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Does geopolitical risk matter for ETF flows in emerging markets?

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Abstract

Purpose: This study investigates the effect of geopolitical risk on ETF flows in emerging markets.
Design/Methodology/Approach: ETFs trading in eight emerging markets (Brazil, Chile, China, Egypt, India, Philippines, South Africa, and Taiwan) are surveyed from July 2013 to June 2023 using Vector Autoregressive (VAR) models and their associated impulse response functions and granger causality tests.
Findings: The results indicate that geopolitical risk has a significant, positive effect on ETF flows in emerging markets, except for Philippines where the effect is significantly negative. Further analysis reveals that geopolitical risk has a significant, positive effect on ETF liquidity in emerging markets except for Egypt and Philippines.
Practical Implications: Firstly, investors and fund managers need to carefully consider the impact of geopolitical risks on the ETFs in their portfolios. Secondly, for policymakers and regulators, these findings indicate that geopolitical risks serve as important sources of growth and liquidity in ETF markets. Thirdly, for academics and researchers, these findings indicate that geopolitical risk are significant determinants of ETF flows and liquidity and should be considered when developing asset pricing models which compensate investors for size and liquidity factors.
Originality/Value: At its core, this is the first study to explore the effect of geopolitical risk on ETF flows. Therefore, this study provides insight into the effect of geopolitical risk on ETF markets. In addition, this study concentrates on emerging markets in which the ETF market conditions and geopolitical risks are fundamentally different from their developed counterparts. Furthermore, this study uses a disaggregated approach to explore the individual country-specific effects while most studies on emerging countries use a panel approach.
Keywords: Emerging market; Exchange traded fund; Fund flow; Geopolitical risk.
Paper Type: Research Paper.

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INTRODUCTION

In recent years, exchange traded funds (ETFs) have gained significant traction as investment vehicles amongst both individual and institutional investors. By definition, an ETF is a pooled investment fund that attempts to track the performance of a specific benchmark by replicating the benchmark's constituents (Kunjal 2022). Since the inception of the world's first ETF in 1990 in Canada, the global ETF market continues to grow in size and number as the demand for low-cost index-based investments continue to soar (Neves et al. 2019). By the end of June 2023, the assets under management in the global ETF market were valued at approximately $10 trillion, representing a growth of more than 350% over the last decade (ETFGI 2023). Much of this growth is attributed to investors drifting away from mutual funds towards ETFs (Lenz and Mayer 2023). This is because ETFs represent a low-cost transformation of a mutual fund that is more widely accessible and offers enhanced market liquidity and trade flexibility. These advantages significantly influence the flow of funds into ETF products (Clifford et al. 2014). In addition, the growth in ETF markets may be attributed to their ability to minimize investors' exposure to certain risk factors (Kunjal et al. 2022).

One of the primary considerations in the investment decision making process is risk. Investments are exposed to various risk factors including political risk, exchange rate risk, interest rate risk, liquidity risk, inflation risk, and financial risk, among others (Malgharni and Karimnia 2014). Political risk arises from four aspects; country-level, societal, regulatory, and geopolitical factors (Cline McCaffrey 2020). According to Fiorillo et al. (2023), geopolitical risk is one of the top five systematic risks. Caldara and Iacoviello (2022) define geopolitical risk as "the threat, realisation, 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". In other words, geopolitical risk relates to political, economic, and social risks which arise from a country's association with other countries. Recent geopolitical events include the Russia-Ukraine, Russia-NATO, US-China, China-Japan, China-India, Syrian, and North Korean conflicts.

Given its importance, geopolitical risk significantly impacts economic activity through its influence on inflation (Caldara et al. 2022), economic growth (Saint Akadiri et al. 2020), interest rates (Gupta et al., 2021), foreign direct investment (Nguyen, et al., 2022), exchange rates (Hui, 2022), and energy prices (Sarker et al. 2023). Recent evidence also suggests that geopolitical risk impacts the dynamics of financial markets, including performance (Agoraki et al. 2022), volatility (Salisu et al. 2022), return predictability (Iyke et al. 2022), and liquidity (Fiorillo et al. 2023). Although scanty, research also suggests that geopolitical risk influences investment decisions. For instance, Kim et al. (2019) report that North Korean investors increase the value of their Korean portfolios when North Korea's geopolitical risk rises, however, foreign investors reduce their Korean portfolio values. Fiorillo et al. (2023) report that geopolitical risk negatively impacts stock liquidity, and this effect is greater for stocks with already low liquidity levels (suggesting a flight to liquidity) as well as stocks of firms with more financial constraints and informational asymmetry (suggesting a shift from risky to safer assets). On this basis, it is plausible to expect a flow towards ETFs when geopolitical risk surges given that these funds are known for their higher liquidity levels and lower informational asymmetry relative to their underlying securities (Zhou 2011).

