Global Finance Journal 63 (2024) 101047



Contents lists available at ScienceDirect

Global Finance Journal

journal homepage: www.elsevier.com/locate/gfj



Riding the geopolitical storm or dodging bullets: Geopolitical risk timing of mutual funds☆

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ARTICLE INFO

JEL classification:
G11
G19
G23

Keywords:
Mutual fund
Geopolitical risk
Market timing

ABSTRACT

This study investigates the mutual fund timing of geopolitical risk and corresponding economic consequences based on open-end active stock funds data in China from January 2005 to June 2023. Mutual funds are effective at timing geopolitical risks, evidenced by their tendency to reduce market risk exposure before periods of heightened geopolitical risk. We find that geopolitical risk timing is significantly positively associated with fund performance with persistence in mutual funds' geopolitical risk timing abilities. This effect remains robust even after controlling for market, volatility, and liquidity timing of mutual funds. The results suggest that mutual funds with superior geopolitical risk timing attract greater fund inflows, highlighting their positive market value. Fund managers with experience as macro analysts and political connections are more sophisticated in timing geopolitical risk than their counterparts.

1. Introduction

Conflicts, war, and terrorism significantly impact financial markets and establish geopolitical risk as a primary external factor that affects asset prices (Baur & Smales, 2020). In the week following the 9/11 terrorist attacks, the S&P 500 Index declined by 5.20 %, and the MOEX Russia Index plummeted by 33.28 % on the first day of the 2022 Russia–Ukraine war. Research suggests that geopolitical risk significantly affects stock liquidity as a prominent external risk for the financial market (Fiorillo et al., 2023; Liu et al., 2024), stock price and volatility (Ahmed et al., 2023; Bouras et al., 2019; Caldara & Iacoviello, 2022; Fiorillo et al., 2024; Li et al., 2023; Zaremba et al., 2022; Zhang et al., 2022), exchange rate (Park & Park, 2020), energy prices (Filippidis et al., 2023; Wang et al., 2023; Zhang et al., 2023), investor sentiment (He, 2023), and investor risk preference (Wang & Young, 2020).

The ability to manage geopolitical risks is crucial for the market to evaluate the investment capabilities of fund managers due to the significant impact of geopolitical risks on asset pricing (Ren et al., 2023; Wang & Young, 2020). Fund managers' ability to identify, assess, and respond to geopolitical risks is essential in enhancing fund performance and elevating their compensation and professional reputation (Bali et al., 2021). According to the National Association of Active Investment Managers statistics,[1] the market risk exposure of U.S. fund managers dropped to 44 % after the Russia–Ukraine conflict outbreak in 2022, the lowest since 2020. This move

☆ We acknowledge the financial support from the National Social Science Fund of China (23CJY025). All remaining errors are our own.
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[1] Please refer to https://naaim.org/programs/naaim-exposure-index/.

https://doi.org/10.1016/j.gfj.2024.101047
Received 5 July 2024; Received in revised form 5 October 2024; Accepted 5 October 2024
Available online 15 October 2024
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demonstrates how fund managers can react promptly to geopolitical uncertainties to mitigate potential negative impacts. However, comprehensive research analyzing whether and how mutual fund managers respond to geopolitical risks is limited. This is despite the intense actions in the asset management industry that reflect fund managers' sensitivity and adaptability in managing geopolitical risks.

Fund timing refers to the capability of fund managers to adjust investment positions based on their assessment of market trends by increasing positions when favorable market conditions are expected to gain higher returns and reducing positions during unfavorable market conditions to minimize loss (Busse, 1999; Cao, Simin, & Wang, 2013; Chen et al., 2018; Yi et al., 2018). This ability is crucial in affecting fund performance in differing market environments (Bali et al., 2021; Osinga et al., 2021). Studies address market timing (Bollen & Busse, 2001; Chen et al., 2018; Kacperczyk et al., 2014; Yi et al., 2018), volatility timing (Busse, 1999; Mirza et al., 2020; Moreira & Muir, 2017), liquidity timing (Cao, Simin, & Wang, 2013), implied tail risk timing (Ni et al., 2021), stock-selection timing (Jiang et al., 2021), higher-order co-moment timing (Wattanatorn & Padungsaksawasdi, 2021), market misvaluation timing (Zheng et al., 2021), and momentum timing (Wang & Zheng, 2024) based on the abilities of mutual funds. However, research regarding mutual funds' potential geopolitical risk timing is in its nascent stage. Mutual funds managers may seek opportunities from evolving economic conditions based on a profit-driven standpoint (Bali et al., 2014). For instance, Zhang et al. (2022) show that the "flight to arms" trend during war tends to raise returns in the defense sector. Therefore, the potential for lucrative profit encourages mutual funds to increase their market risk exposure in times of increased geopolitical risk. From a risk-averse perspective, mutual funds may opt to limit their exposure to market risk to preserve steady returns to mitigate the detrimental effects of geopolitical risk on the market, including diminished returns (Ahmed et al., 2023), reduced liquidity (Fiorillo et al., 2023), and heightened volatility (Bouras et al., 2019). However, studies on this issue remain limited.

The Chinese stock market demonstrates an urgent need for this controversial issue to be explored. It is characterized by a higher proportion of retail investors (Liu et al., 2022) in contrast to developed markets where institutional investors play a dominant role. Retail investors typically lack access to professional information sources and information analysis skills (Ben-David et al., 2022; Muñoz & Vicente, 2018). This limitation grants experienced investors such as mutual fund managers an informative edge to actively scrutinize foreseeable market conditions, including geopolitical risks (Yi et al., 2018). The rapidly growing Chinese mutual fund industry has attracted numerous seasoned fund managers (Luo et al., 2023; Ni et al., 2021; Yi et al., 2018) with sophisticated investment strategies and informational advantages and the potential to demonstrate excellent geopolitical risk timing ability. The Asset Management Association of China suggests the total assets of existing equity-oriented mutual funds are approximately 2.83 trillion Chinese Yuan, accounting for 2.24 % of the GDP in 2023.[2] Given the size and influence of China's economy and its unique investment environment, understanding its mutual fund managers' geopolitical risk timing capabilities is crucial for investors seeking to navigate the complex global financial landscape.

This study employs the global geopolitical risk index developed through textual analysis by Caldara and Iacoviello (2022) to advance our research. We extend previous work on mutual fund timing by investigating whether and how mutual funds exhibit geopolitical risk timing ability. Mutual funds have been observed to reduce their systemic risk exposure by implementing a more prudent trading strategy to limit potential losses before periods of heightened geopolitical risk. Our empirical results illustrate that mutual funds possess a discernible aptitude for timing geopolitical risks, even after accounting for market, volatility, and liquidity timing. Our research contributes to the existing literature on mutual fund timing by elucidating the impact of geopolitical risk, an increasingly significant external factor affecting investment performance. These findings underscore the unique skillset of mutual funds in navigating geopolitical uncertainties, substantiating the significance of incorporating geopolitical risk timing as a crucial aspect of investment strategies.

This investigation finds a significant positive association between geopolitical risk timing and fund performance, suggesting that mutual funds with superior timing capabilities tend to deliver enhanced returns. Therefore, our findings hold valuable implications for fund investors while indicating that investors allocate capital to funds with practical geopolitical risk timing abilities during periods of intense geopolitical uncertainty.

We also observe a persistence in mutual funds' geopolitical risk timing abilities, highlighting the potential for these skills to contribute to improved investment outcomes consistently over time. This persistence underscores the enduring nature of the competencies associated with geopolitical risk timing, thereby solidifying their market value for investors and fund managers.

Notably, mutual funds boasting exceptional geopolitical risk timing skills attract higher fund inflows, underscoring the importance of developing and refining these abilities within asset management organizations in catalyzing substantial investments. This provides compelling evidence for the market demand and recognition of the value associated with this skillset, underpinning the positive market perception of mutual fund timing.

Additionally, fund managers with prior work experience as macro analysts and political connections exhibit greater sophistication in timing geopolitical risks compared to their counterparts. This finding further validates previous research linking macro analysis background, political connections, and investment skills. The expertise gained through analyzing government policies and macroeconomic trends equips these managers with a deeper understanding of the overall risk landscape, enabling them to time geopolitical risks more effectively.

Our study makes valuable contributions to the literature in the following respects. First, although there are extensive discussions on mutual fund timing ability, this literature focuses on market timing, volatility timing, and liquidity timing (Busse, 1999; Cao, Simin, &

[2] Please refer to https://www.amac.org.cn/sjtj/.

Wang, 2013; Chen et al., 2018; Mirza et al., 2020; Yi et al., 2018), lacking a profound understanding of how mutual funds respond to geopolitical risk. Our research provides a unique perspective as we examine how mutual funds time geopolitical risk and the subsequent contribution to fund performance, which has been relatively unexplored. Our findings provide investors with valuable insights into portfolio allocation decisions, particularly in the current market environment where global geopolitical risks are becoming more frequent, significantly affecting investment returns. Investors can make more informed decisions about allocating their capital to funds that will likely perform well in volatile and uncertain environments by understanding how mutual funds manage geopolitical risk.

Second, this study contributes to the growing literature on the economic consequences of geopolitical risk (Bouras et al., 2019; Caldara & Iacoviello, 2022; Filippidis et al., 2023; Fiorillo et al., 2023; Park & Park, 2020; Zaremba et al., 2022; Zhang et al., 2022). Our study enhances the comprehension of the repercussions of geopolitical risk on financial markets by demonstrating how mutual funds respond to the notable potential impact of geopolitical risk on asset pricing. These results are crucial for regulators, providing insights into the mechanisms linking geopolitical events to financial market outcomes. Policymakers are anticipated to possess a profound comprehension of the intricate relationship between geopolitical risks and the risk appetite of institutional investors, which is imperative in devising policies to mitigate the negative consequences of geopolitical risks while strengthening financial stability.

Third, the findings indicate that mutual funds with superior timing skills regarding geopolitical risks perform better and attract higher fund inflows, underscoring the high demand among investors for effective geopolitical risk management strategies. Furthermore, fund managers with experience as macro analysts and political connections are more sophisticated in timing geopolitical risk than their counterparts. This could be attributed to the fact that they have informational advantages pertinent to geopolitical risks and a deeper understanding of overall market risk, improving their timing abilities by examining government policies and macroeconomic trends (Chen et al., 2018). Given investors' increasing emphasis on fund managers' risk management abilities when selecting investment products, fund managers must continually improve their expertise in geopolitical risk management. This will enable them to meet changing market demands, distinguishing themselves from competitors while attracting more investors.

The rest of the paper is organized as follows. Section 2 introduces the research design. Section 3 discusses the empirical results. Section 4 presents additional tests, and Section 5 presents the robustness tests. Finally, Section 6 concludes the paper.

2. Research design

2.1. Data source

We merge two databases to investigate the geopolitical risk timing of mutual funds: (i) the Geopolitical Risk Index Webpage (matteoiacoviello.com), which provides monthly global geopolitical risk indexes, and (ii) the CSMAR database, which contains trading and accounting data on mutual funds, as well as risk factors of Fama–French three-factor model and Carhart four-factor model. We apply three filters to obtain our sample. First, we include open-end active stock funds that invest in the Chinese A-share market and have existed for more than 36 months. Second, we exclude index funds from our sample because they aim to replicate a particular benchmark index rather than engage in active management (Chen et al., 2018). Third, our choice of data post-2005 is grounded in two reasons. On one hand, following the non-tradable share reform in the first half of 2005, the Chinese stock market gained significant liquidity, ensuring that stock prices accurately reflected the fundamental value of companies more efficiently. On the other, the Chinese mutual fund market has exhibited an exceptionally high growth rate since 2005, whereas its size was relatively small before 2005 (Yi et al., 2018). After applying these filters, our sample comprises 15,057 fund-month observations from January 2005 to June 2023.

2.2. Empirical model

Our geopolitical risk timing model is built on Treynor and Mazuy's (1966) fund timing model framework. Following Cao, Chen, et al. (2013) and Osinga et al. (2021), our timing model can be interpreted based on the capital asset pricing model (CAPM) by assuming that a fund manager generates portfolio returns based on the process presented in (1). The market risk exposure ($\beta_{m,p,t-1}$) of a fund is time-varying and set by fund managers in month *t-1* based on their forecast of market conditions in month *t*.

$$R_{p,t} = \alpha_p + \beta_{m,p,t-1} R_{m,t} + \varepsilon_{p,t} \tag{1}$$

where $R_{p,t}$ represents the excess return of fund p on month t. $R_{m,t}$ is the excess market return on month t. α_p denotes the abnormal return of fund p. $\varepsilon_{p,t}$ indicates the idiosyncratic return of fund p on month t. $\beta_{m,p,t-1}$ is the market risk exposure of fund p set by fund managers in month *t-1*.

We employ a first-order Taylor series expansion to approximate the market risk exposure of funds as a linear function of fund managers' predictions of market returns based on the relevant literature (Cao, Simin, & Wang, 2013; Wattanatorn & Padungsaksawasdi, 2021). Specifically, we approximate the market risk exposure of mutual funds ($\beta_{m,p,t-1}$) as a linear function of their forecasts for market conditions based on the available information set (I_{t-1}) as shown in (2). The $\gamma_{m,p}$ coefficient captures the essence of timing skill by representing how market beta varies with forecasts for market conditions. Various timing models share similar frameworks but emphasize fund managers' forecasts of market conditions across varying dimensions. For instance, market timing predicts market returns (Osinga et al., 2021), whereas volatility timing emphasizes market volatility prediction (Busse, 1999).

This paper focuses on the geopolitical risk timing ability of mutual funds, which refers to whether fund managers can effectively adjust the market risk exposure of funds based on their predictions of future geopolitical risks. We specify (2) as (3) to examine the

mutual fund geopolitical risk timing by replacing forecasts for market conditions with the fund manager's anticipation of the deviation between current geopolitical risk and the historical average.

$$\beta_{m,p,t-1} = \beta_{0,m,p} + \gamma_{m,p} E(MarketCondition_t | I_{t-1}) \tag{2}$$

$$\beta_{m,p,t-1} = \beta_{0,m,p} + \gamma_{m,p} \left(G_{m,t} - \overline{G}_m\right) \tag{3}$$

where $\beta_{0,m,p}$ represents the unconditional market risk exposure of fund p. I_{t-1} is the information set available to the fund manager on month t-1. $\gamma_{m,p}$ is the coefficient that captures the essence of timing skill by portraying how market beta varies with forecasts for market conditions. $G_{m,t}$ depicts the geopolitical risk on month t, and we use the average geopolitical risk over the previous 60 months ([t-60, t-1]) as a proxy for the geopolitical risk mean ($\overline{G}_m$).[3]

We construct the monthly single factor geopolitical risk timing in (4) by substituting (3) with (1). We add a lagged index term to the model to address the nonsynchronous trading issue based on previous literature (Busse, 1999; Cao, Chen, et al., 2013). Moreover, we extend the single factor specifications with the Fama–French three-factor model and Carhart four-factor model as shown in (5) with k = 1, 3, or 4 to better capture the return-generating process of mutual funds. Specifically, the Fama–French three-factor model comprises the market factor (*Market*), size factor (*SMB*) and book-to-market factor (*HML*). The Carhart four-factor model extends the Fama–French three-factor model with the momentum factor (*MOM*). A significantly negative geopolitical risk timing coefficient ($\gamma_{m,p}$) indicates that funds have lower market risk exposure before periods of high geopolitical risk, demonstrating that fund managers effectively anticipate this market condition and proactively make favorable asset allocation decisions in advance.

$$R_{p,t} = \alpha_p + \beta_{0,m,p} R_{m,t} + \beta_{lagm,p} R_{m,t-1} + \gamma_{m,p} \left(G_{m,t} - \overline{G}_m\right) R_{m,t} + \varepsilon_{p,t} \tag{4}$$

$$R_{p,t} = \alpha_p + \sum_{j=1}^{k} \left[\beta_{0j,p} R_{j,t} + \beta_{lagj,p} R_{j,t-1}\right] + \gamma_{m,p} \left(G_{m,t} - \overline{G}_m\right) R_{m,t} + \varepsilon_{p,t} \tag{5}$$

2.3. Random portfolios

Following Cao, Chen, et al. (2013), we use a bootstrap analysis to derive statistical inferences for geopolitical risk timing measures at the individual fund level. To make the estimates for geopolitical risk timing capabilities comparable, we construct a random portfolio of hypothetical funds with the same factor loadings as the genuine funds while lacking the ability to time geopolitical risk. We first estimate (5) for each fund p and acquire the estimated coefficients (α_p^{fitted}, β_m^{fitted}, β_{SMB}^{fitted}, β_{HML}^{fitted}, β_{MOM}^{fitted}, $\gamma_{m,p}^{fitted}$) and residuals ($\varepsilon_{p,t}^{fitted}$). Next, we randomly resample the residuals and generate a time series of bootstrapped residuals ($\varepsilon_{p,t}^{b,fitted}$), where b is an index for the bootstrap iteration ($b = 1, 2, \cdots, B$). Finally, we generate monthly excess returns for a pseudo-fund without geopolitical risk timing skill by setting the geopolitical risk timing term coefficient ($\gamma_{m,p}$) to zero.

Funds can be classified into income, balanced, growth, and aggressive growth funds from an investment style perspective. Panel A of Table 1 presents the summary statistics for the monthly returns for the overall equity fund universe and its constituent fund types. Aligning with Cao, Simin, and Wang (2013), aggressive growth funds exhibit the highest returns alongside considerable volatility. Furthermore, funds are distinguishable based on survival status, categorized as survivors (funds still operational) and non-survivors (funds that have been liquidated). Aligning with the relevant literature (Busse, 1999; Cao, Simin, & Wang, 2013), surviving funds exhibit superior returns to non-survivors. Panel B presents the summary statistics of global geopolitical risk measures from January 2005 to June 2023. The standard deviation of 27.028 highlights significant fluctuations in geopolitical risk during this timeframe. A skewness value of 3.685 indicates a right-skewness in the distribution, suggesting that most geopolitical risks lie below the mean with a longer tail on the extremely high risk. The 27.206 kurtosis value demonstrates that the distribution of geopolitical risk has extremely thick tails and a sharp peak, implying extremely high geopolitical risk value. Panel C compares model parameters across various fund groups, including excess returns, risk factor loadings, and coefficients of determination derived from the single, three, and four index specifications. Comparative analysis of the risk factor loadings demonstrates that the random samples exhibit similar levels of market factor (*Market*), size factor (*SMB*), book-to-market factor (*HML*), and momentum factor (*MOM*) exposure as real funds.

3. Empirical result

3.1. Mutual fund geopolitical risk timing

It is necessary to consider a hypothetical scenario in which mutual funds are faced with holding either cash or stocks to understand how fund managers exercise their ability to time geopolitical risk during asset allocation decisions. Zaremba et al. (2022) have established that geopolitical risk negatively impacts stock prices. Fund managers possessing astute skills in geopolitical risk timing would be expected to strategically reallocate their investments from stocks to cash, thereby diminishing their exposure to the market decline in anticipation of a potential escalation in geopolitical risk. In contrast, fund managers may switch from cash holdings to

[3] Aligning with Cao, Simin, and Wang (2013), we use a rolling window of 60 months to calculate the mean of geopolitical risk ($\overline{G}_m$). Our results remain robust if we use rolling windows of 36, and 48 months to calculate the mean of geopolitical risk, which are available upon request.

Table 1
Summary statistics.

