Cost of Capital in the Current Environment

Global Economic and Financial Market Trends

January 2023 Update

Foreword

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Dear Readers,

We are pleased to share the January 2023 update to our *Cost of Capital in the Current Environment – Global Economic and Financial Market Trends Report*. This report provides data and insights used to support Kroll's Recommended Equity Risk Premia and Normalized Risk-free Rate guidance for a variety of countries.

In 2022, global equity markets suffered their worst annual performance since the 2008 global financial crisis, weighed down by record-high inflation, the Russia-Ukraine war, and China's zero-COVID-19 policy. Major central banks have raised interest rates at a brisk pace during 2022, and rate hikes are not yet over. Economists have slashed real economic growth projections for 2023 relative to a year ago. However, some sprouts of optimism are emerging. Inflation may have peeked, a warm winter in Europe has kept a lid on energy prices, China has ended its zero-COVID-19 policy, and consumer spending is showing some resilience. **Global financial markets are starting to believe that the U.S. and the eurozone may be able to escape recession in 2023.** Amidst this highly uncertain environment, cost of capital inputs rose during 2022, but may soon stabilize if major central banks manage to achieve a soft landing in their economies.

This report contains valuable insights on long-term inflation expectations, the balance sheet size of major central banks, stock market performance—along with related volatility measures — credit spreads, unemployment rates, consumer and business confidence indicators, and real GDP growth estimates for seven regions, including Canada for the first time.

We hope you find this report helpful in understanding some of the ingredients used to arrive at Kroll's cost of capital guidance. If you would like to receive further information or discuss any of the findings, please contact us.

Sincerely,
Carla Nunes

Global Cost of Capital Inputs – U.S. and Eurozone

Data as of January 17, 2023

	Normalized Risk-Free Rate	Kroll Recommended Equity Risk Premium
U.S. (in USD)	Higher of 3.5% or Spot*	6.0%
Eurozone *** (in EUR)	Higher of 3.0% or Spot**	5.5% to 6.0%

These are our latest equity risk premium recommendations for the U.S. and the eurozone (from a German investor perspective), along with accompanying risk-free rates.

- Normalized risk-free rates have increased in 2022 as long-term inflation expectations kept rising due to various factors (see next page).
- Equity risk premiums are still higher relative to our recommendations prior to the outbreak of COVID-19 in March 2020.

* We recommend using the spot 20-year U.S. Treasury yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended U.S. normalized risk-free rate of 3.5%. This guidance is effective when developing USD-denominated discount rates as of June 15, 2022, and thereafter.

** We recommend using the spot 15-year German government bond yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended German normalized risk-free rate of 3.0%. This guidance is effective when developing EUR-denominated discount rates as of October 18, 2022, and thereafter.

*** German normalized risk-free rate and eurozone equity risk premium (ERP) for use in EUR-denominated discount rates from a German investor perspective. Our current ERP recommendation is at the top of the range. Additional country risk adjustments may be warranted when estimating discount rates for other countries in the eurozone.

For more information, visit: kroll.com/costofcapitalnavigator

Long-Term Inflation Expectations (Median)

Data as of January 1, 2023

Although at a slower pace, major central banks are continuing to raise interest rates to tame high inflation, which reached levels not seen in 30 to 40 years in some countries (a 70-year record high for Germany). Inflation appears to have peaked at the tail end of 2022, which led financial markets to hope that interest rate hikes will stop sometime in 2023. Long-term inflation expectations have also come down in the U.S. relative to just a few months ago. However, Germany was historically very dependent on energy sourced from Russia prior to the war on Ukraine. While a warmer winter in Europe and some stabilization of natural gas prices have contributed to a slowdown in German inflation, the country's high exposure to energy price fluctuations means that long-term inflation expectations remain high.

U.S.

2.4%

Inflation estimates over the long term rose from 2.0% in June 2020 to 2.9% in October 2022, but declined to 2.4% at the end of December 2022.

Germany

2.8%

Long-term inflation expectations surged from 1.6% in June 2020 to 2.8% in October 2022 and stayed at that level at the end of December 2022.

Sources of underlying U.S. data: *Blue Chip Economic Indicators*, *Blue Chip Financial Forecasts*, *Consensus Economics*, *IHS Markit*, *Federal Reserve Bank of Cleveland*, *Federal Reserve Bank of Philadelphia (Aruoba Term Structure of Inflation Expectations, Livingston Survey, and Survey of Professional Forecasters)*, *Oxford Economics* and the *University of Michigan's Surveys of Consumers Inflation Expectations*.

Sources of underlying German data: *Consensus Economics*, *Economist Intelligence Unit*, *IHS Markit*, *International Monetary Fund*, *Oxford Economics* and *PwC*.

Global Cost of Capital Inputs – Other Countries

Data as of January 17, 2023

This is the latest Kroll risk-free rate guidance for the UK, Canada and Australia. We are happy to share our guidance for Australia for the first time. While we have conducted this analysis internally at Kroll, we had not previously shared our guidance in external publications.

	UK †† (in GBP)	Canada †† (in CAD)	Australia †† (in AUD)
Normalized Risk-Free Rate	Higher of 4.0% or Spot‡	Higher of 3.5% or Spot§	Higher of 3.5% or Spot#

‡ We recommend using the spot 20-year UK Gilt yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended UK normalized risk-free rate of 4.0%. This guidance is effective when developing GBP-denominated discount rates as of October 18, 2022, and thereafter.

§ We recommend using the spot Government of Canada Benchmark Long-Term Bond yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended Canada normalized risk-free rate of 3.5%. This guidance is effective when developing CAD-denominated discount rates as of October 18, 2022, and thereafter.

