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Geopolitical Risk and Stock Prices

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This paper investigates the effects of global geopolitical risk on stock prices of 29 economies by using the local projections method for the monthly period between 1985M1-2023M9. The results show that a positive unit shock of global geopolitical risk (normalized to one standard deviation) reduces stock prices (normalized to one standard deviation) in a statistically significant way by 0.80 in Latvia, 0.71 in China, 0.62 in the Euro Area, 0.50 in Sweden, 0.42 in the United Kingdom, 0.39 in the United States, 0.38 in Switzerland, 0.34 in Israel, 0.28 in Canada, and 0.21 in Denmark in a year following the shock, whereas it increases those only in Iceland by 0.28 that can be used to hedge against any geopolitical risk. Subsample analyses further suggest that the negative effects of the same shock exist in several economies (including the United States, China and Euro Area) during the first half of the sample period that coincides with the geopolitical events that the United States is involved with, whereas they only exist in Russia, Poland, Euro Area and the United Kingdom for the second half of the sample period, suggesting that the Russo-Ukrainian War has mostly affected the stock prices in these nearby economies. It is implied that the geographical location of geopolitical events as well as the countries involved are important indicators to understand the effects of any global geopolitical risk on stock prices.

JEL Classification: G15, G41

Keywords: Geopolitical Risk; Stock Prices; Local Projections Method

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Abstract

This paper investigates the effects of global geopolitical risk on stock prices of 29 economies by using the local projections method for the monthly period between 1985M1-2023M9. The results show that a positive unit shock of global geopolitical risk (normalized to one standard deviation) reduces stock prices (normalized to one standard deviation) in a statistically significant way by 0.80 in Latvia, 0.71 in China, 0.62 in the Euro Area, 0.50 in Sweden, 0.42 in the United Kingdom, 0.39 in the United States, 0.38 in Switzerland, 0.34 in Israel, 0.28 in Canada, and 0.21 in Denmark in a year following the shock, whereas it increases those only in Iceland by 0.28 that can be used to hedge against any geopolitical risk. Subsample analyses further suggest that the negative effects of the same shock exist in several economies (including the United States, China and Euro Area) during the first half of the sample period that coincides with the geopolitical events that the United States is involved with, whereas they only exist in Russia, Poland, Euro Area and the United Kingdom for the second half of the sample period, suggesting that the Russo-Ukrainian War has mostly affected the stock prices in these nearby economies. It is implied that the geographical location of geopolitical events as well as the countries involved are important indicators to understand the effects of any global geopolitical risk on stock prices.

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1 Introduction

The risk of adverse economic and financial consequences arising from the interactions between countries and/or terrorist groups are considered as geopolitical risk according to Caldara and Iacoviello (2022). Increasing global geopolitical risk can have negative effects on global financial markets due to increased risk aversion (e.g., see Baur and Smales (2020)), global supply chain disruptions (e.g., Izzeldin, Muradoğlu, Pappas, Petropoulou, and Sivaprasad (2023)), demand disruption (e.g., see Khudaykulova, Yuanqiong, and Khudaykulov (2022)), or financial market volatility (e.g., see Smales (2021)).

Based on this background, this paper investigates the effects of geopolitical risk on the stock prices of 29 economies. The investigation is based on the monthly period between 1985M1-2023M9. Following Caldara and Iacoviello (2022), the effects of geopolitical risk on stock prices are estimated for each economy individually as the cumulative impulse response of stock prices to the shocks in the global geopolitical risk using the local projections method introduced by Jordà (2005). For robustness, we use three alternative measures of geopolitical risk as in Caldara and Iacoviello (2022), namely geopolitical risk, geopolitical threats, and geopolitical acts. To control for nonlinearities over time, we additionally consider two subsamples of 1985M1-2003M12 and 2004M1-2023M9 in our investigation. Accordingly, the biggest geopolitical events such as the Iraqi invasion of Kuwait in 1990, the Gulf War in 1990-1991, the September 11 attacks in 2001, and the Iraq War starting in 2003 coincide with the first subsample, whereas the Russo-Ukrainian War starting in 2022 coincides with the second subsample.

The estimation results suggest that a positive unit shock of global geopolitical risk (normalized to one standard deviation as in Caldara, Conlisk, Iacoviello, and Penn (2022)) reduces stock prices (normalized to one standard deviation) in a statistically significant way by 0.80 in Latvia, 0.71 in China, 0.62 in the Euro Area, 0.50 in Sweden, 0.42 in the United Kingdom, 0.39 in the United States, 0.38 in Switzerland, 0.34 in Israel, 0.28 in Canada, and 0.21 in Denmark in a year following the shock, consistent with studies such as by Berkman, Jacobsen, and Lee (2011), Jiang, Tian, Wu, and Mo (2020), Yang and Yang (2021), Agoraki, Kouretas, and Laopodis (2022), Caldara and Iacoviello (2022) who show a negative relationship between geopolitical risk and stock prices.

The same shock increases stock prices in Iceland by 0.28 (consistent with studies such as by Umar, Bossman, Choi, and Teplova (2022), Zaremba, Cakici, Demir, and Long (2022)), whereas stock prices in other economies are not affected in a statistically significant way (consistent with studies such as by Balcilar, Bonato, Demirer, and Gupta (2018), Bouras, Christou, Gupta, and Suleman (2018)). It is implied that the stock market in Iceland can be used to hedge against any geopolitical risk according to the full sample, similar to studies such as by Von Hagen, Schuknecht, and Wolswijk (2011), Gerlach and Yook (2016), Bouras, Christou, Gupta, and Suleman (2018), Baur and Smales (2020), Smales (2021), Triki and Maatoug (2021), and Będowska-Sójka, Demir, and Zaremba (2022) who suggest that certain financial markets can be used as a safe haven to diversify risk and hedge against the global geopolitical risk.

When the effects of geopolitical threats and geopolitical acts on stock prices are investigated as alternative measures of geopolitical risk, the results show that the effects of geopolitical threats are higher compared to those of geopolitical acts, consistent with earlier studies

such as by Salisu, Lasisi, and Tchankam (2021). Subsample analyses further suggest that the effects of any geopolitical risk on stock prices are negative and statistically significant for several economies (including the United States, Euro Area, China) during the first subsample that coincides with geopolitical events that the United States is involved with, consistent with earlier studies such as by Nikkinen, Omran, Sahlström, and Äijö (2008) who investigate the effects of September 11 attacks on global stock prices.

When we focus on the second subsample coinciding with the Russo-Ukrainian War, we observe that the negative effects of the same shock only exist in Russia, Poland, Euro Area, and the United Kingdom, suggesting that the Russo-Ukrainian War has mostly affected the stock prices in Russia and its nearby economies. The latter result is consistent with studies such as by Lo, Marcelin, Bassène, and Sène (2022) who show that the dependence of economies on Russian commodities is a significant factor determining the negative effects of the Russo-Ukrainian War on stock prices. It is implied that the geographical location of geopolitical events as well as the countries involved are important indicators to understand the effects of any global geopolitical risk on stock prices as in studies such as by Federle, Müller, Meier, and Sehn (2022).

In the corresponding literature, as the involvement of economies with the global financial markets differs in magnitude, their financial markets can be affected differently (e.g., see Umar, Bossman, Choi, and Teplova (2022)). Moreover, certain economies (and their financial markets) can even benefit from increasing global geopolitical risk, for example, if their international market share increases due to their competitors being affected negatively by the increasing geopolitical risk. It is implied that increasing global geopolitical risk can have negative (e.g., see Berkman, Jacobsen, and Lee (2011), Jiang, Tian, Wu, and Mo (2020), Yang

and Yang (2021), Agoraki, Kouretas, and Laopodis (2022), Caldara and Iacoviello (2022)), positive (e.g., see Umar, Bossman, Choi, and Teplova (2022), Zaremba, Cakici, Demir, and Long (2022)) or insignificant effects (e.g., see Balcilar, Bonato, Demirer, and Gupta (2018), Bouras, Christou, Gupta, and Suleman (2018)) on the stock prices of different financial markets as suggested in studies such as by Bouri, Demirer, Gupta, and Marfatia (2018), Hoque and Zaidi (2020) and Boubaker, Goodell, Pandey, and Kumari (2022). This heterogeneity across financial markets regarding the effects of geopolitical risk suggests that certain financial markets (or certain economies) can be used to diversify risk and hedge against the global geopolitical risk (e.g., see Gerlach and Yook (2016), Bouras, Christou, Gupta, and Suleman (2018), Baur and Smales (2020), Smales (2021), Triki and Maatoug (2021), and Będowska-Sójka, Demir, and Zaremba (2022)).

With respect to these studies, this paper contributes to the literature along the following lines. First, this paper considers the effects of global geopolitical risk on stock prices of 29 economies by using the local projections method, whereas most studies in the literature focus only on a limited number of countries. This strategy results in showing the heterogeneity across economies regarding the effects of geopolitical risk on stock prices. Second, this paper identifies the economies of which stock markets can be used to hedge against any geopolitical risk. In comparison, the literature mostly suggests alternative investment instruments (e.g., gold or other precious metals) to hedge against any geopolitical risk. Third, this paper considers the effects alternative global geopolitical risk measures, whereas the literature mostly focuses on the benchmark geopolitical risk. This approach results in showing that geopolitical threats result in bigger negative effects on stock prices compared to geopolitical acts. Fourth, this paper distinguishes between two subsamples, first including the geopolitical events that

the United States is involved in, and the second including the Russo-Ukrainian War. This innovation results in showing that different geopolitical events are related to different responses of global stock prices. Fifth, this paper conducts several robustness checks with alternative estimation strategies, different subsamples, and country-specific data on geopolitical risks to provide with additional insight on the relationship between geopolitical events and stock prices.

Regarding policy implications, as discussed more in the conclusion section, policymakers need to identify the types and magnitudes of geopolitical risks impacting their stock markets to assess the potential effects on future stock prices. As mitigation strategies, policymakers can encourage investors to diversify their portfolios across different stock markets through regulations, conduct standard policies to stabilize the market conditions, provide transparency regarding government actions, get involved in diplomatic efforts to reduce geopolitical tensions, and provide financial safety nets for specific industries vulnerable to geopolitical events.

The rest of the paper is organized as follows. The next section provides a literature review and a theoretical motivation to investigate the effects of geopolitical risks on stock prices. Section 3 introduces the data and descriptive statistics, whereas Section 4 introduces the estimation methodology. Section 5 depicts the estimation results including alternative geopolitical risk measures for the full sample period. Section 6 and Section 7 depict the estimation results for the first and the second subsamples, respectively. Section 8 conducts robustness checks, whereas Section 9 concludes with policy suggestions.

2 Literature Review and Theoretical Motivation

This section discusses the theoretical channels in the literature through which geopolitical risks can have an impact on stock prices. The discussion is based on four different strands of the literature, including (i) economic uncertainty and disruptions, (ii) increased risk perception and investor sentiment, (iii) sectoral composition of stock markets, and (iv) international openness of stock markets.

2.1 Economic Uncertainty and Disruptions

Geopolitical risks can result in economic uncertainty and disruptions that can reduce stock prices (e.g., see Kannadhasan and Das (2020); Dogan, Majeed, and Luni (2021)). This channel can work through economic policy shifts, supply chain disruptions, or disrupted international trade flows.

Specifically, geopolitical events can trigger sudden changes in economic policies by governments. This includes fiscal policy (taxes, spending), monetary policy (interest rates), and trade policy (tariffs), creating uncertainty for businesses and potentially hindering growth (e.g., see Baker, Bloom, and Davis (2016)). Regarding fiscal policy, higher geopolitical risks may lead to higher military and defense spending, support for strategic industries, and/or economic stimulus packages. Such a strategy can worsen budget deficits by adding to national debt and fuel inflation due to higher government spending, which, in turn, may result in lower growth expectations (e.g., see Ghourchian and Yilmazkuday (2020)) and thus lower stock prices. Regarding monetary policy, a potential increase in food or energy prices following an increase in geopolitical risks (e.g., see Yilmazkuday (2023b); Mignon and Saadaoui

(2024)) can result in central banks tightening their monetary policy by increasing policy rates (e.g., see Nasir and Spencer (2024)). Such a strategy can in turn trigger an economic slowdown and thus lower stock prices. Regarding trade policy, geopolitical risks can result in higher tariff rates, sanctions, and trade wars (e.g., see Gupta, Gozgor, Kaya, and Demir (2019)). Such a trade policy would not only result in a welfare loss of individuals (e.g., see Yilmazkuday (2023c)) but also lower stock prices (e.g., see Bianconi, Esposito, and Sammon (2021)).

Geopolitical risks can also result in disruptions in supply chains or international trade flows that would create shortages, delays, and increased costs of production (e.g., see Benigno, Di Giovanni, Groen, and Noble (2022); Asadollah, Carmy, Hoque, and Yilmazkuday (2023)). A recent example is the global wheat shortage following the Russo-Ukrainian War (e.g., see Devadoss and Ridley (2024)). Regarding the details, shortages may lead to manufacturing slowdowns and thus lower production volumes, fewer sales, and eventually reduced profits which, in turn, can result in lower stock prices (e.g., see Shan, Xiong, and Zhang (2023)). Similarly, delays and increased costs of production may also reduce profits and thus stock prices (e.g., see Klöckner, Schmidt, and Wagner (2023)). Supply chain disruptions created by geopolitical risks may also increase unpredictability of future sales and earnings, leading to lower investment and thus lower stock prices (e.g., see Yilmazkuday (2023a)).

2.2 Risk Perception and Investor Sentiment

Geopolitical events may result in investors becoming more risk-averse, preferring safer assets (e.g., see Cheng, Liao, and Pan (2023)). On one hand, risk aversion caused by geopolitical events may result in selling pressures, especially in riskier stock markets, and thus lower

stock prices (e.g., see Albaity, Saadaoui Mallek, and Mustafa (2023); Demiralay, Wang, and Chen (2024)). On the other hand, investors can perceive certain stock markets as safe havens and thus move funds to these markets to hedge against risk, which, in turn, may lead into higher stock prices (e.g., see Yarovaya, Elsayed, and Hammoudeh (2021)). It is implied that identifying the overall (negative versus positive) effects requires an empirical investigation as achieved in this paper.

