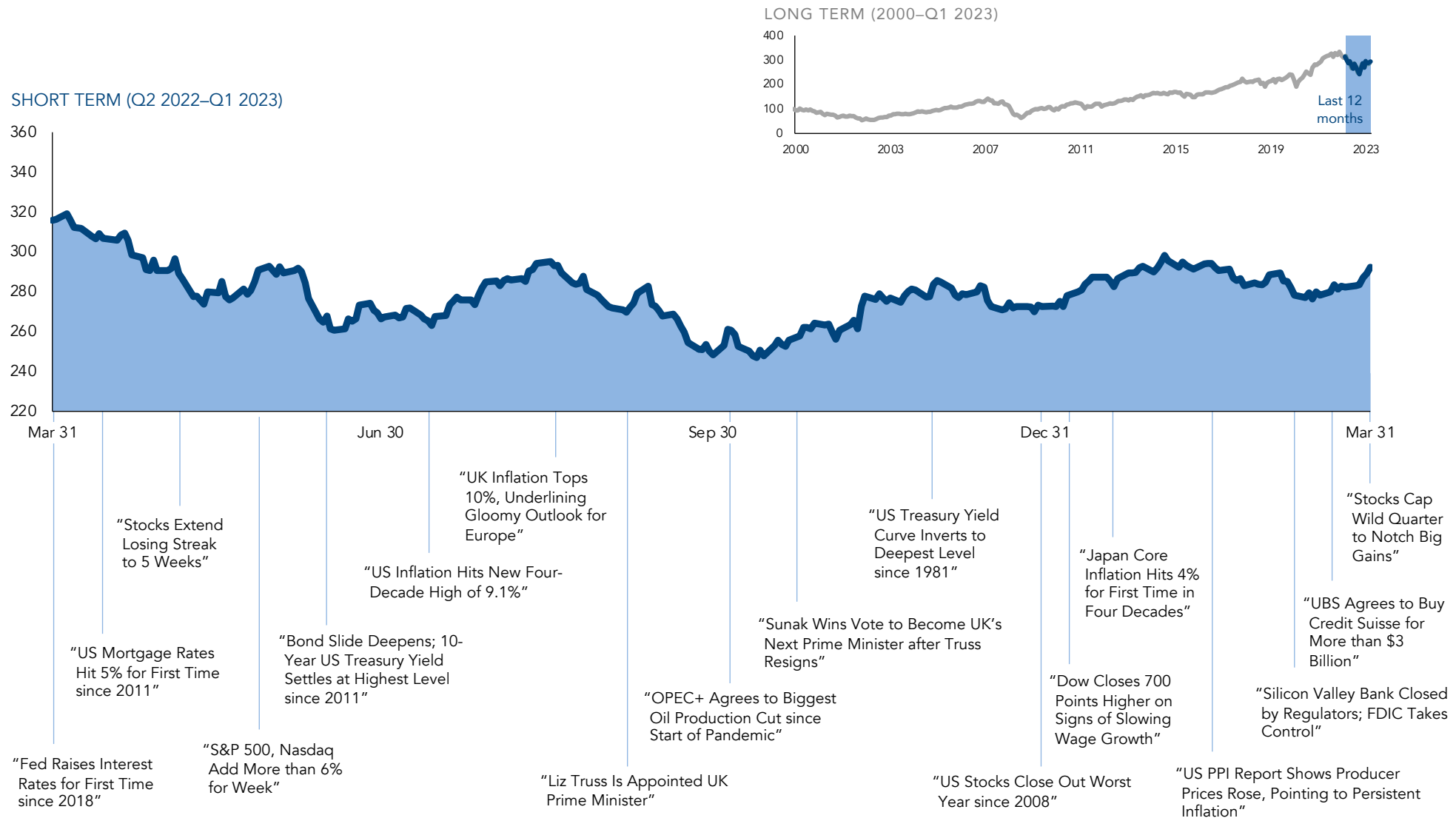
These headlines are not offered to explain market returns. Instead, they serve as a reminder that investors should view daily events from a long-term perspective and avoid making investment decisions based solely on the news.

Graph Source: MSCI ACWI Index (net dividends). MSCI data © MSCI 2023, all rights reserved. Index level based at 100 starting January 2001.

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.

