



Geopolitical Risk as an Investment Signal: A Dynamic Portfolio Switching Strategy between Equities and Gold

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Abstract: This study evaluates a geopolitical risk-guided portfolio switching strategy between gold and equity markets. The results show that portfolios adjusted according to the GPR index outperform conventional buy-and-hold strategies during high-risk periods, particularly in the U.S. market. The findings indicate that lagged geopolitical risk can serve as an effective signal for portfolio allocation by capturing shifts in risk regimes and cross-asset dependence, thereby reinforcing the role of gold as a conditional safe-haven asset. Given these findings, the study offers important policy insights for governments, financial institutions, investors, and other stakeholders. For rapidly developing economies like China, effective crisis response is critical. The results can inform macroeconomic policy adjustments, guide financial institutions in strategic planning, and help investors construct robust portfolios allocation under uncertainty. From a comparative perspective, the experience of developed markets, particularly in relation to gold's safe-haven role, provides useful lessons for China's still-developing financial market infrastructure, especially in improving liquidity, price discovery, and market resilience under geopolitical uncertainty.

Keywords: Geopolitical Risk; Dynamic Portfolio Allocation; Portfolio Switching Strategy; Gold–Equity Allocation; Safe-Haven Asset; Investment Signal

1. Introduction

Since the beginning of the 21st century, the world has witnessed a series of crisis events, ranging from the 2008 subprime mortgage crisis, the 2011 Eurozone crisis, and the 2015 Chinese stock market crash to major unforeseen public incidents such as the onset of COVID-19 in early 2020, the 2022 Russia-Ukraine war, and the 2024 Iran–United States tensions. These events, marked by their urgency and unpredictability, pose significant challenges to the economic development of nations globally. The frequent occurrence of these geopolitical crises poses a severe threat to social stability in countries around the world. These events are currently impacting global peace and development.

Surveying the tumultuous international geopolitical environment in recent years, various investment assets such as stocks and gold have been significantly affected. In 1979, the Soviet Union invaded Afghanistan, and following the war, gold prices continued to rise at a rate of \$30 to \$50 per day, reaching an all-time high by 1991. Meanwhile, it was not until the Gulf War period (1990 – 1991), when the UN Security Council passed Resolution 678 mandating Iraq's withdrawal from Kuwait, that the surge in gold prices was under controlled, but with the United States sending in troops, the market's anticipatory fears of war intensified once again, and the price of gold once again rose sharply. Not only that, on September 11, 2001, but the terrorist attacks on that day also shocked the world, causing the S&P index to plummet 5.2%, and gold rose 6.2% in response. On April 7, 2017, the United States dropped 59 missiles on Syria, and as a result of this event, the gold price rose nearly 2% at one point, but, of course,

In the time since then, the market sentiment happened to fall back quickly, and on that day, the gold price opened at 1,252 USD/oz, rose as high as USD 1,270/oz and finally closed at USD 1,254/oz.

Not only that, the trade war between the United States and China in 2018, as well as the COVID-19 that ravaged the world, constantly impacted the international financial markets, the U.S. government's



signing of tariffs on Chinese products is to make the three major U.S. stock indexes closed down more than 2.4 per cent in a single day. But the price of gold is in the storm all the way up, the price of gold almost reached the highest level in history. All these facts show that geopolitical risk plays a role in financial markets that cannot be ignored.

In April 2017, the Economic Bulletin published by the European Central Bank, along with the World Economic Outlook report released by the International Monetary Fund (IMF), identified geopolitical uncertainty as a significant risk affecting economic prospects. Geopolitics, fundamentally, can be understood as "political interactions among nations arising from geographical conditions or factors and the resulting political relationships" [1]. Geopolitical risks have a certain impact on economic activities, and events driven by geopolitical factors often lead to heightened Global Political Risk (*GPR*), causing panic among the public. These events can result in a more pessimistic outlook for the future among the general population. Therefore, during times of elevated *GPR*, investor sentiment tends to decrease, and there is an increased demand for hedging assets with a hedge capability. According to market equilibrium theory, the rising demand for hedging assets leads to an increase in prices. Investors, seeking successful and effective investments, tend to experience a decline in sentiment when *GPR* is high. This heightened demand for hedging assets serves as a hedge against potential risks.

In recent years, the Geopolitical Risk Index (*GPR*) has been widely employed to capture macroeconomic uncertainty shocks arising from events such as wars, terrorism, and international conflicts [2]. Existing studies generally find that increases in geopolitical risk influence equity and gold markets in opposite directions by intensifying investors' risk aversion. Specifically, *GPR* shocks tend to depress stock market returns or increase volatility, while the gold market may benefit from heightened safe-haven demand [3-5].

However, the responses of equity and gold markets to *GPR* shocks are neither linear nor time-invariant. On the one hand, the extent to which gold serves as a safe-haven or hedging asset varies markedly across different market conditions. On the other hand, the impact of geopolitical risk on both equities and gold is typically more pronounced during market downturns or periods of elevated uncertainty [6]. These observations suggest that geopolitical risk influences investors' dynamic allocation decisions between equities and gold by altering market risk states and cross-asset dependence structures, thereby generating complex and state-dependent intermarket linkages.

Previous studies have extensively examined the relationship between geopolitical risk and financial assets, showing that elevated geopolitical uncertainty is generally associated with increased market volatility, declining equity performance, and rising demand for defensive assets. Among various asset classes, gold has traditionally been regarded as a safe-haven asset due to its ability to preserve value during periods of financial stress and geopolitical uncertainty. However, most existing studies focus on identifying whether gold provides hedging or safe-haven benefits, while relatively less attention has been given to the practical investment question of how investors can use geopolitical risk information to make dynamic asset allocation decisions.

From an investment perspective, the existence of gold's safe-haven property alone does not directly provide a portfolio management strategy. Investors face a more practical decision: when should they reduce equity exposure and increase gold holdings? A static allocation strategy may fail to capture the time-varying nature of geopolitical risk because the relationship between stocks and gold changes across different market conditions. Therefore, identifying a reliable signal that can guide portfolio switching decisions is essential for improving risk-adjusted investment performance.

The geopolitical risk index developed by Caldara and Iacoviello (2022) provides a potential forward-looking indicator for such investment decisions [2]. Since *GPR* measures the intensity of geopolitical uncertainty based on news-based information, it may contain valuable information about future market stress and investor demand for defensive assets. A higher *GPR* level may indicate increasing uncertainty and a greater probability that investors shift away from risky assets toward safe-haven assets such as gold. Therefore, incorporating *GPR* into portfolio allocation frameworks may allow investors to adjust asset exposure dynamically according to changing geopolitical conditions.

However, the effectiveness of *GPR* as an investment signal remains an empirical question. A high geopolitical risk level does not necessarily imply that gold will always outperform equities, as the response of financial markets may differ across countries due to differences in market structure, investor behaviour, financial development, and the degree of global integration. In particular, emerging markets such as China may respond differently from developed markets such as the United States. Therefore, examining whether *GPR*-guided portfolio switching improves investment performance across different markets provides important implications for both investors and policymakers.

Motivated by this research gap, this study develops a geopolitical risk-guided dynamic portfolio switching strategy between equities and gold. Rather than simply examining gold's safe-haven characteristics, this study investigates whether geopolitical risk information can be transformed into an

actionable investment signal. By comparing *GPR*-based switching strategies with conventional buy-and-hold strategies, the analysis evaluates whether incorporating geopolitical risk information can improve portfolio returns, reduce downside risk, and enhance risk-adjusted performance.

2. Literature review

2.1. Introduction to Geopolitical Risk

The term ‘geo’ can be understood in its plainest sense as ‘of the land’ or ‘of the earth’. Academic definitions of the concept of geopolitics mainly include geographic location relationships in real-world contexts, marginal effect relationships on international locations, and interactive interaction relationships based on human social contexts [7]. The famous Swedish political geographer Rudolf Kjellén proposed the concept of ‘geopolitics’ in his *Politische Geographie* published in 1899 and analysed the political and economic relations between countries through geographical factors, and the discipline of geopolitics slowly emerged after Rudolf Kjellén's proposal of ‘geopolitics’. After Rudolf Kjellén's introduction of geopolitics, the discipline of geopolitics slowly emerged, which has since developed globally and has become a key tool for understanding international relations and national strategies.

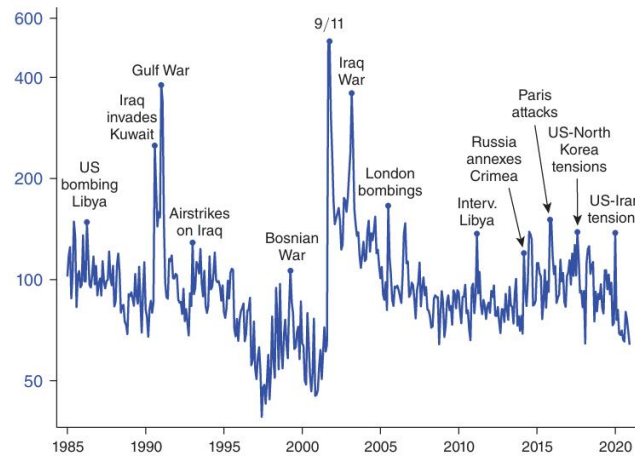
In general, geopolitical risk (*GPR*) refers to risks arising from friction and tension between countries, threats of war, military-related conflicts and terrorist acts [8].

Caldara and Iacoviello construct newspaper-based indices of geopolitical risk (*GPR*), daily and monthly, global and country-specific, and examine their evolution since 1900. The construction of geopolitical risk index consists of definition, measurement, and validation [2].

Caldara and Iacoviello (2022) define geopolitical risk as the threat, realization, and escalation of adverse events associated with wars, terrorism, and any tensions among states and political actors that affect the peaceful course of international relations [2]. In the measurement step, draw on Saiz and Simonsohn (2013) and Baker, Bloom, and Davis (2016), and construct the *GPR* index with an algorithm that computes the share of articles mentioning adverse geopolitical events in leading newspapers published in the United States, the United Kingdom, and Canada [9-10]. These newspapers cover geopolitical events of global interest, often implying an involvement of the United States. That said, while the *GPR* index can be viewed either as a measure that is relevant for major companies, investors, and policymakers, or as a measure that is mostly relevant from a North American and British perspective, our validation analysis shows that our index can be further sliced into separate country-specific components, likely reflecting the different geographic imprint of major geopolitical events [2]. In using the index, I focus on the relatively narrow characteristics of geopolitical risk, i.e., risks associated with wars, acts of terrorism, and tensions between countries that affect the normal and peaceful course of international relations. As one of the shocks of extreme uncertainty affecting financial markets, geopolitical risk is viewed by corporate entrepreneurs, bank managers, and policymakers as one of the most important factors that cause sharp swings in stock markets and affect their investment decisions.

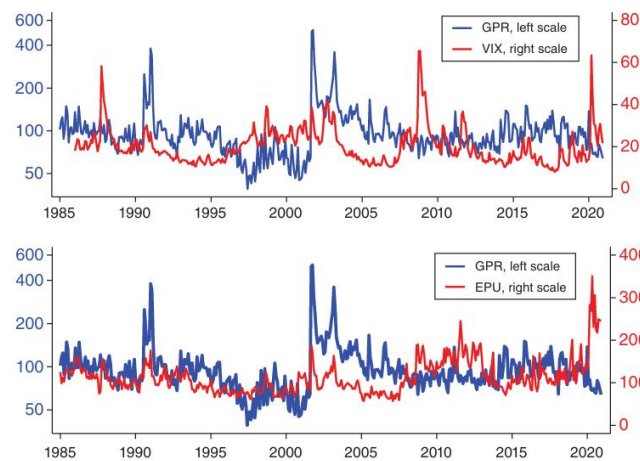
Caldara and Iacoviello (2022) developed the Geopolitical Risk (*GPR*) Index, defining geopolitical risk as the threat posed by wars, terrorism, and interstate tensions that disrupt the peaceful conduct of international relations [2]. The index reflects both risks materialized through geopolitical events and new risks emerging from their subsequent developments.

Looking at the *GPR* benchmark chart, it is clear that the *GPR* index is time-varying and its magnitude is related to the course of geopolitical events occurring at the time. When the *GPR* index increases, it means that local geopolitical conflicts (e.g. terrorist acts, international tensions, wars) break out on the international scene, increasing market uncertainty and affecting investor sentiment and future investment expectations.



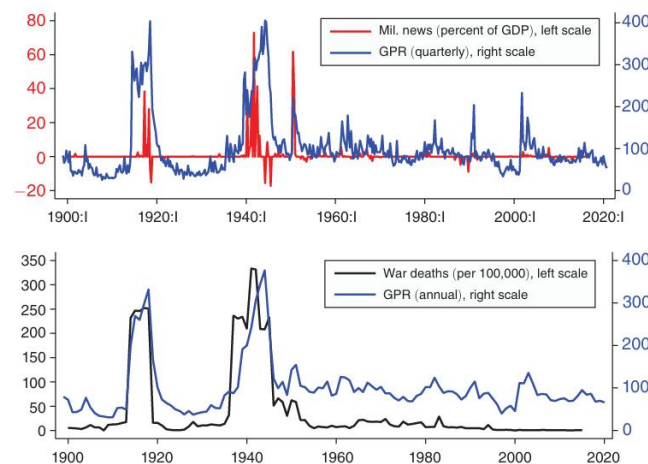
Source: Geopolitical Risk (GPR) Index (matteoiacoviello.com)

Figure 1. GPR index benchmark chart



Source: Geopolitical Risk (GPR) Index (matteoiacoviello.com)

Figure 2. Comparison with Financial and Economic Uncertainty Measures



Source: Geopolitical Risk (GPR) Index (matteoiacoviello.com)

Figure 3. Comparisons with Military Spending News and War Death

Figure 1 presents the benchmark *GPR* index, illustrating the evolution of global geopolitical risk over time and highlighting major geopolitical events associated with sharp increases in uncertainty. Figure 2 compares the *GPR* index with other financial and economic uncertainty measures, demonstrating its relationship with broader uncertainty conditions in financial markets. Figure 3 further compares the *GPR* index with military spending news and war-related fatalities, providing additional evidence of its ability to capture geopolitical tensions and conflict intensity.

The review phase of the *GPR* Index then focuses on the accuracy of the *GPR* Index in quantifying geopolitical risk by comparing the *GPR* Index to other uncertainty indices.

Caldara and Iacoviello (2022) adopted a set of formal review procedures, that is, they manually read more than 16,000 newspapers and constructed an artificially generated *GPR* index [2]. After comparing it with the *GPR* index obtained by the algorithm above, they found that there was a strong correlation between them. That is, the *GPR* index has good robustness in capturing geopolitical risk. Further, the authors compare the *GPR* index with the Economic Policy Uncertainty Index (EPU), the Panic Index (VIX), and the Deaths due to Terrorist Attacks to examine the information transfer between the *GPR* index and such uncertainty indices, as shown in Comparison with Financial and Economic Uncertainty Measures, which shows a certain degree of volatility independence between the *GPR* index and the EPU and VIX indices. The *GPR* index shows higher volatility than the EPU index and the VIX index, with a certain degree of volatility independence between the three.

2.2. Geopolitical Risk and Financial Market Uncertainty

Geopolitical risk has become an increasingly important source of uncertainty in global financial markets. Unlike traditional economic risks, geopolitical risk arises from political conflicts, military tensions, diplomatic disputes, and international instability, which may influence investor expectations and market behaviour before their economic consequences are fully realized. Therefore, geopolitical risk represents a forward-looking measure of uncertainty that may provide valuable information for investment decisions.

Caldara and Iacoviello (2022) developed the Geopolitical Risk (*GPR*) index based on automated text-search methods of newspaper articles, providing a systematic measure of geopolitical tensions over time [2]. Their study demonstrates that geopolitical shocks are associated with significant macroeconomic and financial consequences, including lower investment, reduced economic activity, and increased uncertainty. Following this contribution, subsequent studies have widely applied the *GPR* index to investigate its impact on financial markets.

Existing literature generally finds that higher geopolitical risk is associated with increased financial market instability. For example, geopolitical tensions can increase investor risk aversion, reduce confidence in risky assets, and lead to capital movements toward defensive assets. Baur and Smales (2020) show that geopolitical risk increases demand for precious metals, suggesting that investors respond to geopolitical uncertainty by seeking assets with value-preserving characteristics [11]. Similarly, Smales (2019) documents that gold prices respond positively to geopolitical risk, indicating that geopolitical uncertainty can influence asset allocation decisions [12].

However, most existing studies focus on the direct impact of geopolitical risk on asset prices, volatility, or return predictability. Although these studies provide evidence that *GPR* contains information about market uncertainty, relatively limited attention has been given to whether *GPR* can be transformed into a practical investment signal for portfolio management. In particular, the question of whether investors can use changes in geopolitical risk levels to adjust asset allocation dynamically remains underexplored.

2.3. Gold as a Defensive Asset and Stock–Gold Portfolio Allocation

Gold has traditionally been considered an important defensive asset due to its ability to preserve wealth during periods of financial stress. The literature on gold investment has mainly focused on its hedge and safe-haven properties. Baur and Lucey (2010) distinguish between the hedge role and safe-haven role of gold, showing that gold can protect investors against extreme negative stock market movements rather than providing a constant hedge under normal market conditions [6].

Similarly, Baur and McDermott (2010) provide international evidence that gold exhibits safe-haven characteristics, particularly during periods of severe market downturns [13]. More recent studies have extended this analysis by examining the relationship between gold and geopolitical uncertainty. Baur and Smales (2020) find that geopolitical risk increases the hedging demand for precious metals, highlighting the importance of gold during periods of geopolitical stress [11].

Despite extensive evidence supporting gold's defensive role, the literature mainly evaluates gold from a risk-reduction perspective rather than an investment decision perspective. The existence of safe-haven

properties does not directly answer the practical question faced by investors: when should portfolio exposure be shifted from equities to gold? Since safe-haven behaviour is generally state-dependent, a static allocation strategy may fail to capture the changing relationship between gold and equities across different market environments.

Therefore, a more practical approach is to identify indicators that can signal changes in market conditions and guide portfolio reallocation decisions. Geopolitical risk, as a measure of uncertainty, provides a potential candidate for such a role because it captures changes in investor concerns before extreme market movements occur.

2.4. Modern Portfolio Theory

Modern portfolio theory was proposed by the American economist Markowitz in 1952. Modern portfolio theory suggests that the essence of investing is to choose between uncertain returns and risk, with the intention of creating a portfolio that minimizes risk at a fixed return or maximizes return at a fixed risk.