Uncertainty created by geopolitical risks can also lead to increased market volatility (e.g., see Gkillas, Gupta, and Wohar (2018)). Higher volatility can make investors more cautious, impacting trading decisions and potentially leading to a negative impact on stock prices (e.g., see Smales (2021)).

2.3 Sectoral Composition of Stock Markets

Geopolitical risks can have different effects on sector-level stock prices. As an example, the energy sector may be more vulnerable to conflicts in oil-producing regions, whereas transportation and logistics sectors may suffer more with border closures or trade restrictions (e.g., see Yilmazkuday (2023b). Similarly, using firm-level data, Baker, Bloom, and Davis (2016) find that policy uncertainty is associated with greater stock price volatility and reduced investment and employment in policy-sensitive sectors like defense, health care, finance, and infrastructure construction.

It is implied that when a particular stock market is dominated by specific sectors, the effects of geopolitical risks may be different across countries. On one hand, stock markets with bigger defense and security sectors might see increased demand and potentially higher stock prices in times of conflicts or heightened military tensions. On the other hand, stock

markets with bigger energy and commodity-related sectors may observe lower stock prices due to geopolitical conflicts resulting in higher volatility in energy and commodity prices. It is implied once again that identifying the overall (negative versus positive) effects requires an empirical investigation as achieved in this paper.

2.4 Openness of Stock Markets

The degree of geopolitical risks affecting stock prices can highly depend on the international openness of stock market. As the involvement of economies with the global financial markets differs in magnitude, their financial markets can be affected differently (e.g., see Umar, Bossman, Choi, and Teplova (2022)). Specifically, as more open stock markets attract more foreign investment and thus are more integrated into the global economy (e.g., see Levine and Zervos (1996)), they may be more sensitive to disruptions in trade, supply chains, and financial flows caused by geopolitical events (e.g., see Alqahtani and Klein (2021)).

In comparison, relatively closer stock markets with greater restrictions on foreign investment may observe fewer effects of geopolitical risks on stock prices. Nevertheless, even relatively closer stock markets can get affected by geopolitical risks through supply and trade disruptions as well as global economic instability created by geopolitical risks. It is implied that all stock markets can get affected by geopolitical risks, where the difference across markets may be in the speed and severity of the overall impact.

Overall, there are several channels through which geopolitical risks can have an impact on stock prices. Although these effects are mostly expected to the negative, there may be special cases in which these effects may be positive (e.g., hedging against risk or sectoral

composition of stock markets). It is implied that identifying the overall (negative versus positive) effects requires an empirical investigation as achieved in this paper.

3 Data and Descriptive Statistics

Data for stock prices covering 29 economies for the unbalanced monthly sample period of 1985M1-2023M9 are measured by the share price indices obtained from the webpage of the Organisation for Economic Co-operation and Development (OECD).[1] Stock prices are first converted into U.S. dollar terms by using the exchange rate data obtained from OECD and then normalized with the U.S. consumer price index data obtained from the Federal Reserve Economic Data (FRED) to obtain real stock prices that are comparable across economies. These real stock prices (that are further normalized to one standard deviation for estimation purposes as in Caldara, Conlisk, Iacoviello, and Penn (2022)) are given in Figure 1 for each economy, and they are summarized in Figure 2 across economies. As is evident, except for the period of Great Recession, stock prices of different economies have alternative patterns over time, suggesting an investigation at the economy level (as we proceed in this paper). The bilateral correlation coefficient of these stock prices over time have an average (median) of 0.48 (0.54) across economy pairs, with a range between -0.38 (between Iceland and Indonesia) and 0.95 (between Denmark and Switzerland).

Three global geopolitical risk measures of the geopolitical risk (GPR) index, the geopolitical threats (GPRT) index, and the geopolitical acts (GPRA) index are borrowed from

[1] The monthly series have been downloaded from https://data.oecd.org/price/share-prices.htm. The list of countries and the corresponding sample periods are shown in the Appendix Table A1, where countries are also categorized as advanced economies (AEs) or emerging markets and developing countries (EMDEs) based on the information obtained from the International Monetary Fund (IMF) as of 2023. Estimations are achieved for countries with at least 60 months of observations for stock prices.

Caldara and Iacoviello (2022).[2] The benchmark index of GPR is created by using text-search results of the electronic archives of 10 newspapers, namely Chicago Tribune, the Daily Telegraph, Financial Times, The Globe and Mail, The Guardian, the Los Angeles Times, The New York Times, USA Today, The Wall Street Journal, and The Washington Post. Specifically, by using keywords belonging to eight categories of (1) war threats, (2) peace threats, (3) military buildups, (4) nuclear threats, (5) terror threats, (6) beginning of war, (7) escalation of war, and (8) terror acts, Caldara and Iacoviello (2022) count the number of articles related to adverse geopolitical events in each newspaper for each month (as a share of the total number of news articles) to construct GPR.

The other measures of GPRT and GPRA are constructed as subindices of GPR, for which the first five categories listed above are used for GPRT and the last three categories are used for GPRA. Regarding the correlation coefficient of these alternative geopolitical risk series over time, GPR and GPRT has a correlation coefficient of 0.83, GPR and GPRA has a correlation coefficient of 0.91, and GPRT and GPRA has a correlation coefficient of 0.55. The corresponding global geopolitical risk measures (that are normalized to one standard deviation for estimation purposes as in Caldara, Conlisk, Iacoviello, and Penn (2022)) for the monthly sample period of 1985M1-2023M9 are given in Figure 3, where the biggest spikes represent the Iraqi invasion of Kuwait in 1990, the Gulf War in 1990-1991, the September 11 attacks in 2001, the Iraq War starting in 2003, and the Russo-Ukrainian War starting in 2022.

[2]The monthly series have been downloaded from https://www.policyuncertainty.com/.

4 Estimation Methodology

As in Caldara and Iacoviello (2022), the effects of global geopolitical risk on stock prices are measured by the cumulative impulse responses of stock prices to a unit shock in the global geopolitical risk based on the local projections method introduced by Jordà (2005). Formally, the following h-step-ahead predictive regression is estimated individually for each economy i by using the local projections method:

$$s_{it+h} = \mu_{i(h)} + \beta_{i(h)} g_t + \sum_{k=1}^{p} \varphi_{k(h)} s_{it-k} + \sum_{k=1}^{p} \phi_{k(h)} g_{t-k} + u_{i(h)t+h} \tag{1}$$

where s_{it} represents stock prices (normalized to one standard deviation) in economy i at time t, g_t is the geopolitical risk (normalized to one standard deviation) at time t, $\beta_{i(h)}$ is estimated as the h-step-ahead impulse response coefficient of stock prices in economy i to a unit shock in the global geopolitical risk, the lagged values of s_{it} and g_t serve as control variables, with $p = 12$ representing the number of lags included in the estimation, and $u_{i(h)t+h}$ is a prediction error term.

In order to increase the precision of the local projections method, the *smooth* local projections method introduced by Barnichon and Brownlees (2019) is used in the benchmark estimations. Nevertheless, for robustness purposes, we also use the standard local projections method introduced by Jordà (2005) of which results are discussed during the robustness section.

5 Empirical Results for the Full Sample Period

This section depicts the empirical results for the full sample of 1985M1-2023M9. The estimations are separately achieved for the three global geopolitical risk measures.

5.1 Geopolitical Risk (GPR)

Cumulative impulse responses of stock prices to a unit shock of geopolitical risk (GPR) are depicted over time for each economy in Figure 4, whereas they are summarized in Table 1 by using the responses one year after the shock. As is evident, a positive unit shock of GPR reduces stock prices in a statistically significant way by 0.80 in Latvia, 0.71 in China, 0.62 in the Euro Area, 0.50 in Sweden, 0.42 in the United Kingdom, 0.39 in the United States, 0.38 in Switzerland, 0.34 in Israel, 0.28 in Canada, and 0.21 in Denmark in a year following the shock (consistent with studies such as by Berkman, Jacobsen, and Lee (2011), Jiang, Tian, Wu, and Mo (2020), Yang and Yang (2021), Agoraki, Kouretas, and Laopodis (2022), Caldara and Iacoviello (2022)), whereas it increases those in Iceland by 0.28 (consistent with studies such as by Umar, Bossman, Choi, and Teplova (2022), Zaremba, Cakici, Demir, and Long (2022)).

Stock prices in other economies do not have any statistically significant response to the shocks of GPR (consistent with studies such as by Balcilar, Bonato, Demirer, and Gupta (2018), Bouras, Christou, Gupta, and Suleman (2018)). As stock prices in Iceland represent the only positive response to GPR shocks, it is implied that they can be used to hedge against any geopolitical risk according to the full sample, similar to studies such as by Gerlach and Yook (2016), Bouras, Christou, Gupta, and Suleman (2018), Baur and Smales (2020), Smales

(2021), Triki and Maatoug (2021), and Będowska-Sójka, Demir, and Zaremba (2022) who suggest that certain financial markets can be used to diversify risk and hedge against the global geopolitical risk.

When economies are categorized as advanced economies (AEs) versus emerging markets and developing countries (EMDEs), the results suggest that AEs are negatively affected by GPR shocks more than EMDEs. Specifically, a positive unit shock of GPR reduces stock prices by 0.21 in AEs and 0.12 in EMDEs during the full sample period.

5.2 Geopolitical Threats (GPRT)

Cumulative impulse responses of stock prices to a unit shock of geopolitical threats (GPRT) are depicted over time for each economy in Figure 5, whereas they are summarized in Table 1 by using the responses one year after the shock. According to Table 1, a positive unit shock of GPRT reduces stock prices in a statistically significant way by 0.77 in Latvia, 0.71 in the Euro Area, 0.61 in China, 0.60 in the United Kingdom, 0.58 in Sweden, 0.41 in Switzerland, and 0.34 in the United States, whereas it increases those in Chile by 0.30 that can be used to hedge against any geopolitical threat according to the full sample. Stock prices in other economies do not have any statistically significant response to the shocks of GPRT. When country groups are considered, the results suggest that AEs are negatively affected by GPRT shocks more than EMDEs, where a positive unit shock of GPR reduces stock prices by 0.24 in AEs and 0.11 in EMDEs during the full sample period.

5.3 Geopolitical Acts (GPRA)

Cumulative impulse responses of stock prices to a unit shock of geopolitical acts (GPRA) are depicted over time for each economy in Figure 6, whereas they are summarized in Table 1 by using the responses one year after the shock. According to Table 1, a positive unit shock of GPRA reduces stock prices in a statistically significant way by 0.77 in Latvia, 0.62 in China, 0.39 in the Euro Area, 0.34 in the United States, 0.33 in Israel, 0.32 in Sweden, and 0.29 in Switzerland, whereas it increases those in Iceland by 0.29 that can be used to hedge against any geopolitical act according to the full sample. Stock prices in other economies do not have any statistically significant response to the shocks of GPRT. The effects of GPRA being relatively less compared to those of GPRT is consistent with earlier studies such as by Salisu, Lasisi, and Tchankam (2021). When country groups are considered, the results suggest that only EMDEs are negatively affected by GPRA shocks, where a positive unit shock of GPRA reduces stock prices way by 0.12 during the full sample period.

6 Empirical Results for the First Subsample

This subsection depicts the empirical results for the first subsample of 1985M1-200312 that coincides with the Iraqi invasion of Kuwait in 1990, the Gulf War in 1990-1991, the September 11 attacks in 2001, and the Iraq War starting in 2003. Latvia is not included in these estimation results due to its data availability of stock prices.[3]

[3] Recall that estimations are achieved for countries with at least 60 months of observations for stock prices.

6.1 Geopolitical Risk (GPR)

Cumulative impulse responses of stock prices to a unit shock of geopolitical risk (GPR) are depicted for each economy in Figure 7, whereas they are summarized in Table 2 by using the responses one year after the shock. As is evident, a positive unit shock of GPR reduces stock prices in a statistically significant way by 0.45 in Costa Rica, 0.40 in the Euro Area, 0.29 in Sweden, 0.24 in Canada, 0.18 in the United States, 0.18 in Switzerland, 0.13 in Indonesia, and 0.13 in India in a year following the shock, whereas it increases those in Hungary by 0.13, in Iceland by 0.17, in Russia by 0.22, and in Czech Republic by 0.24 that can be used to hedge against any geopolitical risk according to the first subsample.

It is implied that the effects of any geopolitical risk on stock prices are negative and statistically significant for several economies (including the United States, Euro Area, China) during the first subsample that coincides with geopolitical events that the United States is involved with, consistent with earlier studies such as by Nikkinen, Omran, Sahlström, and Äijö (2008) who investigate the effects of September 11 attacks on global stock prices. When country groups are considered, the results suggest that only EMDEs are negatively affected by GPR shocks during the first subsample, where a positive unit shock of GPR reduces stock prices way by about 0.13.

6.2 Geopolitical Threats (GPRT)

Cumulative impulse responses of stock prices to a unit shock of geopolitical threats (GPRT) are depicted for each economy in Figure 8, whereas they are summarized in Table 2 by using the responses one year after the shock. According to Table 2, a positive unit shock of GPRT

reduces stock prices in a statistically significant way by 0.63 in China, 0.52 in Türkiye, 0.46 in Costa Rica, 0.27 in Sweden, 0.24 in Switzerland, and 0.16 in Norway, whereas it increases those in Czech Republic by 0.35, in Iceland by 0.36, and in Russia by 0.42 that can be used to hedge against any geopolitical threat according to the first subsample. When country groups are considered, the results suggest that only EMDEs are negatively affected by GPRT shocks during the first subsample, where a positive unit shock of GPRT reduces stock prices way by about 0.11.