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.

US Stocks

First Quarter 2023 Index Returns

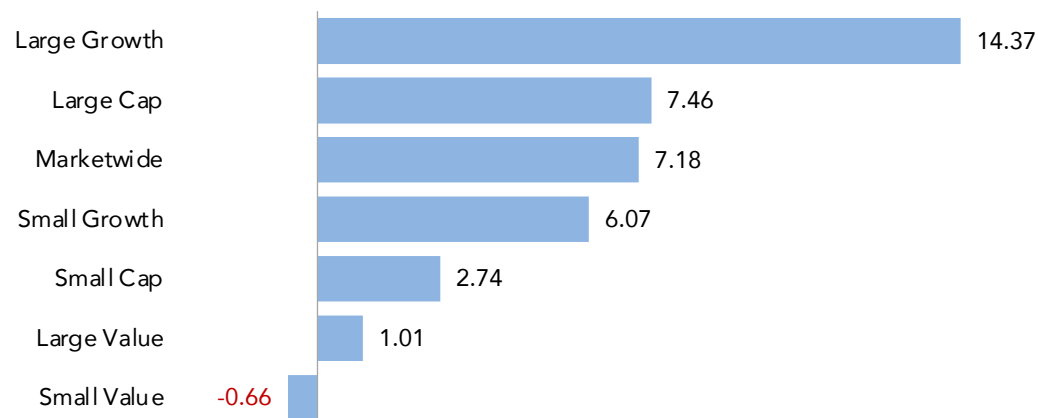
The US equity market posted positive returns for the quarter and underperformed non-US developed markets, but outperformed emerging markets.

Value underperformed growth.

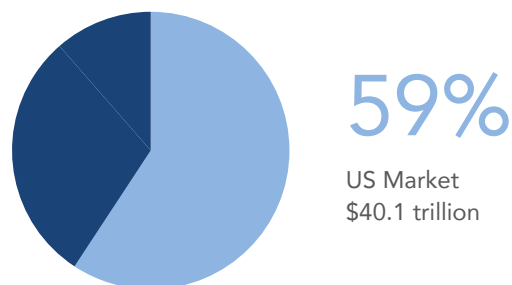
Small caps underperformed large caps.

REIT indices underperformed equity market indices.

Ranked Returns (%)



World Market Capitalization—US



Period Returns (%)

* Annualized

Asset Class	QTR	1 Year	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

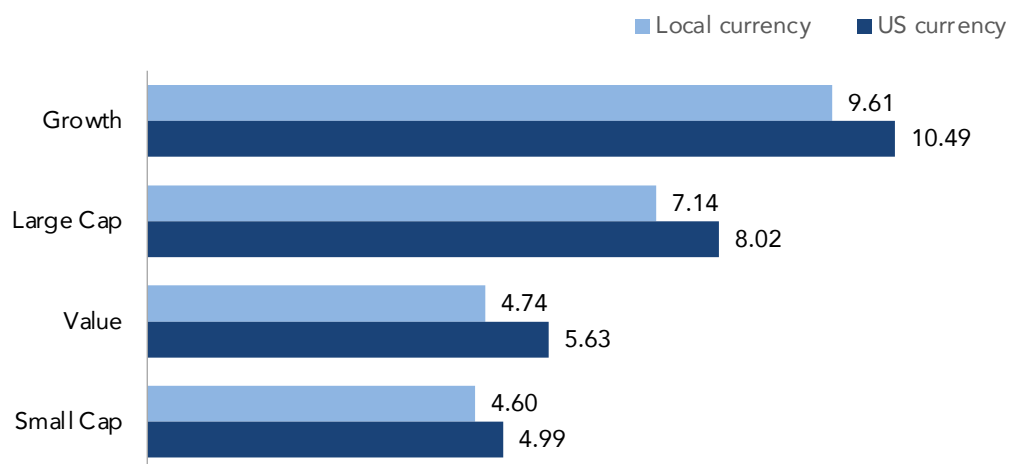
First Quarter 2023 Index Returns

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

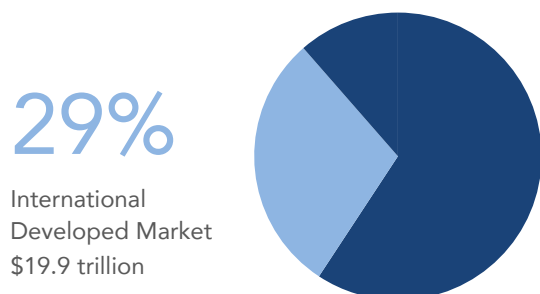
Value underperformed growth.

