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HOW SAFE ARE WE? SHAPING EUROPEAN ECONOMY BY GEOPOLITICAL SHOCKS

Could we measure the impact of geopolitical shocks, such as the Russian invasion of Ukraine and COVID19, on shaping economic diplomacy and investor decisions? This is the question that runs through this study. We are attempting to highlight and identify the vital interconnections between the economy as reflected in the functioning of a state's stock market and the geopolitical risks it faces, attempting to draw useful conclusions for economic diplomacy.

The economic analysis of geopolitical risks and its integration into the economic policy framework is a major concern of the current scientific research and therein lies the value of the present study. By statistically exploiting data from 2000 for the countries facing strong geopolitical risks: the BRICS (Brazil, Russia, India, China & South Africa), MENA (Middle East & North Africa countries: Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestinian Authority, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates & Yemen) and SAHEL (four countries bordering Lake Chad - Cameroon, Chad, Niger, Nigeria – as well as Burkina Faso, The Gambia, Guinea, Mali, Mauritania, and Senegal), but also for the G7 countries (Canada, France, Germany, Italy, Japan, the United Kingdom, & the US, as well as the European Union) due to their involvement in geopolitical crises (either through peacekeeping missions and development aid or by sending military equipment), it is possible to analyse the effects of geopolitical risks on the functioning of their economies, as reflected in stock market fluctuations.

The conclusions are twofold: they feed the information "arsenal" for shaping economic diplomacy, and at the same time help investors to protect themselves from geopolitical risks by diversifying their investment portfolio.

Keywords: Geopolitical Risk, economic diplomacy, emerging markets, portfolio diversification & hedging

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НАСКІЛЬКИ МИ БЕЗПЕЧНІ? ФОРМУВАННЯ ЄВРОПЕЙСЬКОЇ ЕКОНОМІКИ ГЕОПОЛІТИЧНИМИ ШОКАМИ

Чи можемо ми виміряти вплив геополітичних потрясінь, таких як російське вторгнення в Україну та COVID-19 щодо формування економічної дипломатії та рішень інвесторів? Це питання, яке проходить через це дослідження. Ми намагаємося висвітлити та визначити життєвоважливі взаємозв'язки між економікою, що відображається у функціонуванні фондового ринку держави, та геополітичними ризиками, з якими він стикається, намагаючись зробити корисні висновки для економічної дипломатії.

Економічний аналіз геополітичних ризиків та його інтеграція в рамки економічної політики є основною проблемою сучасних наукових досліджень, і в цьому полягає цінність цього дослідження. Використовуючи статистичні дані за 2000 рік для країн, які стикаються з сильними геополітичними ризиками: БРІКС (Бразилія, Росія, Індія, Китай і Південна Африка), MENA (країни Близького Сходу і Північної Африки: Алжир, Бахрейн, Джибуті, Єгипет, Ірак, Йорданія, Кувейт, Ліван, Лівія, Мавританія, Марокко, Оман,

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Палестинська Автономія, Катар, Саудівська Аравія, Сирія, Туніс, Об'єднані Арабські Емірати та Ємен) і SAHEL (чотири країни, що межують з озером Чад – Камерун, Чад, Нігер, Нігерія – а також Буркіна-Фасо, Гамбія, Гвінея, Малі, Мавританія та Сенегал), а також для країн G7 (Канада, Франція, Німеччина, Італія, Японія, Сполучене Королівство та США, а також Європейський Союз) через їх участі в геополітичних кризах (через миротворчі місії та допомогу в розвитку, або шляхом надсилання військового обладнання), можна проаналізувати вплив геополітичних ризиків на функціонування їхніх економік, що відображено в коливаннях фондового ринку.

Висновки двоякі: вони підживлюють інформаційний «арсенал» для формування економічної дипломатії та водночас допомагають інвесторам захиститися від геополітичних ризиків, диверсифікуючи свій інвестиційний портфель.

