BLACKROCK **INVESTMENT** INSTITUTE

BLACKROCK INVESTMENT INSTITUTE – MAY 2019

BlackRock geopolitical risk dashboard

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We see geopolitical risk as a material market factor in 2019, especially in an environment of slowing growth and elevated uncertainty about the economic and corporate earnings outlook. At the center of the geopolitical debate? Increasing rivalry between the U.S. and China across economic, ideological and military dimensions. We believe these tensions are structural and long-lasting. With that in mind, we are taking a deep dive into the race between the two countries for global technological leadership.

Our geopolitical risk dashboard features both data-driven market attention barometers and judgment- based assessments of our top-10 individual risks. We show the market attention to each risk, assess the likelihood of it occurring over a six-month horizon, and analyze its potential market impact. We adjust the market impact reading for how much each risk may already be priced into markets. The greater the market's attention to the risk, the lower the potential market impact. Lastly, we highlight assets sensitive to two key risks that are on the market's radar screen: *Global trade tensions* and *European fragmentation*. Key points of our latest update:

We see trade remaining at the center of U.S. foreign policy in 2019. Market attention to our global trade tensions risk has fallen sharply from last July. Yet we are keeping our likelihood of the risk at a high level. This points to potential for greater market impact should the risk be realized. We could ultimately see an agreement between the U.S. and China on the trade deficit and tariffs as well as on China's market conduct and access. Implementation and enforcement will be challenging, however, and we expect structural issues related to China's industrial policy to persist. Global trade tensions could rise if the U.S. implements tariffs on imported autos and parts from Europe or should ratification of the U.S. trade deal with Canada and Mexico become more uncertain.

Market attention to our *European fragmentation* risk is among the highest on our list. We see the European economy stabilizing later in the year, but worry about a confluence of political risks. A six-month delay to Brexit has reduced the risk of a disruptive no-deal exit in the near-term. Yet divisions within the UK political system are preventing a deal being agreed upon and remain unresolved. European Parliament elections in May will be the next test of populist sentiment within the region, and election campaigns are underway. Populist leaders from both the far right and the far left are expected to deliver their strongest showing to date, although they remain far from gaining a majority. Key to watch will be whether populist groups can operate in a unified fashion, thereby allowing them to wield influence in line with their voting share. Further out, budget negotiations between Italy and the EU are set to restart in September and we see significant confrontation ahead.

We have reframed our U.S.-China risk to focus on the strategic competition between the countries. Our *U.S.-China competition* risk now reflects how U.S.-China relations have transitioned from a broadly cooperative state to a more competitive phase. Competition is sharply focused on technology and is coming to a head in the rollout of 5G cellular networks. We see three issues at play: national security, economic competitiveness and global systems dominance. The evolution of these issues and their impact on global markets are key themes of our 2019 research agenda. We preview this tech race in our focus risk section.

This month, we raise the likelihood of two of our risks: *Gulf tensions* and *LatAm policy*. The U.S. ratcheted up pressure on Iran by allowing sanctions waivers on Iranian oil exports to expire on May 2. This move will increase tensions between the U.S. and Iran and put upward pressure on oil prices. Meanwhile, U.S. relations with Saudi Arabia remain under some pressure amid a Congressional push for sanctions related to Saudi Arabia's campaign in Yemen. In Latin America, we worry about a challenging policy environment in Brazil, a rapidly deteriorating economic situation amid election uncertainty in Argentina, and worsening crisis in Venezuela with spillover effects for global oil markets and neighboring countries.

The effect of geopolitical shocks on global markets often is short-lived, according to our analysis of asset price reactions to 50 risk events since 1962, but can be more enduring in markets where the event occurs. The global impact has been more acute and long-lasting when the economic backdrop was weak. We see markets becoming more sensitive to geopolitical risks as global economic growth slows. We see U.S. Treasuries and gold providing a potential buffer against risk asset selloffs triggered by geopolitical crises. These perceived safe havens have historically rallied ahead of "known unknowns" such as elections, then lagged after the event as fading uncertainty boosted risk assets.

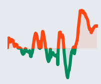
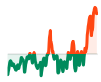
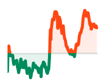
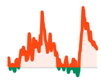
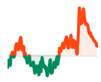
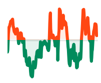
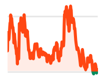
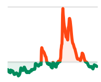
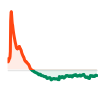
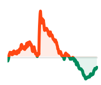
Tracking geopolitical risks and their market impact is as much an art as a science. We are continuously updating our risk scenarios and fine-tuning our methodologies. The scenarios are hypothetical, and our analyses related to market impact are not recommendations to invest in any particular investment strategy or product.