6.3 Geopolitical Acts (GPRA)

Cumulative impulse responses of stock prices to a unit shock of geopolitical acts (GPRA) are depicted for each economy in Figure 9, whereas they are summarized in Table 2 by using the responses one year after the shock. According to Table 2, a positive unit shock of GPRA reduces stock prices in a statistically significant way by 0.44 in Costa Rica, 0.17 in India, and 0.16 in Indonesia, whereas it increases those in Iceland by 0.12, in Hungary by 0.15, in Russia by 0.16 and in Czech Republic by 0.19 that can be used to hedge against any geopolitical act according to the first subsample. The effects of GPRA being relatively less compared to those of GPRT is once again consistent with earlier studies such as by Salisu, Lasisi, and Tchankam (2021). When country groups are considered, the results suggest that only EMDEs are negatively affected by GPRA shocks during the first subsample, where a positive unit shock of GPRA reduces stock prices way by about 0.11.

7 Empirical Results for the Second Subsample

This subsection depicts the empirical results for the second subsample of 2004M1-2023M9 that coincides with the Russo-Ukrainian War starting in 2022.

7.1 Geopolitical Risk (GPR)

Cumulative impulse responses of stock prices to a unit shock of geopolitical risk (GPR) are depicted for each economy in Figure 10, whereas they are summarized in Table 3 by using the responses one year after the shock. As is evident, a positive unit shock of GPR reduces stock prices in a statistically significant way by 1.46 in Russia, 1.25 in Poland, 1.05 in the Euro Area, and 1.00 in the United Kingdom. When country groups are considered, the results suggest that only AEs are negatively affected by GPR shocks during the second subsample, where a positive unit shock of GPR reduces stock prices way by about 0.55.

It is implied that when we focus on the second subsample coinciding with the Russo-Ukrainian War, we observe that the negative effects of the same shock only exist in Russia, Poland, Euro Area, and the United Kingdom, suggesting that the Russo-Ukrainian War has mostly affected the stock prices in Russia and its nearby economies. The latter result is consistent with studies such as by Lo, Marcelin, Bassène, and Sène (2022) who show that the dependence of economies on Russian commodities is a significant factor determining the negative effects of the Russo-Ukrainian War on stock prices. It is implied that the geographical location of the geopolitical event is an important indicator to understand the effects of any global geopolitical risk on stock prices as in studies such as by Federle, Müller, Meier, and Sehn (2022).

7.2 Geopolitical Threats (GPRT)

Cumulative impulse responses of stock prices to a unit shock of geopolitical threats (GPRT) are depicted for each economy in Figure 11, whereas they are summarized in Table 3 by using the responses one year after the shock. According to Table 3, a positive unit shock of GPRT reduces stock prices in a statistically significant way by 1.33 in Russia, 0.97 in the Euro Area, 0.97 in Poland, 0.82 in the United Kingdom, 0.70 in Czech Republic, 0.46 in Colombia, and 0.34 in Japan, whereas it increases those in Norway by 0.67 that can be used to hedge against any geopolitical threat according to the second subsample. When country groups are considered, the results suggest that only AEs are negatively affected by GPRT shocks during the second subsample, where a positive unit shock of GPRT reduces stock prices way by about 0.3.

7.3 Geopolitical Acts (GPRA)

Cumulative impulse responses of stock prices to a unit shock of geopolitical acts (GPRA) are depicted for each economy in Figure 12, whereas they are summarized in Table 3 by using the responses one year after the shock. According to Table 3, a positive unit shock of GPRA reduces stock prices in a statistically significant way by 1.17 in the United States, 1.14 in Switzerland, and 0.92 in Israel, whereas it increases those in Türkiye by 1.53, and in Costa Rica by 2.85 that can be used to hedge against any geopolitical act according to the second subsample. It is implied that GPRA is effective on stock prices of certain economies, whereas GPRT is effective on those of others. When country groups are considered, the results suggest

that only AEs are negatively affected by GPRA shocks during the second subsample, where a positive unit shock of GPRA reduces stock prices way by about 0.83.

8 Robustness Checks

This section conducts several robustness checks to support the benchmark results that have been discussed so far. These robustness checks include (i) using the standard local projections method as in Jordà (2005) (rather than the *smooth* local projections method of Barnichon and Brownlees (2019) used for the benchmark results), (ii) considering an additional subsample after the 2008 global financial crisis to consider the time period that coincides with the rivalry between the United States and China, and (iii) using country-specific GPR data (rather than the global GPR data) to consider idiosyncratic country effects.

Robustness #1: The results of the first robustness check are given in the Appendix Table A2, where the standard local projections method is used as in Jordà (2005) for the full sample. As is evident, the empirical results are highly similar to those in Table 1, although the response of some countries become insignificant. These include the responses of Canada and Denmark when GPR is used, those of Chile and China when GPRT is used, and those of Euro Area when GPRA is used. It is implied that the benchmark results should be considered in line with those in this robustness check.

Robustness #2: The results for the second robustness check are given in the Appendix Table A3, where the additional subsample of 2009M1-2023M9 is used. It is evident that stock prices in many more countries (compared to Table 1) are affected negatively during this subsample period. Specifically, a positive unit shock of GPR reduces stock prices in

a statistically significant way by 2.13 New Zealand, 2.08 in Sweden and Russia, 1.87 in Latvia, 1.66 in South Africa, 1.65 in Poland, 1.61 in Hungary, 1.59 in Switzerland, 1.55 in the United Kingdom, 1.46 in the United States, 1.42 in Denmark, 1.32 in Australia, 1.26 in Czech Republic and Israel, 0.90 in the Euro Area, 0.83 in Canada, 0.75 in Japan, 0.57 in Colombia, 0.57 in Mexico, and 0.36 in Iceland. Specifically, a positive unit shock of GPRT reduces stock prices in a statistically significant way by 1.58 in New Zealand, 1.43 in Russia, 1.36 in Latvia, 1.21 in Hungary, 0.99 in Poland, 0.95 in Sweden, 0.93 in the United States, 0.89 in the United Kingdom, 0.85 in Switzerland, 0.76 in South Africa, 0.72 in Denmark, 0.70 in Czech Republic, 0.64 in Australia, 0.54 in Japan, 0.42 in Colombia, 0.40 in Mexico, and 0.27 in Iceland. Finally, a positive unit shock of GPRA reduces stock prices in a statistically significant way by 3.05 in Costa Rica, 2.19 in New Zealand, 2.17 in Sweden, 2.01 in Switzerland, 1.95 in Hungary, 1.94 in the United States, 1.76 in Russia and South Africa, 1.73 in the Euro Area, 1.72 in Poland, 1.70 in Norway, 1.69 in Latvia and Israel, 1.59 in India, 1.54 in Denmark, 1.53 in Czech Republic, 1.52 in the United Kingdom, 1.40 in Canada, 1.27 in Korea, 1.82 in Colombia, 1.14 in Australia, 1.01 in Japan and 0.38 in Iceland. It is implied that during the subsample after the 2008 global financial crisis that coincides with the rivalry between the United States and China, the statistically significant negative effects of geopolitical risks on stock prices have been higher and more widespread across countries.

Robustness #3: The results for the second robustness check are given in the Appendix Table A4, where country-specific GPR data (when available) are used in the estimations for

the full sample.[4] As is evident, stock prices in Russia and China are negatively affected the most out of a positive country-specific GPR shock. Specifically, a positive unit shock of country-specific GPR reduces stock prices in a statistically significant way by 1.12 in Russia, 0.94 in China, 0.79 in Hungary, 0.71 in Sweden, 0.69 in Poland, 0.38 in the United States, 0.33 in Norway, 0.28 in Canada, 0.27 in Switzerland, and 0.25 in Denmark. It is implied that considering country-specific GPR shocks is as important as considering global GPR shocks while investigating their impact on country-specific stock prices.

9 Concluding Remarks and Policy Suggestions

This paper has investigated the effects of global geopolitical risk on stock prices of 29 economies. The investigation has been based on the cumulative impulse responses of stock prices following a shock in the global geopolitical risk obtained by the local projections method. The investigation has covered the monthly period between 1985M1-2023M9, also distinguishing between its two subsamples coinciding with different geopolitical events.

The estimation results have shown that the effects of geopolitical risk on stock prices are negative and statistically significant for the majority of the economies considered, although there are certain economies of which stock prices react positively to a shock in the global geopolitical risk. The latter result suggest that the stock markets in certain economies can be used to hedge against any geopolitical risk, although these economies change with respect to the geopolitical risk measures considered as well as the geopolitical events coinciding with different time periods. Subsample analyses have suggested that the effects of any geopolitical

[4]These data are also borrowed from Caldara and Iacoviello (2022). The monthly series have been downloaded from https://www.policyuncertainty.com/.

risk on stock prices are negative and statistically significant for several economies (including the United States, Euro Area, China) during the first half of the sample period which coincides with geopolitical events that the United States is involved with, whereas the negative effects of the same shock only exist in Russia, Poland, Euro Area, and the United Kingdom during the second half of the sample period, suggesting that the Russo-Ukrainian War has mostly affected the stock prices in these nearby economies. It is implied that the geographical location of geopolitical events as well as the countries involved are important indicators to understand the effects of any global geopolitical risk on stock prices.

Regarding policy implications, the main suggestion is that policymakers need to identify the types of geopolitical risks (e.g., threats versus acts) impacting their stock markets (as achieved in this paper). Assessing the magnitude of the geopolitical risk's impact on stock prices (as also achieved in this paper) is also essential to forecast future potential geopolitical events. Regarding the strategies for mitigation, policymakers can encourage investors to diversify their portfolios across different stock markets (through regulations) to minimize the exposure to single-economy shocks. Standard (monetary, fiscal, and financial) policies stabilizing the market conditions can help mitigating the negative effects of geopolitical risks. Providing clear communication channels and transparency regarding government actions in response to geopolitical events can help reduce uncertainty and panic-selling, thus stabilizing stock prices. Fostering international cooperation through engagement in diplomatic efforts to reduce geopolitical tensions and building agreements aimed at mitigating future instability can offer sustainable long-term risk reduction in stock markets. Finally, financial safety nets through developing policies such as increased liquidity provision by central banks or targeted

support for specific industries vulnerable to geopolitical events can also act as cushions to soften the blow in stock markets caused by geopolitical risks.

Although this paper has investigated to the effects of geopolitical risk on stock prices at the economy level, future studies can focus on the effects of geopolitical risk on sector-specific stock prices at the economy level. Such an innovation would shed more light on the sectors that are responsible for the overall reaction of stock prices in the economies investigated. Additionally, future studies can also have an actual theoretical model with optimizing agents to better identify the channels through which geopolitical risks affect stock prices. Such a strategy would improve the reduced-form identification strategy in this paper and could potentially be used to investigate the welfare and growth implications of stock price reductions due to geopolitical events.

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Table 1 - Cumulative Impulse Responses of Stock Prices (1985M1-2023M9)

	Shock: Geopolitical Risk			Shock: Geopolitical Threats			Shock: Geopolitical Acts		
	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound
Australia	**-0.007**	-0.277	0.263	**-0.087**	-0.422	0.248	**0.03**	-0.222	0.281
Canada	**-0.281***	-0.549	-0.014	**-0.229**	-0.52	0.063	**-0.261**	-0.527	0.004
Chile	**0.186**	-0.121	0.493	**0.303***	0.016	0.59	**0.075**	-0.209	0.359
Colombia	**-0.044**	-0.23	0.142	**-0.084**	-0.324	0.156	**-0.011**	-0.145	0.124
Costa Rica	**0.004**	-0.394	0.401	**0.006**	-0.48	0.493	**-0.003**	-0.348	0.342
Czech Republic	**0.034**	-0.28	0.348	**-0.094**	-0.611	0.422	**0.083**	-0.154	0.32
Denmark	**-0.208***	-0.41	-0.006	**-0.243**	-0.512	0.027	**-0.134**	-0.284	0.015
Hungary	**-0.179**	-0.696	0.337	**-0.494**	-1.205	0.218	**0.021**	-0.263	0.305
Iceland	**0.281***	0.053	0.51	**0.15**	-0.209	0.509	**0.291***	0.133	0.449
Israel	**-0.343***	-0.594	-0.091	**-0.286**	-0.581	0.01	**-0.329***	-0.528	-0.13
Japan	**0.195**	-0.236	0.626	**0.047**	-0.365	0.458	**0.232**	-0.272	0.736
Korea	**-0.056**	-0.497	0.386	**-0.007**	-0.488	0.473	**-0.136**	-0.525	0.252
Latvia	**-0.798***	-1.198	-0.398	**-0.767***	-1.379	-0.154	**-0.77***	-1.108	-0.431
Mexico	**-0.007**	-0.16	0.145	**-0.038**	-0.212	0.136	**0.002**	-0.144	0.148
New Zealand	**-0.058**	-0.461	0.345	**-0.138**	-0.613	0.337	**-0.005**	-0.417	0.407
Norway	**-0.135**	-0.319	0.048	**-0.138**	-0.386	0.11	**-0.105**	-0.25	0.04
Poland	**-0.199**	-0.578	0.181	**-0.309**	-0.865	0.247	**-0.113**	-0.369	0.143
Sweden	**-0.501***	-0.888	-0.114	**-0.583***	-1.028	-0.139	**-0.319***	-0.609	-0.029
Switzerland	**-0.38***	-0.648	-0.111	**-0.408***	-0.726	-0.091	**-0.285***	-0.472	-0.099
Türkiye	**-0.169**	-0.634	0.295	**-0.369**	-0.817	0.079	**0.033**	-0.477	0.544
United Kingdom	**-0.417***	-0.809	-0.025	**-0.599***	-1	-0.198	**-0.202**	-0.529	0.125
United States	**-0.393***	-0.68	-0.105	**-0.344***	-0.649	-0.038	**-0.339***	-0.578	-0.101
Euro Area	**-0.615***	-1.077	-0.153	**-0.713***	-1.205	-0.221	**-0.392***	-0.772	-0.012
Brazil	**-0.107**	-0.311	0.097	**-0.064**	-0.295	0.167	**-0.131**	-0.316	0.053
China	**-0.705***	-1.155	-0.256	**-0.61***	-1.192	-0.028	**-0.615***	-0.987	-0.244
India	**-0.141**	-0.362	0.08	**-0.13**	-0.428	0.167	**-0.143**	-0.297	0.01
Indonesia	**-0.104**	-0.4	0.193	**0.003**	-0.3	0.306	**-0.133**	-0.381	0.115
Russia	**-0.344**	-0.797	0.109	**-0.554**	-1.25	0.141	**-0.146**	-0.415	0.124
South Africa	**-0.187**	-0.473	0.099	**-0.241**	-0.571	0.089	**-0.14**	-0.408	0.128
Advanced Economies	**-0.208***	-0.399	-0.043	**-0.243***	-0.516	-0.093	**-0.136**	-0.321	0.023
Emerging Markets and Developing Countries	**-0.124***	-0.193	-0.026	**-0.107***	-0.339	-0.017	**-0.122***	-0.142	-0.001

Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation) after one year. For country-specific results, * represents significance of the estimates, whereas the upper and lower bounds represent the confidence intervals based on the 90 percent significance level. For country groups, the estimates represent the median across the corresponding countries, whereas upper and lower bounds represent the interquartile range across the corresponding countries.