We recommend using the spot 10-year Australia Commonwealth Government Bond yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended Australia normalized risk-free rate of 3.5%. This guidance is effective when developing AUD-denominated discount rates as of October 31, 2022, and thereafter.

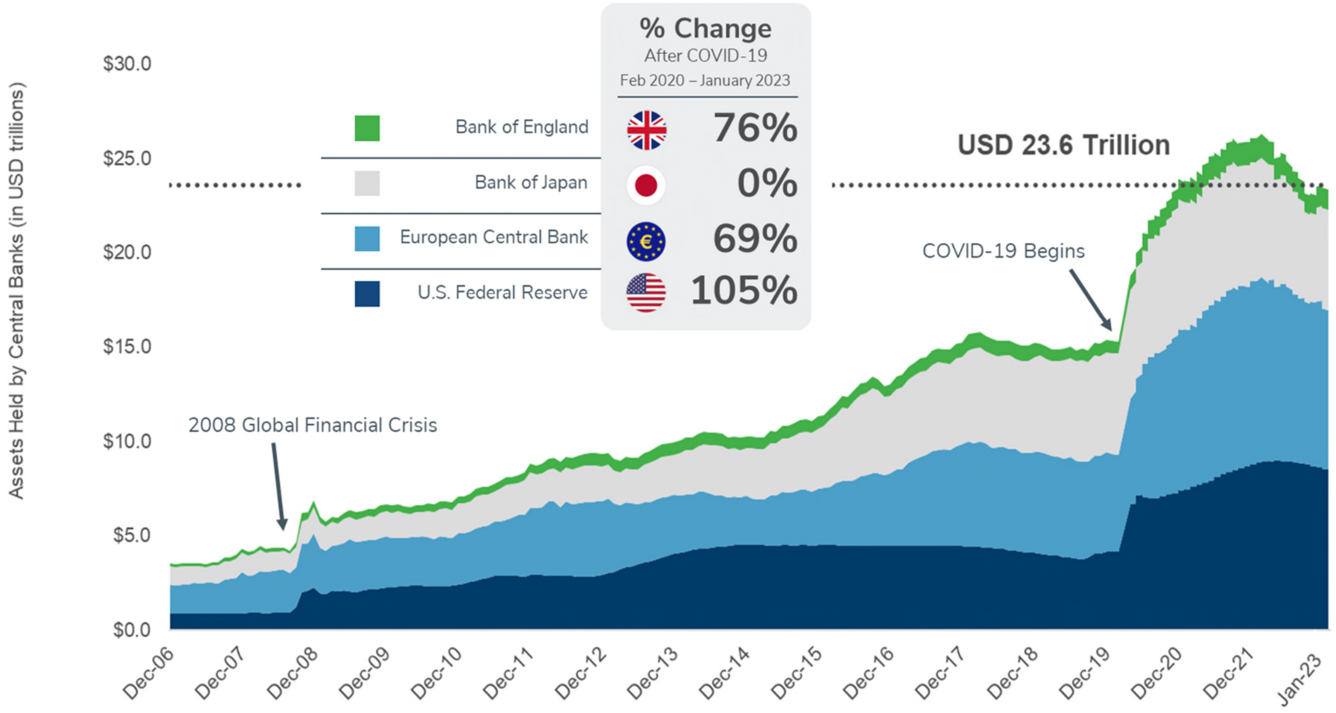
†† Although currently we do not have an official Kroll Recommended ERP for the UK, Canada and Australia, historical and other forward-looking ERP information for these countries is available in the International Cost of Capital module within the Cost of Capital Navigator.

For more information, visit: kroll.com/costofcapitalnavigator

Total Assets Held by Central Banks Over Time

Data as of January 17, 2023

After COVID-19 was declared a pandemic, major central banks implemented quantitative easing (QE) policies that entailed massive purchases of securities at an unprecedented pace. The swelling size of their balance sheets, which primarily comprised government debt securities, contributed to keeping interest rates at historically low levels in most developed markets. Recent inflationary pressures have finally led some central banks to raise policy interest rates, begin unwinding asset purchase programs and reduce the size of their balance sheets (quantitative tightening). However, over the next two years, the combined balance sheet of these central banks will remain significantly larger than pre-pandemic levels.



Sources: Capital IQ, FRED® Economic Data, Bank of England, Bank of Japan and European Central Bank

Global 10-Year Government Bond Yields

Data as of January 17, 2023

Long-term interest rates are still at relatively low levels in developed markets from a historical perspective. However, the recent surge in inflation began impacting short- and long-term interest rates. The European Central Bank embarked on a path to control inflation by raising interest rates for the first time in 11 years and ending net purchases under QE programs. Central banks in the U.S., Canada, Sweden, Switzerland and the UK have also begun their interest rate normalization process. The Bank of Japan increased its target 10-year yield to a range of 0.25% to 0.50%, but more changes may be in store as a new governor takes the helm at the bank.

