

Geopolitical risk and equity returns: Evidence from global markets

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Abstract

Geopolitical events have emerged as critical drivers of financial market uncertainty. We show that their effects have heterogeneous consequences around the globe, both at the aggregate index level and for individual stocks. Using country-specific geopolitical risk measures, this paper examines the persistent effects of geopolitical risk on global equity markets and firm-level returns. At the market level, we document an immediate and negative response of equity returns to increases in geopolitical risk, with stronger effects observed in emerging markets. At the stock level, controlling for standard asset pricing factors, we uncover substantial heterogeneity in firms' exposure, both in magnitude and timing. Firms in developed markets tend to respond contemporaneously, whereas those in emerging markets exhibit delayed reactions. We further explore the investment implications by forming portfolios based on firm-level geopolitical risk exposure. Evidence from the U.S. and Chinese equity markets shows that portfolios constructed using contemporaneous exposure information outperform market benchmarks likely due to look-ahead bias. However, those based on lagged estimates largely track benchmark performance. Overall, our findings highlight geopolitical risk as a persistent pricing factor with meaningful implications for asset pricing and portfolio management beyond extreme events.

Keywords: Geopolitical Risk; Stock Returns; