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MEASURING THE IMPACT OF GEOPOLITICAL RISK ON CAPITAL MARKET IN SELECTED DEVELOPED COUNTRIES

Abstract: Shocks that cause uncertainty also inevitably have an impact on financial markets, in addition to the typical range of economic and financial considerations. Previous research shows that recent events like the COVID-19 pandemic, changes in oil prices, and the Russian-Ukrainian conflict have had an impact on the world financial market. The aim of the paper is to examine the impact of geopolitical risk on the capital markets of developed countries in the region of Asia and Oceania. The main research variables in the capital market are share trading and market capitalization. To measure the impact of geopolitical risk on capital market variables, in the period from 2005 to 2022, a panel regression analysis was applied. The observation period includes three major events that had a strong impact on the global capital markets, namely the global financial crisis, COVID-19, and the Russian-Ukrainian conflict. According to the findings, stock trading is negatively impacted, while market capitalization is positively impacted by geopolitical risk. Both influences are not significant. When making financial decisions, information about how the capital markets respond to geopolitical events can be helpful, especially for investors.

Keywords: Stock trading, Market capitalization, Country-specific geopolitical risk, Asia and Oceania, Panel regression

1. INTRODUCTION

Geopolitical Risk (GPR), which refers to events that could disrupt the regular course of relations between states, has drawn the attention of academic scholars and policymakers due to the sharp increase in the frequency of unfavorable geopolitical events. It is widely held that geopolitical risk (GPR), since it includes risks related to terrorist attacks, wars, and conflicts between nations, has a significant role in influencing financial and macroeconomic cycles. Geopolitical risk is frequently mentioned as a factor in investment decisions by business investors and central bankers (Caldara and Iacoviello, 2018). Significant fluctuations in the price of gold, crude oil, and stock markets have been caused by recent geopolitical tensions (Qian et al., 2022). Consequently, the main factor influencing the state of the global financial system is now geopolitical risk rather than economic risk (Shaik et al., 2023). Understanding geopolitical risk's economic impact is crucial because of its growing relevance, which is a result of both modern globalization and technological advancements, as well as the fact that it lacks an economic foundation and has a weak correlation with other sources of macroeconomic and financial instability (Fiorillo et al., 2024).

According to Bohl et al. (2017), geopolitical risks are trends in political and economic changes that have the potential to be harmful to human well-being. Authors further argue that these risks are caused by three interrelated risks: 1) political risks stemming from power struggles among geopolitical actors, which can take many forms but most intensely manifest as violent conflict; 2) economic risks resulting from regional or global financial and economic unrest; and 3) natural risks resulting from changes in the environment that are not caused by humans, such as droughts brought on by climate change. There's a way to do more focused quantitative research on how geopolitical risks affect financial

markets, thanks to the geopolitical risk index developed by Caldara and Iacoviello (2022). According to Caldara and Iacoviello (2018), economic agents including entrepreneurs, market participants, and central bank officials rely heavily on geopolitical risks when making judgments on investments and stock market movements. They discover that rising geopolitical risk causes movements in capital flows away from developing and toward developed nations, as well as a decline in actual economic activity and stock returns. Nonetheless, depending on certain volatility regimes, times, etc., some prior empirical research supports the positive or negative major benefits of the GPR index on stock market outcomes. Additionally, Bouras et al. (2019) confirm that neither the global nor the country-specific GPRs affect stock returns for emerging economies, and that the global GPR has a positive and statistically greater effect on stock market volatility than country-specific GPRs. Research by Rawat and Arif (2018) shows that compared to Indian and Chinese funds, Brazilian and Russian funds respond more quickly to geopolitical shocks peculiar to their respective nations. According to Hoque et al. (2019), there is no direct influence of geopolitical risk on the Malaysian stock market; nevertheless, there are notable indirect effects that are conveyed through the channels of oil shocks and uncertainty in global economic policy. Based on results of their study, Hoque and Zaidi (2020), with the exception of India, the impacts of both risk factors on stock market returns are asymmetric, and the country-specific GPR has a negative impact on stock market returns.