In theory, there exists two opposing strands of literature which could explain the effect of geopolitical risk on ETF fund flows. On one hand, the Prospect Theory introduced by Kahneman and Tversky (1979) suggests that, when uncertainty increases, risk-averse investors shift away from risky assets towards less risky assets. Given that ETFs are generally considered less risky than their underlying securities due to their diversification and liquidity benefits, it is plausible to expect a shift towards ETFs when geopolitical risk and uncertainty increases, subsequently resulting in ETF inflows. This phenomenon has been confirmed by Yousefi and Najand (2022) who report that investors exhibit a flight-to-safety effect and use ETFs to diversify their portfolios away from high-risk locations towards safer, less riskier locations. On the other hand, Limited Market Participation theories suggest that when uncertainty increases, investors decide not to participate in the market, subsequently, resulting in limited market participation (Cao et al. 2005). This being so, when geopolitical risk and uncertainty surges, investors may choose to exit the market and stop trading, leading to outflows from the ETF market. This phenomenon has been confirmed for the stock market by Lee (2023) who reports that geopolitical risk and stock market participation are negatively related.

To the knowledge of the author, the effect of geopolitical risk on ETF flows has not been explored. However, inferences can be derived from existing studies on political risk and ETF markets. Lee and Chen (2020) report that geopolitical risks significantly influence the returns of U.S-listed country ETFs whereby geopolitical risks in the home trade have a greater effect on ETF returns relative to U.S geopolitical risks. Dutta and Dutta (2022) discover that geopolitical risks negatively influence the volatility of renewable energy ETFs listed on the NYSE. Kunjal (2022) and Kunjal et al. (2022) respectively report that country risk components (which are political, economic, and financial risks) influence the liquidity and volatility of South African ETF, however, the effect is not uniform across country risk components and ETF benchmarking styles. These results indicate that political risk influences the dynamics of ETF markets. Further, there is

evidence that geopolitical risk may influence fund flows as Wang and Young (2020) report that terrorist attacks decrease equity mutual fund flows by increasing investors' risk aversion. In addition, there is also evidence that the geopolitical risks of emerging countries influence their financial markets (Balcilar et al. 2018; Rawat and Arif 2018; Subramaniam 2022). Put together, the findings of these studies suggest that the geopolitical risks of emerging countries may significantly influence the flows in ETF markets. Therefore, the objective of this study is to undertake a comprehensive analysis of the effect of geopolitical risk on ETF flows, particularly for emerging markets.

The motivation for concentrating on emerging markets stems from the growing geopolitical instability in these countries during recent times. The most notable geopolitical event in recent months is the Russia-Ukraine war which has had widespread consequences on global emerging and developed economies and markets. Russia's geopolitical risk as a result of the recent political event has spilled over to other emerging markets, particularly those in the BRICS group (Hong Vo and Dang 2023). In addition, emerging countries have experienced their own local geopolitical issues, including Brazil's international smuggling and border challenges, India's existing Kalapani border dispute with Nepal, the China-US trade war, and South Africa's recent attempt to cancel Zimbabwean permits. Despite geopolitical instabilities, the popularity of ETFs continues to rise, and ETF markets in emerging countries continue to grow. Therefore, it becomes increasingly important to understand how geopolitical risks impact ETF markets.

This study contributes to existing literature in several ways. At its core, this is the first study to explore the effect of geopolitical risk on ETF flows. Whilst the effect of geopolitical risk on stock markets have been studied, the effect on ETF market needs further investigation because the effect of geopolitical risk on different asset classes is not uniform as reported by Będowska-Sójka et al. (2022). Therefore, the first contribution of this study is that it provides insight into the effect of geopolitical risk on ETF markets. Notably, the effect of geopolitical risk on ETF returns and volatility have been investigated, however, the effect on fund flows is yet to be investigated. Such a study is vital because ETF flows contribute to the growth of the market which also promotes the growth and liquidity of constituent securities (Son, et al., 2023), therefore, it is important to understand the factors which contribute to the growth of ETF markets, or the lack thereof. Hence, the second contribution of this study is that it exemplifies research on the effects of geopolitical risk on alternative dynamics of ETF markets, in this case, fund flows. The third contribution of this study is that it concentrates on emerging markets in which the ETF market conditions and geopolitical risks are fundamentally different from their developed counterparts (Bossman and Gubareva 2023). Furthermore, this study uses a disaggregated approach to explore the individual country-specific effects while most studies on emerging countries use a panel approach. This is particularly important because countries do not have a uniform reaction to geopolitical risks (Balcilar et al., 2018). As part of the additional analysis, this study also examines the effects of geopolitical risk on ETF liquidity. Therefore, a further contribution of this study is that it extends knowledge of the determinants of ETF liquidity which is fundamental to their competitiveness against other funds.

