

Geopolitical risk dashboard

BlackRock®

February 2022

Geopolitical Risks – February update

This month, we elevate *Russia-NATO conflict* to our list of top 10 risks. We see Russia's military built-up near Ukraine as the most serious security challenge in Europe since the end of the Cold War. We remove *COVID-19 resurgence* from our top 10 list as the Omicron wave starts to recede in the developed world and countries pursue policies to "live with the virus."

We see geopolitics in 2022 as driven by great power competition, domestic policy priorities, divergence between developed and emerging markets, and dynamics relating to the bumpy energy transition. Indeed, our overall geopolitical risk indicator has spiked to its highest level in more than a year amid heightened market attention to geopolitical competition. This is driven by elevated market attention to conflict-related risks across the board – most notably, *Russia-NATO conflict*.

Our dashboard features both data-driven market attention barometers and judgment-based assessments of our top risks. We show market attention to each risk, assess the likelihood of it occurring over a six-month horizon, and analyze its potential market impact.

We note two areas where market attention and our views diverge: *Global climate policy* and *North Korea conflict*. In each instance, we believe markets are underappreciating the potential risks.

Our BlackRock Geopolitical Risk Indicators (BGRIs) track market attention to each risk based on mentions in brokerage reports and financial news stories, and integrate the latest advancements in natural language processing and machine learning. This assessment of market attention helps determine when geopolitical risks start to appear on investor radar screens – and when they start fading. See our methodology for details.

We also have developed a market movement measure that we believe gives us insights into how much asset prices may be moving in response to each risk. It integrates analysis from our Risk & Quantitative Analysis (RQA) team and its Market-Driven Scenarios (MDS) for each risk.

The gauge's score is based on how similar the market environment is to what the MDS assumed and how much asset prices related to the MDS have moved over the past month. See the "How it works" section. We also list the three assets that we see as the key variables of each MDS.

We believe tracking geopolitical risks and their market impact is as much an art as a science. We are continuously updating our risk scenarios and refining our methodologies. Our scenarios are hypothetical and do not reflect all possible outcomes as geopolitical risks are ever-evolving. Our market movement analyses are not recommendations to invest in any specific investment strategy or product.



Tom Donilon
Chairman – BlackRock Investment Institute



Ben Golub
Chief Risk Officer



Stephanie Lee
Portfolio Manager – BlackRock Systematic Active Equities



Catherine Kress
Advisor to the Chairman of the BlackRock Investment Institute

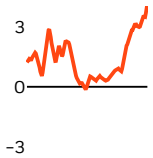
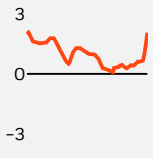
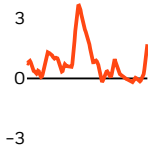
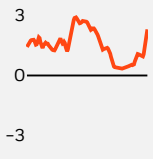
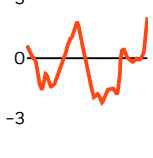
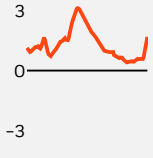
Carl Patchen
Multi-Asset Risk & Quantitative Analysis
Andrew Fischer
Investment Strategist, BlackRock Systematic Active Equities

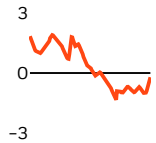
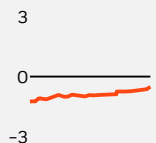
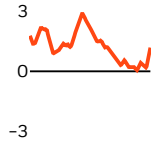
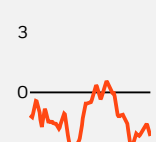
Contents

- Risk summary **2-3**
- Framework **4**
- Scenario variables **5**
- Appendix: How it works **6**