Small caps underperformed large caps.

Ranked Returns (%)



World Market Capitalization—International Developed



Period Returns (%)

Asset Class	QTR	1 Year	3 Years*	* Annualized	
				5 Years*	10 Years*
Growth	10.49	-4.04	11.15	4.96	5.77
Large Cap	8.02	-2.74	13.49	3.8	4.91
Value	5.63	-1.85	15.32	2.18	3.8
Small Cap	4.99	-10.13	13.43	1.54	5.54

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Emerging Markets Stocks

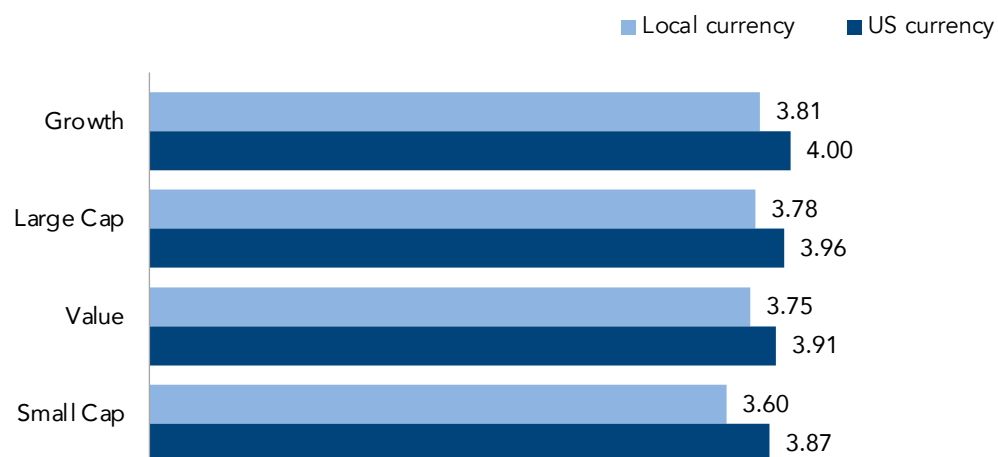
First Quarter 2023 Index Returns

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

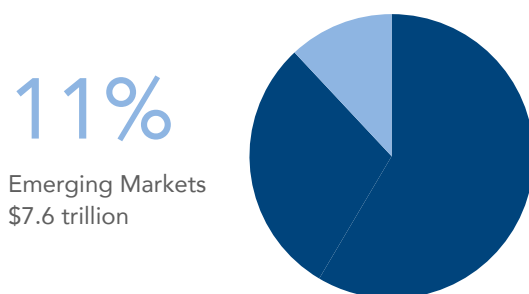
Value underperformed growth.

Small caps underperformed large caps.

Ranked Returns (%)