This paper is structured as follows: the next section outlines the data and methodology. Thereafter, the results are presented. Finally, the study is concluded.

DATA AND METHODOLOGY

Data

The main variables of this study are geopolitical risk and ETF flows. Geopolitical risk is measured using the geopolitical risk indices constructed by Caldara and Iacoviello (2022) which is widely used in existing literature (see Salisu et al. 2022; Bossman and Gubareva 2023; Zhang et al. 2023). The geopolitical risk index of Caldara and Iacoviello (2022) measures the proportion of articles discussing adverse geopolitical events and associated threats in popular newspapers in the U.S, U.K, and Canada relative to the total number of articles published by these newspapers. Accordingly, an increase in the geopolitical risk index signifies an increase in geopolitical risk. The index data is available for monthly frequencies which can be retrieved from: https://www.matteoiacoviello.com/gpr.htm.

Following Ammann et al. (2019) and Apau et al. (2021), ETF flows are defined as the net growth in assets under management beyond reinvested returns, which are computed as follows:

$$\mathrm{Flow_t} = \frac{\mathrm{TNA_t} - \mathrm{TNA_{t-1}}(1 + \mathrm{R_t})}{\mathrm{TNA_{t-1}}} \tag{1}$$

where $Flow_t$ represents the ETF's net flow for month t, TNA_t represents the ETF's total net assets at the end of month t and R_t is the return on ETF during month t. To account for other explanations of ETF

flows, ETF returns and liquidity are included as control variables whereby liquidity is captured using Amihud's (2002) illiquidity ratio. The ETF data are obtained from the EquityRT database. The natural log transformation is used for all series in order to maintain comparison (Bossman and Gubareva 2023).

The sample period for this study varies from July 2013 to June 2023 with the exception of Egypt and Philippines which start in February 2015 and January 2014, respectively. The emerging markets included in this sample are selected based on the availability of ETF data on the EquityRT platform as well as availability of data on the geopolitical risk index provided by Caldara and Iacoviello (2022). As a result, only 8 emerging markets are included in this sample and these markets include Brazil, Chile, China, Egypt, India, Philippines, South Africa, and Taiwan. For each emerging market, a broad equity market ETF is analysed as outlined in Table 1.

Table 1. Sample of ETFs

No.	Country	ETF Name	Benchmark Index
1	Brazil	It Now PIBB IBrX-50 ETF	Brazil 50 Index
2	Chile	Ishares MSCI Chile ETF	Ishares MSCI Chile ETF
3	China	China 50 ETF	SSE50 Index
4	Egypt	EGX 30 ETF	EGX 30 Index
5	India	Nippon India ETF Nifty BeES	CNX Nifty Index
6	Philippines	First Metro Philippine Equity ETF	PSEi Index
7	South Africa	Satrix 40 ETF	JSE Top 40 Index
8	Taiwan	TAIEX ETF	TAIEX Index

Notes: For Chile, the sample includes the Ishares MSCI Chile ETF trading on the Santiago Stock Exchange.

Methodology

The effect of geopolitical risk on ETF flows is examined using Vector Autoregressive (VAR) models introduced by Sims (1980). The choice of this empirical methodology is motivated by the stationarity of the variables at levels since these models are traditionally designed for stationary variables (Cellmer et al. 2009). To achieve the objectives of this study, the following VAR model is estimated for each ETF:

$$\begin{bmatrix}\mathrm{LnFlow_t}\\ \mathrm{LnGPR_t}\end{bmatrix} = \begin{bmatrix}\alpha_{\mathrm{LnFlow}}\\ \alpha_{\mathrm{LnGPR}}\end{bmatrix} + \sum_{m=1}^{M} \mathrm{A_m}\begin{bmatrix}\mathrm{LnFlow_{t-m}}\\ \mathrm{LnGPR_{t-m}}\end{bmatrix} + \sum_{n=0}^{N} \mathrm{B_n}\begin{bmatrix}\mathrm{LnR_{t-n}}\\ \mathrm{LnAmihud_{t-n}}\end{bmatrix} + \begin{bmatrix}\mathrm{e_{LnFlow,t}}\\ \mathrm{e_{LnGPR,t}}\end{bmatrix} \quad (2)$$