Table 2 - Cumulative Impulse Responses of Stock Prices (1985M1-2003M12)

	Shock: Geopolitical Risk			Shock: Geopolitical Threats			Shock: Geopolitical Acts		
	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound
Australia	**-0.039**	-0.202	0.123	**-0.13**	-0.385	0.125	**0.023**	-0.112	0.158
Canada	**-0.243***	-0.459	-0.029	**-0.234***	-0.445	-0.024	**-0.152**	-0.377	0.073
Chile	**0.002**	-0.191	0.194	**0.206**	-0.013	0.424	**-0.08**	-0.266	0.106
Colombia	**-0.019**	-0.091	0.052	**-0.013**	-0.15	0.125	**-0.039**	-0.108	0.029
Costa Rica	**-0.448***	-0.598	-0.297	**-0.457***	-0.776	-0.139	**-0.435***	-0.593	-0.276
Czech Republic	**0.238***	0.133	0.342	**0.347***	0.211	0.482	**0.187***	0.09	0.284
Denmark	**-0.066**	-0.144	0.012	**-0.048**	-0.14	0.044	**-0.048**	-0.128	0.032
Hungary	**0.134***	0.02	0.248	**0.193**	-0.019	0.404	**0.152***	0.071	0.233
Iceland	**0.166***	0.086	0.246	**0.359***	0.223	0.495	**0.122***	0.055	0.19
Israel	**-0.053**	-0.189	0.083	**0.028**	-0.117	0.172	**-0.073**	-0.217	0.07
Japan	**0.325**	-0.389	1.039	**0.424**	-0.091	0.94	**0.163**	-0.543	0.87
Korea	**0.29**	-0.164	0.743	**0.43**	-0.053	0.912	**0.09**	-0.272	0.451
Latvia	-	-	-	-	-	-	-	-	-
Mexico	**-0.002**	-0.112	0.107	**-0.003**	-0.14	0.133	**-0.01**	-0.114	0.093
New Zealand	**-0.04**	-0.418	0.337	**-0.131**	-0.646	0.385	**-0.006**	-0.417	0.404
Norway	**-0.08**	-0.164	0.003	**-0.157***	-0.262	-0.052	**-0.018**	-0.081	0.044
Poland	**-0.142**	-0.362	0.077	**-0.217**	-0.571	0.135	**-0.109**	-0.278	0.06
Sweden	**-0.292***	-0.543	-0.041	**-0.269***	-0.515	-0.024	**-0.238**	-0.503	0.026
Switzerland	**-0.177***	-0.334	-0.021	**-0.244***	-0.425	-0.065	**-0.129**	-0.269	0.011
Türkiye	**-0.352**	-0.71	0.005	**-0.517***	-0.933	-0.101	**-0.218**	-0.525	0.089
United Kingdom	**-0.196**	-0.49	0.097	**-0.311**	-0.66	0.037	**-0.095**	-0.356	0.166
United States	**-0.182***	-0.355	-0.008	**-0.14**	-0.312	0.032	**-0.165**	-0.339	0.01
Euro Area	**-0.404***	-0.8	-0.01	**-0.485**	-0.988	0.017	**-0.279**	-0.609	0.05
Brazil	**-0.138**	-0.277	0.001	**-0.14**	-0.333	0.051	**-0.119**	-0.239	0
China	**-0.25***	-0.408	-0.089	**-0.626***	-0.817	-0.42	**0.083**	-0.078	0.242
India	**-0.13***	-0.241	-0.019	**-0.077**	-0.212	0.058	**-0.17***	-0.283	-0.058
Indonesia	**-0.131***	-0.236	-0.026	**-0.018**	-0.198	0.161	**-0.161***	-0.244	-0.078
Russia	**0.216***	0.102	0.33	**0.422***	0.285	0.558	**0.164***	0.071	0.257
South Africa	**-0.116**	-0.331	0.098	**-0.164**	-0.423	0.095	**-0.169**	-0.409	0.07
Advanced Economies	**-0.059**	-0.189	0.15	**-0.13**	-0.239	0.27	**-0.033**	-0.14	0.106
Emerging Markets and Developing Countries	**-0.13***	-0.196	-0.011	**-0.109***	-0.337	-0.008	**-0.114***	-0.17	-0.025

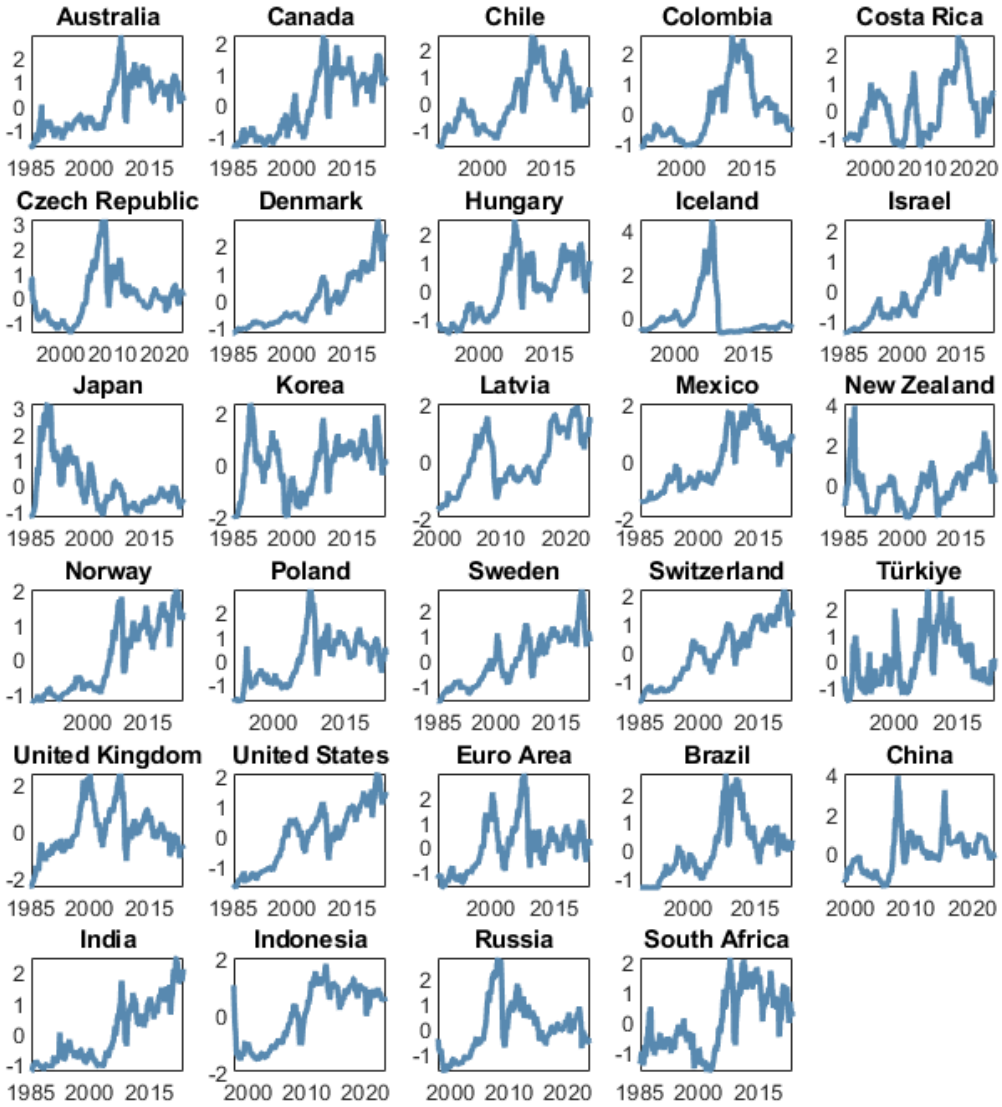
Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation) after one year. For country-specific results, * represents significance of the estimates, whereas the upper and lower bounds represent the confidence intervals based on the 90 percent significance level. Latvia does not have any estimation results due to data availability between 1985M1-2003M12. For country groups, the estimates represent the median across the corresponding countries, whereas upper and lower bounds represent the interquartile range across the corresponding countries.

Table 3 - Cumulative Impulse Responses of Stock Prices (2004M1-2023M9)

	Shock: Geopolitical Risk			Shock: Geopolitical Threats			Shock: Geopolitical Acts		
	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound
Australia	**-0.595**	-1.198	0.009	**-0.329**	-0.734	0.077	**-0.295**	-1.231	0.641
Canada	**-0.305**	-0.916	0.307	**0.009**	-0.422	0.439	**-0.473**	-1.372	0.427
Chile	**0.169**	-0.481	0.818	**0.22**	-0.235	0.674	**0.388**	-0.407	1.182
Colombia	**-0.572**	-1.177	0.033	**-0.464***	-0.82	-0.108	**-0.492**	-1.414	0.431
Costa Rica	**0.972**	-0.473	2.418	**0.086**	-0.776	0.948	**2.847***	1.124	4.571
Czech Republic	**-0.692**	-1.584	0.2	**-0.7***	-1.314	-0.085	**-0.555**	-1.837	0.727
Denmark	**-0.463**	-1.48	0.553	**-0.144**	-0.781	0.493	**-0.683**	-1.902	0.537
Hungary	**-0.844**	-1.964	0.277	**-0.763**	-1.677	0.152	**-1.389**	-2.855	0.077
Iceland	**0.642**	-0.316	1.6	**0.236**	-0.414	0.887	**0.653**	-0.403	1.708
Israel	**-0.546**	-1.292	0.2	**-0.098**	-0.706	0.51	**-0.922***	-1.748	-0.097
Japan	**-0.258**	-0.698	0.182	**-0.343***	-0.622	-0.064	**-0.346**	-1.146	0.454
Korea	**-0.267**	-1.223	0.689	**0.033**	-0.64	0.707	**-0.861**	-1.991	0.269
Latvia	**-0.794**	-1.989	0.401	**-0.685**	-1.453	0.083	**-0.83**	-2.204	0.545
Mexico	**-0.238**	-0.817	0.341	**-0.22**	-0.589	0.15	**0.15**	-0.683	0.984
New Zealand	**-0.548**	-2.17	1.074	**-0.309**	-1.374	0.756	**-0.913**	-2.957	1.13
Norway	**0.267**	-0.667	1.2	**0.668***	0.013	1.324	**-1.073**	-2.166	0.021
Poland	**-1.245***	-2.167	-0.323	**-0.969***	-1.711	-0.227	**-0.948**	-2.143	0.247
Sweden	**-0.812**	-2.194	0.571	**-0.293**	-1.136	0.55	**-0.986**	-2.678	0.705
Switzerland	**-0.706**	-1.565	0.152	**-0.3**	-0.925	0.324	**-1.141***	-2.178	-0.105
Türkiye	**0.304**	-0.676	1.285	**-0.46**	-1.114	0.195	**1.528***	0.108	2.948
United Kingdom	**-0.995***	-1.832	-0.158	**-0.824***	-1.367	-0.281	**-0.498**	-1.682	0.685
United States	**-0.509**	-1.496	0.478	**-0.069**	-0.85	0.712	**-1.169***	-2.329	-0.009
Euro Area	**-1.049***	-2.017	-0.081	**-0.973***	-1.682	-0.263	**-0.812**	-2.467	0.843
Brazil	**-0.244**	-0.795	0.306	**-0.235**	-0.608	0.139	**-0.085**	-0.836	0.666
China	**-0.356**	-1.795	1.084	**-0.523**	-1.437	0.391	**1.28**	-1.015	3.576
India	**0.222**	-0.859	1.304	**0.407**	-0.41	1.223	**-0.386**	-1.464	0.691
Indonesia	**0.057**	-0.524	0.638	**0.136**	-0.228	0.5	**0.157**	-0.652	0.967
Russia	**-1.463***	-2.308	-0.617	**-1.334***	-2.021	-0.647	**-0.39**	-1.546	0.764
South Africa	**-0.816**	-1.797	0.166	**-0.301**	-0.931	0.329	**-0.572**	-1.987	0.843
Advanced Economies	**-0.548***	-0.798	-0.295	**-0.3***	-0.689	-0.05	**-0.83***	-1.008	-0.492
Emerging Markets and Developing Countries	**-0.241**	-0.694	0.195	**-0.268**	-0.494	0.111	**0.033**	-0.441	0.834