Previous research has demonstrated that risks, shocks, and geopolitical turbulence have an effect on financial markets and economic activity (De Wet, 2023; Lai et al., 2023). Long-term geopolitical tensions slow down economic activity and, depending on their severity, may cause individual economies and the global economy to contract, according to empirical findings from a number of studies (Bloom, 2009; Caldara & Iacoviello, 2022). The negative effects on investment, employment, and downside risks (Caldara & Iacoviello, 2022), equity returns and bond spreads (Rigobon & Sack, 2005), and stock market volatility (Choi, 2022) are evidence from studies that suggest GPR has significant impacts on corporations and financial markets. According to a recent study by Salisu et al. (2022), stock returns are more negatively impacted by geopolitical threats (such as military build-ups, acts of terrorism, and war threats) than by geopolitical acts (i.e., the actual occurrence of bad events). Russia-Ukraine war conflict, in 2022, is seen as a major increase in geopolitical dangers as part of a revived geopolitical battle among the world's big powers. Robin et al. (1996) investigate how political risk affects both developed and emerging economies. It was discovered that, in comparison to emerging markets with higher political risk, those with lesser political risk had average returns that were about 11% higher in a quarter. In contrast, for the developed markets, the differential is only 2.5% on a quarterly basis. Dimic et al. (2015) looked into the relationship between political risk factors and stock returns in frontier, emerging, and developed markets. All three stock market categories take composite political risk into account, although the impact of each component varies between markets. Balcilar et al. (2018) examined the effect of geopolitical risk on yield dynamics and volatility in the stock markets of BRICS countries. The effect of geopolitical risks is heterogeneous, which implies that news about geopolitical tensions does not affect yield dynamics in a uniform way. In addition, according to the findings of the study by the mentioned authors, geopolitical risk affects stock market volatility measures.

This article measures the effect of geopolitical risk on developed countries in Asia and Oceania, specifically Australia, China, Hong Kong, Japan, and North Korea, taking into account the topic's current relevance. The study aims to ascertain how geopolitical risk affects stock trading and market capitalization in these countries between 2005 and 2022. Three significant events that had a significant impact on the world's capital markets occurred during the observation period: the global financial crisis, COVID-19, and the Russian-Ukrainian conflict. The introduction appears in the opening section of the paper. The following is the design of the remaining portions of this paper: The research methodology is covered in the second part. The analysis's findings and a discussion of them are provided in the third part. Conclusions and implications are presented in the final part.

2. RESEARCH METHODOLOGY

Data covering the years 2005 to 2022 was used to assess the effect of country-specific geopolitical risk on market capitalization and stock trading in developed nations in Asia and Oceania. Official websites provided the data (Table 1). Annual data is available on market capitalization and stock trading. Since country-specific geopolitical risk data is updated on a monthly basis, average values were utilized in the subsequent research. There have been ninety observations in total.

Table 1: Variables and data sources

Varijabla	Description	Izvor
Stock trading	Market capitalization of listed domestic companies (% of GDP), Annual data	The World Bank https://www.belex.rs/trgovanje/kapitalizacija
Market capitalization	Stocks traded, total value (% of GDP), Annual data	The World Bank https://data.worldbank.org/indicator/CM.MKT.TRAD.GD.ZS
Geopolitical risk	Country-specific geopolitical risk index, Monthly data	https://www.matteoiacoviello.com/gpr_country_files/gprc_as.htm

Source: Authors

The variables analyzed in the research are classified as dependent variables, namely stock traded (ST) in the first analysis, market capitalization (MC) in the second analysis, and an independent variable, country-specific geopolitical risk (GPR). Table 2 shows the descriptive statistics of the sample. As per Jarque-Bera values, the data does not exhibit a normal distribution; therefore, logarithmic values (LST, LMC, and LGPR) were employed for further analysis.

Table 2: Descriptive statistics

	ST	MC	GPR
Mean	218.0833	293.4278	0.251713
Median	125.2000	95.05000	0.173750
Maximum	1102.700	1777.200	1.110000
Minimum	17.20000	17.60000	0.019167
Std. Dev.	228.8192	431.0377	0.230160
Skewness	1.959973	1.787001	1.588392
Kurtosis	6.175438	4.714245	5.373799
Jarque-Bera	95.43515	58.92046	58.97582
Probability	0.000000	0.000000	0.000000
Sum	19627.50	26408.50	22.65417
Sum Sq. Dev.	4659881	16535623	4.714660
Observations	90	90	9 0

Source: Authors

Panel data regression models (PDRM) serve as the basis for data analytics and research methodology. Econometric analysis begins with a review of several statistical model formulations, then moves on to a battery of tests to identify which model best fits the study data. The model's fundamental assumptions - specification model errors, multicollinearity, autocorrelation, and heteroscedasticity - are further tested using econometrics diagnostic tests. Strictly balanced datasets, or "full" time series, are used in the analysis. The least-squares model (POLS), fixed-effect model (FE), and random-effect model (RE) were used for testing.