Ключові слова: геополітичний ризик, економічна дипломатія, ринки, що розвиваються, диверсифікація портфеля та хеджування

Introduction. The conduct of economic policy is based on a wealth of information available to a state's foreign ministry, most of which comes from the economic and trade counsellors' offices of embassies abroad: economic reports, information from participation in trade fairs, and information from contacts with foreign officials. On the other hand, geopolitical risks, increasingly frequent nowadays, either in the form of intense diplomatic negotiations or as a result of military conflicts and terrorist acts, affect the economies of the states involved and therefore shape foreign policy. In recent years, the impact of geopolitical risks on the functioning of financial markets has been the focus of modern academic research: geopolitical shocks are reflected in sharp price fluctuations in stock markets. Typical is the recent study by Iwanicz-Drozdowska et al. (2021), which concludes that geopolitical risk is a factor in shaping investment portfolios. Also, a recent development is the more than 2% decline in stock prices following the Russian invasion of Ukraine in February 2022. The key to this analysis lies in one word: uncertainty and its reflection in the financial market, as also shown by recent studies (Bloom, 2009 & Zaremba et al., 2022, Agoraki et al., 2022 & Salisu et al., 2022b). Similar recent studies have highlighted the relationship between geopolitical risks and stock market volatility: it is definitely negative (Caldara & Iacoviello, 2022; Das & Kannadhasan, 2019), with statistical confirmation clearly in the suffering regions: the Middle East & North Africa (MENA) countries (Zeremba et al, 2022; Elsayed & Helmi, 2021; Das & Kannadhasan, 2019) and BRICS emerging markets (Balcilar et al., 2019), but also for developed economies (Salisu et al., 2022). Geopolitical risks cause cross-market spillover dynamics, and this is reflected in foreign policy formulation as well as in investors' portfolio management (Smales, 2021; Elsayed & Helmi, 2021; Iwanicz-Drozdowska et al., 2021) without clear evidence useful for reshaping both policy and investment decisions (Hedström et al., 2020). How do geopolitical risks impact? This question continues to occupy scientific research. It is also known that, in 2022, Dario Caldara and Matteo Iacoviello constructed a measure of adverse geopolitical events and associated risks based on counting newspaper articles covering geopolitical tensions, and examining its evolution and economic impact since 1900 (Caldara & Iacoviello, 2022), the Geopolitical Risk Index (GPR): The use of statistical data from 2000 until today (2023) can help to integrate the Index into the "arsenal" of economic policy, but also into investors' decisions, leading them to choose stock market investments that

are either unaffected by geopolitical risks or compensate for their impact. We can study the effects of geopolitical risks at two levels:

a. in stock markets, through the assessment of volatility spillover dynamics, using the GARCH statistical modeling technique, a useful method to assess risk and expected returns for assets that exhibit clustered periods of volatility in returns. Particular attention should be paid to the study of the different degree of market reaction (both temporal and geographical) and its relationship with market efficiency and the incurring overreactions in the stock markets,

b. to investors, by calculating the potential losses to investors from the impact of geopolitical risks on stock markets, using Var (Value at risk) (a method widely used by investment banks), using three methods: the historical, variance-covariance, and Monte Carlo methods.

With this in mind, we propose, given the negative impact of geopolitical risks on financial markets, strategies to hedge geopolitical risk: a useful "tool" both for foreign policy formulation and for investors' portfolios. In other words, are there financial assets whose inclusion in investors' portfolios can offset the negative impact of geopolitical risks? (B dowska-Syja, B. et al, 2022).

The conclusions of our study confirm the existence of significant spillover effects in international stock markets driven by geopolitical risk shocks, and the negative impact of geopolitical shocks on stock markets and the financial market, with typical examples being the Russian invasion of Ukraine and COVID19. As it turns out, it is possible to offset the impact of geopolitical shocks on the economy by using safer assets, such as bonds, gold, and artwork.