BlackRock
Investment
Institute

Top 10 risks by likelihood

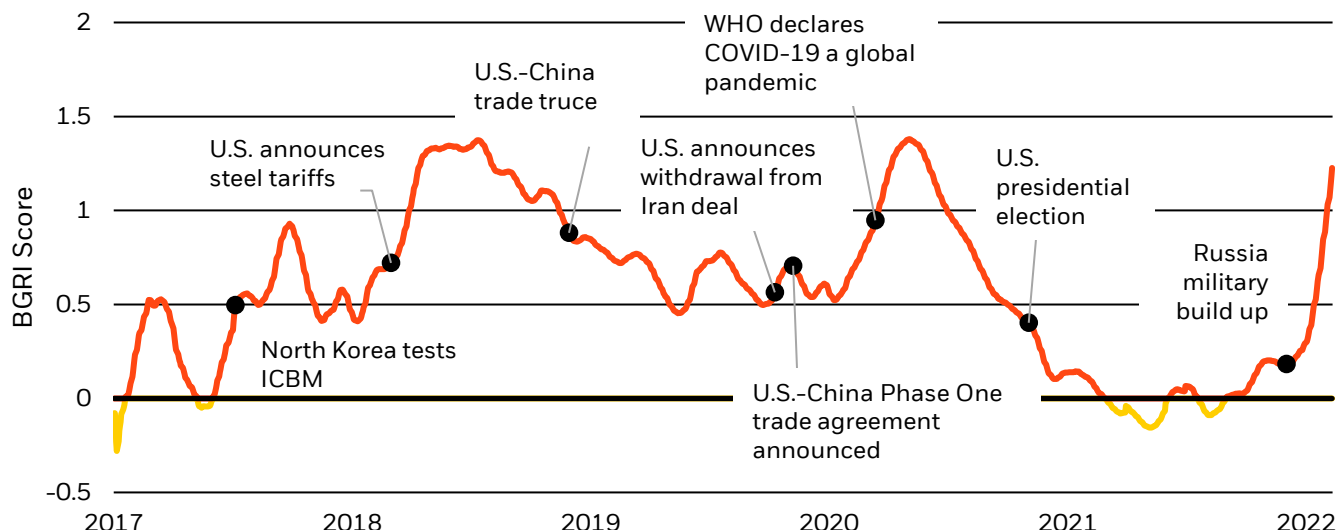
Risk	Description	Market attention since 2019	Likelihood	Our view
1 Russia-NATO conflict	Russian troops launch a large-scale invasion of Ukraine. The U.S. and EU respond with harsh financial, energy, and technology sanctions on Russia.		High	The military standoff at Ukraine's borders reflects the most serious security challenge in Europe since the end of the Cold War. The U.S. and its European allies are pursuing diplomacy to avert a crisis, but are unlikely to be able to meet all of Russia's current demands. There is a range of possible steps that Russia could take against Ukraine. We believe some form of military action and an extended stand-off are most likely. A substantial invasion would trigger harsh Western financial and technology sanctions – as well as military aid to Ukraine and increased NATO presence in eastern Europe.
2 Global technology decoupling	Technology decoupling between the U.S. and China significantly accelerates in scale and scope.		High	The COVID-19 pandemic has exposed supply chain vulnerabilities and heightened reliance on technology. Strategic competition between the U.S. and China is driving global fragmentation as both countries are focused on boosting self-reliance, reducing vulnerabilities and a managed decoupling of their tech sectors. Congress is moving on industrial policy legislation aimed at boosting U.S. competitiveness in critical technologies, the administration is pursuing "Buy American" initiatives, and the SEC is increasing disclosure requirements for Chinese companies listing in the U.S. China, for its part, has cracked down on selected tech industries as part of a broad new development agenda. The U.S. and EU are coordinating more closely on technology issues in order to better meet the China challenge.
3 Major cyberattack(s)	Cyberattacks cause sustained disruption in the operation of critical physical or digital infrastructure.		High	Tensions with Russia have significantly increased the cyber threat to the West. It has become clear that critical government and private sector networks around the globe are vulnerable to hacking and spying, though financial market reactions have been muted. Attacks are increasing in scope, scale and sophistication. Critical infrastructure remains highly vulnerable. The U.S. is facing an "epidemic" of ransomware. Repeated attacks present the possibility of significant damage and sustained disruption. This could spill over to financial markets and the economy.
4 U.S.-China strategic competition	China takes military action to accelerate reunification with Taiwan or more forcefully assert claims in the South China Sea.		Medium	The stability we have seen in relations between the U.S., China and Taiwan over the past four decades is weakening as positions shift on all sides. Taiwan has become a flashpoint in the relationship. China has taken steps, including sending record numbers of aircraft near the island and reiterating Beijing's commitment, to achieving "complete unification" with Taiwan. The U.S. has called for Taiwan's increased participation in UN activities, and approved the possible sale to Taiwan of \$100 million of military equipment and services. We do not see a military confrontation as an imminent threat, but believe the risk will increase as the decade wears on.
5 Major terror attack(s)	A terror attack leads to significant loss of life and commercial disruption.		Medium	The Taliban takeover and the accompanying release of prisoners in Afghanistan may increase the risk of international terrorism, even as U.S. counter-terrorism capabilities have improved. The insurrection at the U.S. Capitol underscores the significant and growing risk of domestic terrorism, which the Biden administration has called the most serious and persistent terrorist threat to the U.S.
6 Emerging markets political crisis	Failure to arrest the COVID-19 pandemic severely stresses EM political systems and institutions.		Medium	COVID-19 has driven significant divergence between developed economies and emerging markets. This has been amplified by an uneven economic recovery, fast-rising inflation, increasing poverty and stressed fiscal conditions. Indeed, many emerging markets have been forced to tighten monetary policy far earlier than developed markets with the aim to contain inflation. Social unrest, already noticeable in various fragile countries, will remain a risk well into 2022. We worry about a potential wave of sovereign defaults in the years ahead.