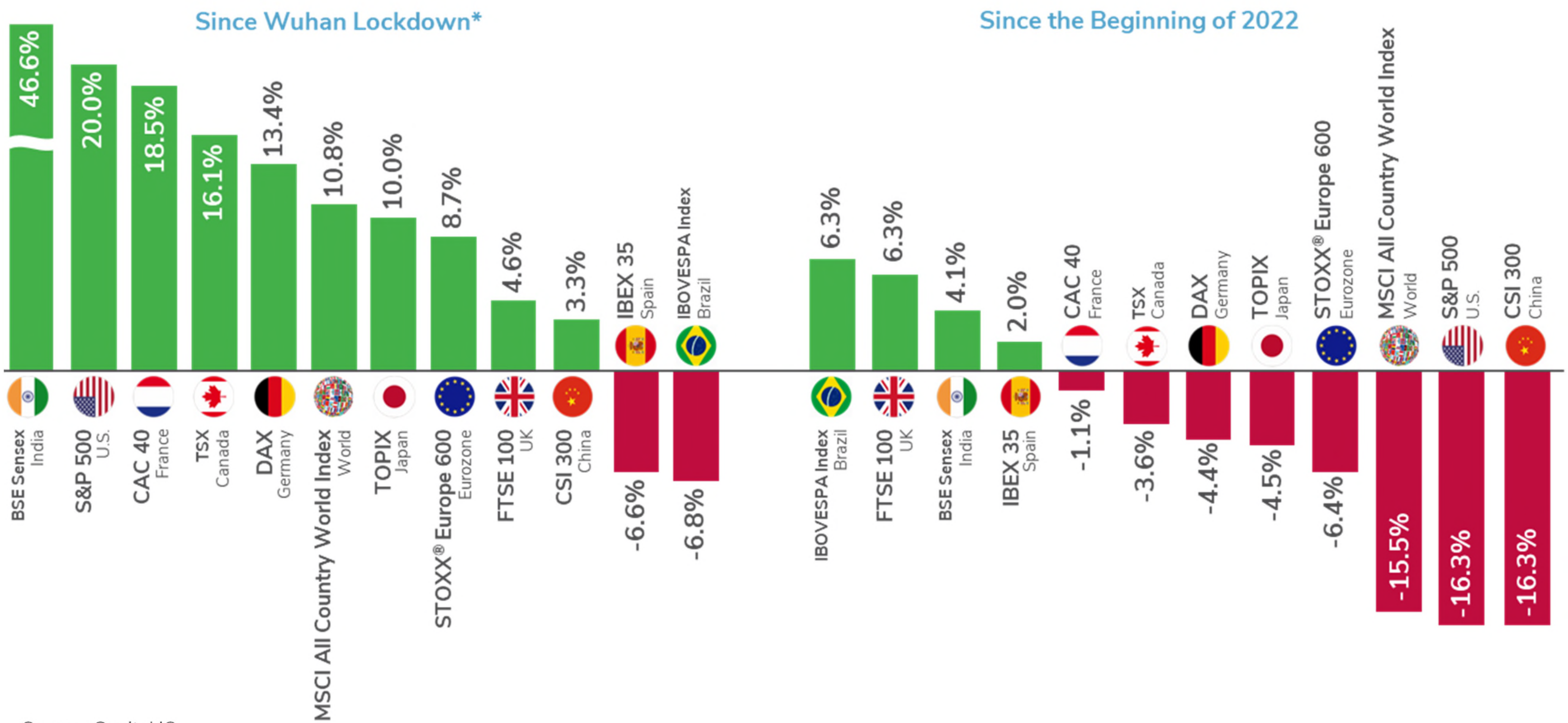
Americas	U.S. **3.53%**	Canada **2.85%**	Brazil **12.51%**
Eurozone	Eurozone **2.19%**	Germany **2.09%**	Netherlands **2.40%**
	France **2.52%**	Spain **3.07%**	Italy **3.85%**
Europe – Other	UK **3.35%**	Switzerland **1.13%**	Sweden **1.84%**
Asia Pacific	China **2.85%**	India **7.33%**	Japan **0.51%**
	Australia **3.61%**	Singapore **2.89%**	South Korea **3.45%**

Sources: *Refinitiv* (Brazil, India), *European Central Bank* (eurozone aggregate yield) and *Capital IQ* (other countries)

Stock Market Performance

Data through January 17, 2023

The S&P 500 was the second worst-performing index since 2022 began, as investors tried to ascertain the impact of rising interest rates on company (equity) values. China was the worst-performing market, but the end of its zero-COVID-19 policy has improved the outlook significantly for 2023. Inflation appears to have peaked at the tail end of 2022, which led global financial markets to hope that interest rate hikes will stop sometime in 2023.



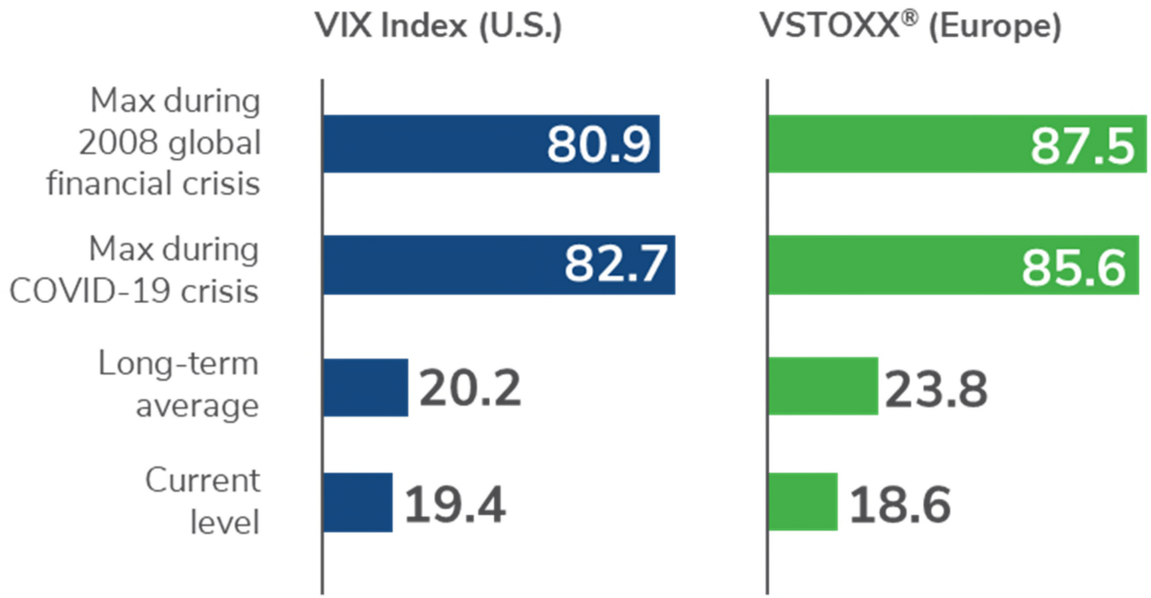
Source: *Capital IQ*

*The first lockdown due to COVID-19 began on January 23, 2020, in Wuhan, China.