World Market Capitalization—Emerging Markets



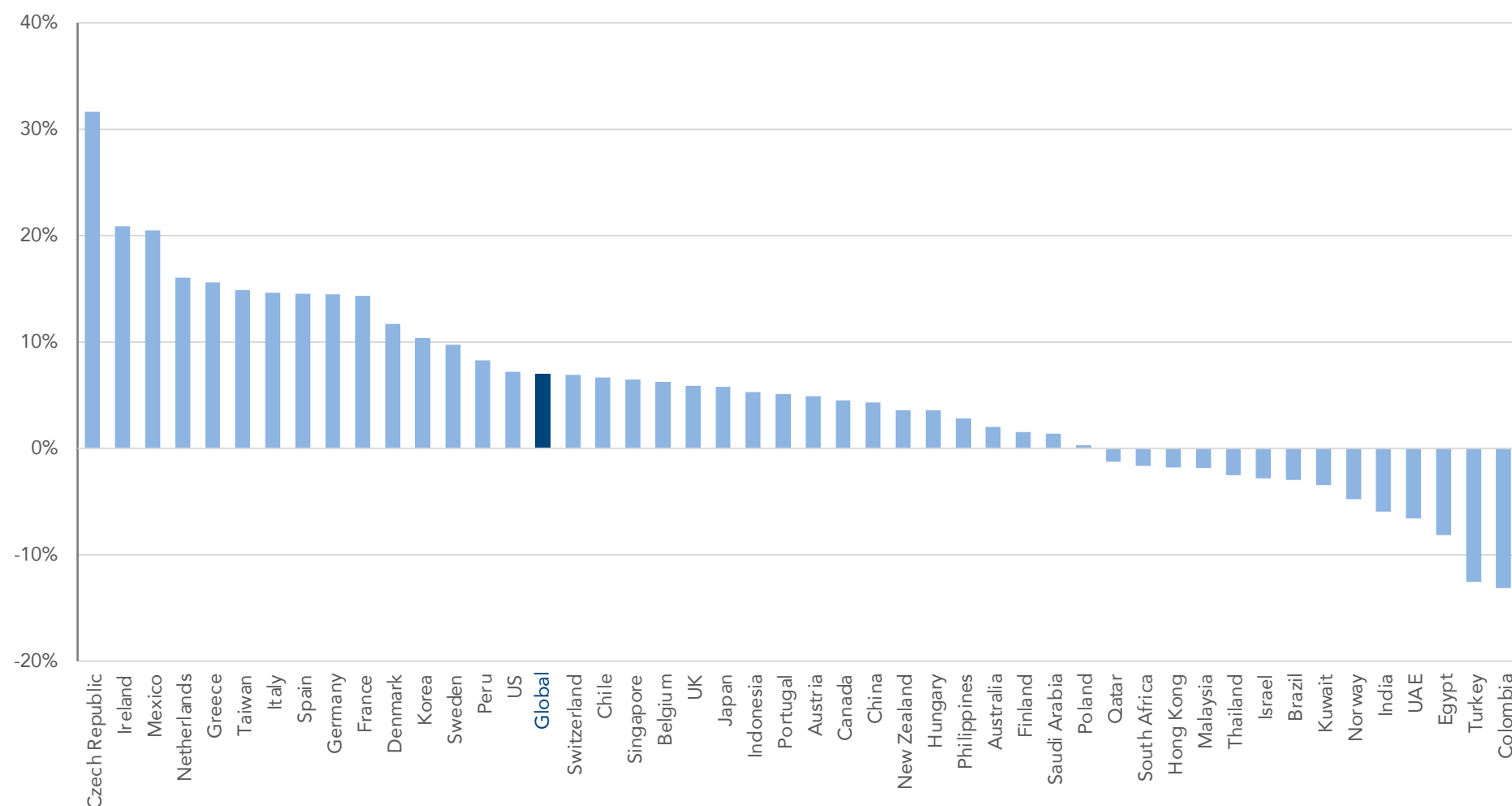
Period Returns (%)

Asset Class	QTR	* Annualized			
		1 Year	3 Years*	5 Years*	10 Years*
Growth	4	-11.87	5.65	-0.79	3.18
Large Cap	3.96	-10.7	7.83	-0.91	2
Value	3.91	-9.44	10.04	-1.15	0.69
Small Cap	3.87	-10.99	20.68	1.8	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.

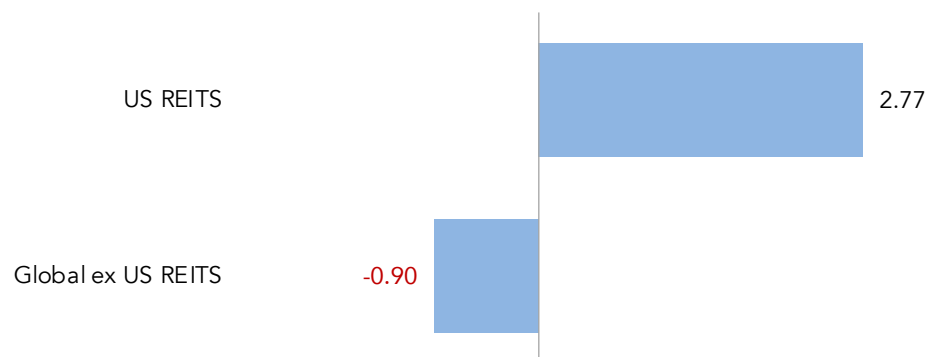
Country returns are the country component indices of the MSCI All Country World IMI Index for all countries except the United States, where the Russell 3000 Index is used instead. Global is the return of the MSCI All Country World IMI Index. MSCI index returns are net dividend. Indices are not available 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)

