Geopolitical risk dashboard

BlackRock

May 2021

Welcome to our new Geopolitical Risk Dashboard

We relaunch our Geopolitical Risk Dashboard with a fresh set of risks as well as updated analytics for the market attention and pricing of each risk.

The election of U.S. President Joe Biden and the geopolitical shifts resulting from the COVID-19 pandemic have led us to update our top-10 risks, including the addition of four new risks:

- ***COVID-19 resurgence*****:** The fight against COVID-19 falters in the developed world.
- ***Climate policy gridlock*****:** Developed economies fail to take policy actions consistent with their goals to reach net-zero emissions.
- ***Emerging markets political crisis*****:** Failure to arrest the COVID-19 pandemic severely stresses EM political systems and institutions.
- ***Global technology decoupling*****:** Technology decoupling between the U.S. and China significantly accelerates in scale and scope.

For our focus risk, we analyze the geopolitical implications of COVID-19 across three dimensions: U.S.-China strategic competition; the chasm opening between the emerging and developed world; and the future of European populism.

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 have updated our BlackRock Geopolitical Risk Indicators (BGRIs), which track market attention to each risk based on mentions in brokerage reports and financial news stories, by integrating the latest advancements in natural language processing and machine learning. This fine-tuned assessment of market attention helps determine when geopolitical risks start to appear on investor radar screens – and when they start fading. See our updated 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

Teddy Bunzel
BlackRock Director of External Affairs

Catherine Kress
Advisor to the Chairman of the BlackRock Investment Institute

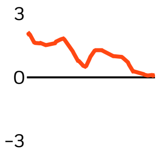
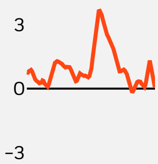
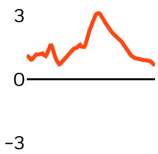
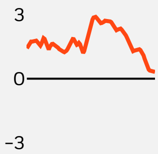
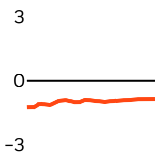
Stephanie Lee
Portfolio Manager – BlackRock Systematic Active Equities

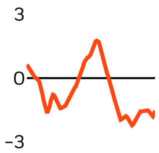
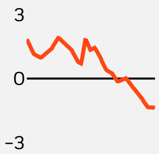
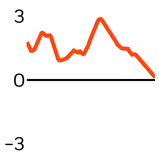
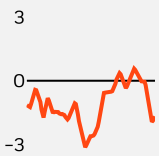
Melissa Yeung
Quantitative Researcher – BlackRock Systematic Active Equities

Contents

BlackRock **Investment** Institute

Top 10 risks by likelihood

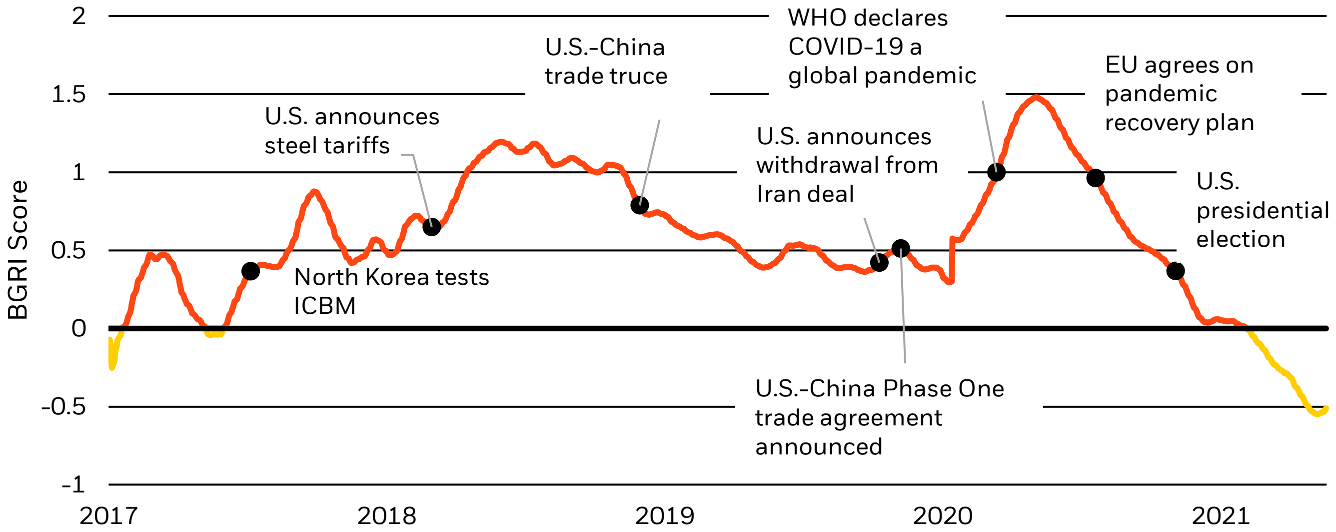
Risk	Description	Market attention since 2019	Likelihood	Our view
Global technology decoupling	Technology decoupling between the U.S. and China significantly accelerates in scale and scope.		High	The pace of global reshoring of technological supply chains has increased markedly as the pandemic has exposed supply chain vulnerabilities and heightened reliance on technology. The Biden administration is continuing the Trump administration’s posture of intense rivalry with China, and China has made technological self-reliance the key theme of its 14th 5-year plan. While the U.S. and China will be the primary engines of global economic growth in 2021, ongoing strategic competition between the two countries is driving global fragmentation as both are increasingly focused on reducing interdependence and a managed decoupling of their tech sectors.
Major cyberattack(s)	Cyberattacks cause sustained disruption in the operation of critical physical or digital infrastructure.		High	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 on critical infrastructure are increasing in scope, scale and sophistication. Repeated attacks present the possibility of significant damage and sustained disruption. This could spill over to both financial markets and the real economy.
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 divergence will be amplified by the uneven rollout of vaccines and stressed fiscal conditions. Demonstrations in Colombia could portend unrest across fragile emerging market countries facing the same explosive convergence of the ongoing pandemic, increasing poverty and weak government performance.
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. China has taken a series of steps including launching the largest ever incursion into Taiwanese airspace. The U.S. loosened restrictions on diplomatic interactions with its Taiwanese counterparts, in response. We do not see these tensions resulting in a military showdown in 2021, but there is a significant medium- and long-term risk.
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 seeks direct diplomacy with Pyongyang, working alongside U.S. allies. We do not see an imminent threat of regional armed conflict. Yet tensions will likely increase heading into 2022, in our view, with the potential for an escalation in North Korean provocations including long-range missile tests and possibly a nuclear test. We see this risk as currently underappreciated by markets.