3. EMPIRICAL RESULTS AND DISCUSSION

For the unit root problem in this work, Im et al. (2003), Levin et al. (2002), and the ADF and PP Fisher chi-square tests recommended by Maddala and Wu (1999) were used. The null hypothesis, according to the results of the four stationarity tests shown in Table 3, is refuted by the data. As a result, it can be concluded that variables in the study (LST and LMC), including the first differential of the variable LGPR, are stationary at level. Table 3 also includes the results of the variance inflation factor (VIF) test. Belsley et al. (1980) state that a VIF of less than 10 indicates that there is no multicollinearity problem. Based on the VIF results, it can be concluded that there is no multicollinearity issue with the data.

Table 3: VIF and panel unit root tests

Variable	VIF	Panel unit root tests			
		Levin, Lin, and Chu	Im, Pesaran, and Shin	PP - Fisher chi-square	ADF - Fisher chi-square
LST	-	-2.06***	-2.19***	24.79***	20.629***
LMC	-	-2.58 ***	-2.89***	40.123***	28.085***
LGPR_D	1.08	-5.16***	-3.98***	44.789***	33.941***

Note: *** - significance at 1%.

Source: Authors

The results of the analysis indicate that the POLS and RE model are not at a statistically significant level (Prob(F-statistic) > 0.05), while the FE model is statistically significant (Prob(F-statistic) < 0.05) (Table 4). The coefficient of determination (R square) is, in the model with fixed effects, about 81% of the variation of the dependent variable (stock trading) is explained on the basis of the independent variable (country-specific geopolitical risk). To determine if the model is well-specified, the Ramsey RESET test was employed. The improved results ($F(1, 86) = 0.018$; Prob > F = 0.8936) show that there were no important factors omitted from the model. The next phase involved searching the model for serial correlation issues using the Pasaran CD test. The absence of serial correlation is the null hypothesis. Given that the test's statistical significance is greater than 0.05 ($p = 0.4306$), the null hypothesis—which holds that there is no serial correlation—can be accepted. Model's heteroscedasticity was tested using White's test. The null hypothesis cannot be rejected if the $\chi 2$ statistic probability generated by this test is greater than the error risk α ($\alpha = 5\%$). The

homoscedasticity errors in the model are confirmed by the probability value of chi statistics in this test, which is 0.5218. With an error risk of 5%, we are unable to reject the null hypothesis.
The results of the FE model show that stock trading is negatively but not significantly related to country specific geopolitical risk. Similarly, Boungou & Yatié (2022) found a negative link between the war in Ukraine and returns on global stock markets based on data on daily stock market returns on a sample of 94 countries for the period from 01/22/2022. – 03/24/2022. The study's findings, according to the cited authors, point to a higher impact early in the war, particularly in the first two weeks following 02/24/2022, or when the combat officially began. The subsequent weeks saw a lessening of the response from the world's stock markets. Furthermore, the results of the previously mentioned study suggest that these effects were particularly noticeable for nations that bordered Russia and Ukraine as well as for UN members that called for a halt to the war conflict. The influence of the Russian-Ukrainian military conflict on the G7 stock markets was studied by Abbassi et al. (2023), and their findings show that the conflict had varied effects on different markets. Over the course of the study period, companies in Germany, Italy, and the UK saw negative cumulative returns, while those in Canada and Italy demonstrated positive cumulative impacts. Conversely, the battle had negligible impact on American and French businesses.

Table 4: FE model results

LST	Coef.	Srd. Err.	t	p
LGPR_D	-0.127620	0.112454	-1.134866	0.2599
Cons.	5.038122	0.040171	125.4167	0.0000
Diagnostic tests				
Ramsey RESET test	t (86) = 0.134, p = 0.8936; F (1,86) = 0.018, p = 0.8936; Likelihood ratio (1) = 0.0186, p = 0.8915			
Pesaran CD	Statistic = 0.788191, p = 0.4306			
White test	Obs*R-squared = 1.300776; Prob. Chi-Square(2) = 0.5218			

Source: Authors

Based on the Jarque-Bera test result of 1.74 with p = 0.42, the results of testing for residual normality (Figure 1) indicate that the residuals have a normal distribution.

