Geopolitical risk dashboard

BlackRock.

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Geopolitical Risks – December update

A new geopolitical world order is coming into view. The Ukraine war and escalating U.S.-China competition have deepened fragmentation and the emergence of competing geopolitical blocs. Our BlackRock Geopolitical Risk Indicator hit a high amid increased market attention to U.S.-China relations, emerging market risks, political upheaval in the UK and the Ukraine war.

Geopolitical events typically have a short-lived impact on markets and economies, according to our analysis of 68 risk events since 1962. The current moment is different, in our view. Geopolitics have become dominant risks for markets, with direct and likely long-lasting impacts. See our 2023 Outlook.

We see strategic competition between major powers intensifying in 2023 - and global economic and energy ties shifting along geopolitical lines. Many volatile situations are playing out, with war and peace in the balance.

Today's geopolitical environment sharply contrasts with periods of cooperation amid crises. Major powers are actively trying to undermine each other – weaponizing energy, technology and financial networks to achieve strategic gains. This presents challenges for global investors.

Key highlights this month include:

- We keep the risk of *Gulf tensions* at a medium level amid stalled progress on the Iranian nuclear deal and strained U.S.-Saudi relations.
- We maintain the *North Korea conflict* risk at a medium likelihood. North Korea's significant escalation of short- and long-range missile tests have increased tensions with the U.S. and allies in the region. We do not see an imminent threat of military conflict, but further provocations are likely.
- We also keep the likelihood of *U.S.-China strategic competition* at a medium level. China is likely to increase pressure on Taiwan through various means, but we do not see military action as likely in the near term.

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.

Our BlackRock Geopolitical Risk Indicators (BGRIs) track market attention to each risk using mentions in brokerage reports and financial news stories. They integrate natural language processing and machine learning techniques. This assessment helps determine when geopolitical risks start to appear on investors' radar screens – and when they start fading.

We also have developed a market movement measure that we believe gives us insights into how asset prices are responding to geopolitical risks. 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 the MDS assumptions and how much the MDS-related asset prices 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' market impact is as much an art as a science. We continuously update our risk scenarios and refine our methodologies. Our scenarios are hypothetical and do not reflect all possible outcomes. Our market movement analyses are not recommendations to invest in any specific investment strategy or product.

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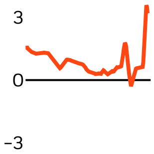
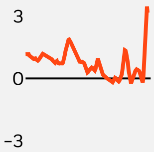
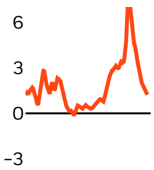
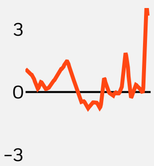
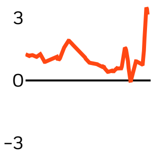
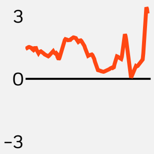
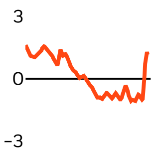
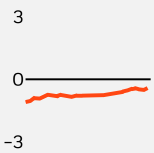
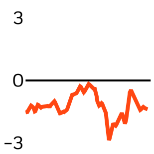
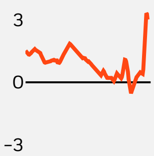
BlackRock Investment Institute