Global Market Volatility

Data as of January 17, 2023

U.S. and European financial markets experienced significant volatility during 2022, as increased uncertainty related to the impact of inflationary pressures on central banks' plans to raise interest rates and the Russia-Ukraine war led to fears of stagflation. Despite the still-uncertain environment, in early 2023 we are seeing some optimism in markets, with U.S. and European volatility indices now below their long-term average.



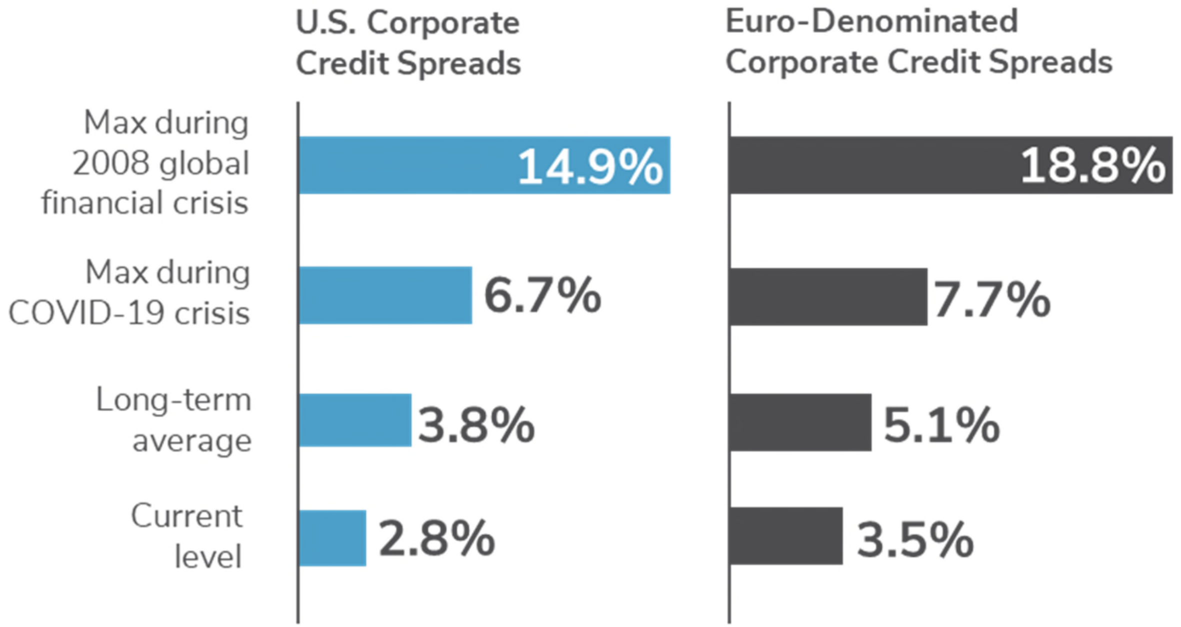
Sources: *Capital IQ, FRED® Economic Data and Morningstar Direct*

Long-term averages are based on 1995 to present for VIX daily series and 1999 to present for VSTOXX daily series.

Global Credit Spreads

Data as of January 17, 2023

Thanks to the inclusion of corporate debt in the Federal Reserve and European Central Bank asset purchase programs, as well as investor perception that these central banks will act as a lender of last resort, U.S. and European corporate debt spreads between high-yield and investment-grade bonds have stayed at historical lows. Towards year-end 2022, credit spreads widened, as interest rates began to rise. However, spreads have narrowed again in early 2023 and are below long-term averages.



Sources: *Capital IQ, FRED® Economic Data and Morningstar Direct*

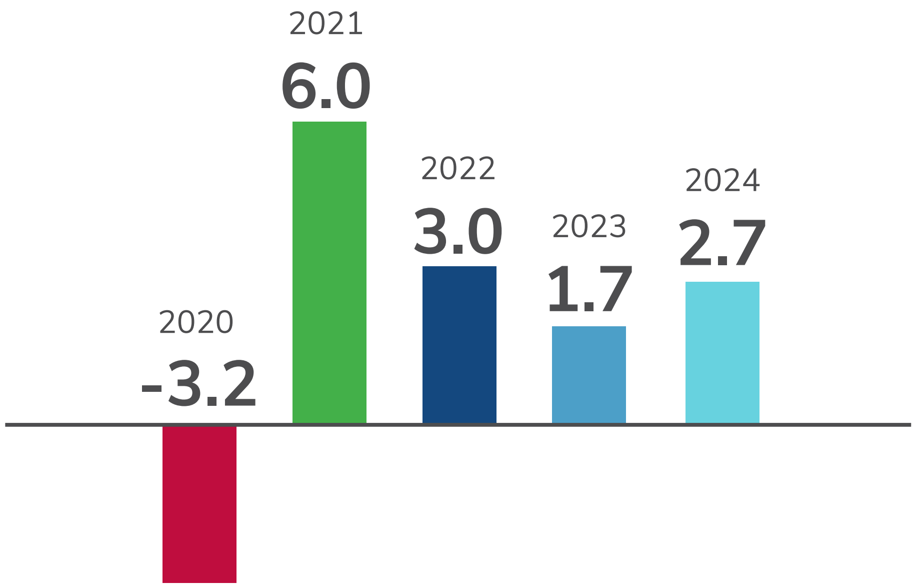
U.S. corporate credit spreads are based on the difference in effective yields between the ICE BofA U.S. High Yield Index and the ICE BofA U.S. Corporate Index. Euro-denominated corporate credit spreads are based on the difference in effective yields between the Bloomberg Barclays Pan-European High Yield Index (EUR) and the Bloomberg Barclays Euro Aggregate Corporate Bond Index. Long-term averages are based on 1996 to present for U.S. credit spread daily series and 1998 to present for EUR-denominated credit spread monthly series.

