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**53 Report** by Max Hanisch

## From Iran to Russia to Hong Kong: geopolitical risks are weighing on the German economy

- Recent strong increase in global geopolitical risk
- Geopolitical risk has a small but statistically significant negative impact on German economy
- Deeper economic and political integration of Germany on a European level could cushion effects of shocks

## LEGAL AND EDITORIAL DETAILS

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## AT A GLANCE

# From Iran to Russia to Hong Kong: geopolitical risks are weighing on the German economy

By Max Hanisch

- Vulnerability of the German economy to global geopolitical risk is analyzed
- A geopolitical risk shock is identified using a model to measure the impact on key variables of the German economy
- Small but statistically significant negative impact on the German economy
- German economy reacts more sensitively in terms of industrial output and less sensitively in terms of the stock market compared to the American economy
- Deeper economic and political integration of Germany on a European level could cushion shock effects

## An increase in geopolitical risk can have different effects on German businesses



## FROM THE AUTHOR

*“Geopolitical risk has increased sharply recently. Our research shows that such tensions weaken the German economy. Although the effects are relatively small overall, they may well be relevant for German companies, as they can take the form of declining consumer demand and deteriorating financing conditions.”*

— Max Hanisch, study author —

## MEDIA



**Audio Interview** with Max Hanisch (in German)  
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# From Iran to Russia to Hong Kong: geopolitical risks are weighing on the German economy

By Max Hanisch

## ABSTRACT

Over the past years, there has been an increase in global geopolitical risk, the most recent example being the intensifying conflict between the USA and Iran. Such geopolitical risks also affect the German economy. A geopolitical shock, defined as an unexpected increase in risk, has a significantly negative effect on the development of the German economy, and stock prices fall. By comparison, German industrial production reacts more strongly to an unexpected geopolitical shock than its American counterpart, while the opposite is true for stock markets. Overall, the effects are relatively moderate, but to minimize them, deeper economic and political integration is recommended.

The German economy is an open economy connected to the outside world via many channels. Accordingly, international influencing factors, both positive and negative, affect the German economy relatively quickly. While this creates opportunities—such as renewed demand for German products abroad—it also creates dependencies and vulnerabilities. Geopolitical shocks, defined as unexpected armed conflicts, terrorist attacks, and tension between states that threaten peaceful, international exchange, are one such vulnerability. Geopolitical risks include already existing conflicts as well as risks that could lead to further tensions. An unexpected increase in such risks and the resulting impact on the German economy are analyzed in this report using a vector autoregressive model.