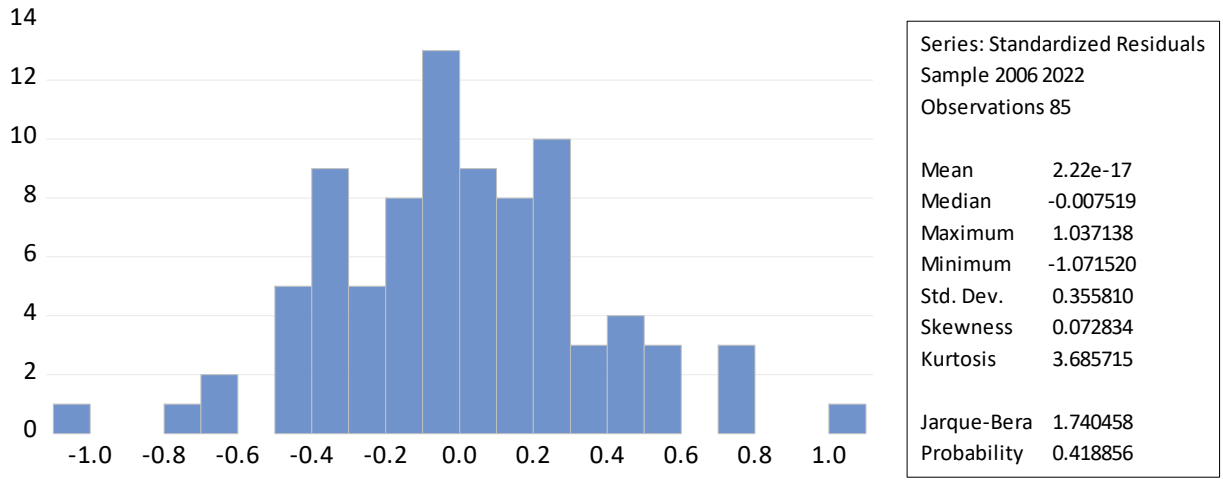

Figure 1: Test for residual normality
Source: Authors

The results of the analysis indicate that the POLS and RE models are not at a statistically significant level (Prob(F-statistic) > 0.05), while the FE model is statistically significant (Prob(F-statistic) < 0.05) (Table 5). The coefficient of determination (R square) is that in a model with fixed effects, about 94% of the variation of the dependent variable (market capitalization) is explained on the basis of the independent variable (country-specific geopolitical risk). To determine if the model is well-specified, the Ramsey RESET test was employed. The improved results (F(1, 86) = 1.221; Prob > F = 0.2723) show that there were no important factors omitted from the model. The next phase involved searching the model for serial correlation issues using the Pasaran CD test. Given that the test's statistical significance is greater than 0.05 (p = 0.6801), there is no serial correlation. Model's heteroscedasticity was tested using White's test. The homoscedasticity errors in the model are confirmed by the probability value of chi statistics in this test, which is 0.7460.
The results of the FE model show that market capitalization is positively, but not significantly, related to country-specific geopolitical risk. Similarly, Hassan et al. (2022) used a sample of six events resulting from Indian border disputes in 2020 to demonstrate the varied impacts of two categories of events. The findings demonstrated that the sector indexes responded to both events in a varied manner. Certain industries had both positive and negative atypical returns, while others were untouched by the circumstances. Sidhu & Suri (2022) assessed how the war between Russia and Ukraine affected the performance of the 20 biggest Indian firms that were listed on the domestic stock market. The

findings showed that following the performance drop, there was a trend of improvement in the first two weeks following the start of the war conflict. The effect of exchange rate fluctuations, economic policy uncertainty, and geopolitical risk on the South Korean stock market was measured by Adebayo et al. (2022) during the years 1997–2021. The study's findings demonstrated the uneven and erratic impact of macroeconomic shocks on the South Korean stock market. The findings demonstrated that while the exchange rate has a causal impact on the stock market that is only evident in the mean value and does not show any evidence of causality in the variance, geopolitical risk and economic policy uncertainty have a causal influence on the stock market that is visible in both the mean value and the variance.