Risk	Description	Market attention since 2019	Likelihood	Our view
7 Gulf tensions	Iran nuclear talks collapse, and tensions escalate, raising the risk of a regional conflict.		Medium	Discussions are underway about the US rejoining the Iran nuclear deal. There have been positive signals recently, but a full revival of the 2015 nuclear deal remains uncertain. Decisions by both sides on whether to return to the deal are expected in the short-term. Iran's nuclear program is advancing, and the Iranian government remains skeptical of the deal's benefits. The risk of military action in the region will rise as Iran's nuclear program continues unabated. Outside of Iran, there has been a general de-escalation of tensions among the Gulf's oil producers, who are benefiting from higher oil prices. Recent attacks on Abu Dhabi by Houthi rebels in Yemen could upset this fragile balance.
8 North Korea conflict	North Korea continues its nuclear buildup and takes provocative actions, such as ballistic missile launches.		Medium	After conducting a review of its policy toward North Korea, the Biden administration is seeking direct diplomacy with Pyongyang, working alongside U.S. allies. North Korea has rebuffed talks and escalated provocations – having conducted more missile tests in January than it did all of last year. Recent studies have noted North Korea's nuclear production capacity is much larger than previously reported, marking an increasingly serious situation. We do not see an imminent threat of regional armed conflict. Yet tensions will increase in 2022, in our view. We could see additional long-range missile tests and possibly a nuclear test. We see this risk as underappreciated by markets.
9 European fragmentation	Ongoing COVID and inflationary pressures lead to a populist resurgence and economic volatility.		Low	We see the risk of European fragmentation as low. Strong monetary and fiscal policy support have bolstered European political unity, though policy normalization by the European Central Bank could further pressure peripheral bonds and reduce the periphery's fiscal space. A debate over the supremacy of EU laws vis-à-vis Polish ones appears likely to resolve, and there is a significant prospect of Prime Minister Viktor Orban losing power this spring. Based on current polls, the French elections in April could see President Emmanuel Macron re-elected or usher in his center-right opponent Valerie Pécresse. Either scenario is unlikely to result in a higher fragmentation risk. Lastly, an escalation in Ukraine could have spillover effects in Europe.
10 Climate policy gridlock	Developed economies fail to increase public investment and regulatory action in pursuit of their stated ambitions for net zero emissions.		Low	Climate risk has moved to the center of policymaking around the world, and negotiations are now shifting to implementation. The COP26 summit in Glasgow saw fresh commitments on coal phase-out and forest protection as well as on sectoral roadmaps to net zero for key global industries like steel and aviation. The gap between promises and implementation, however, is large. Europe is implementing its Fit for 55 plan, but the U.S. Build Back Better initiative faces an uncertain future in Congress. Moreover, energy security concerns amid the Russia-Ukraine crisis could put climate considerations on the backburner in the near term.