In Equation (2), the main variables of interest are $LnFlow_t$ which represents the natural log of the ETF's net flow during month t calculated using Equation (1) and $LnGPR_t$ which represents the natural log of the country's geopolitical risk rating. To account for alternative sources of ETF flows, LnR_t which captures the ETF's log returns and $LnAmihud_t$ which captures the ETF's liquidity are included as exogenous variables in the VAR equation. ETF returns are included to account for the effect of performance on fund flows as reported by Rakowski and Wang (2009) and Arendse, et al. (2018) while the Amihud ratio accounts for the effect of liquidity on ETF flows as reported by Broman and Shum (2018). In Equation (2), α and e respectively denote the constant and error terms. A_m and B_n are parameter estimates. Additionally, M and N respectively denote the optimal lag lengths of the endogenous and exogenous variables which are selected using the information criterion. In addition to the VAR models, impulse response functions and granger causality tests are analysed to assess the effect of geopolitical risks on ETF flows. Impulse response functions are employed to trace the effect of a one standard deviation shock in one of the variables on the endogenous variables in the system while granger causality tests are employed to examine whether one variable is significant in forecasting another variable.

RESULTS

Descriptive Statistics and Unit Root Tests

The descriptive statistics in Table 2 indicate that, on average, the surveyed ETFs have positive net flows suggesting that funds flow into ETFs on average, with the exception of Taiwan. These positive net flows contribute to the growth of ETF markets and may be attributed to their rising popularity. The ETF with the highest average monthly net flows is the Egyptian ETF which may be expected since there is only one ETF trading on The Egyptian Exchange (EGX 2023) while there are several ETFs for investors to choose from in the other emerging markets. The country with the highest average and standard deviation for the geopolitical risk index is China indicating that China exhibits the greatest geopolitical risk on average and its geopolitical risk is relatively volatile. This finding is expected given China's recent geopolitical

tensions with India, Japan, and the U.S amongst other nations (Singh and Roca 2022).

Table 2. Descriptive Statistics

Country	$Flow_t$		GPR_t	
	Mean	**Std. Dev**	**Mean**	**Std. Dev**
Brazil	0.0023	0.0058	0.0575	0.0429
Chile	0.0005	0.0065	0.0146	0.0138
China	0.0008	0.0071	0.7365	0.3630
Egypt	0.0032	0.0079	0.1473	0.0952
India	0.0010	0.0033	0.1909	0.0918
Philippines	0.0011	0.0027	0.0469	0.0383
South Africa	8.71E-05	0.0088	0.0477	0.0313
Taiwan	-0.0016	0.0098	0.1013	0.1249

Prior to estimating the VAR models, it is important to confirm the stationarity of the variables. Table 3 presents the results of the Phillips-Perron (1988) unit root tests conducted on the natural log transformation of the variables. The results in Table 3 indicate that the null hypothesis of a unit root is rejected for all the variables of all the countries at a 1% level of significance, thereby, indicating that the variables are stationary at levels. This finding supports the use of the VAR models to investigate the effect of geopolitical risk on ETF flows.

Table 3. Phillips-Perron Unit Root Test Results

Country	$LnFlow_t$	$LnGPR_t$	LnR_t	$LnAmihud_t$
Brazil	-9.8876*	-8.1987*	-11.1727*	-9.1621*
Chile	-8.6837*	-6.3975*	-14.6164*	-9.2616*
China	-9.1008*	-4.7593*	-9.9115*	-9.9129*
Egypt	-9.6191*	-8.0613*	-9.7285*	-6.9822*
India	-9.9586*	-7.4185*	-11.2556*	-6.8775*
Philippines	-9.6441*	-9.7567*	-11.1871*	-10.1464*
South Africa	-4.2238*	-9.4448*	-12.1163*	-9.0804*
Taiwan	-10.5340*	-3.6473*	-11.7592*	-4.7368*

Notes:
1. The table provides the Phillips-Perron (1988) test statistic.
2. * denotes statistical significance at a 1% level of significance.

Main Results

The results of the VAR models estimated for each emerging market are provided in Table 4. The results are only provided for the regressions with ETF flow as the dependent variable, and the coefficients of interest are the lagged geopolitical risk ratings ($LnGPR_{t-m}$) which provide insight into the response of ETF flow to geopolitical risk.

For Brazil, Chile, China, India, and Taiwan, the lagged one-month geopolitical risk rating ($LnGPR_{t-1}$) exhibits a significant, positive effect on ETF flows. This implies that an increase (decrease) in the geopolitical risk of these countries lead to an increase (decrease) in ETF flows in the next month. For Egypt and South Africa, only the lagged second-month geopolitical risk rating ($LnGPR_{t-2}$) exhibits a significant effect on ETF flow, in which case, the effect is also positive. This implies that there is a delayed reaction whereby an increase (decrease) in the geopolitical risk ratings of Egypt and South Africa lead to an increase (decrease) in ETF flows in the next two months. For India and Taiwan, the positive effect of geopolitical risk remains significant even in the second month, however, the effect becomes negative three months after changes in Taiwan's ratings. On the contrary, the lagged second-month geopolitical risk rating displays a negative effect on ETF flows in Philippines suggesting that an increase (decrease) in Philippine's geopolitical risk leads to a decrease (increase) in ETF flows two months after the change in the rating.