Risk	Description	Market attention since 2019	Likelihood	Our view
COVID-19 resurgence	The fight against COVID falters in the developed world.		Medium	A delayed (though accelerating) vaccine rollout in Europe and a lack of international coordination risk prolonging the crisis. Outbreaks across the globe could lead to the emergence of new variants. A significant stumble in the developed world and vaccine hesitancy are threats that could prolong the pandemic.
Major terror attack(s)	A terror attack leads to significant loss of life and commercial disruption.		Medium	The insurrection at the U.S. Capitol underscores the significant and growing threat of domestic terrorism, which the Biden administration has called the most lethal and persistent terrorist threat to the U.S.. The threat from international terrorism remains present, though dispersed across geographies and less potent given the substantial weakening of ISIS and Al-Qaeda.
Gulf tensions	U.S. negotiations to rejoin the Iran nuclear deal falter.		Medium	Parties to the Iran nuclear deal reconvened in Vienna to negotiate U.S. reentry to the deal. There is a path and mutual desire to return to the 2015 agreement, but progress will likely be slow and come in fits and starts. Negotiations will be complicated by domestic politics and competing factions in Iran. In addition, Iran is testing the Biden administration by taking additional steps inconsistent with the deal.
European fragmentation	Troubled vaccine rollouts, renewed lockdowns, and policy fatigue lead to a populist resurgence.		Low	Monetary and fiscal coordination bolstered European political unity early in the pandemic. Vaccinations are now gaining pace after a shaky vaccine rollout somewhat delayed the economic restart. The race for this September's federal election in Germany is wide open as the Christian Democratic Union (CDU)'s political dominance erodes – though all the CDU's plausible rivals support a strong EU. In France, Marine Le Pen of the populist Front National has been competitive with President Emmanuel Macron in polling for the 2022 French election. A Le Pen victory over Macron would put a break on further European integration.
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 has moved to the center of policymaking around the world. Biden has made climate a top priority, and the U.S. has joined the global climate consensus. Democrats' slim control in the U.S. Congress could risk U.S. commitments. The EU continues the Green Deal climate policy drive, and China continues to invest in its clean energy industry. Ahead of COP26, momentum behind aggressive climate policy will continue to grow as consequences of inaction become more frequent, visible, and costly.