Panel A: Summary statistics of fund returns

Fund group	Obs.	Return	Standard deviation	Skewness	Kurtosis
All	15,057	0.645	0.063	0.158	3.908
Income	1377	0.621	0.064	0.069	3.926
Balanced	5512	0.595	0.059	0.331	4.012
Growth	6382	0.665	0.065	0.100	3.864
Aggressive growth	1786	0.745	0.069	0.014	3.640
Survivors	14,011	0.661	0.063	0.158	3.881
Non-survivors	1046	0.426	0.064	0.144	4.254
Random samples	15,057	0.612	0.066	0.132	3.886

Panel B: Summary statistics of geopolitical risk measures

	Obs.	Mean	Standard deviation	Skewness	Kurtosis
Geopolitical risk	222	96.330	27.028	3.685	27.206

Panel C: Model parameters of mutual funds and pseudo-funds

	Single-index			Three-index					Four-index					
Fund group	α	β_m	R^2	α	β_m	β_{SMB}	β_{HML}	R^2	α	β_m	β_{SMB}	β_{HML}	β_{MOM}	R^2
All	0.002	0.566	0.399	0.003	0.759	0.747	−0.367	0.542	0.002	0.761	0.712	−0.305	0.559	0.551
Income	−0.000	0.512	0.438	0.001	0.701	0.699	−0.250	0.565	0.001	0.701	0.682	−0.215	0.296	0.567
Balanced	0.004	0.533	0.247	0.003	0.719	0.737	−0.386	0.418	0.002	0.733	0.707	−0.333	0.520	0.432
Growth	0.002	0.579	0.459	0.003	0.777	0.770	−0.379	0.580	0.003	0.779	0.732	−0.306	0.628	0.589
Aggressive growth	−0.000	0.612	0.561	0.002	0.785	0.721	−0.405	0.711	0.002	0.783	0.674	−0.311	0.717	0.560
Survivors	0.002	0.570	0.409	0.003	0.764	0.751	−0.365	0.556	0.002	0.765	0.716	−0.305	0.556	0.565
Non-survivors	0.003	0.497	0.287	0.002	0.649	0.664	−0.419	0.375	0.001	0.653	0.616	−0.345	0.653	0.383
Random samples	0.002	0.566	0.388	0.003	0.757	0.746	−0.372	0.431	0.002	0.523	0.711	−0.310	0.561	0.533

Note: The table presents the summary statistics of fund returns, geopolitical risk measures, and model parameters.

equities to augment market exposure in anticipation of a subsequent decline in geopolitical risk. Considering this intuitive understanding, we expect that if fund managers can effectively demonstrate their proficiency in timing geopolitical risk, the market risk loading of a fund will have a negative association with the prevailing level of geopolitical risk. This implies that fund managers will adopt a more defensive strategy by reducing their exposure to equities and increasing their cash holdings as geopolitical risk increases (Baur & Smales, 2020; Wang & Young, 2020), thereby positioning their portfolios to withstand negative repercussions arising from heightened geopolitical uncertainty. Alternatively, fund managers with the ability to accurately gauge shifts in risk sentiment will proactively increase their market exposure by reallocating from cash to equities as geopolitical risk subsides (Bali et al., 2014; Zhang et al., 2022), aiming to capture enhanced returns during periods of relative geopolitical stability.

The estimation results of mutual fund geopolitical risk timing based on (5) are presented in Panel A of Table 2. The geopolitical risk timing coefficients ($\gamma_{m,p}$) for the entire sample are significantly negative for the single, three, and four index specifications, indicating that funds lower their market risk exposure before periods of high geopolitical risk. These findings suggest that fund managers, in month *t-1*, can anticipate potentially high geopolitical risks in month *t* and adjust their asset allocations to reduce market risk exposure accordingly. This strategy enables funds with forward-looking decision-making capabilities to achieve lower market risk exposure in month *t*, thereby mitigating potential investment losses.

We employ the bootstrap procedure to analyze the differences in geopolitical risk timing coefficients between mutual funds and the random control samples. The results in Panel B of Table 2 suggest that the differences are significantly negative for most cases. This indicates that relative to a passive strategy, mutual funds reduce market risk exposure before periods of heightened geopolitical risk. Based on the above, we find strong evidence that mutual funds exhibit geopolitical risk timing capabilities.

Aggressive growth funds demonstrate a heightened sensitivity to geopolitical risk among various subgroups. This phenomenon is attributed to the investment preferences of aggressive growth funds, as they typically allocate capital to high-growth industries and companies (Patel & Sarkissian, 2017). These sectors are inherently more susceptible to the impact of geopolitical risks, as evidenced by Caldara and Iacoviello (2022). Thus, fund managers overseeing aggressive growth funds are likely to possess a higher degree of vigilance and awareness toward geopolitical risks, enabling them to react and adjust their portfolios promptly as warranted.

Furthermore, examining the timing capacities of geopolitical risk among surviving and non-surviving funds suggests that surviving funds exhibit significantly stronger proficiency than their non-surviving counterparts. This finding provides valuable insights into the underperformance of non-surviving funds when juxtaposed with their surviving counterparts (Panel A of Table 1). The superior ability of surviving funds to effectively time geopolitical risk underscores their resilience in navigating volatile market conditions and positioning their portfolios in alignment with prevailing risk sentiments. This result further reinforces that adept geopolitical risk management is instrumental in achieving enduring fund performance and prolonged survival in the competitive investment landscape.

Consequently, the significance of geopolitical risk timing in the fund management realm cannot be overstated. It serves as a critical

Table 2
Estimation results of geopolitical risk timing coefficients.

Panel A: Geopolitical risk timing coefficients ($\gamma_{m,p}$)

	Single-index		Three-index		Four-index	
Fund group	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*
All	−0.049***	(0.004)	−0.080***	(0.000)	−0.140***	(0.000)
Income	−0.140**	(0.022)	−0.116*	(0.060)	−0.116*	(0.062)
Balanced	0.017	(0.536)	−0.062**	(0.019)	−0.161***	(0.000)
Growth	−0.037	(0.197)	−0.055**	(0.038)	−0.104***	(0.000)
Aggressive growth	−0.134***	(0.001)	−0.140***	(0.001)	−0.181***	(0.000)
Survivors	−0.064***	(0.000)	−0.092***	(0.000)	−0.153***	(0.000)
Non-survivors	0.243***	(0.009)	0.183*	(0.054)	0.136	(0.164)
Random samples	0.078***	(0.000)	0.047***	(0.001)	−0.023	(0.136)

Panel B: Difference of $\gamma_{m,p}$ between mutual funds and random samples

	Single-index		Three-index		Four-index	
	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*
All	−0.127***	(0.000)	−0.127***	(0.000)	−0.117***	(0.000)
Income	−0.218***	(0.000)	−0.162***	(0.000)	−0.093**	(0.043)
Balanced	0.061**	(0.036)	−0.109***	(0.000)	−0.138***	(0.000)
Growth	−0.115***	(0.000)	−0.102***	(0.000)	−0.081***	(0.003)
Aggressive growth	−0.212***	(0.000)	−0.187***	(0.000)	−0.158***	(0.003)
Survivors	−0.142***	(0.000)	−0.139***	(0.000)	−0.130***	(0.000)
Non-survivors	0.165**	(0.012)	0.136**	(0.020)	0.159**	(0.011)

Note: The table presents the estimation results of geopolitical risk timing coefficients ($\gamma_{m,p}$) for the single-, three-, and four-index models. Panel A illustrates the sample coefficients, whereas Panel B presents the difference in the coefficients between the mutual funds and the random control samples. The Newey–West adjusted *p*-statistics are presented in parentheses. We infer the significance of the differences between the mutual funds and the random samples based on a difference-in-means test conducted through 1000 bootstrap iterations. ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively.

factor that separates successful funds from their less prosperous peers, as it enables fund managers to allocate capital skillfully, capitalize on profitable opportunities during periods of relative stability, and protect portfolio value during times of heightened geopolitical uncertainty. The observed strong sensitivity to geopolitical risk among aggressive growth funds and the pronounced disparity in timing capacities between surviving and non-surviving funds shed light on the intricate relationship between geopolitical risk, fund management decisions, and investment performance. These findings provide valuable insights for academics and practitioners seeking to understand and optimize their investment strategies in an environment characterized by geopolitical uncertainties.

3.2. Controlling for market, volatility, and liquidity timing

This study finds that mutual fund managers who reduce market risk exposure before periods of high geopolitical risk may face

Table 3
Controlling for market, volatility, and liquidity timing.

Panel A: Geopolitical risk timing coefficients ($\gamma_{m,p}$)

		Single-index		Three-index		Four-index	
Fund group		coefficients	*p-stat*	coefficients	*p-stat*	coefficients	*p-stat*
All	$\gamma_{m,p}$	−0.096***	(0.000)	−0.098***	(0.000)	−0.151***	(0.000)
	$\lambda_{m,p}$	0.306***	(0.000)	0.226***	(0.000)	0.175***	(0.000)
	$\delta_{m,p}$	−0.271***	(0.000)	−0.164***	(0.000)	−0.149***	(0.001)
	$\eta_{m,p}$	0.187***	(0.000)	−0.032	(0.262)	−0.037	(0.189)
Income	$\gamma_{m,p}$	−0.203***	(0.001)	−0.160***	(0.009)	−0.161***	(0.010)
	$\lambda_{m,p}$	0.468***	(0.000)	0.325***	(0.003)	0.308***	(0.006)
	$\delta_{m,p}$	0.090	(0.539)	0.194	(0.146)	0.179	(0.197)
	$\eta_{m,p}$	0.060	(0.625)	−0.049	(0.649)	−0.039	(0.717)
Balanced	$\gamma_{m,p}$	−0.049	(0.124)	−0.091***	(0.002)	−0.169***	(0.000)
	$\lambda_{m,p}$	0.023	(0.859)	0.153	(0.188)	−0.005	(0.968)
	$\delta_{m,p}$	−0.315**	(0.047)	−0.404***	(0.004)	−0.386***	(0.007)
	$\eta_{m,p}$	0.332***	(0.000)	0.047	(0.326)	0.027	(0.576)
Growth	$\gamma_{m,p}$	−0.080***	(0.005)	−0.080***	(0.002)	−0.123***	(0.000)
	$\lambda_{m,p}$	0.322***	(0.000)	0.255***	(0.000)	0.213***	(0.000)
	$\delta_{m,p}$	−0.286***	(0.000)	−0.148**	(0.013)	−0.141**	(0.020)
	$\eta_{m,p}$	0.137***	(0.006)	−0.059	(0.146)	−0.055	(0.174)
Aggressive growth	$\gamma_{m,p}$	−0.157***	(0.000)	−0.150***	(0.000)	−0.185***	(0.000)
	$\lambda_{m,p}$	0.381***	(0.000)	0.204***	(0.003)	0.160**	(0.017)
	$\delta_{m,p}$	−0.160*	(0.093)	−0.120	(0.121)	−0.121	(0.121)
	$\eta_{m,p}$	−0.003	(0.980)	−0.147*	(0.060)	−0.124	(0.109)
Survivors	$\gamma_{m,p}$	−0.110***	(0.000)	−0.111***	(0.000)	−0.164***	(0.000)
	$\lambda_{m,p}$	0.310***	(0.000)	0.231***	(0.000)	0.180***	(0.000)
	$\delta_{m,p}$	−0.231***	(0.000)	−0.124***	(0.005)	−0.109**	(0.017)
	$\eta_{m,p}$	0.182***	(0.000)	−0.031	(0.278)	−0.037	(0.200)
Non-survivors	$\gamma_{m,p}$	0.108	(0.265)	0.107	(0.264)	0.070	(0.470)
	$\lambda_{m,p}$	0.264	(0.163)	0.192	(0.284)	0.136	(0.445)
	$\delta_{m,p}$	−1.004***	(0.000)	−0.765***	(0.001)	−0.773***	(0.001)
	$\eta_{m,p}$	0.298**	(0.027)	−0.021	(0.863)	−0.027	(0.828)
Random samples	$\gamma_{m,p}$	0.031*	(0.085)	0.029*	(0.085)	−0.033	(0.115)
	$\lambda_{m,p}$	0.290***	(0.000)	0.211***	(0.000)	0.160***	(0.000)
	$\delta_{m,p}$	−0.275***	(0.000)	−0.168***	(0.000)	−0.141***	(0.002)
	$\eta_{m,p}$	0.201***	(0.000)	−0.018	(0.551)	−0.027	(0.358)