Real GDP Growth (%) Estimates (Median)

Data as of January 17, 2023

Global economic recovery from the pandemic was cut short in 2022. The Russia-Ukraine war, global supply chain disruptions, inflationary pressures and a zero-COVID-19 policy in China created the specter of stagflation in some countries and regions. Economic growth projections for 2023 have been significantly downgraded relative to a year ago.

WORLD

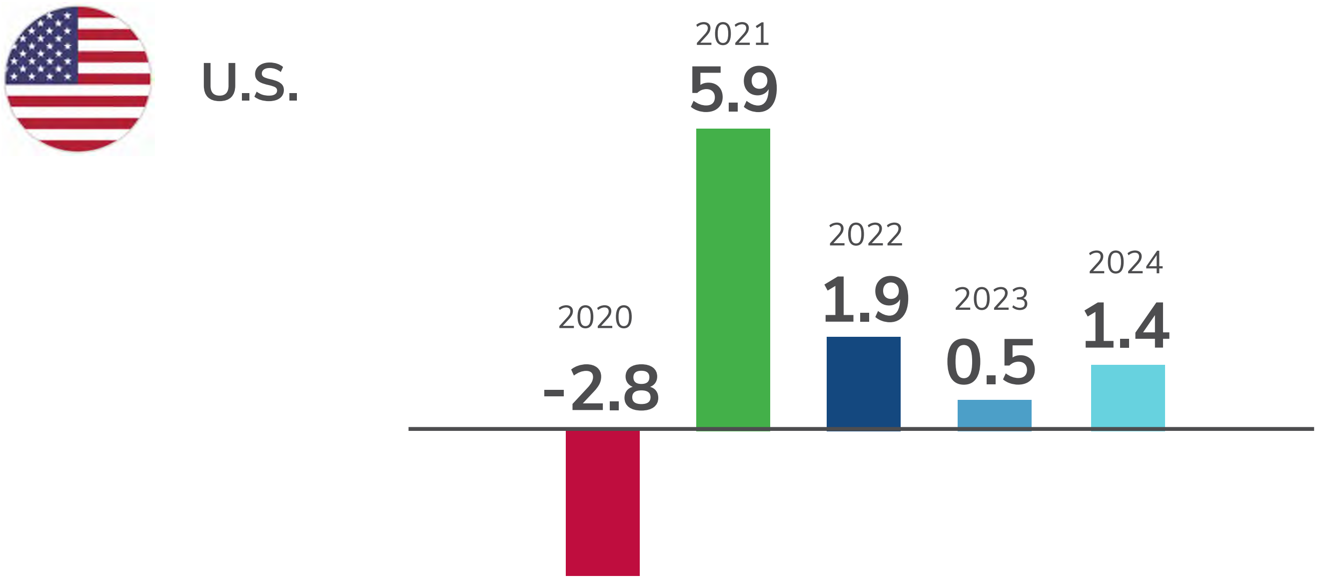


Sources: *OECD, International Monetary Fund, World Bank, Blue Chip Economic Indicators, Consensus Economics, Economic Intelligence Unit, Fitch Ratings, IHS Markit, Oxford Economics and S&P Global Ratings*

Real GDP Growth (%) Estimates (Median)

Data as of January 17, 2023

U.S. economic growth projections for 2023 have been revised down significantly relative to a year ago. The labor market continues to be tight, putting pressure on wage growth. The Fed has embarked on an aggressive path of interest rate hikes in an attempt to tame inflation and cool down the economy. The Fed is attempting to achieve a soft landing, but an overshoot could potentially lead to a recession. Economists are divided on whether we will see a recession in the second half of the year, but the expectations are that even if we do see one, it will not be very deep and it will not last long. Real growth for 2024 is projected to be below potential for the U.S. economy.