## Geopolitical risks increasing

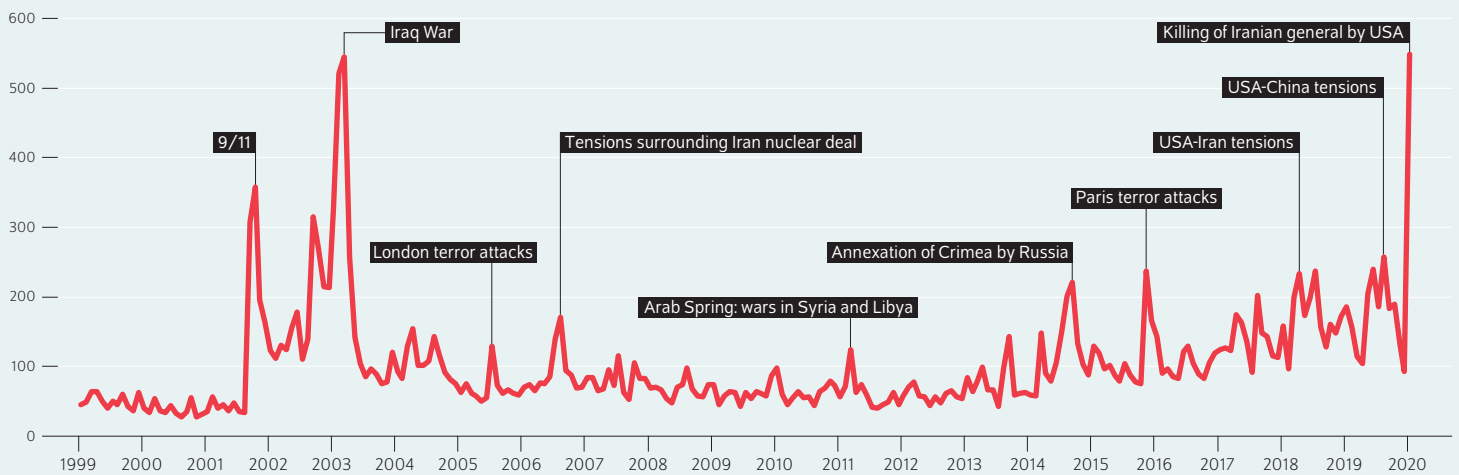
Geopolitical risks have been increasing over the past few years (Figure 1). In general, these risks are nothing new. In 1991, for example, there were heightened tensions and armed conflicts that received international attention in the form of the Gulf War. The September 11, 2001, terror attacks and the resulting Iraq War in 2003 are some of the most important geopolitical risks of the 2000s. Following the deposition of Saddam Hussein, a period of relative calm began. Events during this time, such as the global financial crisis from 2007 to 2009 and the European debt crisis in 2012, had a strong impact on the German economy, but this was of a more economic nature. Measuring geopolitical risk differs significantly from other common methods of measuring uncertainty, such as economic policy uncertainty. The latter peaked around the global financial crisis, although from a geopolitical point of view, there was relative calm at the global level. In 2014, Russia's annexation of Crimea brought geopolitical risks to the forefront again. The rise of ISIS and increase in terror attacks, such as the attacks in Paris in November 2015 or in Berlin in December 2016, as well as the ongoing civil war in Syria, continued to increase geopolitical risk. Many more events in 2019 contributed to an elevated level of risk: attacks on oil tankers in the Strait of Hormuz, attacks on an oil refinery in Saudi Arabia, the withdrawal of the USA from Syria, and the clashes in Hong Kong combined with the fear of Chinese interference. In early 2020, the assassination of



Figure 1

## Geopolitical risk

The value 100 is normalized to the average value during the period 2000–2009.



Source: Geopolitical Risk Index (available online, accessed on January 16, 2020).

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Geopolitical risk has increased again in recent years.

the Iranian major general Qasem Soleimani by a United States drone strike further increased geopolitical tensions.

## Transmission channels of geopolitical shocks

Overall, there is widespread consensus that increased geopolitical risks can dampen the economy.<sup>1</sup> How exactly do such events unfold in and affect Germany? Essentially, there are three possible transmission channels for geopolitical shocks. The first channel is via the macroeconomic vulnerability of domestic industry. Cyclical industries, such as the oil industry and energy-intensive manufacturing sector in particular, are relatively more negatively affected by an increase in geopolitical risk,<sup>2</sup> as demand for products in these sectors declines. Thus, they are directly affected by an increase in geopolitical risk. A general decline in demand for companies in the export business has been identified as the second channel. If general uncertainty increases as a result of geopolitical tensions, households and companies are more reluctant to consume and invest. Thus, even companies not directly related to the international conflicts are affected. The third and final channel is via negative financial contagion effects on heavily indebted companies. Companies with significant foreign debt suffer in particular when international financing conditions deteriorate. If, for example, credit shortages occur as a result of increased international uncertainty, dependence on the availability of such financing sources becomes a risk.

The stronger the real and financial links between an economy and foreign countries are, the more vulnerable the economy is to geopolitical risks. This issue is of particular importance for Germany, whose economy has strong international ties.

## How is geopolitical risk measured?

Caldara and Iacoviello's geopolitical risk index<sup>3</sup> is used to measure changes in geopolitical tensions. The index analyzes the frequency with which geopolitical risks—measured by defined keywords—are the subject of international media reports. These geopolitical risks include actual conflicts as well as discussions about possible further risks. The more frequently specific keywords, such as “war,” or combinations of keywords, such as “nuclear threat,” “terror attack,” or “outbreak of war,” appear, the higher the indicator's value. According to the indicator, the average level of geopolitical risk has increased over the past few years (Figure 1).