Contents

Global overview

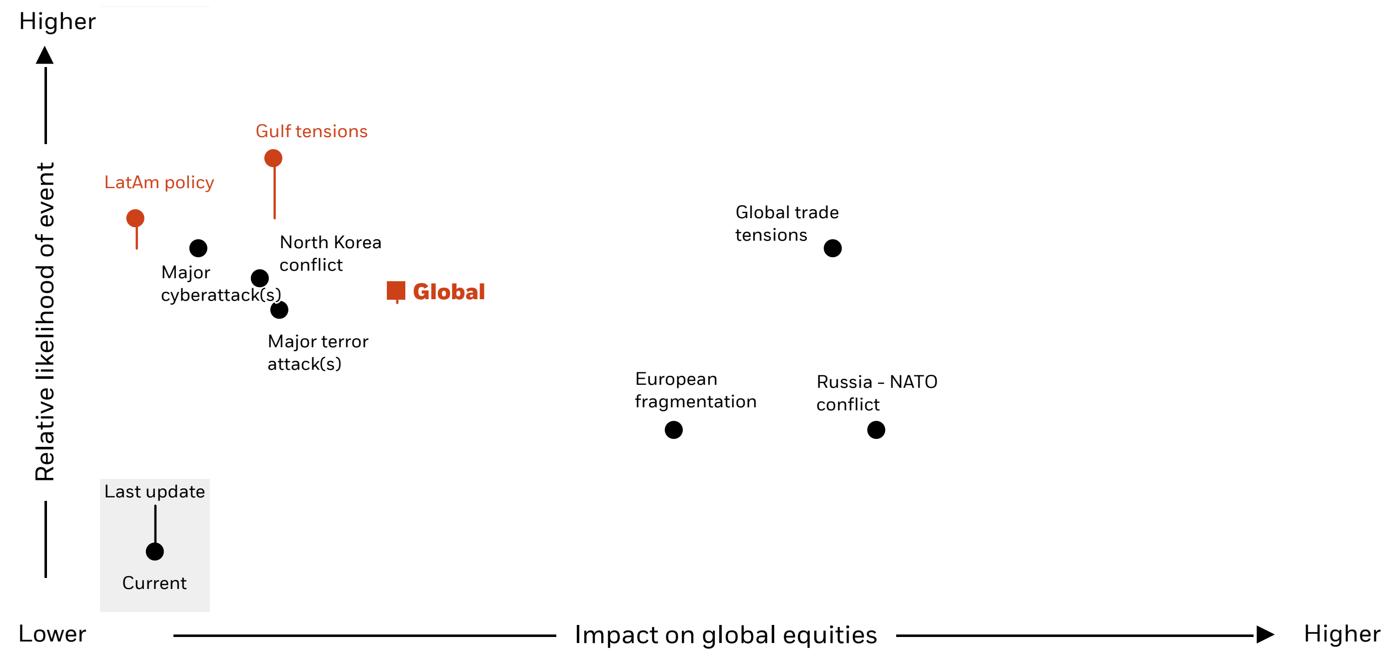
We take a bird's eye look at our top-10 geopolitical risks, describing the hypothetical scenarios that power our market impact and likelihood analysis as well as summarizing our views. We show our focus risk first, then list the other nine risks by level of market attention as measured by the BGRIs. We next show the latest reading of our global geopolitical risk barometer, and plot the risks in a graphic that shows each risk's relative likelihood and potential market impact.