Sources: BlackRock Investment Institute, with data from Refinitiv. Data as of February 2022. Notes: The “risks” column lists the 10 key geopolitical risks that we track. The “description” column defines each risk. “Market attention” is a graphical snapshot of recent movement in the BlackRock Geopolitical Risk Indicator (BGRI) for each risk. The BGRI measures the degree of the market’s attention to each risk, as reflected in brokerage reports and financial media. See the “how it works” section on p.7 for details. The table is sorted by the “Likelihood” column which represents our fundamental assessment, based on BlackRock’s subject matter experts, of the probability that each risk will be realized – either low, medium or high – in the near term. The “our view” column represents BlackRock’s most recent view on developments related to each risk. This is not intended to be a forecast of future events or a guarantee of future results. This information should not be relied upon by the reader as research or investment advice regarding any funds or security in particular. Individual portfolio managers for BlackRock may have opinions and/or make investment decisions that may, in certain respects, not be consistent with the information contained herein.

Geopolitical risk framework

BlackRock Geopolitical Risk Indicator

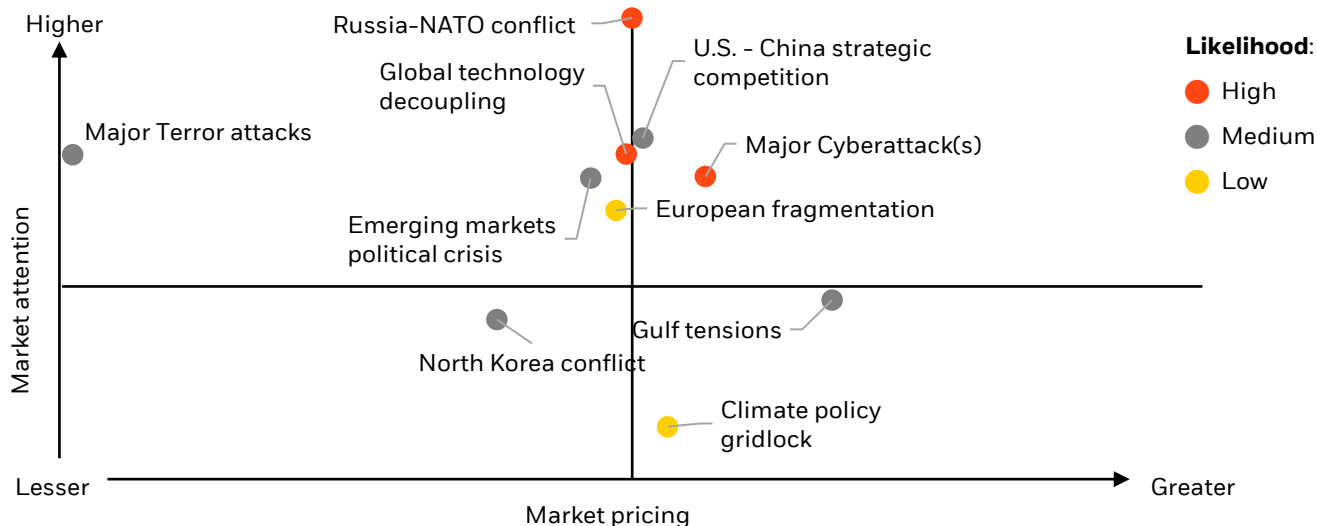


Forward-looking estimates may not come to pass. Source: BlackRock Investment Institute. February 2022. Notes: The BlackRock Geopolitical Risk Indicator (BGRI) tracks the relative frequency of brokerage reports (via Refinitiv) and financial news stories (Dow Jones News) associated with specific geopolitical risks. We adjust for whether the sentiment in the text of articles is positive or negative, and then assign a score. This score reflects the level of market attention to each risk versus a 5-year history. We use a shorter historical window for our COVID risk due to its limited age. We assign a heavier weight to brokerage reports than other media sources since we want to measure the market's attention to any particular risk, not the public's.