Sources: BlackRock Investment Institute, with data from Refinitiv. Data as of May, 2021. 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

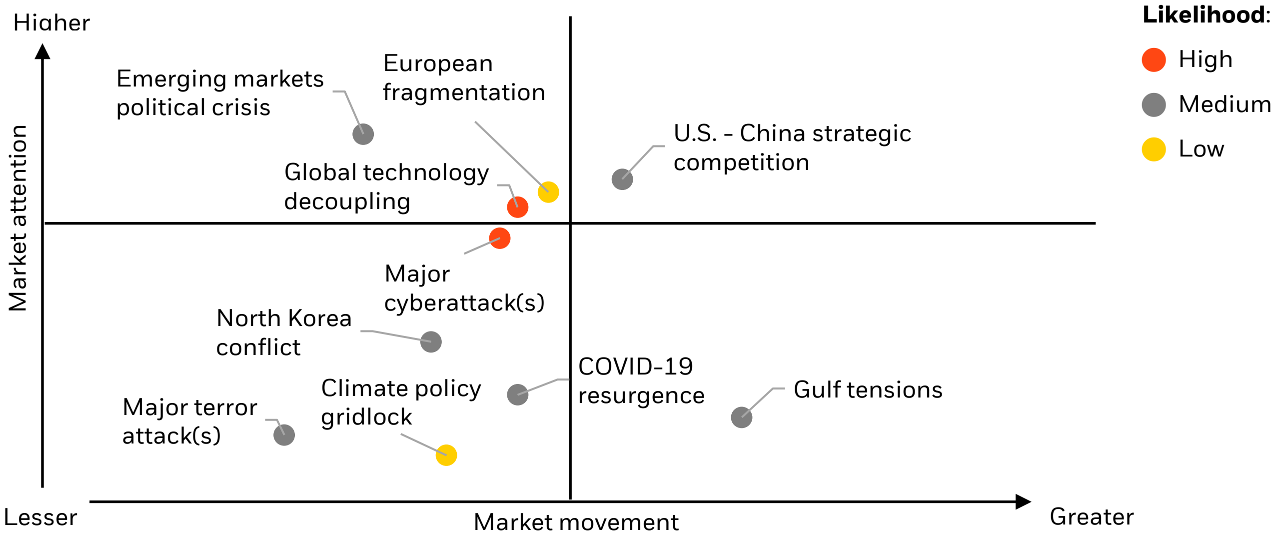


Forward-looking estimates may not come to pass. Source: BlackRock Investment Institute. May 2021. Notes: The BlackRock Geopolitical Risk Indicator (BGRI) tracks the relative frequency of brokerage reports (via Refinitiv) and financial news stories (Dow Jones News) associated with specific geopolitical 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 the market attention to our geopolitical risks. The indicator has been trending down in the past year because of fading market attention to risks such as *U.S.-China strategic competition, COVID-19 resurgence* and *Gulf tensions*. Overall, our global BGRI shows a significant reduction in concern about geopolitical risk since the change in U.S. administration. The gauge has been hovering in negative territory this year, as the chart shows, meaning investor attention to geopolitical risks is below the average of the past four years. As a result, geopolitical shocks could catch investors more off guard than usual.

Risk map

BlackRock Geopolitical market attention, market movement and likelihood



Forward-looking estimates may not come to pass. Source: BlackRock Investment Institute. May 2021. 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.

Risk	Asset	Direction of assumed price impact
Climate policy gridlock	U.S. building products sector U.S. construction materials sector U.S. utilities	▼ ▼ ▲
COVID-19 resurgence	U.S. investment grade credit Asia investment grade credit U.S. energy investment grade	▼ ▼ ▼
Emerging markets political crisis	Latin America consumer staples sector Emerging vs. developed equities Brazil debt	▲ ▼ ▼
European fragmentation	EMEA hotels & leisure Italy 10-year government bond Russian rouble	▼ ▼ ▼
Global technology decoupling	Chinese yuan U.S. investment grade Asia ex-Japan electrical equipment	▼ ▼ ▼
Gulf tensions	Brent crude oil VIX U.S. high yield credit	▲ ▲ ▼
Major cyberattack(s)	U.S. high yield utilities U.S. dollar U.S. utilities sector	▼ ▲ ▼
Major terror attack(s)	Germany 10-year government bond Japanese yen Europe airlines sector	▲ ▲ ▼
North Korea conflict	Japanese yen Korean won Korean equities	▲ ▼ ▼
U.S.-China strategic competition	Taiwanese dollar Taiwanese equities China high yield	▼ ▼ ▼

Source: BlackRock Investment Institute, with data from BlackRock's Aladdin Portfolio Risk Tools application, May 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.

Focus risk: Geopolitical Implications of COVID-19

The COVID-19 pandemic represents a generational crisis, with significant geopolitical implications. As the pandemic enters its second year, we examine three key areas where it may intersect with underlying geopolitical fault lines: U.S.-China strategic competition, emerging market (EM) instability and European populism.

U.S.-China: Vaccine diplomacy meets strategic competition

It has become increasingly clear that vaccination is key to a full economic restart, as lockdowns can only do so much in a globalized world. As a result, the vaccine rollout has become a vector of heightened U.S.-China competition for global influence. China is seeking to lead "vaccine diplomacy" in EMs, and the U.S. is eying its own global vaccination push – including with fellow Quadrilateral Security Dialogue ("Quad") members Japan, India and Australia.