Snapshot of top-10 geopolitical risks, May 2019

Risk	Scenario description	Our view	Risk index since 2014
Focus risk: U.S. - China competition	We are working on a risk scenario and potential market impact that we will share at our next update.	We see the U.S. and China ultimately securing a trade deal, with significant implementation challenges to follow. Yet tensions between the two countries are broadening out to include economic, military and ideological dimensions. We see these tensions as structural and long-lasting. The rivalry is focused on technology and could lead to the progressive decoupling of the U.S. and Chinese tech sectors.	
European fragmentation	Tensions between Italy's populist government and Brussels rise over spending rules and other policies, and Italy threatens to leave the bloc. This scenario focuses specifically on Italy, but we see rising populism, trade frictions and Brexit uncertainty posing additional challenges to Europe, especially considering a weak economic backdrop.	A six-month Brexit delay reduces near-term risks, but uncertainty over the long-term UK/EU relationship remains elevated. We expect a strong showing from populist parties in May's European elections, which remain a long way from a majority, but can negatively impact the pan-European initiative. The budget dispute between Italy and the European Commission has receded for now.	
South Asia tensions (new)	We are working on a risk scenario and potential market impact that we will share at our next update.	Cross-border attacks mark a significant escalation in hostilities between India and Pakistan. India Prime Minister Narendra Modi's tough approach may bolster his electoral prospects in the May elections, although we view an opposition victory as an underappreciated risk.	
Gulf tensions	The war in Yemen escalates and internal strife in Saudi Arabia increases. U.S. sanctions roil the Iranian economy and threaten a full unraveling of the nuclear deal.	The U.S. has extended its maximum pressure campaign against Iran. We see the decision to move to a global ban on importing Iranian oil materially increasing U.S.-Iran tensions, putting the U.S. at odds with China and India, and putting upward pressure on oil prices. U.S.-Saudi relations remain strained due to a U.S. congressional push for additional sanctions and decreased cooperation, which President Trump has strongly resisted.	
Global trade tensions	The U.S. escalates trade disputes, and trading partners impose retaliatory tariffs. The erstwhile champion of free trade plans to overhaul key multilateral trade agreements in response, further undermining the global trade web. Market sentiment deteriorates amid fears of a global trade war.	The U.S. is shaking up the system of global trade with the aim to reduce its trade deficit. The U.S. is moving toward a trade deal with China, but we see structural tensions persisting. We could see frictions with the EU rising with potential auto tariffs and believe ratification of the U.S. trade deal with Canada and Mexico has become less certain.	
LatAm policy	Populist policies in Brazil and Mexico erode investor confidence. U.S.-Mexico relations deteriorate across social, political and economic issues. This scenario focuses on Mexico and Brazil, but we take into account risks around the upcoming Argentina election and crisis in Venezuela.	Brazil's government is facing obstacles addressing the country's fiscal ills. We see risks in Argentina rising amid economic crisis and October election uncertainty, and worry about the spillover effects of a protracted crisis in Venezuela.	
Major cyberattack(s)	Cyberattacks increase in intensity and reach. Possibilities include attacks on the U.S. power grid, a breaching of the defenses of the global financial system, or hackers taking over key technology infrastructure and disrupting the operations of dependent industries.	Cyberattacks have increased in sophistication and quantity. We see a persistent risk of attacks on business-critical infrastructure and major elections. There is heightened risk of nation-state attacks on the U.S. in the wake of increasing tensions with China, Iran and Russia.	
North Korea conflict	The U.S. pursues limited military action against North Korea in response to continued nuclear buildup and missile testing. Retaliation by North Korea draws a South Korean response, but North Korea backs down in the absence of Beijing's support and tensions de-escalate.	The failed summit between the U.S. and North Korea shows significant gaps between the parties on core issues—highlighting a long road to any resolution. Despite recent North Korean provocations, we could see continued diplomatic engagement by the Trump administration. We see the 2019 risk of military conflict on the Korean peninsula as low.	
Russia - NATO conflict	Simmering tensions between Russia and the West boil over. This leads to mutual recriminations, military preparations and the potential for direct conflict.	Tensions remain high between Russia and the West. We could see them increasing further with the suspension of a nuclear arms control treaty, President Vladimir Putin's declining approval ratings, and proposed U.S. legislation targeting Russian energy, finance and oligarchs.	
Major terror attack(s)	A coordinated terror attack in a major U.S. or European city leads to significant loss of life and commercial disruption, prompting a targeted response by the U.S. and its NATO allies against Middle East militants.	The recent Sri Lanka attacks illustrate the ongoing threat of ISIS-inspired local assaults. The principal threat remains autonomous cells or individuals. We see the market risk as greatest in case of a successful attack on the U.S. homeland.	

Source: BlackRock Investment Institute, May 2019. Notes: The table shows the top-10 geopolitical risks identified by the BlackRock Geopolitical Risk Steering Group. The list is topped by our bi-monthly focus risk; other risks are organized by level of market attention as indicated by the BlackRock Geopolitical Risk Indicator for each. See the "How it works" section on page 4 for details.

Relative likelihood and market impact of risks



Forward-looking estimates may not come to pass. Source: BlackRock Investment Institute. May 2019.
Notes: The graphic depicts BlackRock's estimates of the relative likelihood (vertical axis) of the risks over the next six months and their potential market impact on the MSCI ACWI Index (horizontal axis). The market impact estimates are based on analysis from BlackRock's Risk and Quantitative Analysis group. See the How it works section on our Geopolitical risk dashboard and the 2018 paper Market Driven Scenarios: An Approach for Plausible Scenario Construction for details. The chart shows our original estimate of market impact at the time the scenario was conceived. The Global dot represents our overall assessment of geopolitical risk. Its likelihood score is based on a simple average of our top-10 risks; the market impact is a weighted average by likelihood score of 10 risks. 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. Colored lines and dots show whether BlackRock's Geopolitical Risk Steering Committee has increased (orange), decreased (green) or left unchanged (black) the relative likelihood of any of the risks from our previous update. The chart is meant for illustrative purposes only.

The chart above shows our assessment of the relative likelihood of our top-10 risks and the potential severity of their market impact. Our geopolitical experts identify potential escalation triggers for each risk and assess the most likely manifestation of the risk over the next six months. The relative likelihood of each event (vertical axis) is then measured relative to the remaining risks. The severity of market impact (horizontal axis) is based on Market-Driven Scenarios (MDS) analysis from our Risk and Quantitative Analysis group and estimates the one-month impact of each risk on global equities (as measured by the MSCI ACWI) if it were to come to pass. Colored lines and dots show whether BlackRock's Geopolitical Risk Steering Committee has increased (orange) or decreased (green) the relative likelihood of any of the risks from our previous update. We also show our overall measure. Its likelihood score is based on a simple average of our top-10 risks; the market impact is a weighted average by likelihood score. Our Geopolitical Risk Steering Committee has raised the likelihood of two of our risks and focused on two others we view as most pressing:

Gulf tensions

- We have increased the likelihood of our Gulf tensions risk amid increasing tensions between the U.S. and Iran and heightened pressure on the U.S.-Saudi Arabia relationship.
- The U.S. has extended its maximum pressure campaign against Iran, by allowing sanctions waivers on Iranian oil exports to expire. We see this decision putting upward pressure on oil prices, increasing tensions between the U.S. and Iran — and putting the U.S. at odds with China and India, which are unlikely to zero-out imports of Iranian oil.
- U.S. relations with Saudi Arabia remain under some pressure from the U.S. Congress, which is pushing for additional sanctions and decreased cooperation. President Trump has strongly resisted these efforts.