Portfolio theory can be applied to the study of gold-stock market correlation, specifically, Markowitz's theory has several key assumptions as described below: First, the stock market is efficient, that is, investors can know the changes and reasons of the returns and risks of various securities in the stock market. Secondly, the returns of each security are correlated with each other, which means that the correlation coefficients between the securities can be known through calculations so that the portfolio of securities that minimizes risk can be found. Third, investors are risk averse rational beings who will demand larger expected returns as compensation if they need to take higher investment risks. Fourthly, and thirdly, investors tend to choose "high return, low risk" portfolios, where the degree of risk is measured by the standard deviation of the rate of return [14].

2.5. Dynamic Asset Allocation and Risk-Based Switching Strategies

Traditional portfolio management approaches often rely on static asset allocation, where investors maintain fixed proportions of different assets regardless of changing market conditions. Although static diversification can reduce risk, it may not fully exploit the time-varying relationship between assets. During periods of market stress, correlations between risky and defensive assets may change significantly, requiring investors to adjust their portfolio composition dynamically.

The development of dynamic asset allocation strategies has highlighted the importance of incorporating information variables into investment decisions. Previous studies have used macroeconomic indicators, volatility measures, and market sentiment indicators to construct tactical allocation strategies. These approaches demonstrate that observable market signals can improve portfolio performance by allowing investors to respond to changing risk environments.

In particular, volatility-based and uncertainty-based strategies have received increasing attention. Investors may reduce exposure to equities when uncertainty indicators increase and increase defensive asset holdings when market risks become elevated. However, while previous studies have examined economic policy uncertainty (EPU), volatility indices, and financial stress indicators as portfolio signals, the role of geopolitical risk in dynamic asset allocation remains relatively limited.

Compared with traditional financial indicators, geopolitical risk has several potential advantages as an investment signal. First, it captures uncertainty generated by geopolitical events that may not be immediately reflected in economic fundamentals. Second, it reflects changes in investor sentiment and risk perception. Third, geopolitical shocks often affect multiple asset classes simultaneously, making *GPR* potentially useful for cross-asset allocation decisions.

2.6. Research Gap and Contribution

Although previous studies provide extensive evidence regarding geopolitical risk, gold's safe-haven properties, and dynamic portfolio management, several research gaps remain.

First, existing literature mainly examines whether gold performs as a hedge or safe-haven asset during periods of uncertainty. Less attention has been given to whether geopolitical risk itself can be used as an actionable investment signal to determine portfolio switching decisions.

Second, most studies analyse the relationship between geopolitical risk and individual asset returns or volatility, while fewer studies evaluate the economic value of *GPR*-based investment strategies. A statistically significant relationship does not necessarily imply practical investment benefits. Therefore, evaluating portfolio performance, downside risk, and risk-adjusted returns is necessary.

Third, the effectiveness of geopolitical risk as an investment signal may differ across countries. Developed and emerging markets have different levels of financial integration, investor structures, and market responses to geopolitical shocks. Therefore, comparing China and the United States provides

additional insights into whether *GPR*-guided strategies are market-specific.

Motivated by these gaps, this study develops a geopolitical risk-guided portfolio switching strategy between equities and gold. Instead of simply testing whether gold is a safe haven, this study investigates whether geopolitical risk information can improve investment decisions by identifying periods when investors should increase exposure to gold and reduce equity exposure. The analysis contributes to the literature by linking geopolitical risk measurement with practical portfolio management.

3. Methodology

3.1. *GPR-Guided Portfolio Switching Rule*

The core of the methodology is a rule-based portfolio switching mechanism guided by the geopolitical risk (*GPR*) index. At the beginning of each period, the allocation decision is based solely on information available from the previous period.

3.2. *Research Design Overview*

This study constructs a dynamic asset allocation strategy based on the Geopolitical Risk (*GPR*) index. The objective is to examine whether geopolitical risk information can be used as a switching signal between stock and gold markets to enhance portfolio performance.

This study constructs two representative two-asset portfolios: one comprising the S&P 500 and COMEX gold futures to represent the U.S. stock and gold markets, and another comprising the CSI 300 Index and Shanghai Futures Exchange gold futures to represent the Chinese stock and gold markets. The strategy dynamically reallocates capital between stocks and gold according to the level of geopolitical risk.

3.3. *Data Description and Variable Definitions*

3.3.1. Core Risk Variable

Geopolitical Risk (*GPR*) Index: The Geopolitical Risk (*GPR*) index, developed by Caldara and Iacoviello (2022), measures the intensity of geopolitical tensions based on newspaper coverage frequency [2]. It captures events such as wars, terrorist attacks, and diplomatic conflicts.

- Role in this study: Core explanatory variable.
- Economic significance: Proxy for global uncertainty and risk sentiment
- Frequency: Monthly

3.3.2. Financial Market Variables

U.S. Stock Market

S&P 500: The S&P 500 index represents the performance of large-cap U.S. stock.