The previous record highs around September 11, 2001, and the Iraq War in 2003 are clearly visible. Since 2014, the index has been rising slowly but steadily with increasing fluctuations. In 2019, the index peaked at values only surpassed by those during the period of 2001–2003. For the time being, the index has reached a new record high following the killing of an Iranian general by a United States drone strike in early January 2020.<sup>4</sup>

<sup>1</sup> Dario Caldara and Matteo Iacoviello, “Measuring geopolitical risk,” *FRB International Finance Discussion Paper*, no. 1222 (2018) as well as Mark Carney, “Uncertainty, the economy and policy,” speech at the Bank of England on June 30, 2016 (available online, accessed on January 17, 2020). This applies to all other online sources in this report unless stated otherwise.

<sup>2</sup> Caldara and Iacoviello, “Measuring geopolitical risk.”

<sup>3</sup> Caldara and Iacoviello, “Measuring geopolitical risk.”

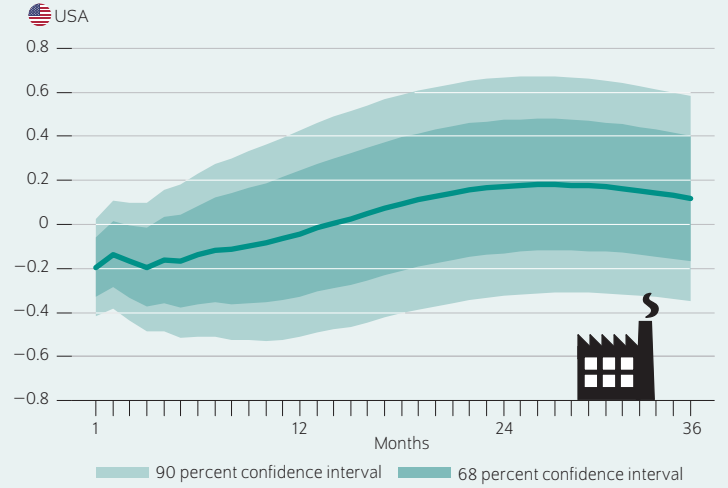
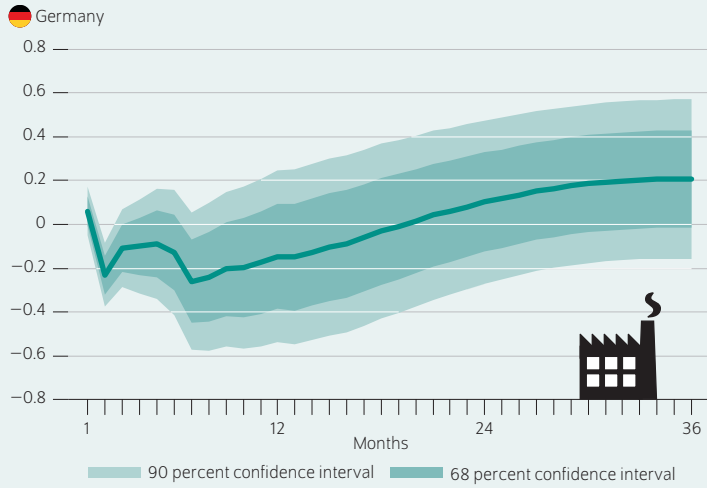
<sup>4</sup> The January figure was only available as a provisional value at the editorial deadline and is based on media articles until January 10, 2020. Since the tensions between the USA and Iran seem to be easing again at this point, a downward revision of the January figure is likely (cf. information on the website of Economic Policy Uncertainty).