LatAm policy

- We have increased the likelihood of our LatAm policy risk as the policy environments in Brazil and Mexico grow more complicated, economic crisis in Argentina deepens ahead of a crucial election, and the situation in Venezuela becomes protracted.
- The Brazilian government appears committed to dealing with the country's fiscal challenges, but is facing a difficult time navigating complicated parliamentary coalitions and opposition. In Mexico, the commitment to reform is pushing up against a slowing economy and trade risks.
- Wrenching recession in Argentina is threatening incumbent President Mauricio Macri's prospects in the run-up to October elections, where he is likely to face off against former president Cristina Kirchner. We worry about the spillover effects on global oil markets and neighboring countries of protracted crisis in Venezuela, as well as heightened risk of military confrontation.

Global trade tensions

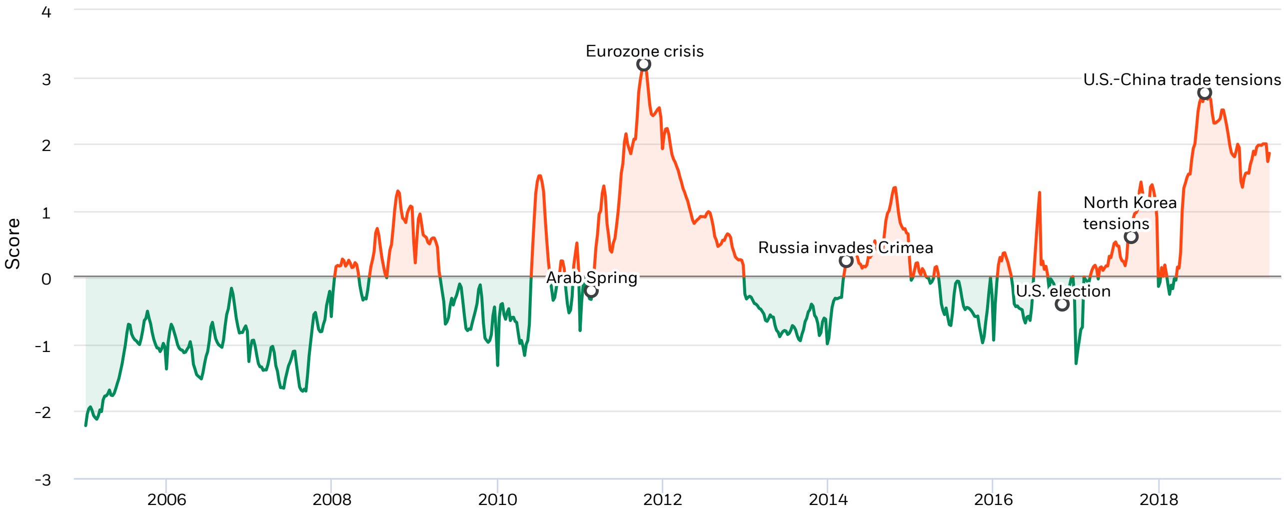
- We are keeping our likelihood score at a relatively high level even though market attention to global trade tensions has declined markedly.
- We could see a U.S.-China trade agreement that includes a Chinese commitment to purchase more U.S. goods, among other items, yet implementation and enforcement will be challenging. Ratification of the U.S.-Mexico-Canada Agreement is far from certain.
- The U.S. and EU are preparing tit-for-tat tariffs following a WTO ruling that EU subsidies to a European aircraft company were illegal. Trump could leverage national security justifications to impose tariffs on EU auto imports — if only to gain leverage in broader trade talks. We expect little of the talks but see them as an essential fig leaf to prevent such tariffs and EU retaliation.

European fragmentation

- We see the European economy shaking off its current soft patch later this year, but there are notable geopolitical risks to our base case. Policymakers will have limited room to maneuver should the economy slip into recession.
- The EU has agreed to delay the UK's scheduled departure from the bloc until up to the end of October. The UK has begun preparations to hold European Parliamentary elections while hoping a deal can be ratified by May 22 to avoid hosting elections, although we see this as unlikely.
- These elections take place on May 23-26. Populist parties are far from winning a majority, but we see a risk they take enough seats to gain veto rights on key policy decisions. By contrast, recent elections in Spain, Slovakia, and Finland show the strength of pro-EU centrist forces.

How it works

BlackRock Global Risk Indicator



Source: BlackRock Investment Institute, with data from Thomson Reuters. Data as of May 2, 2019. Notes: We identify specific words related to geopolitical risk in general and to our top-10 risks. We then use text analysis to calculate the frequency of their appearance in the Thomson Reuters Broker Report and Dow Jones Global Newswire databases as well as on Twitter. We then adjust for whether the language reflects positive or negative sentiment, and assign a score. A zero score represents the average BGRI level over its history from 2003 up to that point in time. A score of one means the BGRI level is one standard deviation above the average. We weigh recent readings more heavily in calculating the average. We recently improved the methodology of our global BGRI, tying it closely to our other risks and updating the keywords. The chart may look different from previous updates as a result.