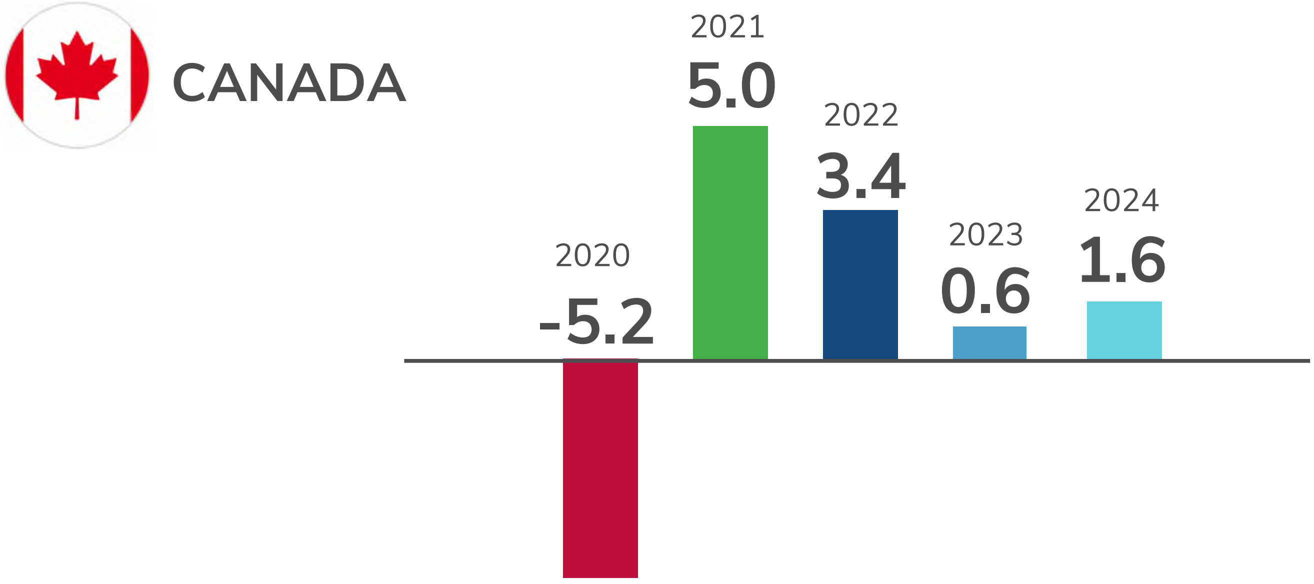


Sources: *OECD, International Monetary Fund, World Bank, Blue Chip Economic Indicators, Consensus Economics, Economic Intelligence Unit, Fitch Ratings, IHS Markit, Moody's Analytics, Oxford Economics and S&P Global Ratings*

Real GDP Growth (%) Estimates (Median)

Data as of January 17, 2023

Canada inflation reached a 40-year high in 2022, with price increases being broad based. This led the Bank of Canada to undertake aggressive interest rate hikes. Real GDP growth is forecast to moderate in 2022, but still at a much stronger pace than the U.S., its main trading partner. The increase in crude oil prices after Russia's invasion of Ukraine benefitted Canadian exports. Nonetheless, higher interest rates are expected to weigh on growth towards year-end. This, combined with other factors, point to a possibility of a recession in 2023.



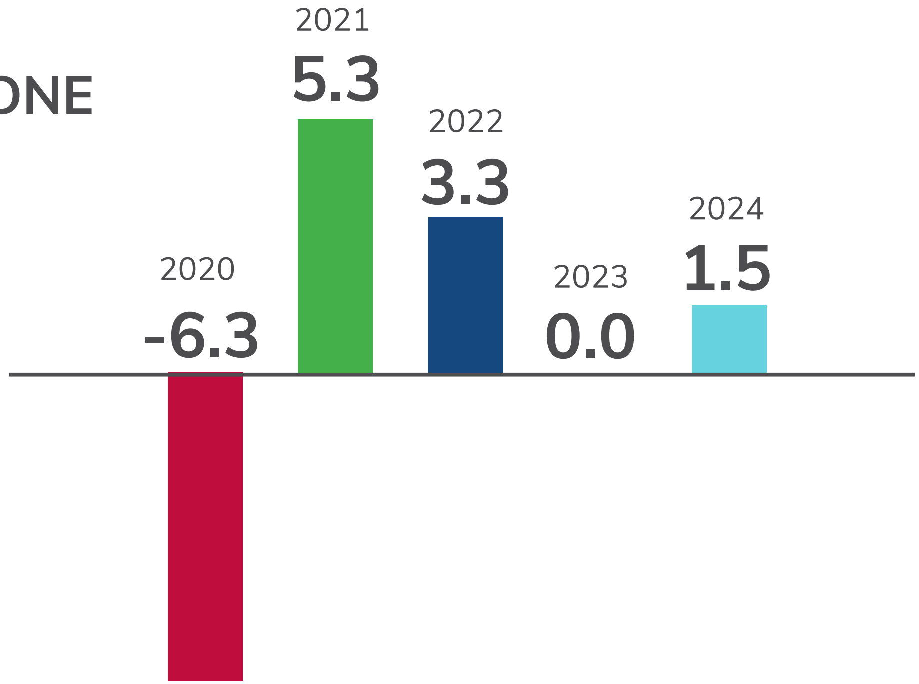
Sources: *OECD, International Monetary Fund, World Bank, Blue Chip Economic Indicators, Consensus Economics, Economic Intelligence Unit, Fitch Ratings, IHS Markit, Oxford Economics and S&P Global Ratings*

Real GDP Growth (%) Estimates (Median)

Data as of January 17, 2023

After a strong recovery in 2021, the eurozone saw a significant downward revision in growth in 2022, thanks in good part to the uncertainty created by the Russia-Ukraine war. Commodity price increases since the war began and the eurozone's significant energy dependence on Russia have led to record-high inflation for the common-currency area, while weighing down growth prospects. The European Central Bank has signaled that interest rates will continue to rise. A warmer winter in Europe and a successful replenishing of natural gas stocks have raised hopes that the eurozone may escape recession in 2023. However, there is very little room for policy errors.