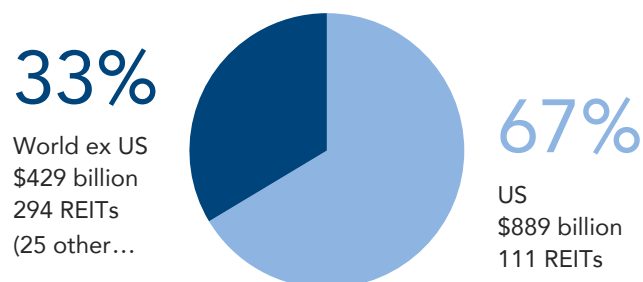
First Quarter 2023 Index Returns

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	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

* Annualized

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.

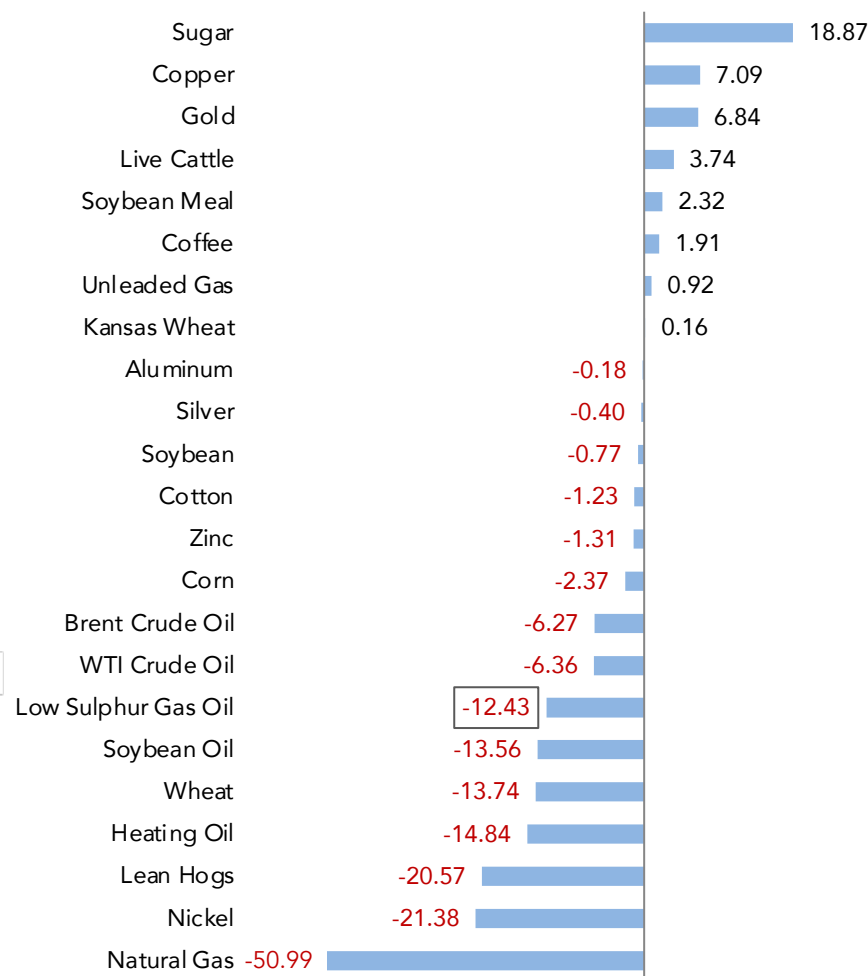
Natural Gas and Nickel were the worst performers, returning -50.99% and -21.38% during the quarter, respectively. Sugar and Copper were the best performers, returning +18.87% and +7.09% during the quarter, respectively.

Period Returns (%)

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

* Annualized

Ranked Returns (%)



Past performance is not a guarantee of future results. Index is not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio.

Commodities returns represent the return of the Bloomberg Commodity Total Return Index. Individual commodities are sub-index values of the Bloomberg Commodity Total Return Index. Data provided by Bloomberg.