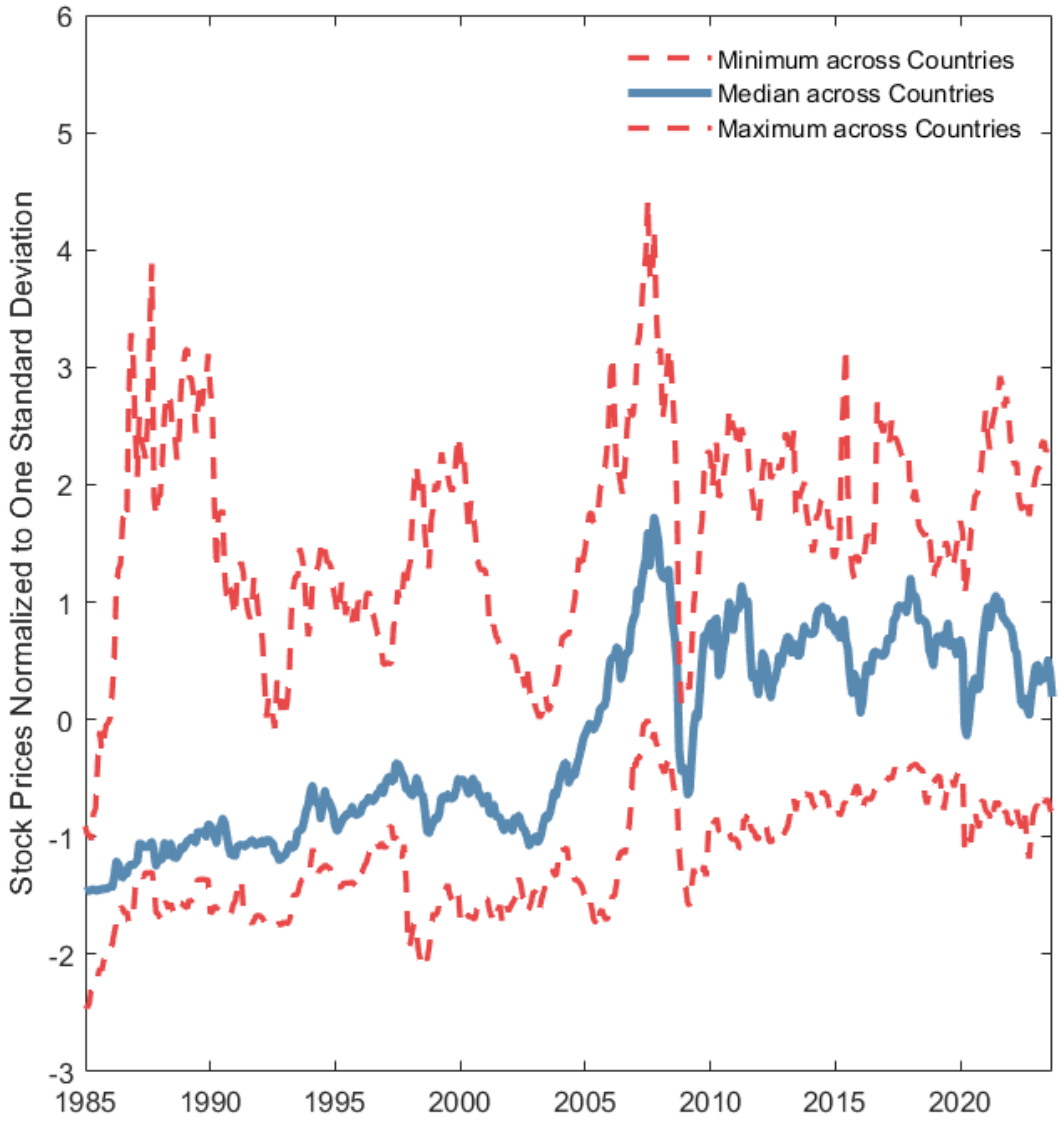
Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation) after one year. For country-specific results, * represents significance of the estimates, whereas the upper and lower bounds represent the confidence intervals based on the 90 percent significance level. For country groups, the estimates represent the median across the corresponding countries, whereas upper and lower bounds represent the interquartile range across the corresponding countries.

Figure 1 – Country-Specific Stock Prices



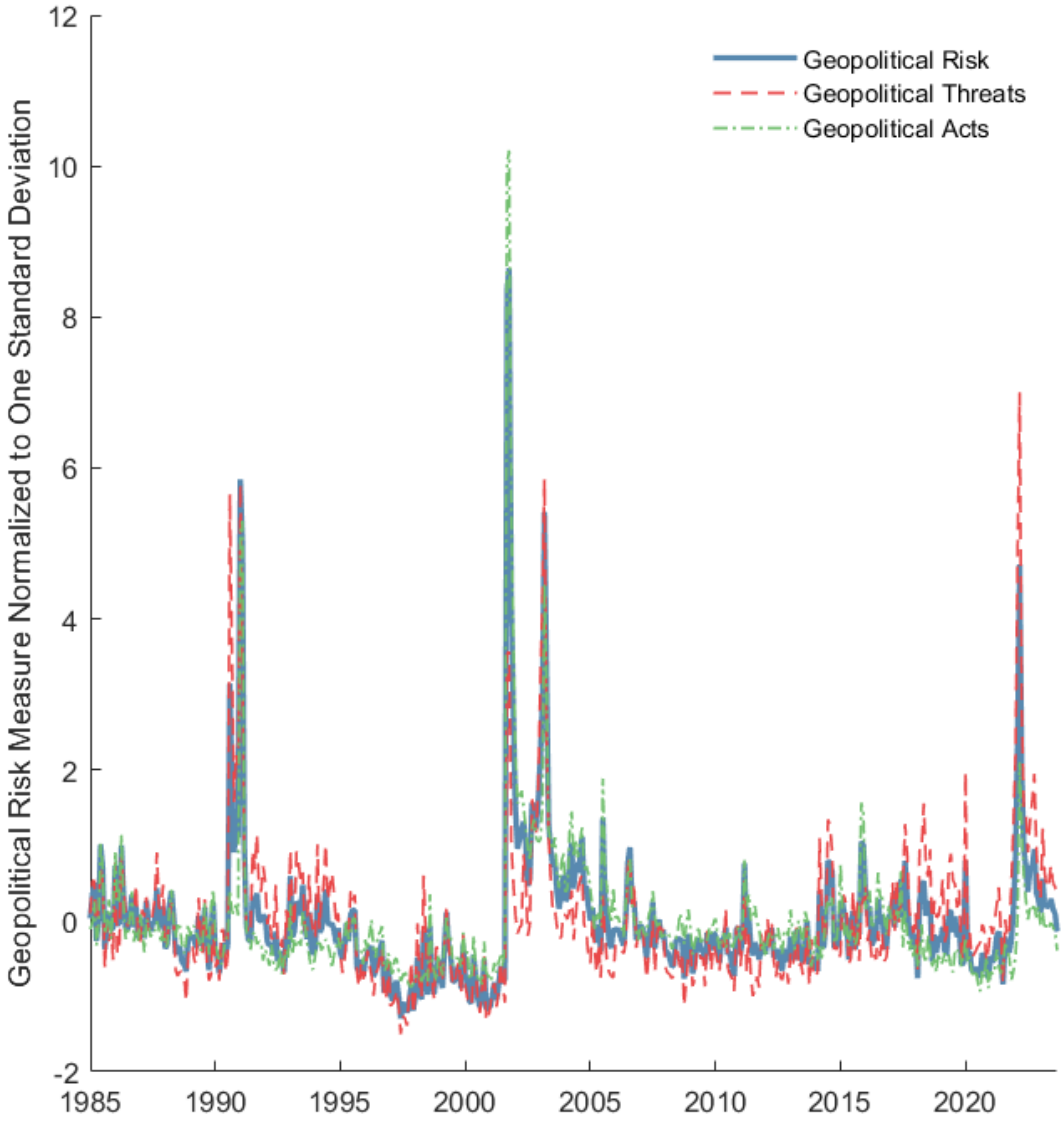
Notes: Stock prices reflect the share price indices downloaded from OECD. All series are normalized to one standard deviation at the country level.

Figure 2 – Summary of Stock Prices



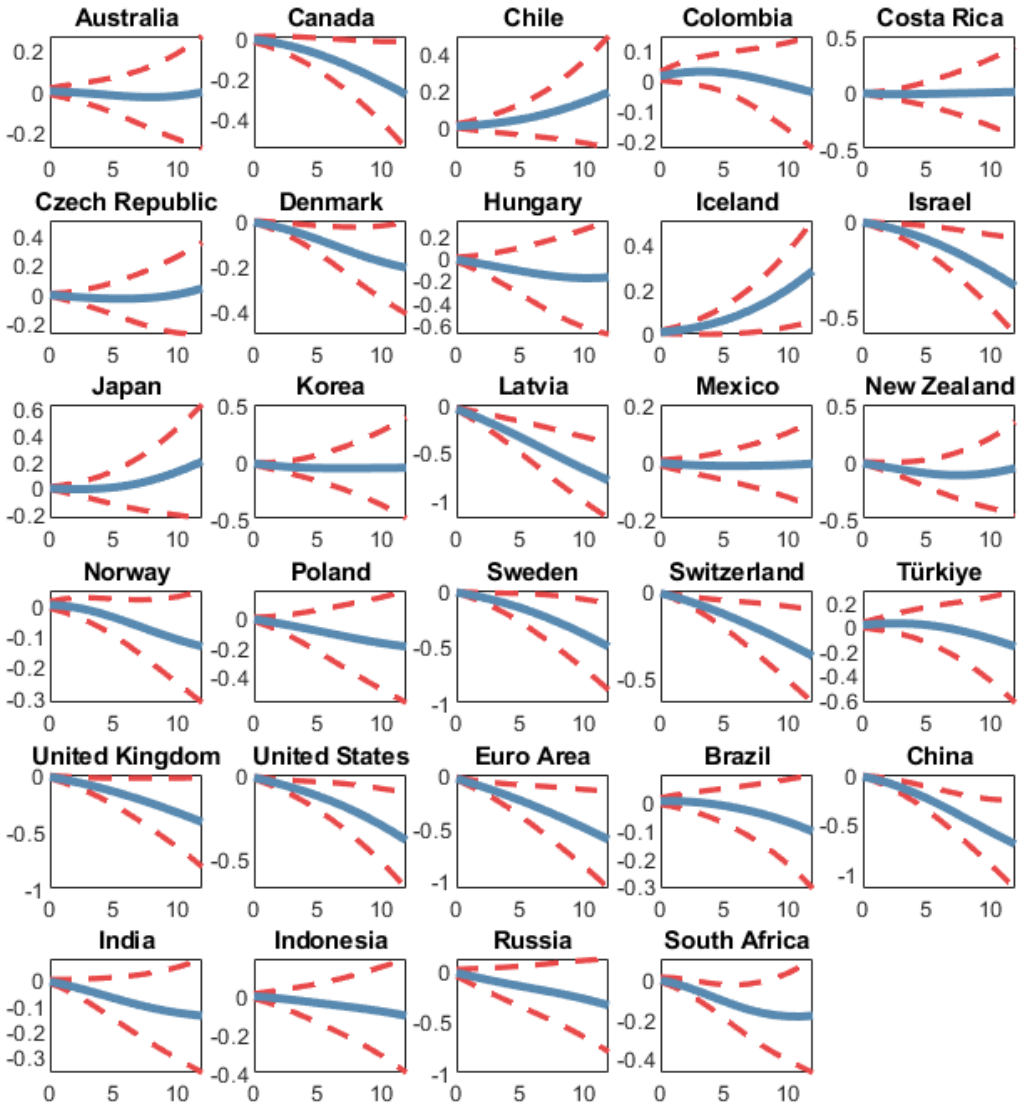
Notes: The series show the minimum, median, and maximum values of stock prices across countries for each month. Stock prices reflect the share price indices downloaded from OECD (https://data.oecd.org/price/share-prices.htm). All series are normalized to one standard deviation at the country level.

Figure 3 – Geopolitical Risk Measures



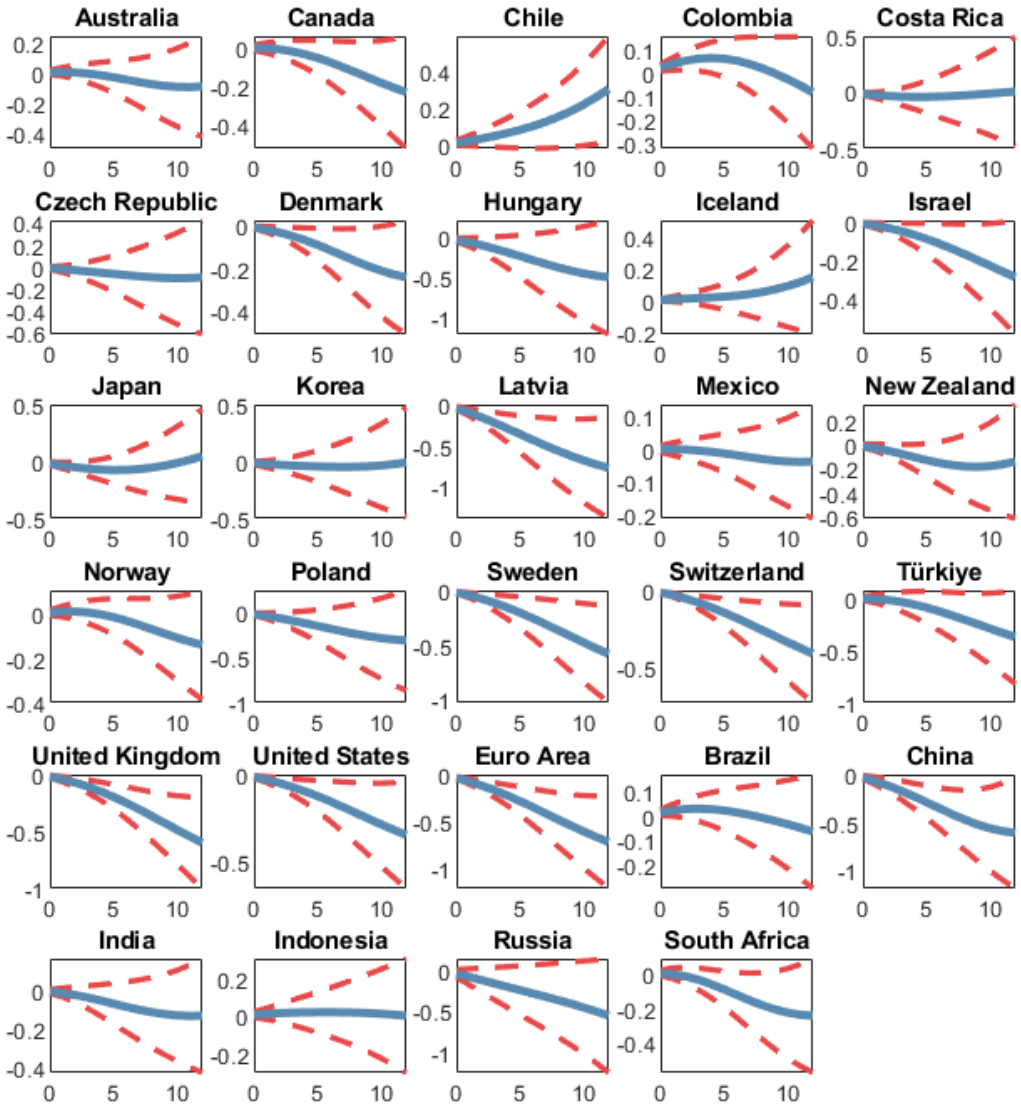
Notes: Geopolitical risk measures have been downloaded from https://www.policyuncertainty.com/. All series are normalized to one standard deviation.