Panel B: Difference of $\gamma_{m,p}$ between mutual funds and random samples

	Single-index		Three-index		Four-index	
	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*
All	−0.127***	(0.000)	−0.127***	(0.000)	−0.118***	(0.000)
Income	−0.234***	(0.000)	−0.189***	(0.000)	−0.128**	(0.025)
Balanced	0.080**	(0.014)	−0.120***	(0.000)	−0.136***	(0.000)
Growth	−0.111***	(0.000)	−0.109***	(0.000)	−0.090***	(0.000)
Aggressive growth	−0.187***	(0.000)	−0.179***	(0.000)	−0.152***	(0.004)
Survivors	−0.141***	(0.000)	−0.140***	(0.000)	−0.131***	(0.000)
Non-survivors	0.077	(0.143)	0.078	(0.132)	0.103*	(0.071)

Note: The table presents the estimations of geopolitical risk ($\gamma_{m,p}$), market return ($\lambda_{m,p}$), volatility ($\delta_{m,p}$), and liquidity ($\eta_{m,p}$) timing coefficients for the single-, three-, and four-index models. Panel A presents the sample coefficients, whereas Panel B shows the disparity between the mutual fund geopolitical risk timing coefficients ($\gamma_{m,p}$) and those of the random control samples. The Newey–West adjusted *p*-statistics are presented in parentheses. We infer the significance of the differences between the mutual funds and the random samples based on a difference-in-means test conducted through 1000 bootstrap iterations. ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively.

Table 4
Geopolitical risk timing and contemporaneous fund performance.

Panel A: Value-weighted			
Quintiles	CAPM alpha	FF3F alpha	Carhart alpha
Low	−0.022	−0.009	−0.011
	(0.837)	(0.877)	(0.845)
2	−0.041	0.028	0.011
	(0.640)	(0.536)	(0.805)
3	0.159	0.125**	0.106
	(0.112)	(0.020)	(0.128)
4	0.369***	0.239***	0.270***
	(0.001)	(0.000)	(0.000)
High	0.571***	0.327***	0.317***
	(0.000)	(0.000)	(0.000)
High–Low	0.593***	0.339***	0.328***
	(0.000)	(0.000)	(0.000)

Panel B: Equal-weighted			
Quintiles	CAPM alpha	FF3F alpha	Carhart alpha
Low	0.011	−0.069	−0.070
	(0.920)	(0.199)	(0.236)
2	0.027	0.008	−0.009
	(0.760)	(0.850)	(0.831)
3	0.090	0.035	0.018
	(0.335)	(0.513)	(0771)
4	0.336***	0.203***	0.234***
	(0.002)	(0.000)	(0.000)
High	0.424***	0.241***	0.211***
	(0.001)	(0.000)	(0.000)
High–Low	0.413***	0.310***	0.281***
	(0.000)	(0.000)	(0.000)

Panel C: Fama–MacBeth regression analysis			
	(1)	(2)	(3)
	CAPM alpha	FF3F alpha	Carhart alpha
GPR_Timing	0.142***	0.172***	0.170***
	(0.000)	(0.000)	(0.000)
TNA	−0.105**	−0.023	−0.029
	(0.015)	(0.473)	(0.193)
Volatility	0.878***	0.810***	0.783***
	(0.000)	(0.000)	(0.000)
Turnover	0.920***	0.867***	0.700***
	(0.000)	(0.000)	(0.000)
Amount	−0.001	0.004	−0.001
	(0.960)	(0.862)	(0.932)
Age	0.006	0.044	0.093***
	(0.923)	(0.286)	(0.006)
Fee	1.772***	1.128***	1.457***
	(0.000)	(0.000)	(0.000)
Style	0.029	0.002	0.001
	(0.159)	(0.924)	(0.958)
Constant	1.027	−0.540*	−0.627**
	(0.160)	(0.088)	(0.038)
R^2	0.414	0.352	0.334

Note: This table presents the relationship between geopolitical risk timing and contemporaneous fund performance. Quintile portfolios are constructed each month by sorting mutual funds based on their geopolitical risk timing measures (*GPR_Timing*) derived from the inverse values of $\gamma_{m,p}$ calculated using the four-factor model over the last 36 months. Panels A and B report the CAPM, Fama–French three factor, and Carhart four factor alphas for each quintile. The last row presents the average monthly differences in alphas between Quintiles 5 and 1. In Panel C, *Performance* is measured by the CAPM, Fama–French three factor, and Carhart four factor alphas in Columns (1)–(3), respectively. The Newey–West adjusted *p*-statistics are presented in parentheses. ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively.

potential endogeneity concerns. On the one hand, since the geopolitical risk is a typical exogenous shock not endogenously modified by mutual fund managers' portfolio rebalancing, we argue that reverse causality will unlikely affect the result. On the other hand, we acknowledge the potential for endogeneity issues arising from omitted variables. Specifically, we must consider that a reduction in fund risk exposure may not solely be attributed to the increased geopolitical risks. It could also be influenced by other factors such as stock market price trends, volatility, and liquidity. Existing literature establishes a positive correlation between geopolitical risk and contemporaneous market volatility and a negative correlation between geopolitical risk and market return and liquidity (Ahmed et al., 2023; Fiorillo et al., 2023). These findings highlight the intricate relationship between geopolitical risk and various market dynamics. Therefore, the main challenge in interpreting our baseline result may be controlling for other timing factors.

As such, exploring the potential interconnections between the identified geopolitical risk timing and other timing strategies, such as market, volatility, and liquidity timing, is imperative. We adopt (6) to explore this possibility to examine mutual fund geopolitical risk timing after controlling for market, volatility, and liquidity timing (Cao, Simin, & Wang, 2013; Mirza et al., 2020; Yi et al., 2018). By incorporating market, volatility, and liquidity timing as control variables, we aim to delineate the distinct effect of geopolitical risk timing to assess whether the observed geopolitical risk timing is intertwined with these other timing strategies.

$$R_{p,t} = \alpha_p + \sum_{j=1}^{k}\left[\beta_{0,j,p}R_{j,t} + \beta_{lagj,p}R_{j,t-1}\right]\left(G_{m,t} - \overline{G}_{\mathrm{m}}\right)R_{m,t} + \lambda_{m,p}R_{m,t}^2 + \delta_{m,p}\left(V_{m,t} - \overline{V}_{\mathrm{m}}\right)R_{m,t} + \eta_{m,p}\left(L_{m,t} - \overline{L}_{\mathrm{m}}\right)R_{m,t} + \varepsilon_{p,t} \quad (6)$$

where $R_{p,t}$ represents the excess return of fund p on month t. $R_{m,t}$ indicates market excess return. $R_{m,t}^2$ is the square of market excess return. $G_{m,t}$ depicts the geopolitical risk in month t. $V_{m,t}$ indicates conditional market volatility measured by an Exponential Generalized Autoregressive Conditional Heteroskedasticity Model (EGARCH) specification (Bali et al., 2014; Busse, 1999; Yi et al., 2018). $L_{m,t}$ represents the market liquidity measure developed by Pástor and Stambaugh (2003). $\overline{G}_m$, $\overline{V}_m$, and $\overline{L}_m$ are the time-series means of geopolitical risk, market volatility, and liquidity, respectively. The $\gamma_{m,p}$, $\lambda_{m,p}$, $\delta_{m,p}$, and $\eta_{m,p}$ coefficients capture geopolitical risk timing, market timing, volatility timing, and liquidity timing, respectively.

The market-timing coefficients ($\lambda_{m,p}$) in Panel A of Table 3 are significantly positive. In contrast, the volatility timing coefficients ($\delta_{m,p}$) are significantly negative for most funds. This suggests that funds increase their exposure to market risk during market upturns and decrease their exposure during market turbulence. These effects confirm that mutual funds exhibit substantial market timing and volatility timing ability at the aggregate level, consistent with Yi et al. (2018) and Mirza et al. (2020). However, the liquidity timing coefficient ($\eta_{m,p}$) is significantly positive in the single-factor model but not significant in the three and four-factor models, indicating that mutual funds have not demonstrated robust liquidity timing ability. After controlling for market timing, volatility timing, and liquidity timing, the geopolitical risk timing coefficients ($\gamma_{m,p}$) are significantly negative, supporting the robustness of mutual fund geopolitical risk timing ability.

Panel B of Table 3 presents the difference in the geopolitical risk timing coefficients ($\gamma_{m,p}$) between mutual funds and the random samples after accounting for market, volatility, and liquidity timing, confirming that mutual funds exhibit significant geopolitical risk timing ability after controlling for other timing measures. Of particular interest is the notable timing ability demonstrated by aggressive growth funds. The above findings imply that geopolitical risk timing is a crucial part of actively managed mutual funds' trading strategy, which differs significantly from the market, volatility, and liquidity timing documented in the literature (Cao, Simin, & Wang, 2013; Mirza et al., 2020; Yi et al., 2018).