Overall, these findings imply that geopolitical risk exhibits a positive effect on ETF flows in the surveyed ETF markets, with the exception of Philippines. The positive effect of geopolitical risk on ETF flows in Brazil, Chile, China, Egypt, India, South Africa, and Taiwan implies that, when geopolitical risk increases, investors shift away from risky assets towards safer asset classes (in this case, ETFs), subsequently, leading to increased net flows for ETF markets. This finding confirms the relevance of the Prospect Theory and coincides with flight-to-safety effect reported by Yousefi and Najand (2022). However, the negative effect for Philippines coincides with Limited Market Participation theories suggesting that investors opt out of financial market participation during increased risk exposures because investors reduce their trading

activities when geopolitical risk increases in Philippines, subsequently, leading to a decrease in ETF net flows. This finding for Philippines is consistent with the findings of Lee (2023) who discovered that geopolitical risk and stock market participation have a negative relationship.

Table 4. Results of the VAR Models

Variable	Brazil	Chile	China	Egypt	India	Philippines	South Africa	Taiwan
$LnFlow_{t-1}$	0.0446 [0.6525]	-0.1566 [-1.1000]	0.1425** [2.2144]	0.0731 [0.7458]	0.0994*** [1.3918]	0.0895 [1.1106]	0.2565 [1.1479]	-0.1019 [-0.8713]
$LnFlow_{t-2}$	-0.0195 [-0.2812]	0.2925** [1.7932]	0.1424** [2.2189]	0.1543*** [1.5826]	0.0493 [0.6897]	0.1145*** [1.4346]	0.2089 [1.0166]	0.0440 [0.4125]
$LnFlow_{t-3}$								0.1272 [1.2129]
$LnGPR_{t-1}$	0.3691** [1.7250]	1.1884* [2.4056]	0.7334** [1.8602]	-0.2183 [-0.5878]	1.2381* [2.7806]	-0.0883 [-0.4111]	0.4065 [0.3587]	0.7554** [2.1380]
$LnGPR_{t-2}$	-0.2696 [-1.2336]	0.2578 [0.4851]	0.1681 [0.4336]	1.2341* [3.3744]	1.3496* [3.0372]	-0.3850** [-1.7759]	2.9477*** [1.4527]	0.5645*** [1.6204]
$LnGPR_{t-3}$								-0.8041** [-2.2063]
Constant	-1.5217 [-1.2731]	8.6109** [2.2703]	12.0748* [7.0998]	-3.9356* [-2.6959]	6.5265* [3.4377]	-4.5944* [-2.9395]	8.2321 [1.1104]	-5.9961* [-3.5915]
LnR_t	-0.1399 [-0.0636]	-7.6059*** [-1.4402]	-1.6436 [-0.6677]	2.7487 [1.1067]	5.3586*** [1.4273]	-4.9701*** [-1.3511]	6.2177 [0.3039]	3.0600 [0.5712]
$LnAmihud_t$	1.1070* [10.220]	1.5914* [6.4679]	1.6347* [12.8702]	0.3532* [4.1156]	1.1037* [9.2709]	0.8746* [6.7551]	0.3115 [0.5347]	0.2820* [4.1797]
AIC	6.0240	6.6042	4.2700	5.8626	5.1663	6.4191	5.8390	6.4591
SBIC	6.3545	7.2200	4.6538	6.2677	5.5080	6.7589	6.4474	7.0283

Notes:
1. T-statistics are provided in brackets below the coefficient estimates.
2. The critical threshold values at a 1 %, 5 %, and 10 % level of significance are 2.364, 1.660, and 1.290, respectively.
3. *, **, and *** denote statistical significance at a 1 %, 5 %, and 10 % level of significance, respectively.

For completion, the VAR results in Table 4 also indicate that ETF flows are positively autocorrelated in Chile, China, Egypt, India, and Philippines. Positive autocorrelations in fund flows may be driven by herd behaviour (Del Guercio and Tkac 2002) and was also reported by Rakowski and Wang (2009), Ben-Rephael et al. (2011), and Staer (2017). Additionally, ETF flows are significantly influenced by their returns and liquidity in some countries. For instance, ETF returns have a significant, positive effect of ETF flows in India but a negative effect in Chile and Philippines. The Amihud ratio exhibits a consistent positive and significant effect in all emerging markets except South Africa. This implies that ETF flows are positively influenced by greater price impacts (measured by the Amihud ratio) which may be driven by increased demand for these funds.

