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.

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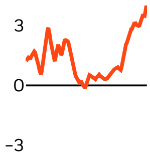
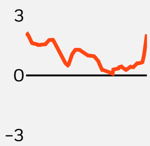
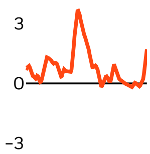
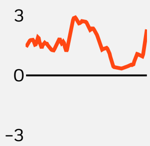
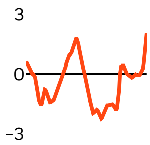
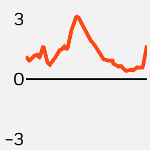
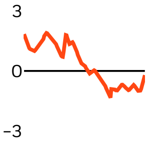
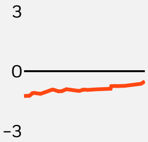
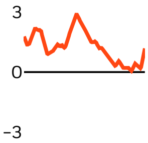
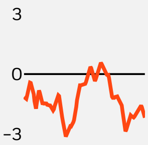
BlackRock **Investment** Institute

Top 10 risks by likelihood

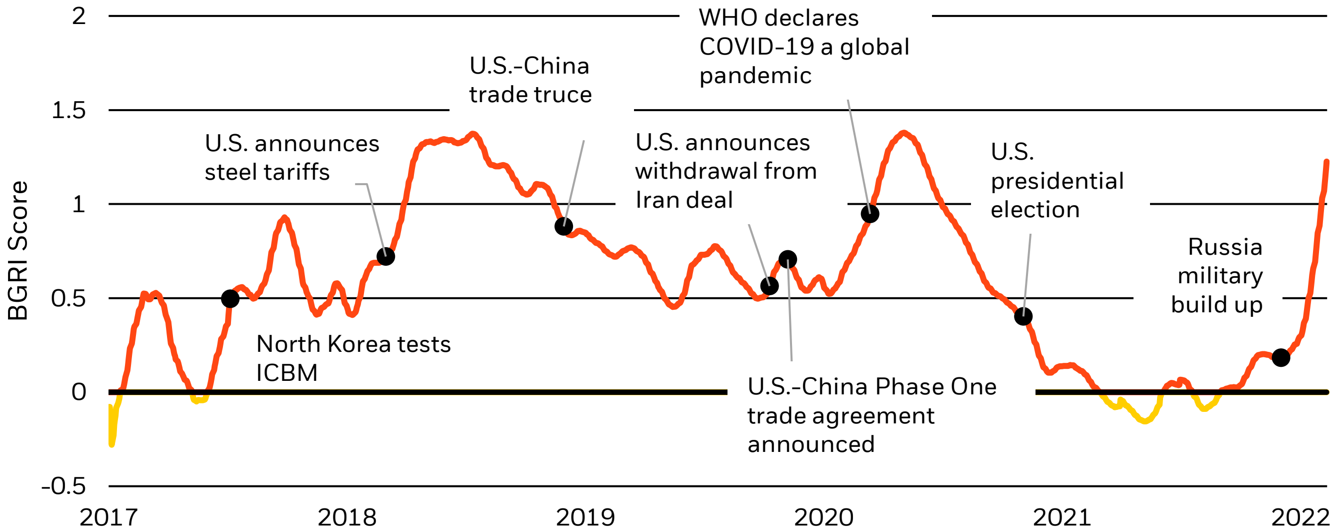
Risk	Description	Market attention since 2019	Likelihood	Our view
1 **Russia-NATO conflict**	Russian troops launch a large-scale invasion of Ukraine. The U.S. and EU respond with harsh financial, energy, and technology sanctions on Russia.		High	The military standoff at Ukraine's borders reflects the 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

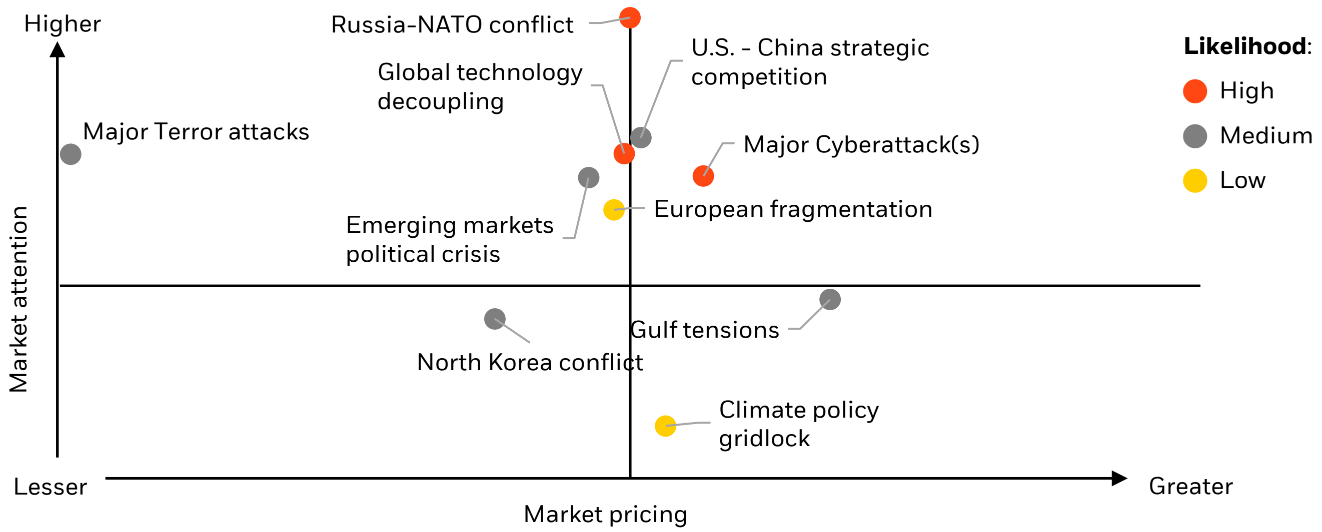


Forward-looking estimates may not come to pass. Source: BlackRock Investment Institute. February 2022. Notes: The BlackRock Geopolitical Risk Indicator (BGRI) tracks the relative frequency of brokerage reports (via Refinitiv) and financial news stories (Dow Jones News) associated with specific geopolitical 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 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.

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