EUROZONE

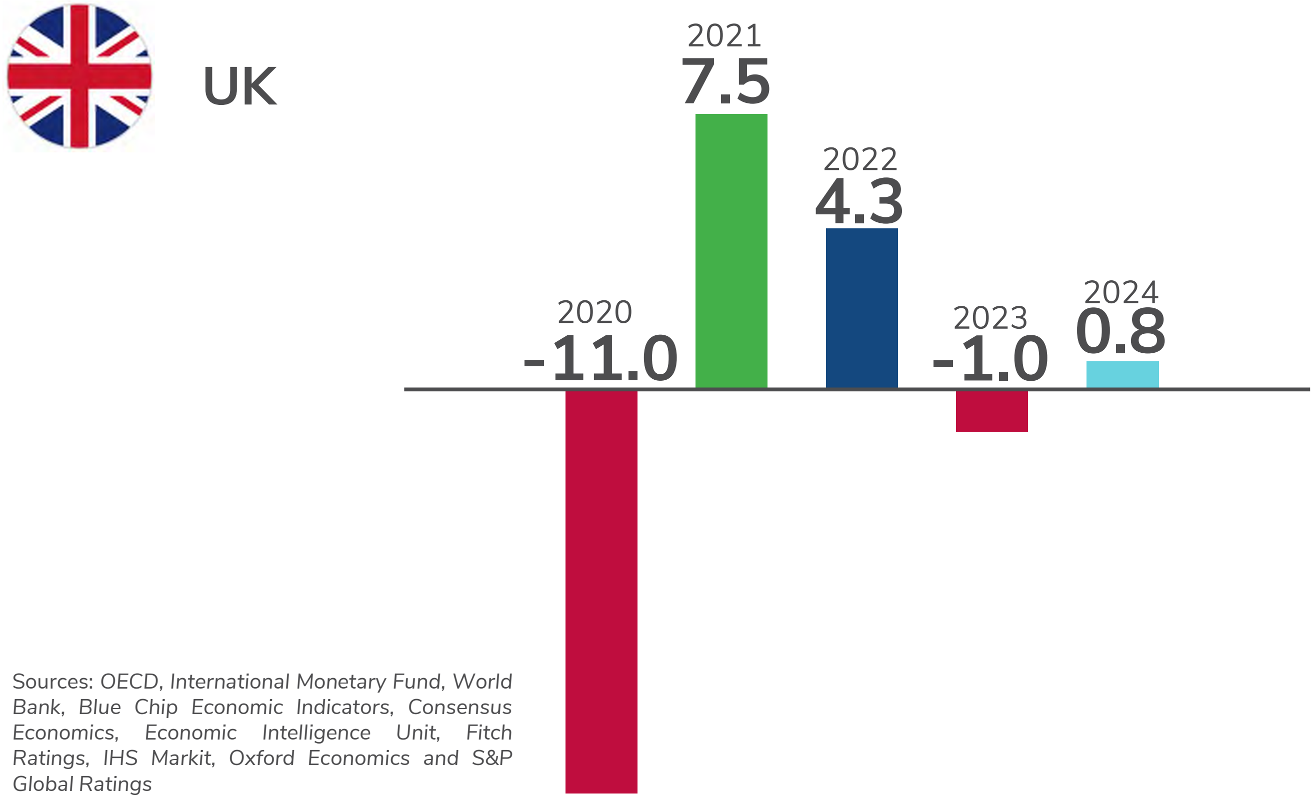


Sources: *OECD, International Monetary Fund, World Bank, Blue Chip Economic Indicators, Consensus Economics, Economic Intelligence Unit, Fitch Ratings, IHS Markit, Oxford Economics and S&P Global Ratings*

Real GDP Growth (%) Estimates (Median)

Data as of January 17, 2023

A surge in inflation in 2022 has lowered consumer purchasing power and dimmed UK's growth outlook. The UK economy is vulnerable to spill-over effects from the Russia-Ukraine war, particularly due to rising energy prices and supply chain disruptions. The Bank of England has been raising interest rates at a rapid pace, and markets went through a turbulent period in September and October, seeing two new prime ministers in a short period of time. Economists believe that the UK economy will not escape recession in 2023, and growth is expected to be anemic in 2024.



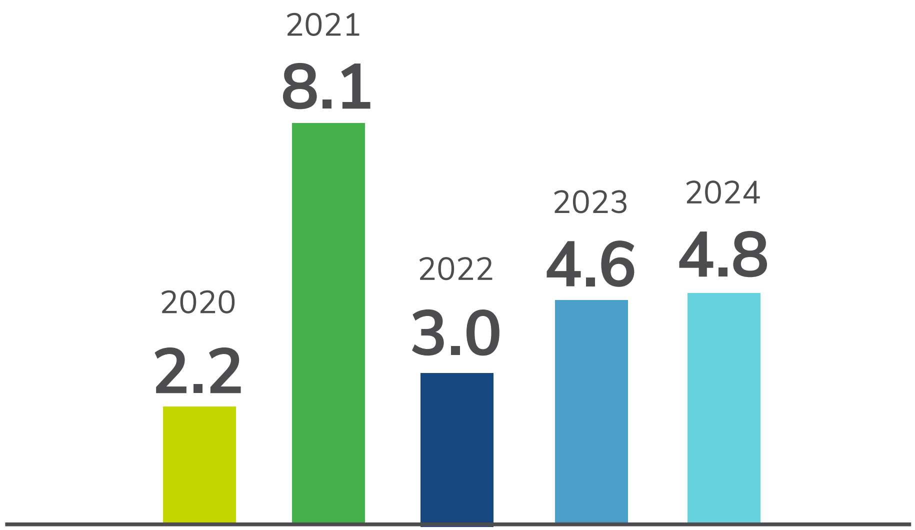
Sources: OECD, International Monetary Fund, World Bank, Blue Chip Economic Indicators, Consensus Economics, Economic Intelligence Unit, Fitch Ratings, IHS Markit, Oxford Economics and S&P Global Ratings

Real GDP Growth (%) Estimates (Median)

Data as of January 17, 2023

Real GDP growth in 2022 was the second worst in decades (after the low in 2020), as a resurgence of COVID-19 cases and China's zero-COVID-19 policy translated into lockdowns in many cities and ports. These measures weighed on economic activity and contributed to further bottlenecks in global supply chains. With an end to the zero-COVID-19 policy, the outlook for 2023 has brightened, but real GDP growth is still expected to be below the nearly 6% (and higher) level the economy enjoyed for many years.