To further investigate the effect of geopolitical risk on ETF flows, the impulse response functions associated with the VAR models are presented in Figure 1. The impulse response functions in Figure 1 display the response of ETF flows to geopolitical risk ratings in each country. Overall, the impulse response functions conform with the VAR results. In particular, the impulse response functions indicate that shocks in geopolitical risk have positive impacts on ETF flows in all emerging markets except for Philippines where the impact is negative. However, the impacts are only statistically significant in Chile (period 2), China (period 4), Egypt (period 3), India (periods 2 and 3), and Taiwan (periods 2, 3, and 5) confirming a strong positive effect of geopolitical risk on ETF flows in these emerging markets.

Additionally, granger causality tests are used to detect possible causality from geopolitical risk to ETF flows. The null hypothesis for the test states that geopolitical risk does not granger cause ETF flow, and the results are provided in Table 5. The null hypothesis is rejected in Chile, China, Egypt, India, and Taiwan implying that geopolitical risk granger causes ETF flows in these countries, thus, providing evidence of a strong relationship between geopolitical risk and ETF flows in Chile, China, Egypt, India, and Taiwan – confirming the results of the impulse response functions. Whilst the granger causality tests do not provide an indication of the direction of the relationship, the VAR and impulse response functions suggest that the relationship is positive for these countries, consistent with flight-to-safety effect.