Figure 2

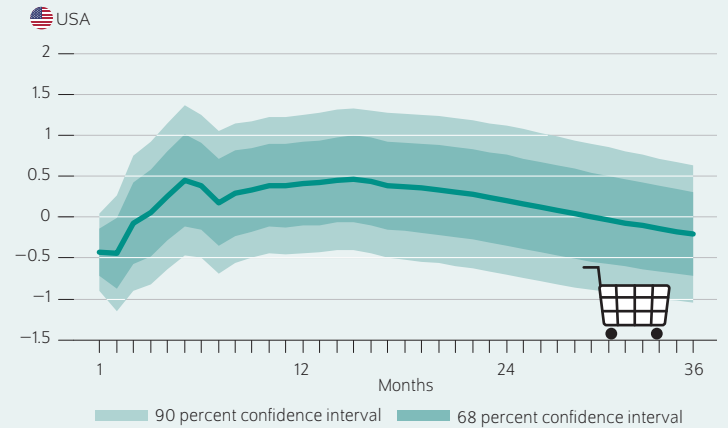
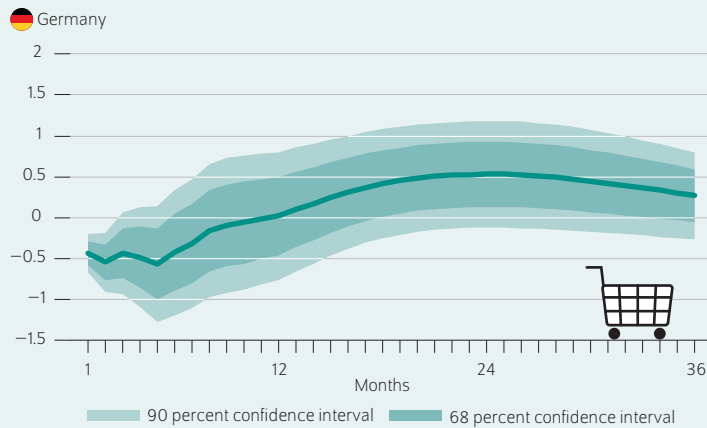
## Responses to a geopolitical shock

Change in percent, reactions between 1999 and 2019

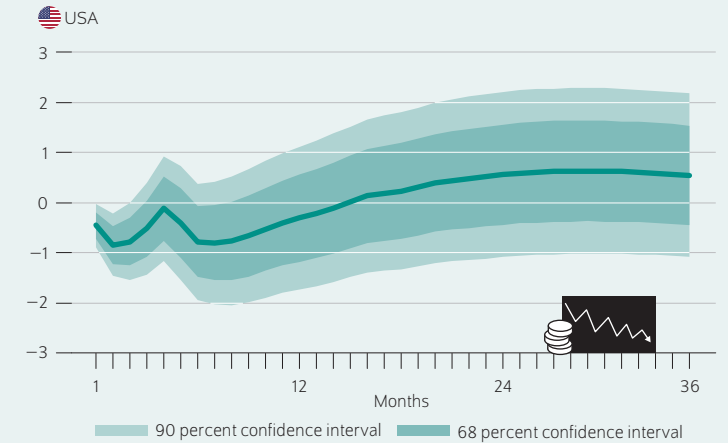
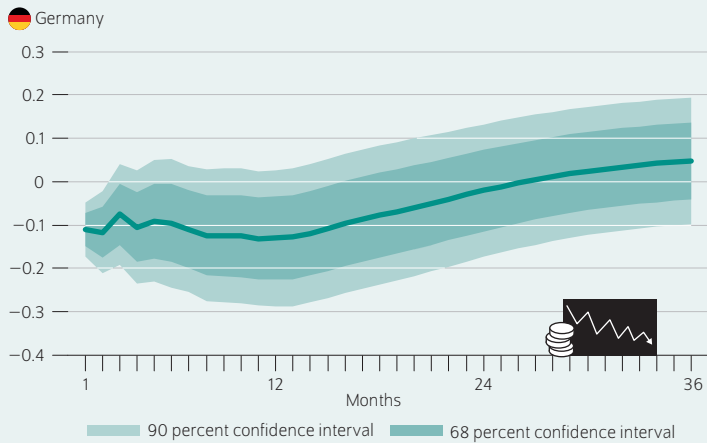
### Industrial production



### Consumer behavior



### Stock markets



Source: Author's own calculations.