Top 10 risks by likelihood

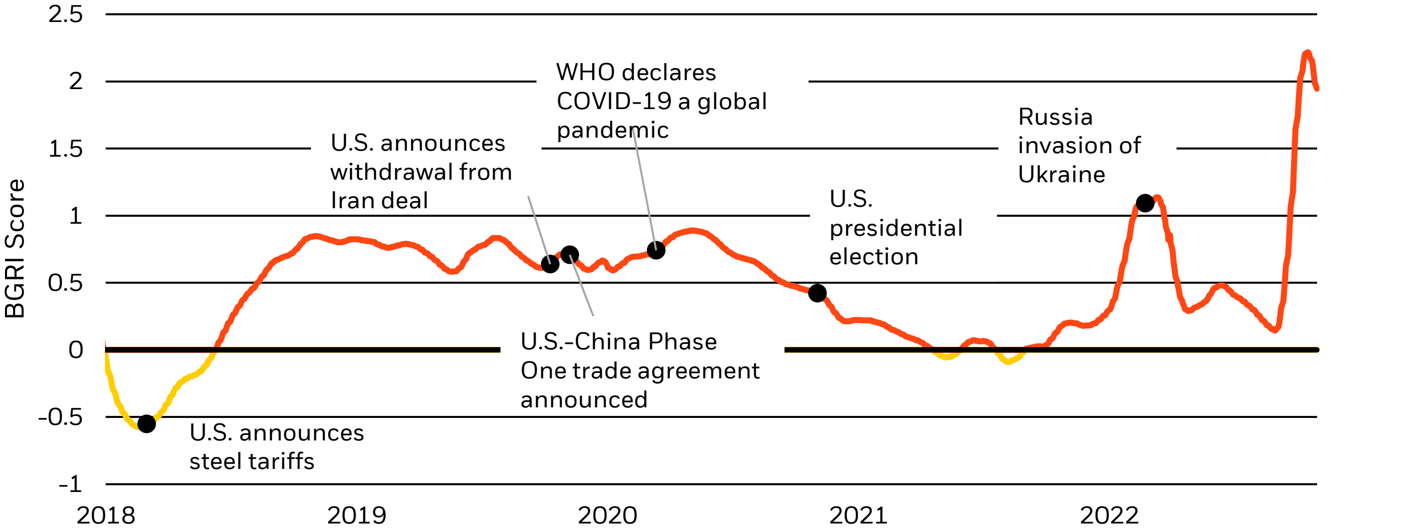
Risk	Description	Market attention since 2019	Likelihood	Our view
1 **Global technology decoupling**	Technology decoupling between the U.S. and China significantly accelerates in scale and scope.		High	Strategic competition between the U.S. and China is driving global fragmentation as both focus on boosting self-reliance, reducing vulnerabilities and decoupling their tech sectors. Unprecedented U.S. semiconductor export restrictions against China are set to accelerate decoupling. The U.S. is weighing similar export controls on other technologies and a mechanism to review outbound investment flows to China. The U.S. has enacted the CHIPS and Science Act aimed at boosting competitiveness in critical technologies. And the SEC is seeking to increase disclosure requirements for Chinese firms listing in the U.S. Technology was a focus of China's 20th Party Congress, highlighting the drive for self-sufficiency.
2 **Major cyberattack(s)**	Cyberattacks cause sustained disruption to critical physical and digital infrastructure.		High	We see the likelihood of cyber attacks increasing as the Russia-Ukraine conflict persists. Critical government and private sector networks as well as infrastructure are vulnerable to hacking and spying. Attacks are increasing in scope, scale and sophistication, with the U.S. facing an "epidemic" of ransomware. The U.S. government is pushing for more required protections. Repeated attacks could cause significant damage and disruption that could spill over to financial markets and the economy.
3 **Russia-NATO conflict**	Russia launches a large-scale invasion of Ukraine. The U.S. and EU respond with financial, energy and technology sanctions on Russia.		High	Russia's invasion of Ukraine is the largest, most dangerous military conflict in Europe since WWII. Russian President Vladimir Putin failed in his initial aim to destroy Ukrainian sovereignty. Ukraine has recaptured territory in the south and northeast, including the strategic city of Kherson. Russia has increased attacks on Ukraine's energy infrastructure. A settlement looks unlikely for now. Instead, we see an extended conflict, alongside a long-term political, economic and military standoff between the West and Russia. There is an ever-present risk of intentional or accidental escalation between NATO and Russia.
4 **Major terror attack(s)**	A terror attack leads to significant loss of life and commercial disruption.		Medium	The killing of Al-Qaida leader Ayman al-Zawahiri demonstrates the strength of U.S. counterterrorism capabilities, even after the withdrawal from Afghanistan. It should weaken Al-Qaida, according to U.S. intelligence, but the international terrorist threat persists with affiliate networks and ISIS still active. The U.S. administration has underscored the growing risk of domestic terrorism, calling it the most serious and persistent terrorist threat to the homeland. We see the threat increasing amid a more polarized U.S. political environment.
5 **Emerging markets political crisis**	Ripple effects from the Ukraine crisis severely stress EM political systems and institutions.		Medium	2022 saw differentiation among emerging markets. Ripple effects from the Ukraine war amplified challenges as EMs faced a slow rebound from Covid-19. EMs are under pressure from high food and energy costs, higher U.S. interest rates, a strong U.S. dollar and slow Chinese growth. We see increased risks of sovereign defaults and social unrest. Some EMs, like Indonesia and Brazil, will absorb these shocks, we think. They hiked rates early, tightened fiscal policy and engaged with the IMF. We see other commodity producers as well buffered, too.