Figure 4 – Cumulative Impulse Responses of Stock Prices to a Unit Shock of Geopolitical Risk for 1985M1-2023M9



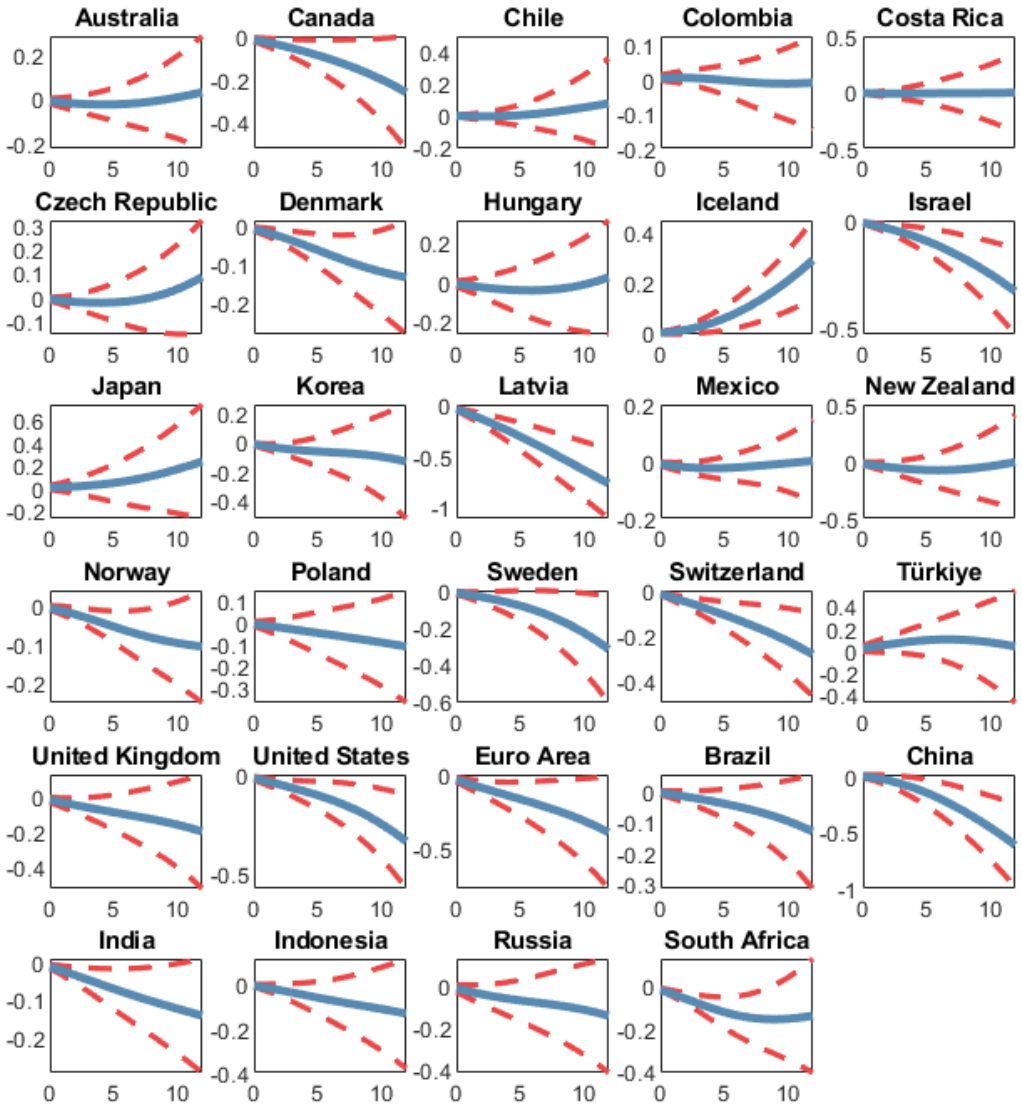
Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates (represented by solid lines) show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation). The upper and lower bounds (represented by dashed lines) show the confidence intervals based on the 90 percent significance level.

Figure 5 – Cumulative Impulse Responses of Stock Prices to a Unit Shock of Geopolitical Threats for 1985M1-2023M9



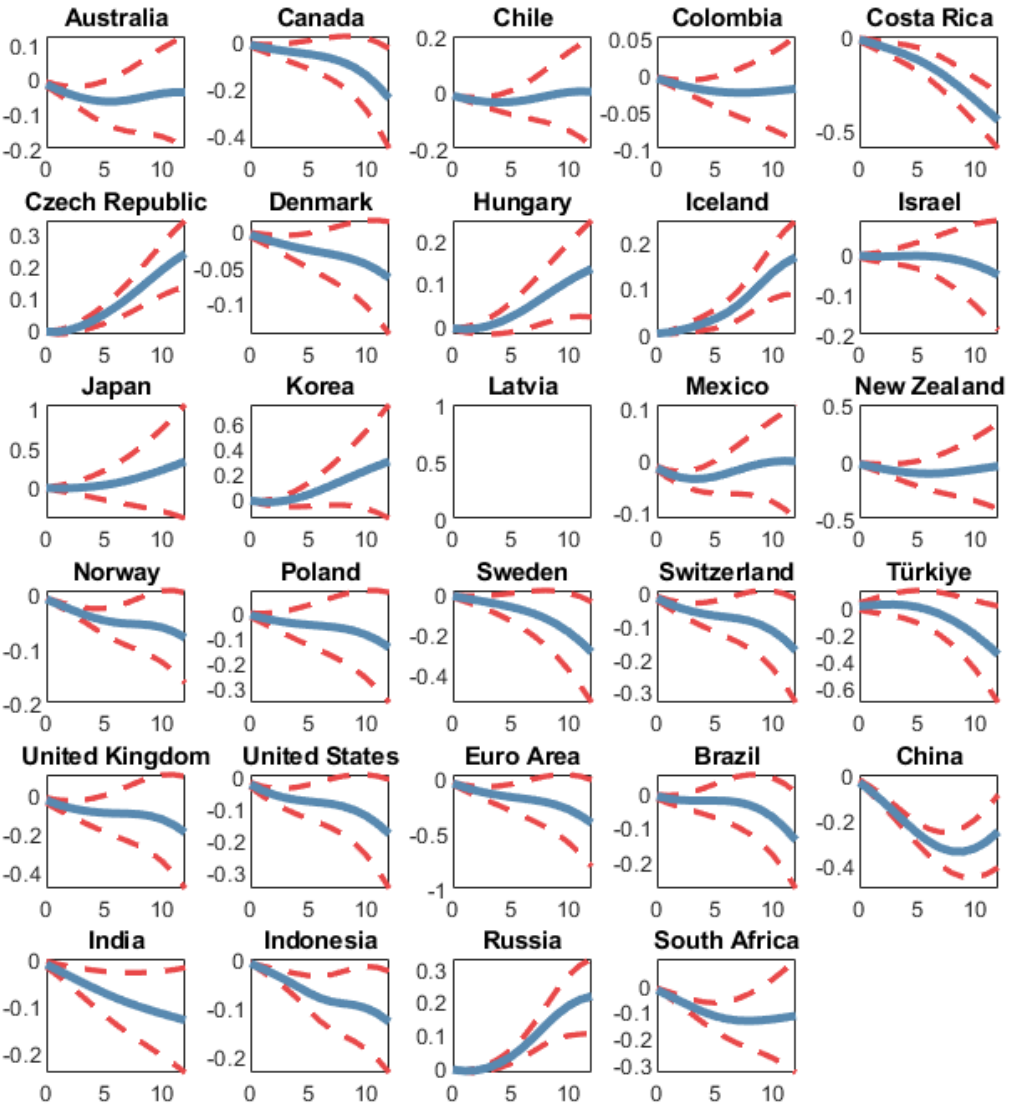
Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates (represented by solid lines) show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation). The upper and lower bounds (represented by dashed lines) show the confidence intervals based on the 90 percent significance level.

Figure 6 – Cumulative Impulse Responses of Stock Prices to a Unit Shock of Geopolitical Acts for 1985M1-2023M9



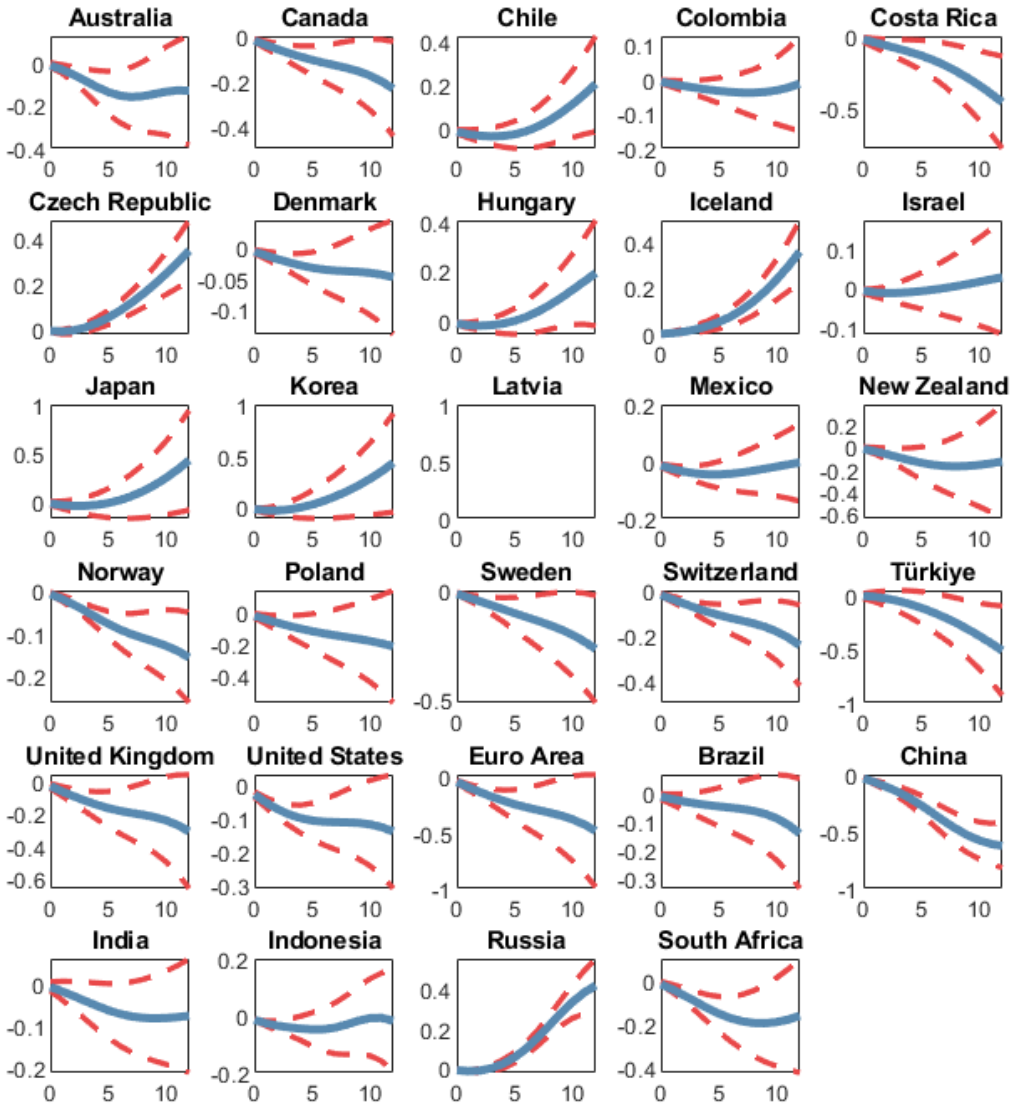
Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates (represented by solid lines) show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation). The upper and lower bounds (represented by dashed lines) show the confidence intervals based on the 90 percent significance level.