The global BlackRock Geopolitical Risk Indicator (BGRI) aims to capture market attention to our geopolitical risks. The indicator has spiked in recent months amid increased market attention to *Russia-NATO conflict*, *U.S.-China strategic competition*, *Global technology decoupling*, *Major cyber attack(s)* and *Major terror attack(s)*. The gauge is now well above its historic average, meaning investors are paying heightened attention to geopolitical risk. We see this level of attention as well-justified given high levels of geopolitical competition and potential conflict in the world.

Risk map

BlackRock Geopolitical market attention, market movement and likelihood



Forward-looking estimates may not come to pass. Source: BlackRock Investment Institute. December February 2022. Notes: The vertical axis depicts the market attention to each of our top-10 risks, as reflected in brokerage reports and financial media and measured by the BlackRock Geopolitical Risk Index (BGRI). The horizontal axis shows our estimate of the degree to which asset prices have moved in accordance with our risk scenarios (horizontal axis). See the "How it works" section on p.7 for details. The color of the dots indicates our fundamental assessment of the relative likelihood of the risk – low, medium or high, as per the legend. Some of the scenarios we envision do not have precedents – or only imperfect ones. The scenarios are for illustrative purposes only and do not reflect all possible outcomes as geopolitical risks are ever-evolving. The chart is meant for illustrative purposes only. This material represents an assessment of the market environment at a specific time and is not intended to be a forecast of future events or a guarantee of future results. This information should not be relied upon by the reader as research or investment advice regarding any funds, strategy or security in particular.

We have developed a market movement score for each risk that measures the degree to which asset prices have moved similarly to our risk scenarios, integrating insights from our Risk & Quantitative Analysis (RQA) team and their Market-Driven Scenario (MDS) shocks. We do this by estimating how "similar" the current market environment is to our expectation of what it would look like in the event the particular MDS was realized, also taking into account the magnitude of market moves. The far right of the horizontal axis indicates that the similarity between asset movements and what our MDS assumed is greatest; the middle of the axis means asset prices have shown little relationship to the MDS, and the far left indicates markets have behaved in the opposite way that our MDS anticipated.

Key scenario variables

How to gauge the potential market impact of each of our top-10 risks? We have identified three key “scenario variables” for each – or assets that we believe would be most sensitive to a realization of that risk. The chart below shows the direction of our assumed price impact.

Geopolitical risk	Asset	Direction of assumed price impact
Russia-NATO conflict	Russian equities	▼
	Russian ruble	▼
	Brent crude oil	▲
Global technology decoupling	Chinese yuan	▼
	U.S. investment grade	▼
	Asia ex-Japan electrical	▼
Major cyberattack(s)	U.S. high yield utilities	▼
	U.S. dollar	▲
	U.S. utilities sector	▼
U.S.-China strategic competition	Taiwanese dollar	▼
	Taiwanese equities	▼
	China high yield	▼
Major terror attack(s)	Germany 10-year government bond	▲
	Japanese yen	▲
	Europe airlines sector	▼
Emerging markets political crisis	Latin America consumer staples sector	▲
	Emerging vs. developed equities	▼
	Brazil debt	▼
Gulf tensions	Brent crude oil	▲
	VIX volatility index	▲
	U.S. high yield credit	▼
North Korea conflict	Japanese yen	▲
	South Korean won	▼
	South Korean equities	▼
European fragmentation	Italy 10-year government debt	▼
	EMEA hotels and leisure	▼
	Russian rouble	▼
Climate policy gridlock	U.S. building products sector	▼
	U.S. construction materials sector	▼
	U.S. utilities sector	▲

Source: BlackRock Investment Institute, with data from BlackRock’s Aladdin Portfolio Risk Tools application, February 2021. Notes: The table depicts the three assets that we see as key variables for each of our top-10 geopolitical risks – as well as the direction of the assumed shocks for each in the event of the risk materializing. The up arrow indicates a rise in prices (corresponding to a decline in yields for bonds); the down arrow indicates a fall in prices. Our analysis is based on similar historical events and current market conditions such as volatility and cross-asset correlations. See the “implied stress testing framework” section of the 2018 paper Market-Driven Scenarios: An Approach for Plausible Scenario Construction for details. For illustrative purposes only. The scenarios are for illustrative purposes only and do not reflect all possible outcomes as geopolitical risks are ever-evolving. This material represents an assessment of the market environment at a specific time and is not intended to be a forecast of future events or a guarantee of future results. This information should not be relied upon by the reader as research or investment advice regarding any funds, strategy or security in particular.