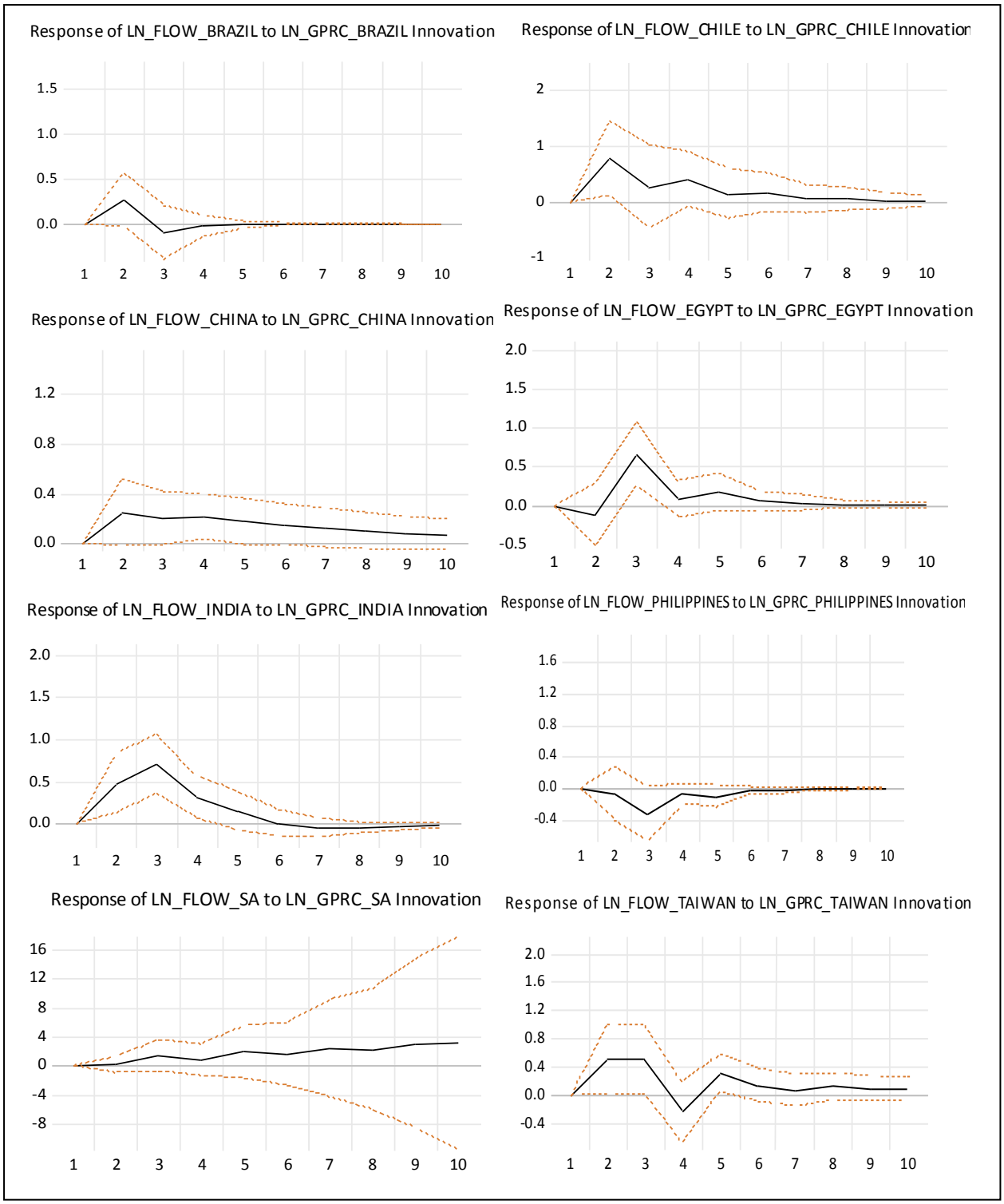

Figure 1. Impulse Response Functions

Table 5. Results of the Granger Causality Tests

Country	**Chi-squared Stat.**	**Prob.**
Brazil	3.5522	0.1693
Chile	7.1602**	0.0279
China	8.3291**	0.0155
Egypt	11.3883*	0.0034
India	26.0474*	0.0000
Philippines	3.5622	0.1684
South Africa	2.2621	0.3227
Taiwan	11.5307*	0.0092

Notes:
1. Null hypothesis: $LnGPR$ does not granger cause $LnFlow$.
2. *, **, and *** denote statistical significance at a 1 %, 5 %, and 10 % level of significance, respectively.

Further Analysis

Further analysis is conducted on the effect of geopolitical risk on ETF liquidity. Liquidity is proxied using Amihud's (2002) illiquidity ratio, and the results of the VAR models are provided in Table 6 for the regressions with the Amihud ratio as the dependent variable. The results in Table 6 indicate that historical geopolitical risk ratings exhibit a significant negative effect on the ETFs' Amihud ratios in all emerging markets except Egypt and Philippines. This implies that an increase (decrease) in geopolitical risk leads to a decrease (increase) in the Amihud ratio and, thus, an increase (decrease) in liquidity. Put together, these findings suggest that geopolitical risk exhibits a positive effect on ETF liquidity in all emerging markets except Egypt and Philippines. This positive effect on ETF liquidity contradicts the findings of Fiorillo, et al. (2023) who discover that geopolitical risk has a negative effect on stock market liquidity. In addition, the results in Table 6 also indicate a consistent, positive relationship between ETF flows and the Amihud ratio in line with the main results. The combined results, therefore, indicate that, on average, higher geopolitical risk increases the net flow to emerging markets' ETFs and brings about additional liquidity except for Egypt in which case ETF liquidity is not significantly impacted by geopolitical risk and Philippines where ETF flows are negatively impacted by geopolitical risk while liquidity is not impacted.

Table 6: Results of the VAR Models for Liquidity

Variable	**Brazil**	**Chile**	**China**	**Egypt**	**India**	**Philippines**	**South Africa**	**Taiwan**
$\mathbf{LnAmihud_{t-1}}$	0.1574** [2.3025]	0.0627 [0.5572]	0.0646 [0.9726]	0.2561** [2.3520]	0.2566* [4.1886]	0.0886 [1.0856]	0.0313 [0.3163]	0.5781* [6.8334]
$\mathbf{LnAmihud_{t-2}}$	0.0672 [0.9839]	-0.1630*** [-1.3977]	0.0105 [0.1563]	0.0706 [0.6685]	0.1428** [2.2648]	0.1433** [1.7912]	0.0752 [0.7626]	0.1324*** [1.5352]
$\mathbf{LnAmihud_{t-3}}$					0.2316* [3.6569]			
$\mathbf{LnGPR_{t-1}}$	-0.2987** [-2.2816]	-0.3690*** [-1.5025]	-0.3548** [-1.7502]	-0.3961 [-0.8738]	-0.2162 [-0.9669]	-0.1108 [-0.8287]	-0.2472 [-1.1102]	-0.4798** [-1.8092]
$\mathbf{LnGPR_{t-2}}$	0.1488 [1.1005]	-0.2953 [-1.1065]	-0.0870 [-0.4347]	-0.5208 [-1.0961]	-0.3875** [-1.7270]	0.1439 [1.0391]	-0.5286** [-1.7239]	-0.1007 [-0.3649]
$\mathbf{LnGPR_{t-3}}$					-0.2551 [-1.1771]			
Constant	-0.972*** [-1.3101]	-6.8674* [-3.9458]	-7.0205* [-6.0886]	2.1183 [1.5111]	-1.1778 [-1.0219]	-0.1774 [-0.1833]	-6.5401* [-4.8314]	2.8369* [2.9889]
$\mathbf{LnR_t}$	0.5338 [0.4004]	3.9858** [1.7114]	-0.1461 [-0.1298]	-2.6050 [-0.8842]	0.8317 [0.4527]	2.0108 [0.8663]	10.1199* [3.0661]	-3.9371 [-0.8908]
$\mathbf{LnFlow_t}$	0.4457* [10.661]	0.3165* [4.8269]	0.3887* [11.579]	0.4474* [3.5967]	0.4089* [11.7741]	0.3455* [6.8270]	0.2293* [3.9220]	0.6049* [6.5757]
AIC	5.0476	5.5387	3.0203	6.2286	3.7465	5.4206	5.0440	6.5454
SBIC	5.3781	6.0361	3.3721	6.6338	4.1785	5.7604	5.4738	6.9057