4. Further analysis

4.1. Geopolitical risk timing and fund performance

4.1.1. Geopolitical risk timing and contemporaneous fund performance

Research continually emphasizes the pivotal role of fund managers' proficiency in timing abilities, which significantly contribute to enhancing fund performance (Cao, Simin, & Wang, 2013; Ferson & Mo, 2016; Ma, Tee, & Li, 2022; Moreira & Muir, 2017; Yi et al., 2018). Fund managers can potentially enhance portfolio performance and mitigate downside risk by dynamically adjusting their asset allocation strategies and actively navigating the geopolitical risk landscape. Effective geopolitical risk timing requires a deep understanding of market dynamics and the ability to assess the potential impact of geopolitical events on financial markets. It also demands a reasonable implementation of timely portfolio adjustments to exploit market inefficiencies. Thus, fund managers' skillful management of geopolitical risk is essential and may serve as a distinguishing factor in their ability to generate superior risk-adjusted investment returns.

Through univariate portfolio analysis, we examine the nexus between geopolitical risk timing and fund performance. We construct quintile portfolios based on the geopolitical risk timing measure (*GPR_Timing*) derived from the inverse γ value computed using the four-factor model over the last 36 months. We employ three key metrics to assess the performance of fund portfolios: the CAPM alpha, the Fama–French three factor alpha, and the Carhart four factor alpha. Panels A and B of Table 4 illustrate the results of the univariate analysis of the value/equal-weighted portfolios, respectively. Regarding value-weighted portfolios, funds exhibiting the most vital geopolitical risk timing skills (Quintile high) demonstrate a notable outperformance compared to those with the weakest skills (Quintile low). Specifically, they exceed the latter by 0.593 % per month for the CAPM alpha, 0.339 % for the Fama–French three factor alpha, and 0.328 % for the Carhart four factor alpha. These differences are not only statistically significant but also economically important. Similar patterns emerge in the analysis of equal-weighted portfolios, in which the disparity between the top-performing quintile and the lowest-performing quintile (High–Low) amounts to 0.413 % for the CAPM alpha, 0.310 % for Fama–French three

Table 5
Predictive power of geopolitical risk timing on subsequent fund performance.

Panel A: Value-weighted			
Quintiles	CAPM alpha	FF3F alpha	Carhart alpha
Low	−0.015	0.011	0.010
	(0.882)	(0.841)	(0.866)
2	−0.055	0.018	0.014
	(0.539)	(0.677)	(0.753)
3	0.177*	0.114**	0.111
	(0.080)	(0.040)	(0.121)
4	0.367***	0.241***	0.236***
	(0.002)	(0.000)	(0.000)
High	0.564***	0.339***	0.323***
	(0.000)	(0.000)	(0.000)
High–Low	0.579***	0.328***	0.313***
	(0.000)	(0.000)	(0.000)

Panel B: Equal-weighted			
Quintiles	CAPM alpha	FF3F alpha	Carhart alpha
Low	0.016	−0.044	−0.046
	(0.881)	(0.398)	(0417)
2	0.004	−0.004	−0.012
	(0.960)	(0.925)	(0.784)
3	0.139	0.033	0.033
	(0.176)	(0.567)	(0.655)
4	0.333***	0.213***	0.199***
	(0.003)	(0.000)	(0.000)
High	0.426***	0.257***	0.224***
	(0.000)	(0.000)	(0.000)
High–Low	0.410***	0.301***	0.270***
	(0.000)	(0.000)	(0.000)

Panel C: Fama–MacBeth regression analysis			
	(1)	(2)	(3)
	CAPM alpha	FF3F alpha	Carhart alpha
GPR_Timing	0.125***	0.162***	0.146***
	(0.001)	(0.000)	(0.000)
TNA	−0.095*	−0.115*	−0.026
	(0.074)	(0.099)	(0.248)
Volatility	0.849***	0.704***	0.723***
	(0.001)	(0.000)	(0.000)
Turnover	0.819***	0.772***	0.671***
	(0.000)	(0.000)	(0.000)
Amount	−0.006	0.047*	−0.002
	(0.882)	(0.067)	(0.889)
Age	0.005	0.040	0.097***
	(0.935)	(0.339)	(0.008)
Fee	1.535**	1.340***	1.378***
	(0.011)	(0.000)	(0.000)
Style	−0.008	0.023	−0.007
	(0.814)	(0.278)	(0.583)
Constant	1.099	0.472	−0.617**
	(0.195)	(0.643)	(0.046)
R^2	0.419	0.360	0.342

Note: This table presents the predictive power of geopolitical risk timing on subsequent fund performance. Quintile portfolios are created monthly by sorting mutual funds based on their geopolitical risk timing abilities (*GPR_Timing*) in month *t*, derived from the inverse values of $\gamma_{m,p}$ calculated using the four-factor model over the last 36 months. Panels A and B present the CAPM, Fama–French three factor, and Carhart four factor alphas in month $t + 1$ for value-weighted and equal-weighted portfolios, respectively. The last row indicates the average monthly differences in alphas between Quintiles 5 and 1. In Panel C, *Performance* is measured by the CAPM, Fama–French three factor, and Carhart four factor alphas in Columns (1)–(3), respectively. The Newey–West adjusted *p*-statistics are presented in parentheses. ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively.

factor alpha, and 0.281 % for the Carhart four factor alpha.

We establish a Fama–MacBeth regression to further elucidate the relationship between geopolitical risk timing and fund performance in (7).

$$Performance_{p,t} = \beta_1 + \beta_2 GPR_Timing_{p,t} + \beta_c Controls_{p,t} + \varepsilon_{p,t} \quad (7)$$

where *Performance* represents fund performance, measured by the CAPM, Fama–French three factor, and Carhart four factor alphas, respectively. *GPR_Timing* represents the geopolitical risk timing measure derived from the inverse γ value calculated using the four-factor model over the last 36 months. A higher value indicates a more proficient geopolitical risk timing ability. Following Osinga et al. (2021) and Franzoni and Schmalz (2017), we control for the logarithm of total net assets (*TNA*), the return volatility (*Volatility*), fund turnover ratio (*Turnover*), the logarithm of the transaction amount (*Amount*), the logarithm of the fund's age (*Age*), the management fee in percentages (*Fee*), and the fund investment style (*Style*).

The estimation results in Panel C indicate that the *GPR_Timing* coefficients are significantly positive. This demonstrates that funds with more sophisticated geopolitical risk timing ability are associated with higher fund performance. This finding aligns with the relevant literature on the effects of market timing on fund performance (Bali et al., 2021; Cao, Simin, & Wang, 2013; Li et al., 2020; Osinga et al., 2021), reinforcing the notion that geopolitical risk timing is crucial in augmenting mutual fund performance. These findings provide compelling evidence that funds endowed with superior geopolitical risk timing abilities can generate superior fund performance, underscoring the importance of geopolitical risk considerations in portfolio management and their potential to enhance investment outcomes.

4.1.2. Predictive power of geopolitical risk timing on subsequent fund performance

Previous research demonstrates that market-timing ability, which notably impacts concurrent fund performance, does not inherently entail predictive capability for subsequent fund performance (Bali et al., 2021; Osinga et al., 2021). We meticulously construct quintile portfolios based on their geopolitical risk timing abilities (*GPR_Timing*) to further investigate the predictive power of geopolitical risk timing. We evaluate the predictive power for future fund performance measured by the CAPM, Fama–French three factor, and Carhart four factor alphas for the subsequent month.

Panels A and B in Table 5 present the results of value-weighted and equal-weighted portfolios, respectively. Examining the value-weighted portfolios indicates that funds exhibiting a superior ability to time geopolitical risk (Quintile high) significantly outperform funds with the lowest risk timing capability (Quintile low). Specifically, funds with the strongest geopolitical risk timing abilities

Table 6
Persistence in geopolitical risk timing ability.

Panel A: 6-month-ahead analysis					
	Worst	2	3	4	Best
Worst	**56.41 %**	23.81 %	9.21 %	5.76 %	4.81 %
2	20.15 %	**41.14 %**	22.81 %	10.77 %	5.13 %
3	8.04 %	23.54 %	**40.04 %**	20.67 %	7.71 %
4	5.28 %	9.46 %	22.60 %	**43.61 %**	19.05 %
Best	4.22 %	5.61 %	9.26 %	24.00 %	**56.91 %**

Panel A: 12-month-ahead analysis					
	Worst	2	3	4	Best
Worst	**37.48 %**	26.70 %	16.20 %	10.82 %	8.80 %
2	19.64 %	**31.31 %**	22.70 %	15.90 %	10.45 %
3	13.46 %	23.36 %	**28.13 %**	22.49 %	12.56 %
4	10.84 %	14.95 %	22.54 %	**31.21 %**	20.46 %
Best	9.20 %	10.55 %	17.47 %	25.56 %	**37.22 %**

Panel A: 24-month-ahead analysis					
	Worst	2	3	4	Best
Worst	**22.47 %**	25.04 %	18.75 %	17.71 %	16.03 %
2	19.03 %	**21.53 %**	21.64 %	20.84 %	16.96 %
3	21.05 %	20.35 %	**19.07 %**	21.74 %	17.79 %
4	15.96 %	17.93 %	22.39 %	**23.19 %**	20.53 %
Best	17.65 %	17.04 %	21.38 %	21.88 %	**22.05 %**

Note: This table presents the portfolio transition matrix for the geopolitical risk timing ability (*GPR_Timing*) for the next 6, 12, and 24 months. The table illustrates the probabilities that funds belonging to quintile i (denoted by rows) in month t will transition to quintile j (denoted by columns) in month $t + 6$, $t + 12$, and $t + 24$. In each panel, the diagonal elements from the top left to the bottom right are highlighted to indicate the degree of persistence in geopolitical risk timing ability.

exhibit a 0.579 % higher CAPM alpha, a 0.328 % higher Fama–French three factor alpha, and a 0.313 % higher Carhart four factor alpha in the subsequent month compared to funds with weaker timing abilities. The results derived from the equal-weighted portfolios exhibit a similar trend. The performance difference between the funds in the highest and lowest quintiles (High–Low) is 0.410 % for the CAPM alpha, 0.301 % for the Fama–French three factor alpha, and 0.270 % for the Carhart four factor alpha.