Although industrial production falls in response to a geopolitical shock, it rebounds quickly.

Thus, geopolitical tensions are once again high. An in-depth look at theoretical geopolitical shock transmission channels suggests they have a significant negative impact on an open economy such as Germany's. The following section of this report will empirically analyze the impact of geopolitical risks. The shocks analyzed here, which are defined as an unexpected increase in geopolitical risk, are of an international nature. For comparison and as a benchmark, the effect of the shock on the USA is also quantified; due to its economic and political supremacy in the world, it is of particular importance.

### Geopolitical risk dampens economy, mood

The effects of an increase in geopolitical risk on select macroeconomic indicators in Germany and the USA are estimated using structural vector autoregression models (SVARs) (Box). A hypothetical shock is fed into the model and the effects of this shock on the German and American economies are simulated. The size of the shock is normalized to two standard deviations, thus corresponding to the average increase in the risk indicator as a result of the nine major events during the period under review, including September 11; the Iraq War in 2003; the July 7, 2005, bombings in London; and the annexation of Crimea in 2014.

Industrial output, which serves as a proxy for real activity, decreases in Germany as well as in the USA (Figure 2). In Germany, the lowest point occurs half a year after the shock, while the USA reaches the lowest point at four months. At -0.25 percent, this low point is slightly stronger in Germany than in the USA, where it is -0.2 percent. The openness of the German economy is probably one reason why the local economy reacts quite sensitively to globally significant events. However, the effects run their course quickly and become insignificant. The model thus demonstrates that an increase in geopolitical risk has a dampening effect on the development of the German and American economies, but in both cases, the measured effect is relatively small.

The impact is not limited to industrial output, as the analysis of the sentiment indicators shows (Figure 2). The sentiment indicators fall immediately after the shock in both Germany and the USA, although the effects in Germany are more long lasting. However, the effects quickly become insignificant, similar to industrial output. The first two mechanisms, a general decline in demand and thus consumption, therefore seem to be relevant transmission channels, especially in Germany. Reduced demand for German consumer and intermediate goods could weigh on industrial output, hampering economic development.

### Financial markets also play a role

Do shocks also affect investor behavior? Stock market reactions show a clear answer: on both sides of the Atlantic, prices fall immediately with the shock (Figure 2). In contrast to previous findings, the decline in the USA, with a peak of -0.7 percent, is significantly stronger than in Germany. Due

#### Box

#### Structural vector autoregression models

Structural vector autoregression models (SVAR models) are estimated separately using monthly data for Germany and the United States for the period of January 1999 to October 2019. In addition to the geopolitical risk indicator, the models include the respective economic uncertainty index by Baker, Bloom, and Davis,<sup>1</sup> both in logarithmic form. This ensures that the effects of possible uncertainty are taken into account by means of an economic policy response (e.g., through fiscal policy stimuli). The models also include the price of oil, which often reacts sensitively to geopolitical tensions. The impact of these price changes on the economy must be separated from the impact of the actual shock. Finally, the variables which approximate the US and German economies are industrial production, stock markets (price indices<sup>2</sup> and volatility), consumer confidence,<sup>3</sup> exchange rates (all logarithmized), and yields on ten-year government bonds. Six delays of variables are included.

In the model, geopolitical shocks are plausibly assumed to be exogenous, i.e., not driven by other variables. This allows for a causal interpretation of the effects. A Choleski decomposition of the variance-covariance matrix of the residuals is used to identify shocks. The assumption is that some variables do not react contemporaneously—within the same time period—to certain shocks. In line with Caldara and Iacoviello,<sup>4</sup> it is assumed that geopolitical risk has a contemporaneous effect on all variables, but does not react immediately to changes in them. Geopolitical risk is therefore ordered first in the sequence of variables. This means that all country variables, including oil prices, can react to the shock in the first period, but the shock itself is independent of the country variables. This method represents the standard<sup>5</sup> in the literature<sup>6</sup> on the effects of uncertainty.