Appendix: How it works

The quantitative components of our geopolitical risk dashboard incorporate two different measures of risk: the first based on the market attention to risk events, the second on the market movement related to these events.

Market attention

The BlackRock Geopolitical Risk Indicator (BGRI) tracks the relative frequency of brokerage reports (via Refinitiv) and financial news stories (Dow Jones News) associated with specific geopolitical risks. We adjust for whether the sentiment in the text of articles is positive or negative, and then assign a score. This score reflects the level of market attention to each risk versus a 5-year history. We use a shorter historical window for our COVID-19 risk due to its limited age. We assign a heavier weight to brokerage reports than other media sources since we want to measure the market's attention to any particular risk, not the public's.

Our updated methodology improves upon traditional "text mining" approaches that search articles for predetermined key words associated with each risk. Instead, we take a big data approach based on machine-learning. Huge advances in computing power now make it possible to use language models based on neural networks. These help us sift through vast data sets to estimate the relevance of every sentence in an article to the geopolitical risks we measure.

How does it work? First we augment a pre-trained language model with broad geopolitical content and articles representative of each individual risk we track. The fine-tuned language model then focuses on two tasks when trawling through millions of brokerage reports and financial news stories:

- classifying the relevance of each sentence to the individual geopolitical risk to generate an attention score
- classifying the sentiment of each sentence to produce a sentiment score

The attention and sentiment scores are aggregated to produce a composite geopolitical risk score. A zero score represents the average BGRI level over its history. A score of one means the BGRI level is one standard deviation above its historical average, implying above-average market attention to the risk. We weigh recent readings more heavily in calculating the average. The level of the BGRI changes slowly over time even if market attention remains constant. This is to reflect the concept that a consistently high level of market attention eventually becomes "normal."

Our language model helps provide more nuanced analysis of the relevance of a given article than traditional methods would allow. Example: Consider an analyst report with boilerplate language at the end listing a variety of different geopolitical risks. A simple keyword-based approach may suggest the article is more relevant than it really is; our new machine learning approach seeks to do a better job at adjusting for the context of the sentences – and determining their true relevance to the risk at hand.

Market movement

In the market movement measure, we use Market-Driven Scenarios (MDS) associated with each geopolitical risk event as a baseline for how market prices would respond to the realization of the risk event.

Our MDS framework forms the basis for our scenarios and estimates of their potential one-month impact on global assets. The first step is a precise definition of our scenarios – and well-defined catalysts (or escalation triggers) for their occurrence. We then use an econometric framework to translate the various scenario outcomes into plausible shocks to a global set of market indexes and risk factors.

The size of the shocks is calibrated by various techniques, including analysis of historical periods that resemble the risk scenario. Recent historical parallels are assigned greater weight. Some of the scenarios we envision do not have precedents – and many have only imperfect ones. This is why we integrate the views of BlackRock's experts in geopolitical risk, portfolio management, and Risk and Quantitative Analysis into our framework. See the 2018 paper [Market Driven Scenarios: An Approach for Plausible Scenario Construction](#) for details. MDS are for illustrative purposes only and do not reflect all possible outcomes as geopolitical risks are ever-evolving.

We then compile a market movement index for each risk.* This is composed of two parts:

1. Similarity: This measures how "similar" the current market environment is to our expectation of what it would look like in the event the particular MDS was realized. We focus on trailing one-month returns of the relevant MDS assets.
2. Magnitude: this measures the magnitude of the trailing one-month returns of the relevant MDS assets.

These two measures are combined to create an index that works as follows:

- A value of 1 would mean that asset prices reacted in an identical way as our MDS indicated.
- A value of zero would indicate that the pattern of asset prices bears no resemblance at all to what the MDS for a particular risk would indicate.
- A value of -1 would indicate that asset prices are moving in the opposite direction to what the MDS would indicate. Markets are effectively betting against the risk.

*This material represents an assessment of the market environment at a specific time and is not intended to be a forecast of future events or a guarantee of future results. This information should not be relied upon by the reader as research or investment advice regarding any funds, strategy or security in particular. The scenarios are for illustrative purposes only and do not reflect all possible outcomes as geopolitical risks are ever-evolving.