We employ a rigorous Fama–MacBeth regression analysis to gain a deeper understanding of the association between geopolitical risk timing and future fund performance. Specifically, we regress fund performance on month $t + 1$ onto the geopolitical risk timing measure (*GPR_Timing*) on month *t*. The results in Table 5 indicate a significantly positive relationship between funds' geopolitical risk timing abilities and their subsequent performance. This finding augments existing literature on the predictive power of timing ability for future performance (Bali et al., 2021; Osinga et al., 2021).

4.2. Persistence in geopolitical risk timing ability

Investors allocate capital toward funds exhibiting superior investment skills, conditional on the persistence of these skills and their likelihood of repetition in the future (Gao et al., 2018). We employ a portfolio transition matrix analysis to further investigate the persistence of geopolitical risk timing ability. This allows us to assess the consistency and reliability of funds' geopolitical risk timing performance over time. Specifically, we analyze the transition probabilities between different geopolitical risk timing quintiles over consecutive periods. Table 6 presents the probabilities that funds belonging to quintile *i* (denoted by rows) in month *t* will transition to quintile *j* (denoted by columns) in month $t + 6$, $t + 12$, and $t + 24$. We expect a random distribution across the quintiles regardless of their performance in month *t* without any persistent geopolitical risk timing ability among funds. If funds' geopolitical risk timing skills lack persistence, the values along the diagonal of Table 6 are expected to approximate 20 %, reflecting a uniform distribution across quintiles.

Table 7
Geopolitical risk timing and fund flow.

Panel A: Univariate portfolio analysis

Quintiles	Fund flow over the next 6 months	Fund flow over the next 12 months	Fund flow over the next 24 months
Low	−0.033	−0.013	−0.007
2	−0.008	0.041	0.168
3	0.049	0.144	0.370
4	0.056	0.176	0.409
High	0.077	0.420	1.051
High–Low	0.110***	0.433***	1.058***
	(0.000)	(0.000)	(0.000)

Panel B: Fama–MacBeth regression analysis

	(1)	(2)	(3)
	Fund flow over the next 6 months	Fund flow over the next 12 months	Fund flow over the next 24 months
GPR_Timing	0.071***	0.212***	0.489***
	(0.000)	(0.000)	(0.000)
TNA	0.117***	0.060	−0.359***
	(0.000)	(0.161)	(0.000)
Return	0.314**	0.874**	2.245***
	(0.019)	(0.028)	(0.004)
Volatility	0.261***	0.568**	−0.274
	(0.008)	(0.040)	(0.442)
Turnover	0.768***	2.282***	4.982***
	(0.000)	(0.000)	(0.000)
Amount	−0.082***	−0.156***	−0.229***
	(0.000)	(0.000)	(0.000)
Age	−0.064***	−0.046	0.063
	(0.004)	(0.258)	(0.454)
Fee	−0.596***	−1.378***	−2.851***
	(0.000)	(0.000)	(0.000)
Style	−0.027**	−0.053*	−0.072
	(0.021)	(0.100)	(0.152)
Constant	−0.801***	1.894***	12.536***
	(0.000)	(0.006)	(0.000)
R^2	0.299	0.321	0.348

Note: Panel A shows the results of the univariate portfolio analysis. We classify funds into five groups based on the geopolitical risk timing ability (*GPR_Timing*) and calculate the cumulative fund flows of each portfolio for the next 6, 12 and 24 months. The last row reports the differences in cumulative fund flows between Quintile high and Quintile low. Panel B presents the estimated effect of the geopolitical risk timing on the cumulative fund flows using Fama–MacBeth regression. The Newey–West adjusted *p*-statistics are given in parentheses. ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively.

However, the findings indicate that the diagonal values in Panels A and B are significantly higher than 20 %. This suggests that funds' geopolitical risk timing abilities are highly persistent over the subsequent 6 and 12 months. This persistence is reflected in the increased likelihood of funds remaining within the same quintile over time. The results indicate that funds with superior risk timing skills are likelier to maintain their performance over longer horizons. Furthermore, the persistence observed is particularly robust among funds exhibiting superior geopolitical risk timing abilities. Specifically, a noteworthy 56.91 % (37.22 %) of funds initially belonging to the top quintile (Quintile best), based on geopolitical risk timing skills, maintained their position within the same quintile after a six-month (twelve-month) period.

The persistence of geopolitical risk timing appears to be less pronounced in the analysis for the following 24 months, with the diagonal elements of the transition matrix hovering around 20 %. Specifically, 22.05 % of funds initially positioned in the top quintile for geopolitical risk timing retain their status within this elite group after two years. This finding suggests that the overall persistence of risk timing abilities may weaken over longer horizons. Overall, the persistence analysis results are crucial in informing investors' decisions, as it indicates that a significant proportion of funds demonstrate remarkable resilience and consistency in their geopolitical risk timing performance. Such funds could offer investors a valuable opportunity to capitalize on sustained risk-adjusted returns in the face of evolving geopolitical landscapes.

4.3. Geopolitical risk timing and fund flow

The established relationship between fund performance and fund flow (Franzoni & Schmalz, 2017; Giglio et al., 2021) indicates the necessity to explore whether funds with enhanced geopolitical risk timing proficiency attract higher fund inflows. First, we employ a quintile-based portfolio analysis and classify funds into five groups based on geopolitical risk timing ability (*GPR_Timing*). We calculate the cumulative fund flows of each portfolio for the next 6, 12, and 24 months, with mutual fund flows estimated as the percentage change in assets under management, including adjustments for capital gains and losses. The results in Panel A of Table 7 indicate that funds exhibiting the strongest geopolitical risk timing abilities (Quintile high) experience significantly greater fund inflows than those demonstrating the weakest geopolitical risk timing capabilities (Quintile low).

We establish the Fama–MacBeth regression (8) to further elucidate the relationship between geopolitical risk timing and fund flow. The estimation results in Panel B of Table 7 demonstrate that funds with stronger geopolitical risk timing ability are associated with higher fund inflows.

$$Flow_{p,t+n} = \beta_1 + \beta_2 GPR_Timing_{p,t} + \beta_c Controls_{p,t} + \varepsilon_{p,t} \tag{8}$$

where *Flow* represents the cumulative fund flows over the next 6, 12, and 24 months. *GPR_Timing* is derived from the inverse value of γ calculated with the four-factor model over the last 36 months, with a higher value indicating a more proficient geopolitical risk timing ability. Following Osinga et al. (2021) and Franzoni and Schmalz (2017), we control for the logarithm of total net assets (*TNA*), the fund's return over the past 12 months (*Return*), the return volatility (*Volatility*), the fund turnover ratio (*Turnover*), the logarithm of the transaction amount (*Amount*), the logarithm of the fund's age (*Age*), the management fee in percentages (*Fee*), and the fund investment style (*Style*).

The results demonstrate that investors search for funds with exceptional capacities to anticipate and respond to geopolitical hazards, leading to substantially increased inflows. This finding is consistent with prior research indicating that market-timing abilities increase investor inflows (Bali et al., 2021). Our findings contribute to the growing literature on the determinants of fund flow (Ben-David et al., 2022; Cumming et al., 2019; Ma, Xiao, & Zeng, 2022; Hartzmark & Sussman, 2019; Wang & Young, 2020), carrying

Table 8
Work experience of fund manager and geopolitical risk timing ability.

Panel A: Geopolitical risk timing abilities (*GPR_Timing*)

	Single-index		Three-index		Four-index	
Fund group	*GPR_Timing*	*p-stat*	*GPR_Timing*	*p-stat*	*GPR_Timing*	*p-stat*
Macro analyst	0.187**	(0.012)	0.242***	(0.000)	0.297***	(0.000)
Non-macro analyst	0.041**	(0.020)	0.071***	(0.000)	0.131***	(0.000)
Industry analyst	0.110	(0.557)	−0.022	(0.857)	−0.010	(0.947)
Non-industry analyst	0.049***	(0.005)	0.080***	(0.000)	0.140***	(0.000)

Panel B: Difference of *GPR_Timing* between the *Macro analyst* and *Non-Macro analyst* subgroups

	Single-index		Three-index		Four-index	
	GPR_Timing	*p-stat*	*GPR_Timing*	*p-stat*	*GPR_Timing*	*p-stat*
Macro–Non-macro	0.146**	(0.033)	0.171***	(0.000)	0.166***	(0.000)

Note: The table illustrates the relationship between the work experience of fund managers and their geopolitical risk timing abilities (*GPR_Timing*) measured by the single-, three-, and four-index models. Panel A presents the mean geopolitical risk timing abilities of *the macro analyst*, *non-micro analyst*, *industry analyst*, and *non-industry analyst* subgroups. Panel B presents the mean-difference tests between the *macro* and *non-macro analyst* subgroups. The Newey–West adjusted *p*-statistics are presented in parentheses. ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively.

profound implications for fund managers seeking to augment fund attractiveness while accumulating substantial assets under management (Bali et al., 2021; Osinga et al., 2021). The findings indicate that investors are discerning and prefer funds that exhibit a keen sense of timing in navigating the complex landscape of geopolitical risks. Funds showcasing a shrewd ability to time geopolitical risks are deemed more capable of preserving and enhancing investor capital during heightened uncertainty, compelling investors to allocate their capital toward these funds.

4.4. Mutual fund managers' prior work experience and geopolitical risk timing ability

We examine the impact of previous experience as macro and industry analysts, the two most prevalent career paths among Chinese mutual fund managers (Chen et al., 2018), to understand the relationship between fund managers' prior work experience and their proficiency in timing geopolitical risk. Industry analysts specialize in firms within specific sectors, with the advantage of handling firm-level information, but may lack expertise in market timing (Bradley et al., 2017; Cici et al., 2018). Comparatively, macro analysts possess a deeper understanding of overall market risk and enhance their market-timing abilities by examining government policies and macroeconomic trends (Chen et al., 2018). Therefore, we expect fund managers with distinct professional backgrounds to possess varying investment skills. Those who previously worked as macro analysts are expected to exhibit superior abilities in timing geopolitical risk. We divide the sample into two subgroups based on whether fund managers possess prior experience as macro analysts (industry analysts) to test this hypothesis: *macro* and *non-macro analysts (industry analysts and non-industry analysts*).