CHINA



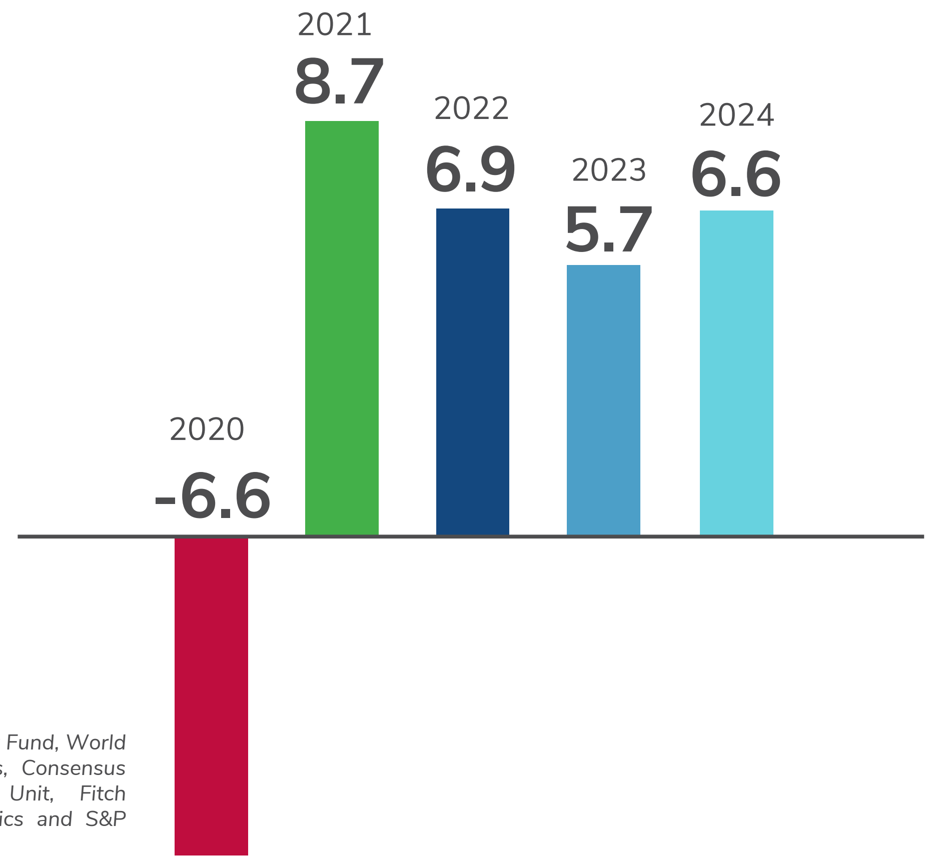
Sources: *OECD, International Monetary Fund, World Bank, Blue Chip Economic Indicators, Consensus Economics, Economic Intelligence Unit, Fitch Ratings, IHS Markit, Oxford Economics and S&P Global Ratings*

Real GDP Growth (%) Estimates (Median)

Data as of January 17, 2023

India saw an impressive rebound from the pandemic in 2021. However, real growth in 2022 decelerated as rising global food and energy prices impacted the Indian economy negatively. Growth expectations for 2023 were downgraded substantially from a year earlier.

INDIA



Sources: OECD, International Monetary Fund, World Bank, Blue Chip Economic Indicators, Consensus Economics, Economic Intelligence Unit, Fitch Ratings, IHS Markit, Oxford Economics and S&P Global Ratings

U.S. vs. Eurozone Unemployment Rate

Data as of January 2023

The U.S. unemployment rate is now back to pre-pandemic levels, matching multi-decade lows. The U.S. is still seeing pockets of labor shortages in a variety of industries, although layoffs in tech and some other industries have begun. The eurozone's unemployment rate is now lower than the level registered in March 2020.

	U.S.	Eurozone
2020		
March	4.4%	7.1%
June	11.0%	8.0%
September	7.9%	8.7%
December	6.7%	8.1%
2021		
March	6.0%	8.1%
June	5.9%	7.8%
September	4.7%	7.4%
December	3.9%	7.0%
2022		
March	3.6%	6.8%
June	3.6%	6.7%
September	3.5%	6.6%
Latest available*	3.5%	6.5%

Source: *U.S. Bureau of Labor Statistics and Eurostat*

* Data through December 2022 for the U.S. and November 2022 for the eurozone.

U.S. and Eurozone
Consumer Sentiment vs. Business Confidence

Data as of January 17, 2023

Consumer sentiment declined dramatically in the U.S. and eurozone, with a rise in inflation creating anxiety about the future. Consumer confidence is now lower than at the height of the COVID-19 crisis in both geographies. In contrast, business confidence in the U.S. is about the same as prior to the pandemic, while the eurozone is now higher.

		Pre-COVID-19 (February 2020)		Post-COVID-19 (January 2023)	Long-Term Avg.
Consumer Sentiment	U.S.	101.0	↓	64.6	(1952–2023) 85.8
	Eurozone	107.1	↓	77.5*	(1985–2023) 100.0
Business Confidence	U.S.	99.0	↔	99.0*	(1950–2023) 100.0
	Eurozone	100.6	↑	105.4*	(1985–2023) 100.0

* Data only available for December 2022

Sources: *Michigan University's Index of Consumer Sentiment, OECD's Business Confidence Index and European Commission business and consumer surveys* (The same methodology that the European Commission uses to standardize its Economic Sentiment Indicator [ESI] was applied to the Eurozone Consumer Confidence and Business Climate Indicator series.)

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About Valuation Digital Solutions

The Valuation Digital Solutions group within Kroll strives to empower companies and finance professionals with cost of capital thought leadership and high-quality valuation data that enables them to make sound business decisions. Key data and content essential in the quantification of risk can be found in the Cost of Capital Navigator digital platform. For more information visit: www.kroll.com/costofcapitalnavigator.

About Kroll

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