- Role: Proxy for U.S. equity market returns.
- Economic significance: It provides insight into market expectations and economic outlook.

China Stock Market

CSI 300: The CSI 300 index tracks the performance of the largest and most liquid A-share stocks in China.

- Role: Proxy for Chinese equity market.
- Economic significance: Reflects domestic economic conditions and market sentiment.

U.S. Gold Market

COMEX Gold Futures: COMEX gold futures represent international gold prices.

- Role: Proxy for global gold market.
- Economic significance: Safe-haven asset during financial and geopolitical crises.

China Gold Market

Shanghai Futures Exchange Gold: SHFE gold futures reflect domestic gold price dynamics in China.

- Role: Proxy for Chinese gold market
- Economic significance: Influenced by both global gold prices and RMB exchange rate

3.4. *Initial Capital and Portfolio Evolution*

Define Candidate Threshold Set, let g denote a candidate *GPR* threshold, and let G denote the set of pre-defined candidate thresholds examined in this study:

$$G = \{g1, g2, \dots, gn\} (g = 10, 20, 30 \dots 150) \quad (1)$$

For each candidate threshold $g \in G$, the portfolio allocation is determined by the following rule:

Initial investment is set at 1,000,000 (USD for U.S. market, RMB for China market). Investment units are determined using monthly closing prices.

$$R_{p,t}(g) = \begin{cases} R_{gold,t} & \text{if } GPR_t > g \\ R_{stock,t} & \text{if } GPR_t \leq g \end{cases} \quad (2)$$

where $R_{p,t}(g)$ is the portfolio return at time t under threshold g , $R_{gold,t}$ is the gold return, $R_{stock,t}$ is the stock return, and GPR_t is the geopolitical risk index. This rule implies that the portfolio is allocated to gold when geopolitical risk is above the threshold, while it remains invested in equities when geopolitical risk is below or equal to the threshold.

$$V_t(g) = V_{t-1}(g)[1 + R_{p,t}(g)] \quad (3)$$

where $V_t(g)$ is the portfolio value at time t , and V_0 is the initial investment. The terminal portfolio value under threshold g is therefore:

$$V_t(g) = V_0 \prod_{i=1}^T [1 + R_{p,i}(g)] \quad (4)$$

The final portfolio profit is calculated as the terminal portfolio value minus the initial investment:

$$Final\ Portfolio\ Profit(g) = V_t(g) - V_0 \quad (5)$$

or equivalently:

$$Final\ Portfolio\ Profit(g) = V_0 (\prod_{i=1}^T [1 + R_{p,i}(g)] - 1) \quad (6)$$

After calculating the final portfolio profit for each candidate threshold, the best-performing threshold is selected as:

$$GPR^{BP} = \arg \max_{g \in G} \{Final\ Portfolio\ Profit(g)\} \quad (7)$$

where GPR^{BP} denotes the GPR threshold that generates the highest final portfolio profit within the pre-defined candidate threshold set G . The notation $\arg \max$ indicates that the selected value is the threshold g that maximizes the final portfolio profit among all tested thresholds.

It is important to note that GPR^{BP} should not be interpreted as a global mathematical optimum. Since the threshold search is conducted over a finite and pre-defined candidate set, the selected threshold represents the best-performing threshold within the tested discrete GPR values. The purpose of this exercise is to examine whether GPR contains useful information for dynamic asset allocation, rather than to estimate an exact continuous optimal threshold.

To evaluate the effectiveness of the GPR -guided switching strategy, this study compares its performance with two benchmark strategies: a buy-and-hold stock strategy and a buy-and-hold gold strategy. The buy-and-hold stock strategy invests fully in the stock index throughout the sample period, while the buy-and-hold gold strategy invests fully in gold throughout the sample period. The GPR -guided switching strategy is considered effective if it generates a higher terminal portfolio value, higher cumulative return, or better risk-adjusted performance than these benchmark strategies.

The term “optimal threshold” in this experimental analysis refers to different levels of the GPR index that have the potential to generate varying investment returns. However, it does not necessarily represent the exact threshold value that yields the maximum possible investment profit.

Overall, this portfolio exercise provides an additional empirical link between geopolitical risk, gold’s safe-haven function, and investment decision-making. While the earlier econometric analysis identifies the impact of GPR on market volatility and stock–gold dependence, the switching strategy examines whether such information can be translated into a practical asset allocation rule. Therefore, the strategy serves as a bridge between the empirical findings on gold’s conditional safe-haven role and their implications for portfolio management.

4. Empirical results

The portfolio analysis is conducted using monthly data over the period from March 2008 to August 2024, covering 198 observations or 16 years and 6 months. The analysis is able to assess whether the proposed portfolio strategies remain effective across different levels of financial and geopolitical uncertainty.