<sup>1</sup> Scott R. Baker et al., "Measuring economic policy uncertainty," *The Quarterly Journal of Economics* 131, no. 4 (2016): 1593–1636.

<sup>2</sup> The DAX 30 is used for Germany and the S&P 500 is used for the USA.

<sup>3</sup> The ifo Geschäftsklimaindex is used for Germany and the University of Michigan Consumer Sentiment Index is used for the USA.

<sup>4</sup> Caldara and Iacoviello, "Measuring geopolitical risk."

<sup>5</sup> The results prove to be robust to alternative model specifications, such as a different variable order or more recorded delays.

<sup>6</sup> Nicolas Bloom, "The impact of uncertainty shocks," *Econometrica* 77, no. 3 (2009): 623–685; Kyle Jurado, Sydney C. Ludvigson, and Serena Ng, "Measuring uncertainty," *American Economic Review* 105, no. 3 (2015): 1177–1216; Baker et al., "Measuring economic policy uncertainty," as well as Benjamin Born, Sebastian Breuer, and Steffen Elstner, "Uncertainty and the great recession," *Oxford Bulletin of Economics and Statistics* 80, no. 5 (2018): 951–971.

to its political hegemony in the world, the USA is of particular importance in regards to geopolitical tensions. Investors' fears of being drawn into a conflict may therefore be greater for the USA than for Germany; the reaction is correspondingly stronger. Therefore, financial markets could also function as a transmission channel for the shocks analyzed here.

All in all, a geopolitical shock exerts a statistically significant negative influence on all relevant variables in both the USA and Germany. However, there is a dichotomy between the two countries: the German economy reacts more negatively than the American economy, measured here by industrial production and sentiment indicators. At the same time, the American financial markets react more sensitively than those in Germany.

### **Conclusion: geopolitical risks cannot be eliminated, but effects can be minimized**

The consequences of geopolitical events do not only reach the public via the media; they also leave their mark on the economy and financial markets. Even if the effects can be classified as quite small in quantitative terms, they are statistically significant and therefore not negligible.

In general, it can be assumed that terror attacks or the outbreak of war will always have a negative impact, which is reflected in increased uncertainty and consumer reticence. The risks discussed here can hardly be eliminated

themselves. Instead, the focus should be on what can be done to strengthen resilience to external shocks without foregoing the benefits that arise from active exchange with other countries. If, for example, risks are shared by a larger number of actors, the need to adjust at the individual level in response to a risk is lower. In concrete terms, this means that expanding and enlarging free trade areas and, more generally, removing trade barriers can have a shock-absorbing effect. If the number of potential trading partners available in the event of interrupted supply chains and demand bottlenecks increases, the effects of the external shock are spread out over more actors. The same applies to the financial markets: if alternative sources of financing are more readily available, the consequences of a deterioration in global financing conditions can be mitigated. From a German point of view, completing the banking union within the euro area would be a good idea, for example.<sup>5</sup> Reduced vulnerability to external shocks should also enhance investor confidence and thus reduce the negative reaction observed in equity markets.

Deeper real and financial economic integration on both a European and global level increases the number of escape routes. In turn, the resulting buffer increases resilience to geopolitical shocks.

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<sup>5</sup> For more on the discussion on improved risk sharing in the event of country-specific shocks, cf. Franziska Bremus and Claudia M. Buch, "Capital Markets Union and Cross-Border Risk Sharing," in *Capital Markets Union and Beyond*, eds. Franklin Allen et al. (2019); Franziska Bremus and Tatsiana Kliatskova, "Effizientere Insolvenzregelungen können Finanzmärkte widerstandsfähiger machen," *DIW Wochenbericht*, no. 18 (2019): 310–323 (available online).

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