Risk	Description	Market attention since 2019	Likelihood	Our view
6 **U.S.-China strategic competition**	China takes military action against Taiwan or asserts claims in the South China Sea by force.		Medium	Taiwan is set to remain the key flashpoint in U.S.-China relations. President Xi Jinping reaffirmed his intention to unify Taiwan with the mainland at the recent National Party Congress. The next U.S. Congress is likely to support closer Taiwan relations, further elevating tensions. We do not see military action in the near term but expect the risk to increase significantly over time. China can take a range of steps short of military action to pressure Taiwan. Indicators such as surging weapons production or military mobilization would signal greater likelihood of military action.
7 **Gulf tensions**	Iran nuclear talks collapse, and tensions escalate, raising the risk of a regional conflict.		Medium	Negotiations toward a revived nuclear deal have hit a standstill. Without a deal, we see increasing risk of military action. Iran's military support for Russia is exacerbating tensions. Inside Iran, protests show no signs of easing. There has been a general de-escalation of tensions among Gulf oil producers, who have benefited from high energy prices. The Abraham Accords and diplomatic efforts by the U.S. administration are enhancing cooperation between Israel and Arab states. The Accords are likely to be supported by the new Israeli government. U.S.-Saudi relations are strained after the OPEC+ decision to cut oil production.
8 **North Korea conflict**	North Korea pushes ahead with its nuclear buildup and takes provocative actions such as missile launches.		Medium	North Korea's nuclear program continues unabated. North Korea has rebuffed talks with the U.S. and escalated provocations. This includes increasingly threatening rhetoric, legislation updating its nuclear doctrine and record tests of short-range and intercontinental ballistic missile in 2022, with some increasingly close to South Korean territory. We do not see an imminent threat of regional conflict. Yet tensions will worsen in 2023. This could include additional long-range missile tests and a seventh nuclear test. We believe markets are underappreciating this risk.
9 **Climate policy gridlock**	Developed economies fail to increase public investment or take action to achieve net-zero emission targets.		Medium	The Ukraine war has brought energy security to the fore. The world will need more non-Russian fossil fuels in the near term, and we believe the crisis will make the transition to a lower-carbon world more regionally diverse. The energy shock will likely boost decarbonization plans in Europe and make clean energy more competitive as the oil-importing continent seeks greater energy security. In the U.S., there is political polarization around energy and climate change. Recent legislation, including the Inflation Reduction Act, provides significant renewables incentives and investment opportunities.
10 **European fragmentation**	The energy crunch and inflationary pressures lead to a populist resurgence and economic volatility.		Low	The Ukraine war triggered a strong impulse toward European unity, as governments came together to sanction Russia and support Ukraine. Italy's conservative government has so far avoided stoking tensions with the EU, and Brussels has shown openness to reform EU fiscal rules. We think European institutions and Hungary will likely resolve their longstanding dispute over the erosion of democratic institutions, and we see positive progress in UK-EU relations. We worry divisions may emerge as the economic costs of Ukraine war mount. Franco-German relations are at a low, and countries are grappling with how to approach China amid a more competitive geopolitical environment.