This study constructs a *GPR* index-guided investment switching strategy to examine whether geopolitical risk information can be economically meaningful for asset allocation decisions. In contrast to conventional investment approaches that maintain continuous exposure to a single asset, the proposed strategy allows investors to switch fully between equities and gold based on the level of geopolitical risk observed in the previous period. The analysis is conducted using a standardized initial investment of one million dollars/yuan, enabling a direct comparison of realised profits across different investment strategies.

The Geopolitical Risk (*GPR*) Index is utilised to determine whether investment funds should be allocated to the stock market or the gold market. If the previous month's *GPR* index is lower than the optimal *GPR* index threshold, the investment will be allocated to the stock market. Conversely, if the previous month's *GPR* index exceeds the optimal *GPR* index threshold, the investment will be allocated to the gold market. As explained in Chapter 3, the term "optimal threshold" in this experimental analysis refers to different levels of the *GPR* index that have the potential to generate varying investment returns. However, it does not necessarily represent the exact threshold value that yields the maximum possible investment profit.

Table 1. Generated Profit Across Different Investment Strategies.

US market: conventional investment strategy (buy-and-hold)					
COMEX (profit)	1601025.64				
S&P500 (profit)	3043343.23				
US market: <i>GPR</i> guided investment switching strategy					
<i>GPR</i> index threshold	10	20	30	40	50
Profit	1601025.64	1601025.64	1601025.64	1601025.64	1601025.64
<i>GPR</i> index threshold	60	70	80	90	100
Profit	1682966.81	2078725.13	2764369.92	2565177.03	3402474.74
<i>GPR</i> index threshold	110	120	130	140	150
Profit	3284974.07	3834812.89	4256467.96	4065705.24	3555497.07
Chinese market: conventional investment strategy (buy-and-hold)					
SHFE (profit)	1555755.97				
CSI300 (profit)	-289464.80				
Chinese market: <i>GPR</i> guided investment switching strategy					
<i>GPR</i> index threshold	10	20	30	40	50
Profit	1555755.97	1555755.97	1555755.97	1555755.97	1555755.97
<i>GPR</i> index threshold	60	70	80	90	100
Profit	1695430.26	1668357.21	256516.04	124460.44	228006.64
<i>GPR</i> index threshold	110	120	130	140	150
Profit	-81560.19	160857.18	124726.74	164583.31	34156.21

Table 1 summarises the generated profits under different investment strategies and provides a comparative assessment of their economic performance.

4.1. US Market

From a benchmark strategy perspective, the long-term return performance of equities versus gold in the US market over the period of 16 years exhibits a pronounced disparity: passive investment in the S&P 500 yielded profits of 3,043,343.23, surpassing the 1,601,025.64 generated by COMEX gold. This indicates that, over the experimented period, equity assets demonstrated a stronger overall return advantage. The introduction of the *GPR* index as a switching signal for asset allocation revealed that investment performance was highly dependent on the selected *GPR* threshold level. When the *GPR* threshold remained at lower levels (10–50), the *GPR*-guided switching strategy yielded returns identical to those of a pure gold investment strategy. This indicates that under low-risk conditions, the strategy predominantly maintained a gold allocation, thereby failing to fully capitalise on high-return opportunities in the equity markets.

As the *GPR* threshold progressively increases (60–100), the profitability of the switching strategy begins to enhance significantly. Profit levels gradually surpass those of the gold-only investment strategy

and, within certain threshold ranges, approach or even exceed those of the equity-only investment strategy. This outcome indicates that when the *GPR* threshold effectively distinguishes between ‘normal risk’ and ‘high-risk states,’ the dynamic switching of assets between equities and gold commences to exert a risk-modulating effect.

Notably, when the *GPR* threshold was set around 130, the *GPR*-guided switching strategy achieved the highest profit level of 4,256,467.96, significantly outperforming both the gold investment strategy and the returns from a single equity investment strategy. This finding indicates that in the US market, timely switching from equities to gold during periods of heightened geopolitical risk can preserve the long-term growth advantages of the equity market while controlling downside risk, thereby enhancing overall investment performance.

4.2. Chinese Market

Compared with the US market, the results for the Chinese market exhibit markedly different characteristics. Under the traditional investment strategy, investing solely in SHFE gold yielded a positive return of 1,555,755.97, whereas the strategy of continuously investing in the CSI300 incurred a loss of 289,464.80, reflecting the overall volatility of returns in the Chinese stock market during the experimented period.

Against this backdrop, the *GPR*-guided asset switching strategy did not systematically enhance investment returns. Specifically, when the *GPR* threshold was set at relatively low levels (10–50), the returns from the switching strategy were identical to those of a pure gold investment strategy. This indicates that in the Chinese market, the asset allocation outcomes under low threshold settings are highly conservative.