The estimated geopolitical risk timing abilities (*GPR_Timing*) for the four subgroups are presented in Panel A of Table 8. We find that fund managers with prior experience as macro analysts possess the capability to navigate geopolitical risks effectively, whereas fund managers with industry analyst experience lack timing skills. Furthermore, the mean-difference test of geopolitical risk timing ability between the *macro analyst* and *non-macro analyst* subgroups is presented in Panel B of Table 8. The evidence confirms that the geopolitical risk timing abilities of fund managers with macro analyst experience are significantly greater than those without macro analyst experience.

Our empirical findings support that fund managers' prior work experience impacts their geopolitical risk timing skills. Specifically, fund managers with a background as macro analysts possess superior timing abilities in navigating geopolitical risks. Our findings extend the literature on the influencing factors of mutual fund timing ability (Chen et al., 2018) and provide valuable insights for academics and practitioners. This emphasizes the potential advantages of hiring fund managers with relevant macro analysis experience to optimize investment strategies amid geopolitical uncertainties. Understanding and harnessing the unique skill sets associated with specific professional backgrounds can inform fund selection processes, enhance investment outcomes, and better equip investors to navigate the intricate geopolitical risk landscape.

4.5. Mutual fund managers' political connection and geopolitical risk timing ability

The political connections of fund managers in China may confer upon them a unique informational advantage (Wu et al., 2016), particularly in accessing information pertinent to geopolitical risks. This informational edge can endow managers with enhanced predictive capabilities, facilitating more forward-looking investment decisions within financial markets. Aligning with prior research (He & Kryzanowski, 2023; Huang & Wang, 2015), we define fund managers with government work experience or those occupying departmental managerial or higher positions in state-owned enterprises as politically connected fund managers. We divide our sample of fund managers into two groups, politically connected (*Political*) and non-politically connected (*Non-political*), for comparative analysis to investigate the correlation between fund managers' political connections and their geopolitical risk timing abilities.

Panel A of Table 9 exhibits the estimated results of geopolitical risk timing abilities (*GPR_Timing*) for the two fund manager groups.

Table 9
Political connection and geopolitical risk timing ability.

Panel A: Geopolitical risk timing abilities (*GPR_Timing*)

	Single-index		Three-index		Four-index	
Fund group	*GPR_Timing*	*p-stat*	*GPR_Timing*	*p-stat*	*GPR_Timing*	*p-stat*
Political	0.147**	(0.028)	0.191***	(0.002)	0.260***	(0.000)
Non-political	0.043**	(0.016)	0.073***	(0.000)	0.132***	(0.000)

Panel B: Difference of *GPR_Timing* between the *macro analyst* and *Non-macro analyst* subgroups

	Single-index		Three-index		Four-index	
	GPR_Timing	*p-stat*	*GPR_Timing*	*p-stat*	*GPR_Timing*	*p-stat*
Political–Non-political	0.104*	(0.089)	0.121**	(0.035)	0.128**	(0.026)

Note: This table shows the relationship between the political connection of fund managers and their geopolitical risk timing abilities (*GPR_Timing*) measured by the single-, three-, and four-index models. Panel A reports the mean of geopolitical risk timing abilities for the *Political* and *Non-political* subgroups. Panel B presents the mean-difference tests between the *Political* and *Non-political* subgroups. The Newey–West adjusted *p*-statistics are given in parentheses. ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively.

The results indicate that both groups manifest significant timing capabilities, with the politically connected group demonstrating stronger timing abilities than the non-politically connected group. Moreover, Panel B of Table 9 formally validates this observation through a mean-difference test. These findings indicate that fund managers with political connections exhibit a significantly stronger advantage in predicting and timing geopolitical risks than their non-politically connected counterparts. This finding may be attributed to these fund managers' capacity to access critical geopolitical information ahead of time through exclusive information channels, enabling them to formulate more precise investment strategies accordingly.

5. Robustness check

5.1. Excluding stock market crash

The stock market witnessed spectacular fluctuations during the 2007–2008 global financial crisis and the 2015 stock market crash in China (Liu et al., 2022; Luo et al., 2022), which may considerably impact fund performance. We repeat the baseline test of (5) after excluding the market crash periods to address this concern. Specifically, we designate August 2007 to December 2008 as the financial crisis sample following Liu et al. (2022). Moreover, we adopt the approach of Han and Liang (2017) and take the period from June 2015 to September 2015 as the 2015 Chinese stock market crash subsample. The results in Table 10 confirm that mutual funds exhibit a stronger ability to anticipate future geopolitical risks in advance and adjust market risk exposure accordingly, compared to a more passive strategy.

5.2. Excluding small-scale funds

Small-scale funds may possess superior market-timing capabilities due to greater flexibility in trading with limited assets, allowing for swift portfolio adjustments while reducing the impact on market liquidity (Cao, Chen, et al., 2013). There is a potential concern that these small-scale funds might drive our main findings due to the impressive market-timing capabilities exhibited by small-scale funds. We exclude funds with assets under management below 100 million RMB to address this concern. Table 11 presents the results excluding small-scale funds, indicating that our main findings are not driven by small-scale funds, confirming the robustness of our conclusions.

Table 10
Excluding stock market crash.

Panel A: Geopolitical risk timing coefficients ($\gamma_{m,p}$)

	Single-index		Three-index		Four-index	
Fund group	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*
All	−0.009	(0.613)	−0.062***	(0.000)	−0.128***	(0.000)
Income	−0.123*	(0.056)	−0.114*	(0.073)	−0.111*	(0.086)
Balanced	0.038	(0.178)	−0.049*	(0.063)	−0.151***	(0.000)
Growth	0.009	(0.761)	−0.037	(0.180)	−0.093***	(0.002)
Aggressive growth	−0.081*	(0.069)	−0.128***	(0.006)	−0.179***	(0.000)
Survivors	−0.023	(0.198)	−0.075***	(0.000)	−0.142***	(0.000)
Non-survivors	0.258***	(0.006)	0.192**	(0.044)	0.145	(0.141)
Random samples	0.126***	(0.000)	0.071***	(0.000)	−0.003	(0.086)

Panel B: Difference of $\gamma_{m,p}$ between mutual funds and random samples

	Single-index		Three-index		Four-index	
	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*
All	−0.135***	(0.000)	−0.133***	(0.000)	−0.125***	(0.000)
Income	−0.249***	(0.000)	−0.185***	(0.000)	−0.108**	(0.045)
Balanced	0.088***	(0.003)	−0.120***	(0.000)	−0.148***	(0.000)
Growth	−0.117***	(0.000)	−0.108***	(0.000)	−0.090***	(0.006)
Aggressive growth	−0.207***	(0.000)	−0.199***	(0.000)	−0.176***	(0.002)
Survivors	−0.149***	(0.000)	−0.146***	(0.000)	−0.139***	(0.000)
Non-survivors	0.132*	(0.053)	0.121*	(0.059)	0.148**	(0.030)

Note: This table presents the estimation results of geopolitical risk timing coefficients ($\gamma_{m,p}$) for the single-, three-, and four-index models after excluding market crash subsamples. Panel A shows the sample coefficients and Panel B presents the difference between the coefficients of mutual funds and the random control samples. The Newey–West adjusted *p*-statistics are presented in parentheses. We infer the significance of the differences between the mutual funds and the random samples based on a difference-in-means test conducted through 1000 bootstrap iterations. ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively.

Table 11
Excluding small-scale funds.

Panel A: Geopolitical risk timing coefficients ($\gamma_{m,p}$)

	Single-index		Three-index		Four-index	
Fund group	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*
All	−0.058***	(0.002)	−0.087***	(0.000)	−0.135***	(0.000)
Income	−0.107*	(0.088)	−0.085	(0.181)	−0.080	(0.211)
Balanced	−0.001	(0.971)	−0.084***	(0.006)	−0.166***	(0.000)
Growth	−0.040	(0.191)	−0.056**	(0.045)	−0.098***	(0.001)
Aggressive growth	−0.135***	(0.001)	−0.145***	(0.001)	−0.178***	(0.000)
Survivors	−0.069***	(0.000)	−0.095***	(0.000)	−0.141***	(0.000)
Non − survivors	0.273**	(0.016)	0.197*	(0.078)	0.093	(0.408)
Random samples	0.066***	(0.001)	0.037**	(0.043)	−0.020	(0.282)

Panel B: Difference of $\gamma_{m,p}$ between mutual funds and random samples

	Single-index		Three-index		Four-index	
	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*	$\gamma_{m,p}$	*p-stat*
All	−0.124***	(0.000)	−0.124***	(0.000)	−0.115***	(0.000)
Income	−0.173***	(0.000)	−0.122**	(0.029)	−0.060	(0.169)
Balanced	0.068**	(0.042)	−0.121***	(0.000)	−0.146***	(0.000)
Growth	−0.107***	(0.000)	−0.092***	(0.000)	−0.078**	(0.014)
Aggressive growth	−0.202***	(0.000)	−0.182***	(0.000)	−0.157***	(0.000)
Survivors	−0.135***	(0.000)	−0.132***	(0.000)	−0.121***	(0.000)
Non-survivors	0.207**	(0.022)	0.161**	(0.041)	0.114	(0.115)

Note: This table shows the estimation results of geopolitical risk timing coefficients ($\gamma_{m,p}$) for the single-, three-, and four-index models after excluding small-scale funds. Panel A presents the sample coefficients and Panel B indicates the difference in the coefficients between the mutual funds and the random control samples. The Newey–West adjusted *p*-statistics are presented in parentheses. We infer the significance of the differences between the mutual funds and the random samples based on a difference-in-means test conducted through 1000 bootstrap iterations. ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively.

5.3. Alternative measures for geopolitical risk

As a crucial determinant of investment outcomes, geopolitical risk can be classified into geopolitical acts and threats. Considering these components separately is imperative, as differing measures of geopolitical risk may yield varying impacts on estimating geopolitical risk timing ability. Considering this, we conduct analyses incorporating alternative measures of geopolitical risk, namely the Geopolitical Acts (*GPA*) index and the Geopolitical Threats (*GPT*) index (Caldara & Iacoviello, 2022).