Table 5: FE model results

LMC	Coef.	Srd. Err.	t	p
LGPR_D	0.093181	0.081888	1.137913	0.2586
Cons.	4.949389	0.029252	169.1971	0.0000
Diagnostic tests				
Ramsey RESET test	t (86) = 1.1048, p = 0.2723; F (1,86) = 1.221, p = 0.2723; Likelihood ratio (1) = 1.2542, p = 0.2627			
Pesaran CD	Statistic = -0.412365, p = 0.6801			
White test	Obs*R-squared = 0.586134; Prob. Chi-Square(2) = 0.7460			

Source: Authors

Based on the Jarque-Bera test result of 0.64 with p = 0.73, the results of testing for residual normality (Figure 2) indicate that the residuals have a normal distribution.

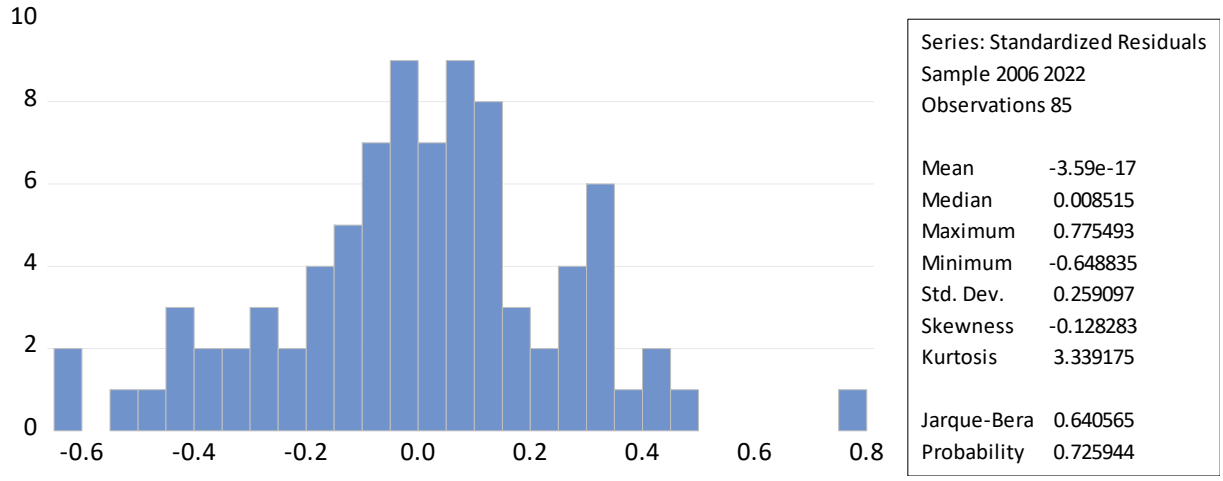

Figure 2: Test for residual normality
Source: Authors

4. CONCLUSION

The aim of the research, within this paper, was to determine the impact of geopolitical risk on stock trading and market capitalization in developed countries of the Asia and Oceania region (Australia, China, Hong Kong, Japan and South Korea). The obtained results indicated a negative impact of geopolitical risk on stock trading, while the impact on market capitalization was positive. However, both effects are insignificant.

In general, the effects of geopolitical risk on financial volatility have not yet been sufficiently explored. Increasing research on this topic is, therefore, one of the key implications of this work. Consequently, by analyzing the responses of Asian and Oceanian stock markets to the global financial crisis, Covid-19 pandemic, and the Russia-Ukraine crisis, this study adds to the body of literature. On the other hand, as a supplement to existing knowledge, investors in particular can benefit from knowing how the capital markets react to geopolitical events when making financial decisions. This helps to boost the efficacy of hedging techniques in addition to portfolio diversification.

Following the paper, some restrictions are placed on the task; these restrictions might also serve as suggestions for additional research on the subject. Specifically, country-specific risk, market capitalization, and stock trading were the three indicators used in this research. In light of this, additional indicators from both developed and developing countries, such as stock market returns or global geopolitical risk, may be incorporated into future studies. Furthermore, examining the impact of geopolitical risk alone on developed country capital markets could mislead researchers into believing that these markets respond poorly to geopolitical developments. For this reason, volatility may be incorporated into a variety of econometric models in future studies. Furthermore, there are always additional variables, such as concurrent political developments, that were not covered in this research. Specifically, the patterns of share prices and stock market indices are the result of all concurrent events, and these elements may be considered in

subsequent research. In addition, future studies might look at which developed-country markets are the primary risk transmitters and how geopolitical risk contributes to the process of bringing instability to those markets.
Geopolitical shocks, especially terrorist incidents, are usually unpredictable. However, an open economy, which allows local investors to diversify their country-specific risks in their portfolios, as well as a strong financial sector, can help restore financial market stability.

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