The **BlackRock Geopolitical Risk Indicator (BGRI)** continuously tracks the relative frequency of analyst reports, financial news stories and tweets associated with geopolitical risks. We have used the Thomson Reuters Broker Report and the Dow Jones Global Newswire databases as sources, and recently added the one million most popular tweets each week from Twitter-verified accounts. We calculate the frequency of words that relate to geopolitical risk, adjust for positive and negative sentiment in the text of articles or tweets, and then assign a score. We assign a much heavier weight to brokerage reports than to the other data sources because we want to measure the *market's* attention to any particular risk, not the *public's.*

Our global BlackRock Geopolitical Risk Indicator has ticked up recently, driven by heightened market attention to our *European fragmentation* and *U.S.-China competition* risks. See the *Global overview* chart. We view recent declines in attention to our *Global trade tensions* risk as a sign that investors may be growing complacent about the risk and impact of trade conflicts.

The BGRI is primarily a market attention indicator, gauging to what extent market-related content is focused on geopolitical risk. The higher the index, the more financial analysts and media are referring to geopolitics.

We also take into account whether the market focus is couched in relative positive or negative sentiment. For example, market attention on geopolitical risks was extremely high during the Arab Spring of 2011. Much of the attention was focused on the potentially positive effects of the regime changes, however. The adjustment for this positive sentiment mitigated the Arab Spring's impact on the BGRI's level. Sentiment adjustment also helps us avoid overstating geopolitical risk when risks actually are being resolved.

Here's the step-by-step process:

1. **BGRI attention:** This is the market attention score. The global BGRI uses words selected to denote broad geopolitical risks. Local BGRIs identify an anchor phrase specific to the risk (e.g., North Korea) and related words (e.g., missile, test). A cross-functional group of portfolio managers, geopolitical experts and risk managers agrees on key words for each risk and validates the resulting historical moves in the relevant BGRI. The group reviews the key words regularly.

2. **BGRI sentiment:** This is the sentiment score. We use a proprietary dictionary of about 150 "positive sentiment" words and 150 "negative sentiment" words. We use a weighted moving average that puts more emphasis on recent documents.

3. **BGRI total score:** This is BGRI attention — (0.2 * BGRI sentiment). We want the indicator to fundamentally measure market attention, so we put a much greater weight on the attention score. A 20% weight of the sentiment score can mitigate spikes at times when risk may actually be receding.

4. **Meaning of the score:** A zero score represents the average BGRI level over its history from 2003 up to that point in time. A score of one means the BGRI level is one standard deviation above the average. We weigh recent readings more heavily in calculating the average.

The level of the BGRIs changes 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." In other words, the effects of elevated BGRIs wash out over longer periods as investors become more accustomed to the risk.

Market impact

Our MDS framework forms the basis for our scenarios and estimates of the one-month impact on global equities. The first step is 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.

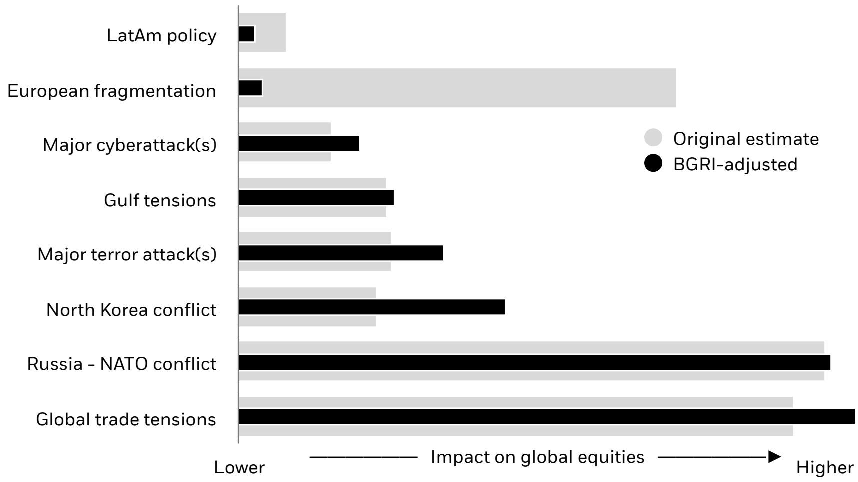
The size of the shocks is calibrated by various techniques, including analysis of historical periods that resemble the risk scenario. Recent historical parallels are assigned greater weight. Some of the scenarios we envision do not have precedents – and many have only imperfect ones. This is why we integrate 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. The BGRI's risk scenario is for illustrative purposes only and does not reflect all possible outcomes as geopolitical risks are ever-evolving.

BGRI-adjusted market impact

We enhance our market impact analysis by adjusting the market impact scores to reflect shifting market attention over time. When scenarios are first defined, market shocks are calibrated to reflect what is not already priced in to the market by investors. We call this the original estimate.