Within the medium threshold range (60–90), the switching strategy yielded returns marginally higher than gold investments at certain thresholds (i.e., 1,695,430.26 at threshold 60), though this advantage proved inconsistent. As thresholds increased further (above 110), the switching strategy's returns declined markedly, even turning negative at certain thresholds. This indicates that within the Chinese market, geopolitical risk signals do not consistently translate into sustainable cross-asset allocation returns.

Overall, the findings from the Chinese market suggest that *GPR*-guided investment switching strategies mitigate downside risks in equity investments to a certain extent, yet do not significantly enhance long-term returns. Their economic impact manifests more as risk mitigation rather than yield enhancement.

Comparing outcomes across the US and Chinese markets reveals significant disparities in the economic efficacy of *GPR*-guided asset allocation strategies. Within the US market, the *GPR* switching strategy achieves superior results to traditional single-asset investments by balancing returns and risk control within a reasonable threshold range. Conversely, in the Chinese market, this strategy primarily functions as a risk mitigation tool, offering relatively limited and unstable returns enhancement.

This divergence may stem from differences in the institutional environments, investor structures, and market maturity between the two countries' financial markets. The US market exhibits a more robust pricing mechanism for global geopolitical risks, with gold's safe-haven attributes during heightened risk conditions being more readily reflected in market movements. In contrast, the linkage mechanism between equity and gold prices in the Chinese market is subject to greater influence from policy and institutional factors, thereby diminishing the effectiveness of *GPR* signals for asset allocation purposes.

5. Conclusion

This study further evaluates the practical investment value of geopolitical risk by conducting portfolio allocation simulations. The results show that, in the U.S. market, conventional strategies that rely on holding either equities or gold alone are unable to achieve return maximisation across different risk regimes. By contrast, an investment strategy that uses the *GPR* index as a threshold signal to dynamically switch between equities and gold generates significantly higher cumulative returns during periods of elevated geopolitical risk. In particular, when the *GPR* threshold lies approximately in the range of 120–130, portfolio performance reaches its peak over the experimented period and clearly outperforms single-asset allocation strategies. These findings indicate that during episodes of heightened geopolitical risk, reallocating capital from equities to gold can effectively improve investment performance, thereby highlighting gold's safe-haven value under high-risk conditions. By contrast, the allocation results for the Chinese market indicate that although *GPR*-based switching strategies can improve performance within certain ranges, their overall effectiveness is weaker than in the U.S. market. This difference may be attributed to domestic market structure, capital flow constraints, and investor behaviour, and reflects cross-country variation in how gold's safe-haven function is realised across different financial systems.

6. Policy implications

The findings of this study provide several important implications for investors, portfolio managers, and financial institutions regarding the practical application of geopolitical risk information in asset allocation decisions. Rather than viewing geopolitical risk merely as a source of market uncertainty, this study demonstrates that *GPR* can serve as a forward-looking indicator to support dynamic portfolio management between equities and gold.

6.1. Implications for Investors and Portfolio Managers

The main implication of this study is that investors should incorporate geopolitical risk information into their portfolio decision-making process rather than relying solely on traditional asset allocation strategies. Conventional buy-and-hold strategies may overlook the time-varying nature of market risks, particularly during periods of heightened geopolitical uncertainty. The results suggest that changes in the *GPR* index can provide useful information regarding when defensive asset allocation should be considered.

Specifically, when geopolitical risk rises beyond certain levels, investors may benefit from reducing equity exposure and increasing allocation to gold. This approach does not imply that gold should permanently replace equities, but rather that gold allocation should be adjusted dynamically according to changing geopolitical conditions. Therefore, *GPR* can be incorporated as an additional risk indicator alongside traditional financial variables when making tactical asset allocation decisions.

Furthermore, investors should interpret *GPR* levels as risk signals rather than mechanical trading rules. A high *GPR* level does not automatically guarantee superior gold performance, as asset responses depend on market conditions, liquidity, and investor behaviour. Therefore, *GPR*-based switching strategies should be combined with other risk management tools, such as volatility indicators, market trends, and macroeconomic conditions.

6.2. Implications for Institutional Investors and Asset Managers

For institutional investors, including asset management companies and pension funds, the findings highlight the potential value of incorporating geopolitical risk indicators into portfolio construction frameworks. Existing portfolio management approaches often rely on historical returns, volatility measures, and macroeconomic indicators, while geopolitical uncertainty is frequently treated as an external risk factor rather than an actionable investment variable.

The results suggest that geopolitical risk can be integrated into quantitative asset allocation models as an additional information variable. For example, portfolio managers may develop risk-adjusted allocation strategies that increase exposure to defensive assets when geopolitical uncertainty rises and gradually return to equity-oriented positions when uncertainty declines.

Such a dynamic allocation framework may improve portfolio resilience during geopolitical shocks by reducing downside exposure and enhancing risk-adjusted performance. This is particularly relevant for global investors who are exposed to cross-border political conflicts, trade tensions, and international instability.

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