BlackRock Investment Institute

The BlackRock Investment Institute (BII) leverages the firm's expertise and generates proprietary research to provide insights on the global economy, markets, geopolitics and long-term asset allocation – all to help our clients and portfolio managers navigate financial markets. BII offers strategic and tactical market views, publications and digital tools that are underpinned by proprietary research.

General disclosure: This material is intended for information purposes only, and does not constitute investment advice, a recommendation or an offer or solicitation to purchase or sell any securities to any person in any jurisdiction in which an offer, solicitation, purchase or sale would be unlawful under the securities laws of such jurisdiction. The opinions expressed are as of February 2022 and are subject to change without notice. Reliance upon information in this material is at the sole discretion of the reader. Investing involves risks.

In the **U.S. and Canada**, this material is intended for public distribution. **In EMEA** Until 31 December 2020, issued by BlackRock Investment Management (UK) Limited, authorised and regulated by the Financial Conduct Authority. Registered office: 12 Throgmorton Avenue, London, EC2N 2DL. Tel: + 44 (0)20 774 3 3000. Registered in England and Wales No. 2020394, has issued this document for access by Professional Clients only and no other person should rely upon the information contained within it. For your protection telephone calls are usually recorded. Please refer to the Financial Conduct Authority website for a list of authorised activities conducted by BlackRock. From 1 January 2021, in the event the United Kingdom and the European Union do not enter into an arrangement which permits United Kingdom firms to offer and provide financial services into the European Union, the issuer of this material is: (i) BlackRock Investment Management (UK) Limited for all outside of the European Union; and (ii) BlackRock (Netherlands) B.V. for in the European Union, BlackRock (Netherlands) B.V. is authorised and regulated by the Netherlands Authority for the Financial Markets. Registered office Amstelplein 1, 1096 HA, Amsterdam, Tel: 020 – 549 5200, Tel: 31-20-549-5200. Trade Register No. 17068311 For your protection telephone calls are usually recorded. **In Switzerland**, for qualified investors in Switzerland: This document is marketing material. Until 31 December 2021, this document shall be exclusively made available to, and directed at, qualified investors as defined in the Swiss Collective Investment Schemes Act of 23 June 2006 ("CISA"), as amended. From 1 January 2022, this document shall be exclusively made available to, and directed at, qualified investors as defined in Article 10 (3) of the CISA of 23 June 2006, as amended, at the exclusion of qualified investors with an opting-out pursuant to Art. 5 (1) of the Swiss Federal Act on Financial Services ("FinSA"). For information on art. 8 / 9 Financial Services Act (FinSA) and on your client segmentation under art. 4 FinSA, please see the following website: www.blackrock.com/finsa. **For investors in Israel:** BlackRock Investment Management (UK) Limited is not licensed under Israel's Regulation of Investment Advice, Investment Marketing and Portfolio Management Law, 5755-1995 (the "Advice Law"), nor does it carry insurance thereunder. **In South Africa**, please be advised that BlackRock Investment Management (UK) Limited is an authorized financial services provider with the South African Financial Services Board, FSP No. 43288. **In the DIFC** this material can be distributed in and from the Dubai International Financial Centre (DIFC) by BlackRock Advisors (UK) Limited – Dubai Branch which is regulated by the Dubai Financial Services Authority (DFSA). This material is only directed at 'Professional Clients' and no other person should rely upon the information contained within it. BlackRock Advisors (UK) Limited - Dubai Branch is a DIFC Foreign Recognised Company registered with the DIFC Registrar of Companies (DIFC Registered Number 546), with its office at Unit 06/07, Level 1, Al Fattan Currency House, DIFC, PO Box 506661, Dubai, UAE, and is regulated by the DFSA to engage in the regulated activities of 'Advising on Financial Products' and 'Arranging Deals in Investments' in or from the DIFC, both of which are limited to units in a collective investment fund (DFSA Reference Number F000738). **In the Kingdom of Saudi Arabia**, issued in the Kingdom of Saudi Arabia (KSA) by BlackRock Saudi Arabia (BSA), authorised and regulated by the Capital Market Authority (CMA), License No. 18-192-30. Registered under the laws of KSA. Registered office: 29th floor, Olaya Towers – Tower B, 3074 Prince Mohammed bin Abdulaziz