Figure 7 – Cumulative Impulse Responses of Stock Prices to a Unit Shock of Geopolitical Risk for 1985M1-2003M12



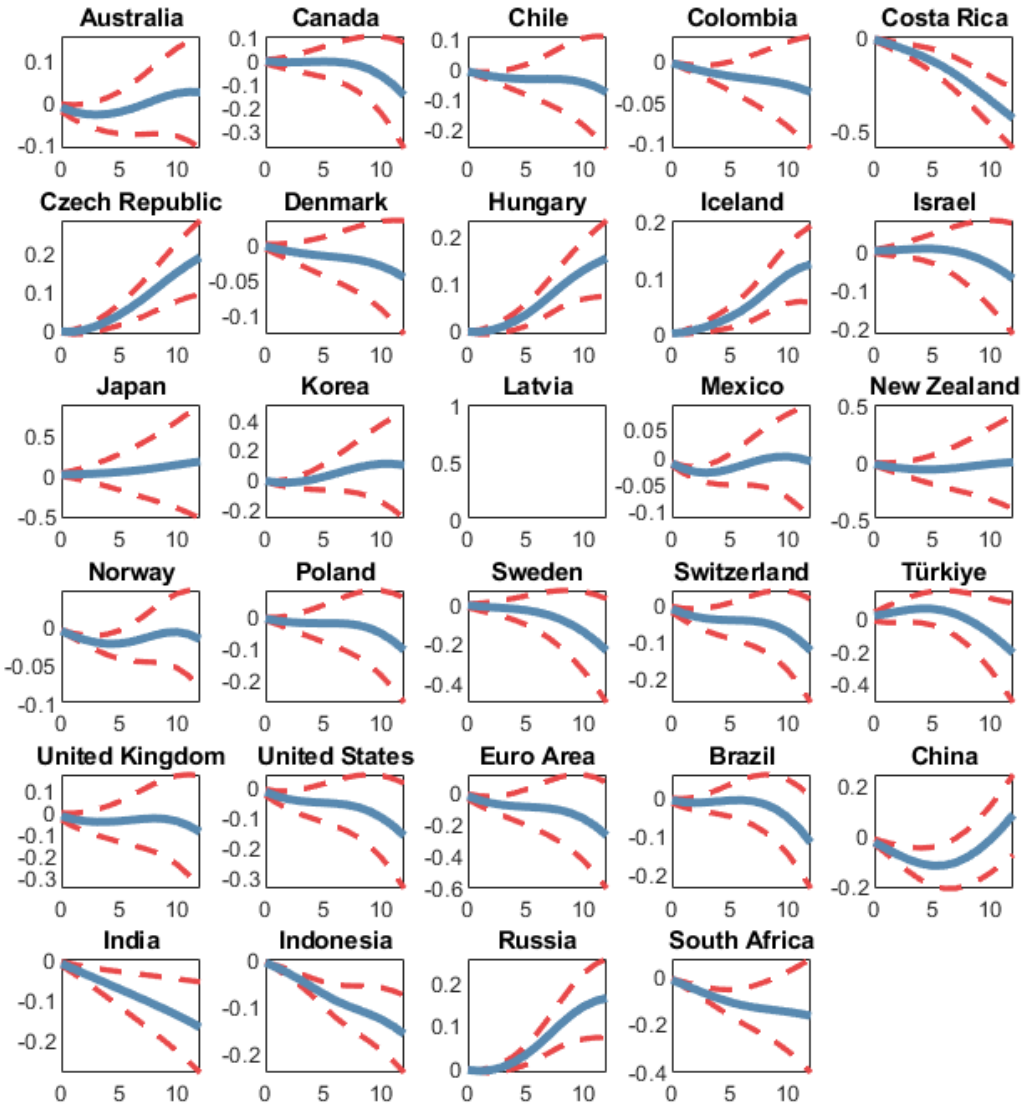
Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates (represented by solid lines) show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation). The upper and lower bounds (represented by dashed lines) show the confidence intervals based on the 90 percent significance level. Latvia does not have any estimation results due to data availability of stock prices between 1985M1-2003M12.

Figure 8 – Cumulative Impulse Responses of Stock Prices to a Unit Shock of Geopolitical Threats for 1985M1-2003M12



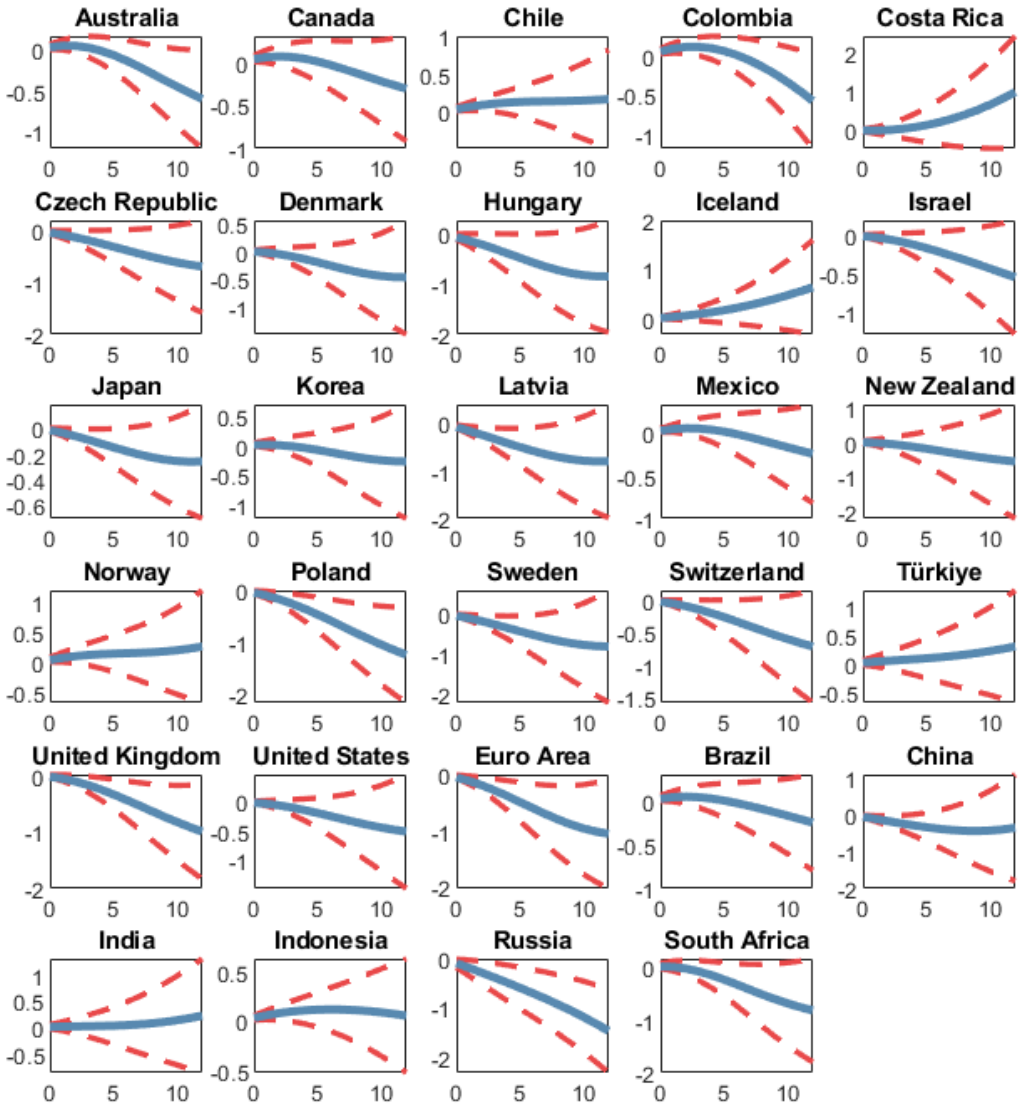
Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates (represented by solid lines) show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation). The upper and lower bounds (represented by dashed lines) show the confidence intervals based on the 90 percent significance level. Latvia does not have any estimation results due to data availability of stock prices between 1985M1-2003M12.

Figure 9 – Cumulative Impulse Responses of Stock Prices to a Unit Shock of Geopolitical Acts for 1985M1-2003M12



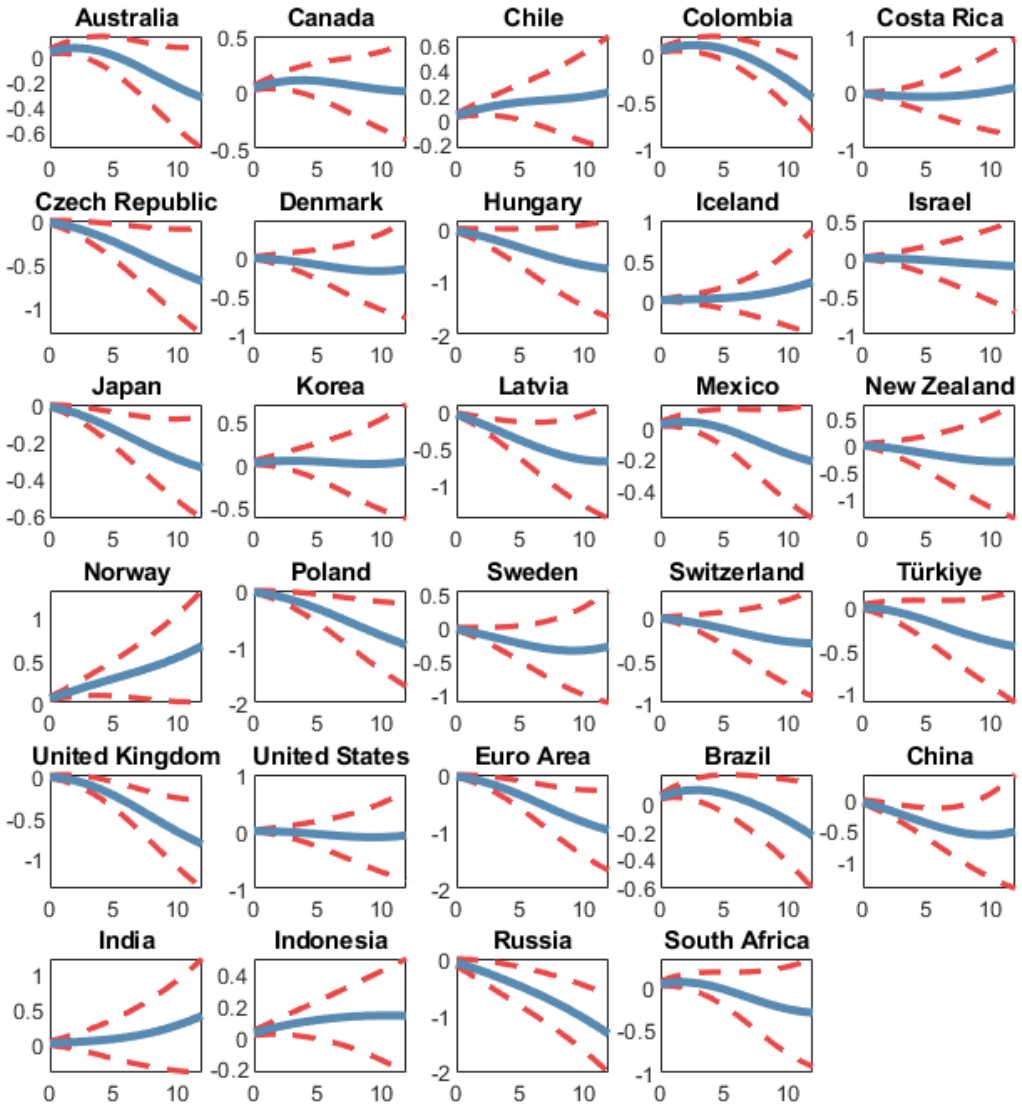
Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates (represented by solid lines) show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation). The upper and lower bounds (represented by dashed lines) show the confidence intervals based on the 90 percent significance level. Latvia does not have any estimation results due to data availability of stock prices between 1985M1-2003M12.

Figure 10 – Cumulative Impulse Responses of Stock Prices to a Unit Shock of Geopolitical Risk for 2004M1-2023M9



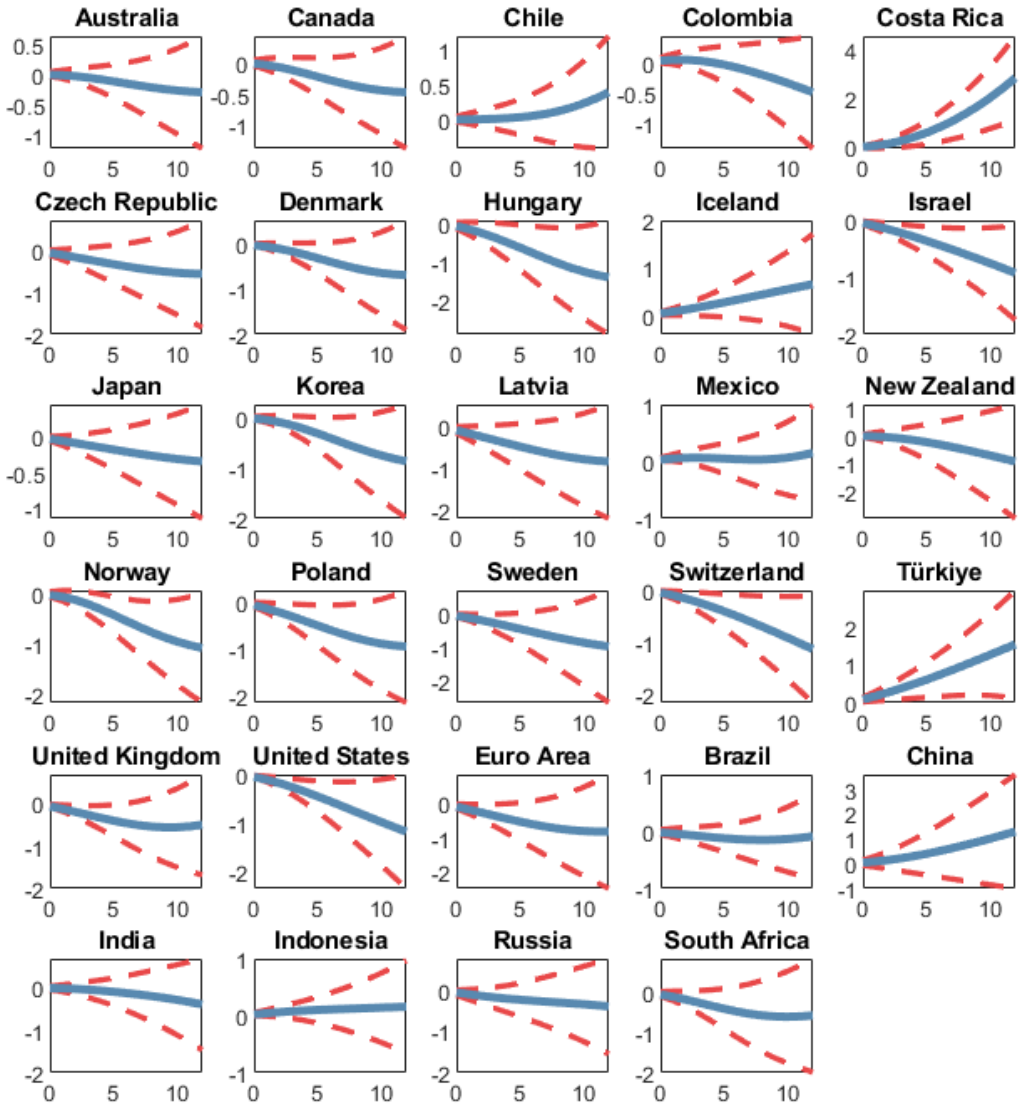
Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates (represented by solid lines) show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation). The upper and lower bounds (represented by dashed lines) show the confidence intervals based on the 90 percent significance level.