2. Literature Review. Unsurprisingly, early work on the role of geopolitical risk in financial markets focused on specific events: terrorist attacks and military mobilizations (Graham & Ramiah, 2012; Chesney et al., 2011; Nikkinen et al., 2000). It took about ten years until (Salisu et al., 2022a) created a predictive model, using of course the GPR Index proposed by Caldara & Iacoviello (2022). The findings of the studies confirmed the effects of geopolitical shocks on stock markets, not only in crisis regions (which is quite natural, as Elsayed & Helmi (2021) demonstrated for MENA countries) but also in developed economies, and with an important finding: not only was the effect of actual geopolitical shocks significant, but also of potential threats, thus demonstrating the sensitivity of the financial market to anything that deviates from normality:

- geopolitical risks increase economic policy uncertainty, as Agoraki et al. (2022) showed in their study of 22 countries,
- the study by Bouras et al. (2019) on 18 emerging countries showed that geopolitical risks increase stock volatility,
- the recent study by Smales (2021) showed that geopolitical shocks have a negative effect on equities, but a positive effect on the oil market!
- in the same spirit as Smales' study, the study by Abdel-Latif & El-Gamal (2020) had earlier also moved in the same direction but highlighting the domino effect of oil price volatility: low oil prices fuel geopolitical shocks and these in turn boost the oil price. The lack of liquidity in the financial market also plays an important role, making it difficult to adjust quickly,
- and the study by Zaremba et al. (2022) also came to an unexpected finding: geopolitical risks have a positive effect on future stock returns! Where does this come

from? Probably an overreaction of investors to exogenous events, a reaction that is reversed in the next normalization period.

What is the transmission mechanism of crises? What is it that turns geopolitical shocks into stock market fluctuations?

- the study by Wang et al. (2022) focuses on the recent War in Ukraine and concludes that commodities and precious metals "transmit" geopolitical shocks to the financial market!

What could be the appropriate policy to compensate for these negative impacts?

- the results of the Baur & Smales (2020) study can be exploited by economic diplomats and, of course, by investors: precious metals can be used as a hedge against geopolitical risk,

- and the study by Li et al. (2022) focusing on the relationship between geopolitical risks and oil prices and the stock market in China, concludes that gold and silver can be used as a hedge against geopolitical risks.

3. Methodology

3.1. Hypothesis development. What is the impact of geopolitical risk on the stock market? How is it possible to mitigate the risk of mitigating investment activities? The following research hypotheses are formulating:

Hypothesis-1: Geopolitical shocks negatively affect stock markets, as investors, in an effort to protect themselves from exogenous shocks, seek more stable stocks, causing stock prices to fall (Ang & Chen, 2002; Black, 1976).

Hypothesis-2: The above hypothesis translates into a diffusion of effects at the international level, due to the increased degree of globalization of markets. This means that, regardless of the geographical proximity to the geopolitical shock area, clearly stock markets in developed countries will be affected. Uncertainty exacerbates stock market linkages, i.e., in a state of uncertainty, bad news is more easily transmitted (Forbes & Rigobon, 2002; Iwanicz-Drozdowska et al., 2021).

Hypothesis 3: Investors, thinking rationally, try to mitigate the impact of geopolitical risks by selling "risky" securities to buy safer ones: precious metals, bonds and works of art.

3.2. Econometric methodology

a. The starting point of our methodology is the estimation of unexpected changes - which cannot be explained by economic activity. GPRSHOCK1 explains shocks in the GPR index. To assess geopolitical risk in the stock market, we estimate VAR specification for each country to identify the unanticipated and exogenous changes in the stock market returns. An alternative estimation of the above could be based on the GIR-GARCH model proposed by Glosten et al. (1993), due, among other things, to the advantage that this model considers the leverage effect of the shocks: which shock enhances volatility more? The negative or the positive shocks? The answer can contribute substantially to the formulation of economic diplomacy, and also to investors' portfolio management decisions.