St., Olaya District, Riyadh 12213 – 8022, KSA, Tel: +966 11 838 3600. The information contained within is intended strictly for Sophisticated Investors as defined in the CMA Implementing Regulations. Neither the CMA or any other authority or regulator located in KSA has approved this information. The information contained within, does not constitute and should not be construed as an offer of, invitation or proposal to make an offer for, recommendation to apply for or an opinion or guidance on a financial product, service and/or strategy. Any distribution, by whatever means, of the information within and related material to persons other than those referred to above is strictly prohibited. **In the United Arab Emirates** this material is only intended for -natural Qualified Investor as defined by the Securities and Commodities Authority (SCA) Chairman Decision No. 3/R.M. of 2017 concerning Promoting and Introducing Regulations. Neither the DFSA or any other authority or regulator located in the GCC or MENA region has approved this information. **In the State of Kuwait**, those who meet the description of a Professional Client as defined under the Kuwait Capital Markets Law and its Executive Bylaws. **In the Sultanate of Oman**, to sophisticated institutions who have experience in investing in local and international securities, are financially solvent and have knowledge of the risks associated with investing in securities. **In Qatar**, for distribution with pre-selected institutional investors or high net worth investors. **In the Kingdom of Bahrain**, to Central Bank of Bahrain (CBB) Category 1 or Category 2 licensed investment firms, CBB licensed banks or those who would meet the description of an Expert Investor or Accredited Investors as defined in the CBB Rulebook. The information contained in this document, does not constitute and should not be construed as an offer of, invitation, inducement or proposal to make an offer for, recommendation to apply for or an opinion or guidance on a financial product, service and/or strategy. **In Singapore**, this is issued by BlackRock (Singapore) Limited (Co. registration no. 200010143N). This advertisement or publication has not been reviewed by the Monetary Authority of Singapore. **In Hong Kong**, this material is issued by BlackRock Asset Management North Asia Limited and has not been reviewed by the Securities and Futures Commission of Hong Kong. **In South Korea**, this material is for distribution to the Qualified Professional Investors (as defined in the Financial Investment Services and Capital Market Act and its sub-regulations). **In Taiwan**, independently operated by BlackRock Investment Management (Taiwan) Limited. Address: 28F., No. 100, Songren Rd., Xinyi Dist., Taipei City 110, Taiwan. Tel: (02)23261600. **In Japan**, this is issued by BlackRock Japan Co., Ltd. (Financial Instruments Business Operator: The Kanto Regional Financial Bureau. License No 375, Association Memberships: Japan Investment Advisers Association, the Investment Trusts Association, Japan, Japan Securities Dealers Association, Type II Financial Instruments Firms Association.) For Professional Investors only (Professional Investor is defined in Financial Instruments and Exchange Act). **In Australia**, issued by BlackRock Investment Management (Australia) Limited ABN 13 006 165 975 AFSL 230 523 (BIMAL). The material provides general information only and does not take into account your individual objectives, financial situation, needs or circumstances. **In China**, this material may not be distributed to individuals resident in the People's Republic of China ("PRC", for such purposes, excluding Hong Kong, Macau and Taiwan) or entities registered in the PRC unless such parties have received all the required PRC government approvals to participate in any investment or receive any investment advisory or investment management services. **For Other APAC Countries**, this material is issued for Institutional Investors only (or professional/sophisticated /qualified investors, as such term may apply in local jurisdictions) **In Latin America**, for institutional investors and financial intermediaries only (not for public distribution). This material is for educational purposes only it is your responsibility to inform yourself of, and to observe, all applicable laws and regulations of your relevant jurisdiction **In Mexico**, these materials are being shared in the understanding that the addressee is an Institutional or Qualified investor as defined under Mexican Securities (*Ley del Mercado de Valores*).

©2021 BlackRock, Inc. All Rights Reserved. **BLACKROCK** is a trademark of BlackRock, Inc., or its subsidiaries in the United States and elsewhere. All other trademarks are those of their respective owners.