As market attention fluctuates, the BGRI-adjusted market impact either increases or decreases in severity based on how market attention evolves. For example, an elevated BGRI level relative to the point at which a scenario is first defined would suggest an increase in investor attention. This would result in a less severe BGRI-adjusted market impact relative to our original estimate. The converse result — in the case of a depressed BGRI level — would also hold. We determine a factor that scales the size of the BGRI move since the date of our original market impact estimate to calculate the BGRI-adjusted market impact. We use a sigmoid function to do so, or a statistical technique that is characterized by an S-shaped curve. We then multiply our original estimate of the market impact by (1 – scaling factor) to reach the BGRI- adjusted market impact score.

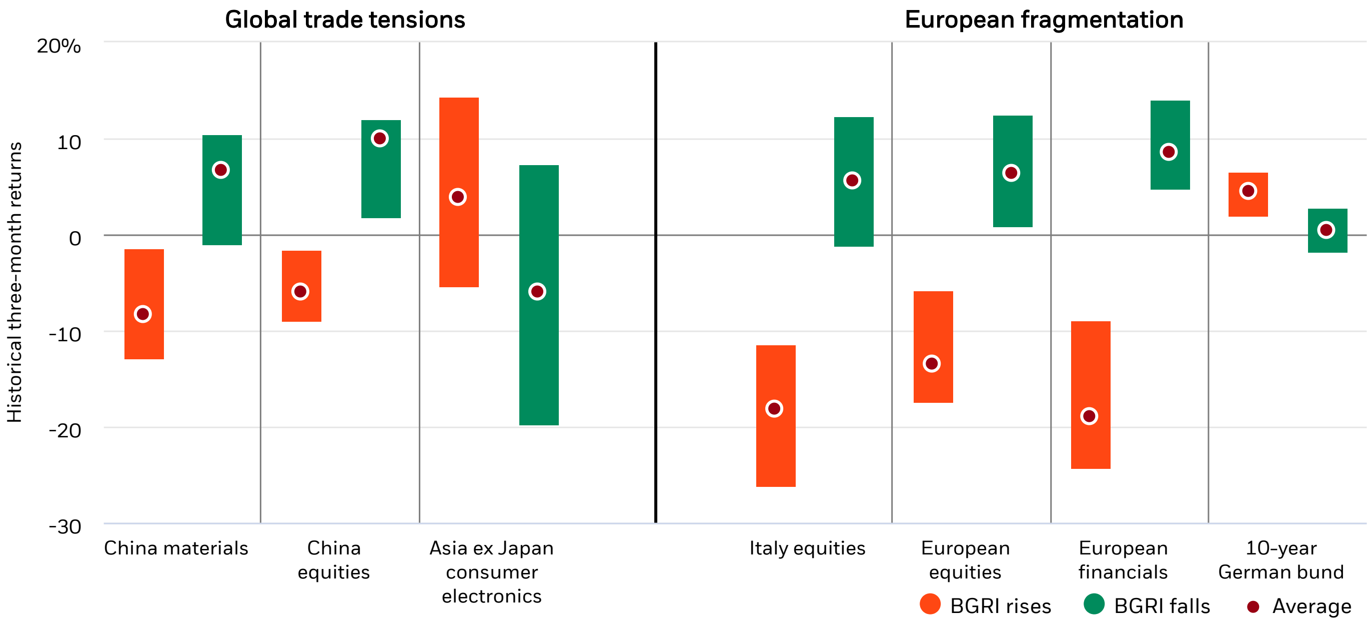
Market impact of risks



Source: BlackRock Investment Institute, with data from Thomson Reuters. Notes: The chart shows our estimates of the potential market impact on the MSCI ACWI Index, the grey bar shows our original estimate, the black bars show the adjusted impact based on the level of the BGRI. For example, an elevated BGRI level for a risk would suggest increased investor attention and therefore a lower BGRI-adjusted market impact. Estimates are based on analysis from BlackRock's Risk and Quantitative Analysis group. See the How it works section and the 2018 paper Market Driven Scenarios: An Approach for Plausible Scenario Construction for details. 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. Original estimates are based on the analysis run on the following dates:
South Asia tensions (new): (to be released)
U.S. - China competition: (to be released)
LatAm policy: March 21, 2018
European fragmentation: July 3, 2018
Major cyberattack(s): December 18, 2018
Gulf tensions: February 12, 2019
Major terror attack(s): November 3, 2017
North Korea conflict: June 2, 2017
Russia - NATO conflict: April 23, 2018
Global trade tensions: June 11, 2018

BGRI-specific asset analysis

We are now working to pinpoint assets that have moved along with big changes in individual BGRIs, based on statistically meaningful relationships. We have focused on two risks that are solidly on the market's radar screen: *Global trade tensions* and *European fragmentation*. The chart below shows the historical ranges of three-month returns for selected assets in three-month periods when the respective BGRI rose (the orange bars) or fell (the green bars) by more than one standard deviation. The analysis focused on three dozen assets we believed are related to these two risks.Risk assets generally underperformed, and perceived safe-haven assets mostly outperformed, in this analysis.