Beijing has said it will send vaccines to many countries around the world – and has been open to licensing production to foreign countries as well. China's global vaccine drive parallels its infrastructure investment as part of its Belt and Road Initiative. China has prioritized sending vaccines abroad. As of May, China had exported or donated more than 40% of its total vaccine production. The challenge: Case studies in countries reliant on the Chinese vaccines have shown mixed results – even as the World Health Organization has authorized certain Chinese vaccines for emergency use. In Chile and the Seychelles, for example, infection rates have remained high despite high vaccination rates.

Western vaccines' stronger efficacy presents an opportunity for U.S. diplomacy. Given its initial focus on meeting domestic demand, the U.S. has only recently started to export doses – despite being second only to China in terms of production. The U.S. is now stepping up its global pandemic response, with commitments to donate tens of millions of doses around the world. The Biden administration seeks to eventually position the U.S. as a net exporter of effective vaccines and to expand its global vaccination drive as a strategic imperative. The U.S. appointment of a coordinator for its global COVID-19 response and support for lifting vaccine patent protections demonstrate this objective. It is also coordinating its efforts with allies: Quad members also announced they would deliver at least one billion vaccine doses to countries in need by the end of 2022, with a focus on Southeast Asia and the Pacific. This dynamic of vaccine diplomacy will be a key dimension of U.S.-China competition moving forward.

Emerging markets: A "dangerous divergence" could drive instability

We see the gap between the emerging and developed worlds widening in 2021 – accelerating a pre-pandemic trend. India's second wave of COVID-19 offers a troubling example of such divergence, with a huge surge in cases pushing its public health system to the limit. Developed markets have procured a disproportionate amount of vaccines, and many look set to vaccinate half of their populations by mid-year. We expect EMs to pass this threshold only by early 2022. As a result, 2021 may be one of the rare years where EM (ex-China and India) growth actually lags DM growth.

At the same time, rising interest rates fueled by the global restart have tightened financial conditions for indebted emerging economies. Many EMs have started raising rates and cut spending to fend off inflation, reversing last year's stimulus. The gross financing needs of EM (ex-China and India) sum to $1.3 trillion, according to BlackRock calculations, a stark reminder of EM's vulnerability to rising borrowing costs. Rising rates could lead markets to question EM debt sustainability, raising the risk of restructuring and defaults. UN Secretary General António Guterres has cautioned against "an illusion of sustainability" and IMF Managing Director Kristalina Georgieva warned of a "dangerous divergence between and within economies." On the plus side: soaring demand for commodities is providing a financial lift for EM commodities producers.

We see a risk of political and social unrest across EMs that experience persistent infections, worsening poverty, deteriorating economic and fiscal conditions, and weak government performance. In a January report, the World Bank estimated that the pandemic could push 143-163 million people into extreme poverty in 2021. This would be the first increase in global poverty since 1998, and shows how Covid-19 could undo decades of progress in alleviating poverty. Pressure on governments can quickly spiral into social unrest, as seen in Colombia, Peru and Brazil. Latin America looks particularly vulnerable. All of this could have significant long- term implications, including democratic backsliding or populist outcomes in elections as citizens lose trust in their leaders' ability to steer their countries out of the pandemic.

Europe: COVID-19 unlikely to fuel fragmentation

A powerful pan-European fiscal response and flexible monetary policy bolstered unity early in the pandemic. This gave way this year to questions around the handling of vaccine procurement by the European Commission, delayed rollouts at the country level, and concerns around the European vaccine of choice. However, vaccine distribution is now gaining pace: as of May, the EU is administering more daily shots per capita than the U.S. and UK as supply in Europe increases and demand falls in the latter countries. Core European countries such as Germany and France still trail the U.S. in vaccine distribution, somewhat delaying the euro area's economic rebound relative to the U.S., in our view.

These dynamics have fueled discontent with establishment political parties, though any significant risk of European fragmentation looks at bay. In Germany, we see a wide-open race for September's federal election, as the more centrist Christian Democratic Union's (CDU) political dominance erodes. Yet all the CDU's possible rivals support a strong EU and the far-right Alternative for Germany (AFD) is not benefiting from anti-CDU sentiment. In France, the populist Front National's Marine Le Pen has been competitive with President Emmanuel Macron in polling for the 2022 presidential election. An unexpectedly strong showing by Le Pen could stymie further European integration. Meanwhile in Italy, newly-elected Prime Minister Mario Draghi has quietly strengthened the case for technocratic leadership in Europe.

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 though 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 BGRIs 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 means 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.

BlackRock