Figure 11 – Cumulative Impulse Responses of Stock Prices to a Unit Shock of Geopolitical Threats for 2004M1-2023M9



Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates (represented by solid lines) show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation). The upper and lower bounds (represented by dashed lines) show the confidence intervals based on the 90 percent significance level.

Figure 12 – Cumulative Impulse Responses of Stock Prices to a Unit Shock of Geopolitical Acts for 2004M1-2023M9



Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates (represented by solid lines) show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation). The upper and lower bounds (represented by dashed lines) show the confidence intervals based on the 90 percent significance level.

Table A1 - List of Countries, Sample Periods and Country Groups

	First Month	Last Month	Advanced Economies
Australia	1985M1	2023M9	YES
Canada	1985M1	2023M9	YES
Chile	1990M1	2023M9	NO
Colombia	1991M1	2023M9	NO
Costa Rica	1995M1	2023M9	NO
Czech Republic	1994M1	2023M9	YES
Denmark	1985M1	2023M9	YES
Hungary	1991M1	2023M9	YES
Iceland	1993M1	2023M9	YES
Israel	1985M1	2023M9	YES
Japan	1985M1	2023M9	YES
Korea	1985M1	2023M9	YES
Latvia	2000M1	2023M9	YES
Mexico	1985M1	2023M9	NO
New Zealand	1985M1	2023M9	YES
Norway	1986M1	2023M9	YES
Poland	1991M1	2023M9	NO
Sweden	1985M1	2023M9	YES
Switzerland	1985M1	2023M9	YES
Türkiye	1988M1	2023M9	NO
United Kingdom	1985M1	2023M9	YES
United States	1985M1	2023M9	YES
Euro Area	1986M12	2023M9	YES
Brazil	1988M10	2023M8	NO
China	1999M1	2023M8	NO
India	1985M1	2023M8	NO
Indonesia	1997M7	2023M8	NO
Russia	1997M9	2023M8	NO
South Africa	1985M1	2023M8	NO

Notes: Sample periods are determined based on the data availability of stock prices (share price indices) downloaded from OECD. Advanced Economies are represented by YES in the last column, whereas Emerging Markets and Developing Countries are represented by NO according to the country classification of IMF.

Table A2 - Robustness #1: Cumulative Impulse Responses of Stock Prices (1985M1-2023M9)

	Shock: Geopolitical Risk			Shock: Geopolitical Threats			Shock: Geopolitical Acts		
	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound
Australia	**-0.007**	-0.299	0.284	**-0.087**	-0.442	0.268	**0.03**	-0.235	0.295
Canada	**-0.281**	-0.564	0.002	**-0.228**	-0.536	0.079	**-0.261**	-0.536	0.013
Chile	**0.186**	-0.129	0.502	**0.303**	-0.001	0.607	**0.075**	-0.215	0.365
Colombia	**-0.044**	-0.247	0.159	**-0.084**	-0.34	0.172	**-0.011**	-0.163	0.142
Costa Rica	**0.004**	-0.418	0.426	**0.006**	-0.517	0.53	**-0.003**	-0.369	0.363
Czech Republic	**0.034**	-0.291	0.359	**-0.094**	-0.621	0.433	**0.083**	-0.165	0.331
Denmark	**-0.208**	-0.421	0.005	**-0.243**	-0.52	0.034	**-0.134**	-0.292	0.024
Hungary	**-0.179**	-0.706	0.348	**-0.494**	-1.216	0.229	**0.021**	-0.277	0.319
Iceland	**0.281***	0.043	0.519	**0.15**	-0.217	0.517	**0.291***	0.121	0.461
Israel	**-0.343***	-0.607	-0.079	**-0.286**	-0.597	0.025	**-0.329***	-0.538	-0.12
Japan	**0.195**	-0.247	0.637	**0.047**	-0.382	0.475	**0.232**	-0.278	0.742
Korea	**-0.056**	-0.511	0.4	**-0.007**	-0.506	0.491	**-0.136**	-0.536	0.263
Latvia	**-0.798***	-1.216	-0.38	**-0.767***	-1.395	-0.139	**-0.77***	-1.118	-0.421
Mexico	**-0.007**	-0.177	0.162	**-0.038**	-0.229	0.153	**0.002**	-0.156	0.16
New Zealand	**-0.058**	-0.484	0.367	**-0.138**	-0.634	0.358	**-0.005**	-0.429	0.419
Norway	**-0.135**	-0.337	0.066	**-0.138**	-0.4	0.124	**-0.105**	-0.266	0.056
Poland	**-0.199**	-0.595	0.198	**-0.309**	-0.882	0.264	**-0.113**	-0.384	0.158
Sweden	**-0.501***	-0.898	-0.103	**-0.583***	-1.037	-0.129	**-0.319***	-0.617	-0.02
Switzerland	**-0.38***	-0.658	-0.101	**-0.408***	-0.735	-0.082	**-0.285***	-0.48	-0.09
Türkiye	**-0.169**	-0.673	0.334	**-0.369**	-0.852	0.114	**0.033**	-0.505	0.571
United Kingdom	**-0.417***	-0.827	-0.007	**-0.599***	-1.019	-0.178	**-0.202**	-0.545	0.141
United States	**-0.393***	-0.693	-0.092	**-0.344***	-0.662	-0.025	**-0.339***	-0.585	-0.094
Euro Area	**-0.615***	-1.098	-0.132	**-0.713***	-1.224	-0.201	**-0.392**	-0.788	0.004
Brazil	**-0.107**	-0.327	0.113	**-0.064**	-0.312	0.184	**-0.131**	-0.33	0.068
China	**-0.705***	-1.18	-0.23	**-0.61**	-1.227	0.006	**-0.615***	-1.008	-0.223
India	**-0.141**	-0.374	0.092	**-0.13**	-0.437	0.176	**-0.143**	-0.308	0.021
Indonesia	**-0.104**	-0.407	0.2	**0.003**	-0.315	0.321	**-0.133**	-0.386	0.12
Russia	**-0.344**	-0.805	0.117	**-0.554**	-1.262	0.153	**-0.146**	-0.427	0.136
South Africa	**-0.187**	-0.5	0.126	**-0.241**	-0.593	0.112	**-0.14**	-0.431	0.151
Advanced Economies	**-0.208***	-0.399	-0.043	**-0.243***	-0.516	-0.092	**-0.136**	-0.321	0.023
Emerging Markets and Developing Countries	**-0.124***	-0.193	-0.026	**-0.107***	-0.339	-0.017	**-0.122***	-0.142	-0.001

Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation) after one year. For country-specific results, * represents significance of the estimates, whereas the upper and lower bounds represent the confidence intervals based on the 90 percent significance level. For country groups, the estimates represent the median across the corresponding countries, whereas upper and lower bounds represent the interquartile range across the corresponding countries.

Table A3 - Robustness #2: Cumulative Impulse Responses of Stock Prices (2009M1-2023M9)

	Shock: Geopolitical Risk			Shock: Geopolitical Threats			Shock: Geopolitical Acts		
	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound
Australia	**-1.315***	-1.757	-0.874	**-0.637***	-0.917	-0.357	**-1.144***	-1.96	-0.327
Canada	**-0.828***	-1.302	-0.353	**-0.239**	-0.551	0.074	**-1.395***	-2.139	-0.65
Chile	**-0.128**	-0.907	0.652	**-0.21**	-0.645	0.225	**-0.098**	-1.186	0.99
Colombia	**-0.574***	-1.112	-0.036	**-0.419***	-0.775	-0.063	**-1.182***	-2.265	-0.098
Costa Rica	**0.209**	-0.933	1.35	**-0.544**	-1.127	0.04	**3.046***	1.316	4.777
Czech Republic	**-1.264***	-1.8	-0.727	**-0.697***	-1.096	-0.298	**-1.529***	-2.348	-0.709
Denmark	**-1.417***	-2.36	-0.474	**-0.717***	-1.206	-0.228	**-1.536***	-2.83	-0.243
Hungary	**-1.617***	-2.572	-0.661	**-1.206***	-1.899	-0.513	**-1.948***	-3.677	-0.218
Iceland	**-0.359***	-0.491	-0.226	**-0.268***	-0.357	-0.179	**-0.381***	-0.573	-0.19
Israel	**-1.259***	-2.058	-0.459	**-0.335**	-0.98	0.309	**-1.688***	-2.521	-0.854
Japan	**-0.749***	-1.198	-0.299	**-0.542***	-0.784	-0.3	**-1.005***	-1.786	-0.225
Korea	**-0.519**	-1.187	0.149	**-0.022**	-0.395	0.351	**-1.369***	-2.358	-0.381
Latvia	**-1.871***	-2.678	-1.064	**-1.364***	-1.86	-0.867	**-1.689***	-3.143	-0.235
Mexico	**-0.569***	-1.028	-0.11	**-0.4***	-0.665	-0.135	**-0.505**	-1.299	0.289
New Zealand	**-2.131***	-3.385	-0.877	**-1.578***	-2.349	-0.808	**-2.188***	-4.307	-0.069
Norway	**-0.455**	-1.197	0.287	**0.133**	-0.282	0.549	**-1.696***	-2.721	-0.67
Poland	**-1.651***	-2.369	-0.933	**-0.99***	-1.571	-0.408	**-1.718***	-2.598	-0.837
Sweden	**-2.083***	-3.404	-0.761	**-0.946***	-1.555	-0.338	**-2.173***	-3.864	-0.483
Switzerland	**-1.587***	-2.189	-0.984	**-0.846***	-1.275	-0.416	**-2.008***	-2.955	-1.061
Türkiye	**-0.134**	-0.943	0.675	**-0.176**	-0.723	0.371	**0.103**	-1.271	1.478
United Kingdom	**-1.551***	-2.108	-0.993	**-0.885***	-1.271	-0.499	**-1.523***	-2.368	-0.678
United States	**-1.464***	-2.113	-0.813	**-0.929***	-1.368	-0.49	**-1.941***	-2.858	-1.024
Euro Area	**-0.899***	-1.607	-0.191	**-0.337**	-0.785	0.112	**-1.734***	-2.79	-0.677
Brazil	**-0.127**	-0.597	0.343	**-0.039**	-0.373	0.296	**-0.617**	-1.473	0.24
China	**-0.215**	-1.477	1.047	**-0.48**	-1.168	0.208	**1.043**	-1.479	3.566
India	**-0.889**	-1.808	0.031	**-0.267**	-1.019	0.486	**-1.585***	-2.553	-0.617
Indonesia	**-0.337**	-0.726	0.052	**-0.224**	-0.454	0.006	**0.049**	-0.476	0.575
Russia	**-2.075***	-2.752	-1.399	**-1.43***	-1.96	-0.901	**-1.759***	-2.743	-0.774
South Africa	**-1.656***	-2.372	-0.939	**-0.758***	-1.189	-0.326	**-1.759***	-2.901	-0.617
Advanced Economies	**-1.315***	-1.594	-0.808	**-0.697***	-0.933	-0.318	**-1.688***	-1.943	-1.389
Emerging Markets and Developing Countries	**-0.453***	-1.27	-0.131	**-0.41***	-0.651	-0.217	**-0.561**	-1.651	0.076

Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. The estimates show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in geopolitical risk measures (normalized to one standard deviation) after one year. For country-specific results, * represents significance of the estimates, whereas the upper and lower bounds represent the confidence intervals based on the 90 percent significance level. For country groups, the estimates represent the median across the corresponding countries, whereas upper and lower bounds represent the interquartile range across the corresponding countries.

Table A4 - Robustness #3: Cumulative Impulse Responses of Stock Prices (1985M1-2023M9)

	Shock: Country-Specific Geopolitical Risk		
	Estimate	Lower Bound	Upper Bound
Australia	**-0.065**	-0.433	0.303
Canada	**-0.276***	-0.523	-0.029
Chile	**0.045**	-0.211	0.301
Colombia	**-0.135**	-0.432	0.162
Costa Rica	-	-	-
Czech Republic	-	-	-
Denmark	**-0.253***	-0.415	-0.091
Hungary	**-0.788***	-1.273	-0.303
Iceland	-	-	-
Israel	**0.041**	-0.174	0.255
Japan	**0.181**	-0.125	0.487
Korea	**0.186**	-0.266	0.638
Latvia	-	-	-
Mexico	**0.135**	-0.075	0.346
New Zealand	-	-	-
Norway	**-0.325***	-0.553	-0.097
Poland	**-0.692***	-1.005	-0.378
Sweden	**-0.712***	-1.059	-0.364
Switzerland	**-0.27***	-0.443	-0.097
Türkiye	**0.172**	-0.319	0.664
United Kingdom	**-0.188**	-0.613	0.236
United States	**-0.378***	-0.652	-0.104
Euro Area	-	-	-
Brazil	**0.073**	-0.215	0.36
China	**-0.938***	-1.745	-0.132
India	**-0.081**	-0.254	0.092
Indonesia	**-0.145**	-0.396	0.105
Russia	**-1.118***	-1.553	-0.684
South Africa	**0.197**	-0.674	1.069
Advanced Economies	**-0.262***	-0.352	-0.012
Emerging Markets and Developing Countries	**-0.081**	-0.555	0.12

Notes: Cumulative impulse responses of stock prices in each country are estimated by using the local projections method. Subject to the data availability of country-specific geopolitical risk measures, the estimates show the cumulative impulse of stock prices (normalized to one standard deviation) to a unit shock in country-specific geopolitical risk measures (normalized to one standard deviation) after one year. For country-specific results, * represents significance of the estimates, whereas the upper and lower bounds represent the confidence intervals based on the 90 percent significance level. For country groups, the estimates represent the median across the corresponding countries, whereas upper and lower bounds represent the interquartile range across the corresponding countries.