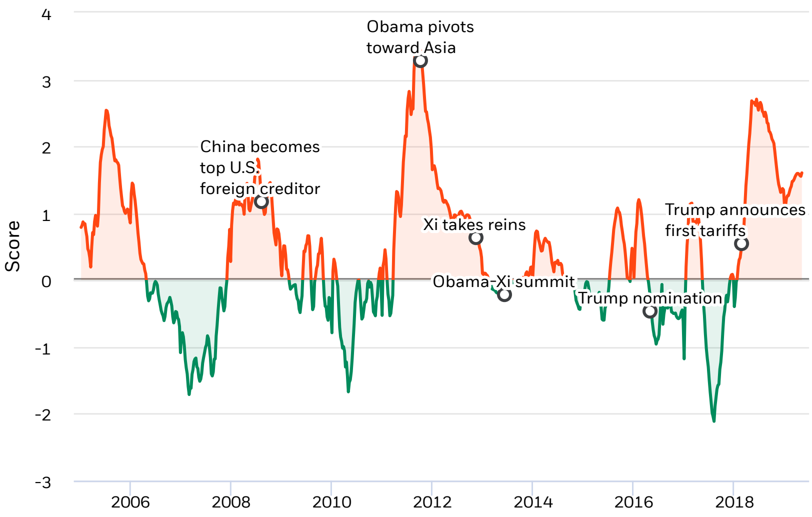


Past performance is not a reliable indicator of future results. This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise - or even estimate - of future performance. Source: BlackRock Investment Institute, with data from Thomson Reuters. Data as of May 2, 2019. Notes: The chart shows the 25%–75% percentile ranges (bars) and average three-month returns (dots) for selected assets during rolling three-month periods when the BlackRock Geopolitical Risk Indicator rises or falls by more than one standard deviation. MSCI USD indexes price returns are used for equities, and Thomson Reuters benchmark indexes total returns are used for government bonds.

Focus risk

U.S. – China competition

BlackRock Geopolitical Risk Indicator



Risk scenario description:

We are working on a risk scenario and potential market impact that we will share at our next update.

Our view:

We see the U.S. and China ultimately securing a trade deal, with significant implementation challenges to follow. Yet tensions between the two countries are broadening out to include economic, military and ideological dimensions. We see these tensions as structural and long-lasting. The rivalry is focused on technology and could lead to the progressive decoupling of the U.S. and Chinese tech sectors.

Source: BlackRock Investment Institute, with data from Thomson Reuters. Data as of May 2, 2019. Notes: We identify specific words related to this geopolitical risk in general and to our top -10 risks. We then use text analysis to calculate the frequency of their appearance in the Thomson Reuters Broker Report and Dow Jones Global Newswire databases as well as on Twitter. We then adjust for whether the language reflects positive or negative sentiment, and assign a score. A zero score represents the average BGRI level over its history from 2003 up to that point in time. A score of one means the BGRI level is one standard deviation above the average. We weigh recent readings more heavily in calculating the average. The BGRI's risk scenario is for illustrative purposes only and does not reflect all possible outcomes as geopolitical risks are ever-evolving.

Background

- The relationship between the U.S. and China has entered a more competitive phase across economic, ideological and military dimensions. We see these tensions as structural and long-lasting. Investors should not confuse any trade truce with a détente in the overall relationship.
- There are parallel efforts underway in the U.S. to confront China. The first is focused on trade, with President Donald Trump bent on closing the bilateral trade gap. See *Global trade tensions*. The second is centered around technology and China's territorial ambitions — and is driven by the broader U.S. government.
- The U.S. and China are in a race to dominate the industries of the future. This could lead to the progressive decoupling of the countries' technology sectors. Other risks include an accidental or deliberate clash in the South China Sea and tensions over Taiwan.

Key recent developments

- The U.S. will implement new export controls on sensitive technologies in the coming months, and is also considering measures to block Chinese citizens from performing sensitive research at U.S. research institutes. A proposed White House Office of Critical Technologies and Security would oversee the interagency process to identify and control new technologies.
- Washington is pursuing multiple tracks to persuade countries across Europe and Asia to consider legal measures to ban Chinese companies from their 5G networks. Security concerns are the overt objective, but the U.S. is also fighting to maintain its position as the global standard-setter for technology and innovation, as well as the leader of the free Internet. Pushback in Europe and Asia may cause the U.S. to intensify its campaign.
- The Committee on Foreign Investment in the United States (CFIUS), between March and April 2019, forced two Chinese firms to unwind their acquisitions of U.S. companies on national security grounds. We could increasingly see restrictions on capital that are grounded in political and security concerns, rather than market concerns.
- The U.S. has expressed concerns about China's infrastructure loans tied to China's "One Belt, One Road" initiative, and its projection of power in the South China Sea and the Taiwan Strait. This highlights additional sources of conflict, and may force Asian nations to choose sides in the U.S.-China dispute.

Escalation triggers

- The U.S. implements whole entity restrictions—preventing certain Chinese companies from doing business in the U.S. or purchasing U.S. components for their products—and blocking partnerships with foreign countries and companies utilizing Chinese technology products.
- A military clash occurs between China and the U.S. during Freedom of Navigation Exercises in the South China Sea or in the Taiwan Strait.

Focus risk

U.S.-China technology competition

Market attention to our *U.S.-China competition* risk is elevated. We believe markets are focused too narrowly on the countries' trade dispute — where progress is indeed likely — and are failing to appreciate the complexities of intense technological rivalry. We take a deep dive into this area as we see the tensions there as structural and likely long-lasting.