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.

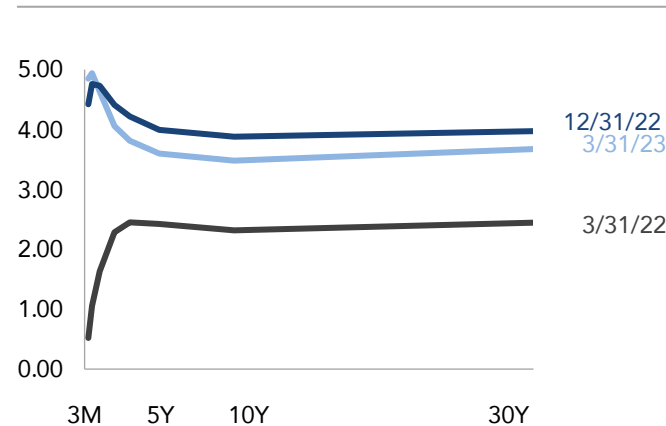
On the short end of the yield curve, the 1-Month US Treasury Bill yield increased 62 basis points (bps) to 4.74%, while the 1-Year US Treasury Bill yield decreased 9 bps to 4.64%. The yield on the 2-Year US Treasury Note decreased 35 bps to 4.06%.

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%.

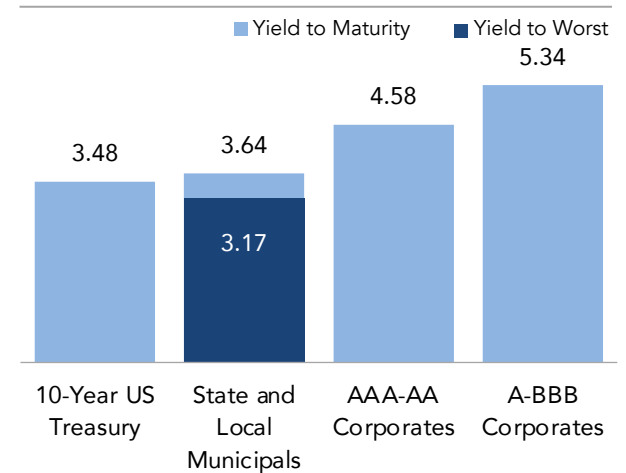
In terms of total returns, short-term US treasury bonds returned +1.87% while intermediate-term US treasury bonds returned +2.27%. Short-term corporate bonds returned +1.68% and intermediate-term corporate bonds returned +2.50%.¹

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%.²

US Treasury Yield Curve (%)



Bond Yield Across Issuers (%)



Period Returns (%)

Asset Class	QTR	*Annualized				
		1 Year	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	4.1	
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	-0.4	-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	2.5	0.89	1.41	0.87	

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 (SBBBI) 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.