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



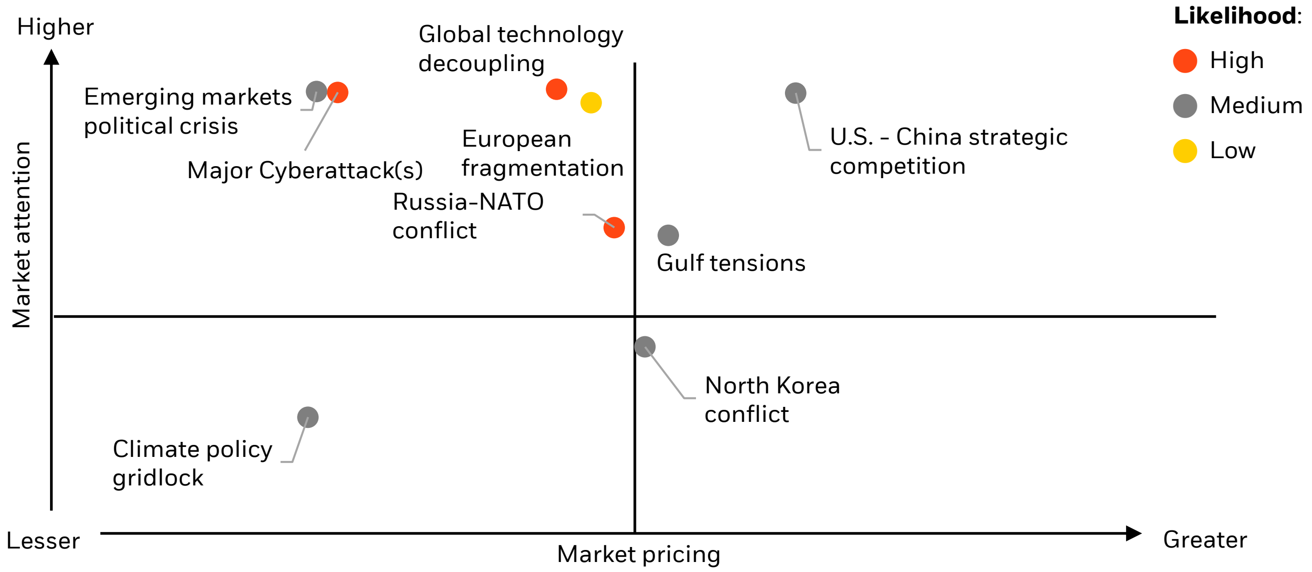
Forward-looking estimates may not come to pass. Source: BlackRock Investment Institute. November 2022. Notes: The BlackRock Geopolitical Risk Indicator (BGRI) tracks the relative frequency of brokerage reports (via Refinitiv) and financial news stories (Dow Jones News) associated with specific geopolitical 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 overall market attention to geopolitical risks, as the line chart shows. The indicator is a simple average of our top-10 individual risks. The Indicator hit a high this fall amid increased market attention to *Global technology decoupling, Emerging markets political crisis, Major cyber attack(s), U.S.-China strategic competition* and *European fragmentation*.

We keep our *Gulf tensions risk* at a medium likelihood rating (see the grey dot in the chart below) amid decreased prospects for a Iranian nuclear deal and strained U.S.-Saudi relations. We also maintain the *North Korea conflict* risk at a medium likelihood as North Korea's provocations increase. The market's attention to this risk is low, as the chart shows. We keep our *Russia-NATO conflict*, *Major cyber attacks* and *Global technology decoupling* risks at high levels (the red dots).

Risk map

BlackRock Geopolitical market attention, market movement and likelihood



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

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
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	▼
Russia-NATO conflict	Russian equities	▼
	Russian ruble	▼
	Brent crude oil	▲
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	▼
U.S.-China strategic competition	Taiwanese dollar	▼
	Taiwanese equities	▼
	China high yield	▼
Gulf tensions	Brent crude oil	▲
	VIX volatility index	▲
	U.S. high yield credit	▼
North Korea conflict	Japanese yen	▲
	South Korean won	▼
	South Korean equities	▼
Climate policy gridlock	U.S. building products sector	▼
	U.S. construction materials sector	▼
	U.S. utilities sector	▲
European fragmentation	Italy 10-year government debt	▼
	EMEA hotels and leisure	▼
	Russian rouble	▼

Source: BlackRock Investment Institute, with data from BlackRock's Aladdin Portfolio Risk Tools application, November 2022. 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.

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 five-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.

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