Background

The U.S. and China are competing to take the commanding heights of technology. This competition is coming to a head in the debate over fifth-generation (5G) cellular networks. This is the high-speed mobile technology that will enable enhanced communications and advanced technology solutions. First adopters of 5G are expected to sustain a significant long-term competitive advantage. The U.S. and China see 5G leadership as a matter of economic and national security and are competing to be the first to deploy the technology and set the standards for 5G globally.

Each country is ramping up its efforts and adjusting its policies to win the 5G race. In China, technology development has the full weight of the national government behind it. The government has laid out a comprehensive plan — Made in China 2025 — to create globally competitive firms and reduce China's dependence on foreign technology. In the U.S., by contrast, the development of new technologies is led by the private sector. The U.S. is seen as home to many of the world's most innovative firms and a strong pool of talent. Silicon Valley operates with limited regulation, coordination or direction from the national government. This enables more diffuse outcomes. Yet the U.S. lacks a coordinated technology strategy, employees of U.S. tech companies often oppose national security contracts, and concern is rising that the U.S. federal government is not doing enough to support research and development.

Key issues

Chinese President Xi Jinping has called for China to surpass the U.S. technologically by 2030, sparking a strong reaction in the U.S. Washington increasingly views advanced technologies as a zero-sum game; any progress made by China is seen as coming at the U.S.'s expense. The current challenge between the U.S. and China is focused on three key issues: national security, economic competitiveness, and global systems dominance.

National security

U.S. government officials fear that technological advances made by China will threaten U.S. national security. The U.S. is taking measures to protect its technology and intellectual property (IP) from transfers, acquisitions and other perceived threats to its national security. These include:

- Expanded CFIUS authority: Legislation expanded the authority of the Committee on Foreign Investment in the United States (CFIUS) in August 2018 by extending its powers and offering a broader definition of what constitutes "critical technologies." It does not single out any specific country, but is seen as a tool for countering Chinese attempts to acquire sensitive U.S. technologies and IP. Though it could take more than a year to finalize, the package allows for pilot programs. We could see this having an impact in the short run.
- New export controls: The Export Control Reform Act of 2018 expands the U.S. export controls process to review joint ventures involving sensitive U.S. technology. In line with this legislation, the U.S. could soon implement new export controls targeting China. A proposed White House Office of Critical Technologies and Security would oversee the interagency process to identify and control new technologies.
- Visa restrictions: The U.S. administration is considering measures to block Chinese citizens from performing sensitive research at U.S. universities and research institutes over fears they may acquire critical IP. Certain types of projects could become subject to personnel restrictions — particularly those related to technologies central to China's Made in 2025 strategy.
- Entity restrictions: The U.S. is moving toward whole entity restrictions — preventing certain companies from doing business in the U.S. or purchasing U.S. components. A ban on telecommunications equipment from Chinese companies would reverberate through the global technology ecosystem. Any blocking of partnerships with foreign countries and companies utilizing Chinese technology would have even greater impact.

China, too, cites national security justifications in its push for technology development. China wants to reduce its dependence on foreign suppliers of digital and communications equipment and, instead, scale up its own capabilities and cyber defenses.

Economic competitiveness

Each country is taking a very different approach toward achieving global technology leadership, and this is spilling over into the trade dispute.

China's Made in China 2025 strategy is reliant on government subsidies, technology transfer, and the promotion and protection of national champions. China's state-led model helps to ensure that domestic firms are at the forefront of technology standards and development globally. These practices are clear in its approach to 5G development. Not only have recent government plans earmarked $400 billion for 5G-related investments, but the government has also arranged for its top telecom providers to coordinate on 5G development, and for Chinese Internet platform companies to subsidize 5G rollout.

This is a point of contention for the U.S., which sees Chinese government support as threatening the ability of U.S. companies to compete globally. The U.S. administration has leveraged Section 301 of the Trade Act of 1974 to combat China's industrial policy and approach to IP. The U.S. has imposed tariffs on $250 billion worth of Chinese imports in accordance with this measure; the Section 301 report mentions "Made in China 2025" more than 110 times. Resolving the existing tariffs in place, as well as the underlying structural issues, is the focus of ongoing negotiations.

Global systems dominance

For nearly half a century, the U.S. has guided the growth and development of the Internet in a model that is characterized by limited regulation, privacy and free speech. Now China is presenting an alternative global systems model with its strategy to transform into a cyber superpower. China's Internet guides public opinion and fosters economic growth — and is tightly controlled to ensure regime stability.

The competition between the U.S. and China raises the prospect of technological spheres of influence. In the case of 5G, the U.S. administration has made clear that countries and companies may soon be forced to choose sides. We see this leading to tensions between the U.S. and traditional allies, with early signs the UK, Germany and other countries are ready to challenge the U.S. stance.

Implications for markets

We see confrontation over these issues driving the progressive decoupling of the U.S. and Chinese technology sectors, with meaningful implications for the global economy and markets. It makes sense for investors to own selected technology stocks in both the U.S. and China as a result, as we detailed in The heat is on for tech stocks amid U.S.-China cold war. Understanding the full range of the implications will be a core focus of the BlackRock Investment Institute this year.

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