We aim to ensure the robustness and validity of our results by employing these alternative measures of geopolitical risk. The results in Table 12 confirm that our findings remain robust and consistent across all alternative measures considered. These results affirm the significant role of geopolitical risk in shaping fund managers' decision-making processes.

5.4. Alternative factor models

Table 13 presents the estimation results of mutual fund geopolitical risk timing with the five-index model. The results indicate that fund managers proactively adjust asset allocations before the onset of geopolitical risks, thereby reducing the market risk exposure of their portfolios, confirming the robustness of our conclusions.

6. Conclusions

This study finds that mutual funds exhibit a notable geopolitical risk timing ability, even after controlling for the market, volatility, and liquidity timing of mutual funds. Moreover, our findings indicate that geopolitical risk timing is significantly positively associated with fund performance with a persistence in mutual funds' geopolitical risk timing abilities. Additionally, the results suggest that mutual funds with superior geopolitical risk timing skills attract greater fund inflows, highlighting the positive market value of mutual fund timing. Furthermore, fund managers with experience as macro analysts and political connections are more sophisticated in timing geopolitical risk than their counterparts.

Our research contributes to the growing literature on mutual fund timing. We present novel evidence on the response of mutual funds toward geopolitical risk, an increasingly crucial external factor affecting investment performance. Our study has valuable implications for fund investors, indicating that those with effective geopolitical risk timing abilities tend to deliver higher returns. Moreover, our study contributes to a better understanding of the complexities posed by geopolitical risk and informs the development of investment strategies that account for its impact. The findings validate the considerable worth of improved geopolitical risk timing skills for fund managers, which fosters increased fund inflows. This study highlights the importance of honing and refining these skills,

Table 12
Alternative measures for geopolitical risk.

Panel A: Geopolitical acts timing coefficients ($\gamma_{m,p}^{GPA}$)

	Single-index		Three-index		Four-index	
Fund group	$\gamma_{m,p}^{GPA}$	*p-stat*	$\gamma_{m,p}^{GPA}$	*p-stat*	$\gamma_{m,p}^{GPA}$	*p-stat*
All	−0.051***	(0.000)	−0.057***	(0.000)	−0.117***	(0.000)
Income	−0.151***	(0.001)	−0.129***	(0.007)	−0.132***	(0.007)
Balanced	0.016	(0.500)	−0.013	(0.583)	−0.111***	(0.000)
Growth	−0.051**	(0.028)	−0.057**	(0.010)	−0.106***	(0.000)
Aggressive growth	−0.112***	(0.001)	−0.115***	(0.001)	−0.151***	(0.000)
Survivors	−0.065***	(0.000)	−0.070***	(0.000)	−0.130***	(0.000)
Non-survivors	0.222***	(0.003)	0.198**	(0.010)	0.167**	(0.046)
Random samples	0.056***	(0.000)	0.051***	(0.000)	−0.019	(0.205)

Panel B: Difference of $\gamma_{m,p}^{GPA}$ between mutual funds and random samples (*GPA* index)

	Single-index		Three-index		Four-index	
	$\gamma_{m,p}^{GPA}$	*p-stat*	$\gamma_{m,p}^{GPA}$	*p-stat*	$\gamma_{m,p}^{GPA}$	*p-stat*
All	−0.107***	(0.000)	−0.108***	(0.000)	−0.098***	(0.000)
Income	−0.207***	(0.000)	−0.181***	(0.000)	−0.113**	(0.014)
Balanced	0.041*	(0.064)	−0.064***	(0.000)	−0.092***	(0.000)
Growth	−0.108***	(0.000)	−0.108***	(0.000)	−0.087***	(0.000)
Aggressive growth	−0.169***	(0.000)	−0.166***	(0.000)	−0.132***	(0.000)
Survivors	−0.121***	(0.000)	−0.121***	(0.000)	−0.111***	(0.000)
Non-survivors	0.166***	(0.004)	0.147***	(0.003)	0.186**	(0.030)

Panel C: Geopolitical threats timing coefficients ($\gamma_{m,p}^{GPT}$)

	Single-index		Three-index		Four-index	
Fund group	$\gamma_{m,p}^{GPT}$	*p-stat*	$\gamma_{m,p}^{GPT}$	*p-stat*	$\gamma_{m,p}^{GPT}$	*p-stat*
All	−0.040***	(0.005)	−0.071***	(0.000)	−0.110***	(0.000)
Income	−0.092*	(0.078)	−0.070	(0.176)	−0.070	(0.178)
Balanced	0.010	(0.666)	−0.071***	(0.001)	−0.134***	(0.000)
Growth	−0.024	(0.297)	−0.041*	(0.053)	−0.074***	(0.001)
Aggressive growth	−0.117***	(0.001)	−0.114***	(0.001)	−0.143***	(0.000)
Survivors	−0.049***	(0.001)	−0.079***	(0.000)	−0.118***	(0.000)
Non-survivors	0.148**	(0.045)	0.087	(0.231)	0.053	(0.461)
Random sample	0.058***	(0.000)	0.025*	(0.066)	−0.019	(0.179)

Panel D: Difference of $\gamma_{m,p}^{GPT}$ between mutual funds and random samples (*GPT* index)

	Single-index		Three-index		Four-index	
	$\gamma_{m,p}^{GPT}$	*p-stat*	$\gamma_{m,p}^{GPT}$	*p-stat*	$\gamma_{m,p}^{GPT}$	*p-stat*
All	−0.098***	(0.000)	−0.097***	(0.000)	−0.091***	(0.000)
Income	−0.150***	(0.002)	−0.095**	(0.023)	−0.050	(0.163)
Balanced	0.048**	(0.043)	−0.097***	(0.000)	−0.115***	(0.000)
Growth	−0.082***	(0.001)	−0.067***	(0.003)	−0.054**	(0.013)
Aggressive growth	−0.175***	(0.000)	−0.139***	(0.000)	−0.124***	(0.002)
Survivors	−0.107***	(0.000)	−0.104***	(0.000)	−0.098***	(0.000)
Non-survivors	0.090*	(0.070)	0.062	(0.142)	0.073*	(0.088)

Note: This table shows the estimation results of geopolitical risk timing coefficients for the single-, three-, and four-index models with alternative geopolitical risk measures. Panels A and C show the sample coefficients and Panels B and D present the difference in the coefficients between the mutual funds and the random control samples. The Newey–West adjusted *p*-statistics are presented in parentheses. We infer the significance of the differences between the mutual funds and the random samples based on a difference-in-means test conducted through 1000 bootstrap iterations. ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively.

particularly for managers with working experience as macro analysts demonstrating greater sophistication in timing geopolitical risks.

Although our study focuses on the context of China, it is essential to note that the challenges posed by geopolitical risks are similar for fund managers worldwide. Therefore, our methods and findings can be extrapolated to other markets, offering valuable insights into the complexities of navigating geopolitical uncertainties. Future research endeavors can extend this study by investigating

Table 13
Alternative factor models.

Panel A: Geopolitical risk timing coefficients ($\gamma_{m,p}$)		
	Five-index	
Fund group	$\gamma_{m,p}$	*p-stat*
All	−0.078***	(0.000)
Income	−0.109*	(0.075)
Balanced	−0.080***	(0.004)
Growth	−0.049*	(0.066)
Aggressive growth	−0.135***	(0.001)
Survivors	−0.090***	(0.000)
Non-survivors	0.179*	(0.065)
Random samples	0.001	(0.961)

Panel B: Difference of $\gamma_{m,p}$ between mutual funds and random samples		
	Five-index	
	$\gamma_{m,p}$	*p-stat*
All	−0.079***	(0.000)
Income	−0.110**	(0.021)
Balanced	−0.081***	(0.000)
Growth	−0.050***	(0.002)
Aggressive growth	−0.136***	(0.000)
Survivors	−0.091***	(0.000)
Non-survivors	0.178***	(0.000)

Note: This table presents the estimation results of geopolitical risk timing coefficients ($\gamma_{m,p}$) for the five-index model. Panel A shows the sample coefficients and Panel B illustrates the difference in the coefficients between the mutual funds and the random control samples. The Newey–West adjusted *p*-statistics are presented in parentheses. We infer the significance of the differences between the mutual funds and the random samples based on a difference-in-means test conducted through 1000 bootstrap iterations. ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively.

whether fund managers can learn from major geopolitical events to enhance their geopolitical risk timing abilities. This would provide valuable insights into the adaptability and learning potential within geopolitical risk management.

CRediT authorship contribution statement

Jie Liu: Writing – review & editing, Writing – original draft, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Zhenshan Chen:** Writing – review & editing, Writing – original draft, Methodology, Data curation. **Gengyan Lin:** Writing – review & editing, Writing – original draft, Conceptualization. **Yinglun Zhu:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization.

Declaration of competing interest

The authors have declared that no competing interests exist.

Data availability

Data will be made available on request.

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Glossary

Field-specific terms: Definition
Fund timing: The capability of fund managers to adjust investment positions based on their assessment of market trends.
Geopolitical risk: The threat, realization, and escalation of adverse events associated with wars, terrorism, and any tensions among states and political acts that affect the peaceful course of international relations.
Mutual fund: An investment fund that pools money from investors to purchase securities.
Market factor: Excess return on the value-weighted equity market index over the risk-free rate (the monthly rate of the one-year Chinese deposit).
Size factor: The return of a zero-cost long-short size-based portfolio that is long on stocks with low market capitalization and short on stocks with high market capitalization.
Book-to-market factor: The return of a zero-cost long-short book-to-market ratio based portfolio that is long on stocks with high book-to-market ratios and short on stocks with low book-to-market ratios.
Momentum factor: The return of a portfolio that is long on stocks with high momentum and short on stocks with low momentum.
Aggressive growth fund: The aggressive growth fund is a mutual fund that seeks capital gains by investing in the shares of aggressive growth stocks
Growth fund: The growth fund is a mutual fund that has capital appreciation as its primary goal, with little or no dividend payouts.
Balanced fund: The balanced fund is a mutual fund that typically contains a component of stocks and bonds.
Income fund: The income fund is a mutual fund that focuses on providing investors with a consistent income stream from a portfolio of investments.
Survivors fund: The survivors fund is a fund that is still in operation.
Non-survivors fund: The non-survivors fund is a fund that has already been liquidated.