Global Fixed Income

First Quarter 2023 Yield Curves

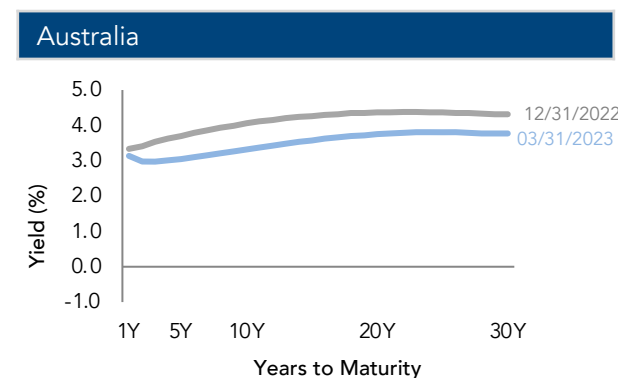
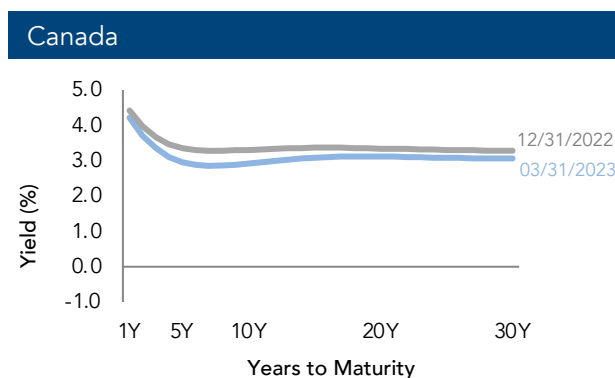
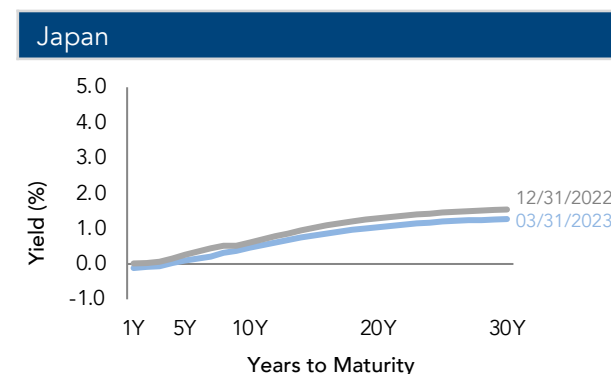
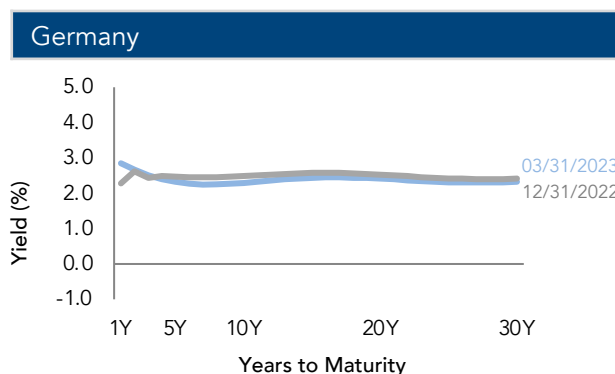
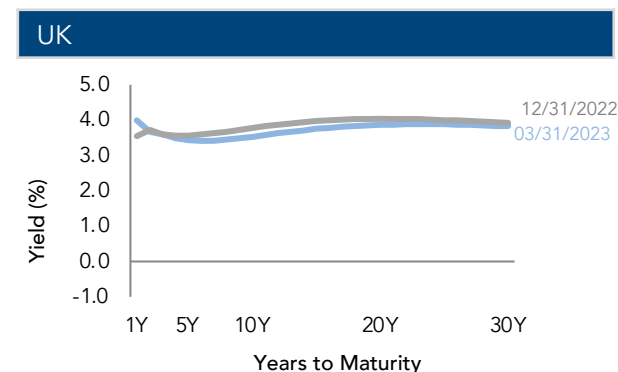
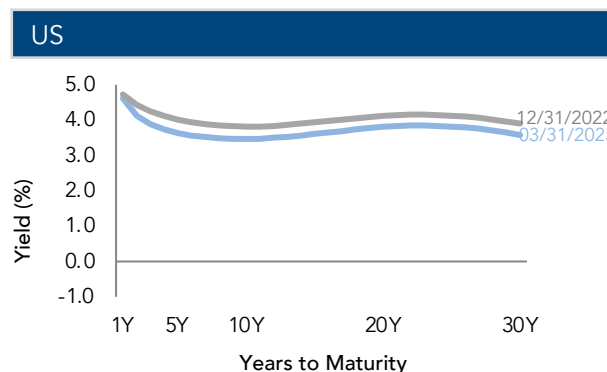
Except for ultrashort-term government bonds in the German and UK markets, interest rates generally decreased within global developed markets for the quarter.

Realized term premiums were positive in global developed markets.

In Japan, ultrashort-term nominal interest rates were negative. In Germany, the UK, Canada, and Australia the short-term segment of the yield curve was inverted.

Changes in Yields (bps) since 12/31/2022

	1Y	5Y	10Y	20Y	30Y
US	-11.4	-37.9	-34.8	-31.3	-32.2
UK	44.6	-13.5	-24.6	-17	-8.8
Germany	56.9	-15.6	-19.5	-11.5	-8
Japan	-13	-15.9	-15.5	-25.7	-27
Canada	-20.3	-39.9	-38.8	-22.7	-22.5
Australia	-19.4	-65.3	-73.3	-61.7	-54.6



Important Disclosures

March 2023

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