Notes:
1. T-statistics are provided in brackets below the coefficient estimates.
2. The critical threshold values at a 1 %, 5 %, and 10 % level of significance are 2.364, 1.660, and 1.290, respectively.
3. *, **, and *** denote statistical significance at a 1 %, 5 %, and 10 % level of significance, respectively.

Implications of Findings

Overall, except for Philippines, the results of this study suggest that geopolitical risk contributes to the growth of emerging markets' ETFs by increasing net flows to ETF markets when geopolitical risk increases. This may be attributed to the flight-to-safety effect whereby investors view ETFs as safe havens during periods of heightened geopolitical risk, consequently, resulting in a shift towards ETFs. This shift towards ETFs subsequently creates additional liquidity in ETF markets except in Egypt and Philippines. Therefore, geopolitical risk serves as an important source of ETF liquidity in emerging markets. These important findings have implications for various stakeholders.

Firstly, for investors and fund managers, these findings indicate that ETF markets are not immune to the effects of geopolitical risks. Therefore, investors and fund managers need to carefully consider the impact of geopolitical risks on the ETFs in their portfolios. For instance, ETFs with exposure to geopolitical risks may be subject to shocks in fund flows and liquidity when geopolitical risk ratings change. Thus, investors who are primarily concerned with stability in liquidity should avoid ETFs with excessive exposure to geopolitical risks. Secondly, for policymakers and regulators, these findings indicate that geopolitical risks serve as important sources of growth and liquidity in ETF markets. Therefore, policymakers and regulators should devise policies to maintain stability in geopolitical factors rather than attempting to reduce geopolitical risk as this could have adverse consequences on ETF growth and liquidity which could, subsequently, spill-over to broader financial markets. Further, the presence of the flight-to-safety effect may indicate that investors are subject to behavioural biases and, therefore, it is important for regulators to provide financial education which aims to eradicate the presence of behavioural biases in the investment decision-making process. Thirdly, for academics and researchers, these findings indicate that geopolitical risk are significant determinants of ETF flows and liquidity and should be considered when developing asset pricing models which compensate investors for size and liquidity factors. However, it is important to acknowledge that the effect of geopolitical risk is not uniform across emerging markets.

In terms of recommendations for future studies, it is important for future studies to explore the effect of other forms of political risk on ETF markets to determine whether the effect is uniform across different forms of political risk. Likewise, it is also important to understand how geopolitical risks impact other dynamics of ETF markets, such as volatility and return predictability, which are important considerations when making ETF investment decisions. Further research can also provide a comparison of the effect of geopolitical risk on ETF flows in emerging and developed markets to identify whether the effect varies across different countries. In a similar manner, future studies can compare the effect on fund flows to ETFs and mutual funds to shed light on whether the effect is uniform across different funds. It is also important to examine whether these effects have been magnified by extreme geopolitical events such as the Russia-Ukraine war once there is enough data observations.

CONCLUSION

Despite increasing geopolitical risks in emerging markets, ETFs trading in these markets continue to grow both in size and number. To further understand the connection between geopolitical risk and ETF markets, this study investigated the effect of geopolitical risks on ETF flows in emerging markets. To achieve this objective, ETFs trading in eight emerging markets (which are, Brazil, Chile, China, Egypt, India, Philippines, South Africa, and Taiwan) were surveyed from July 2013 to June 2023 using VAR models and their associated impulse response functions as well as granger causality tests. Consistent with the flight-to-safety effect, the results indicated that geopolitical risk has a significant, positive effect on ETF flows in the emerging markets except for Philippines where the effect is significantly, negative. Further analysis revealed that geopolitical risk has a significant, positive effect on ETF liquidity in emerging markets except for Egypt and Philippines. These findings have important implications for various stakeholders including investors, regulators, and researchers. Noteworthy is that these findings imply that geopolitical risks in emerging markets impact trading activities whereby there is a shift towards ETFs which offer low-cost diversification. However, investors need to ensure that this flight-to-safety is not influenced by biases and emotions, but rather it should be based on fundamental factors.

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