¹ GPRSHOCKt is the residual of the first-order autoregressive process $GPR_STD_t = GPR_STD_{t-1} + v_t$ where GPR_STD_t is the standardized GPR index.

b. We then focus on the assessment of possible spillover effects within the groups of countries: VAR specification with N=35 number of countries pooled into specific groups such as Developed, Emerging, MENA and SAHEL. GPRSHOCK is inserted as an exogenous variable, while MSCI index, VIX, Economic Uncertainty Index are considered endogenous variables.

c. And finally, we experiment with alternative investment opportunities based on their possible procyclicality and countercyclicality to geopolitical risk events:

- Sovereign Bonds, since they have a reputation as safe havens during financial and economic crises,
- Gold, like Sovereign Bonds, are a haven for investors in difficult times,
- Copper, and related commodities reflect the expected level of production and the increasing demand for products.
- and Artwork (Modern Art, Paintings, Old Masters and Post War art crafts, because we have statistical data, whereas, unfortunately, for other categories, we do not have sufficient statistical information): the average price of artwork is expected to rise following a negative shock in the stock market.

4. Data & sample selection

The selection of countries was based on their relevance to geopolitical risks:

- G7: arguably the most important group of countries, in terms of political & economic power, with little likelihood of direct geopolitical risks, but with a strong diffusion of exogenous risks through their stock markets, whose operation incorporates highly sensitive information through the price mechanism,
- BRICS: the second category of countries with considerable economic and political power, but with a higher probability of geopolitical risks compared to the G7 group. As the functioning of their financial markets improves, so does the diffusion of exogenous geopolitical risks, as in the G7 group,
- MENA group of countries: increased likelihood of geopolitical risks. However, to simplify our analysis, we select the following countries: Israel, Saudi Arabia, Egypt, UAE, Jordan, Bahrain, Kuwait, Lebanon, IRAQ, Morocco, Oman, Qatar, and Tunisia, out of the 21 countries belonging to the MENA category, based on the World Bank's ranking,
- SAHEL: group of countries with high political and economic uncertainty, especially after the Arab Spring and the increase in terrorist attacks in the region, this category is also of particular importance for our analysis, but with statistical shortcomings,
- finally, Australia, Turkey, and South Korea are also included in our analysis.

We also calculated nine (9) economic indicators, based on data on a monthly frequency, for 32 years (January 1990-June 2022): Global Industrial Production (OECD IP)²:

1. Industrial Production Index³,

² Industrial production refers to the output of industrial establishments and covers sectors such as mining, manufacturing, electricity, gas and steam and air-conditioning. This indicator is measured in an index based on a reference period that expresses change in the volume of production output.

³ The industrial production index (IPI) is a monthly economic indicator measuring real output in the manufacturing, mining, electric, and gas industries, relative to a base year. In the US, it is published in the middle of every month by the Federal Reserve Board (FRB) and reported on by the Conference Board, a member-driven economic think tank. The FRB also releases revisions to previous estimates at the end of every March

2. Consumer Price Index,
3. central bank interest rates,
4. 10-year sovereign bond yields,
5. Morgan Stanley Capital International indices for global stocks and emerging markets stocks,
6. Brent oil price ⁴
7. Economic Uncertainty Indicator,
8. and Cboe Global Markets VIC index⁵

5. Conclusions

Our results confirm the relationship between geopolitical risk and stock market returns: a 1% increase in geopolitical risk negatively affects stock market returns by 0.5-0.7%, given the asymmetric volatility that characterizes stock market fluctuations. In order to hedge geopolitical risk, experience confirms that investors resort to alternative, even illiquid assets such as commodities, government bonds, gold, copper and artworks.

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⁴ MSCI is perhaps best known for its benchmark indexes—including the MSCI Emerging Market Index and MSCI Frontier Markets Index—which are managed by MSCI Barra. The company continues to launch new indexes each year. The VIX Index is a calculation designed to produce a measure of constant, 30-day expected volatility of the

⁵ U.S. stock market, derived from real-time, mid-quote prices of S&P 500® Index (SPXSM) call and put options. On a global basis, it is one of the most recognized measures of volatility -- widely reported by financial media and closely followed by a variety of market participants as a daily market indicator.

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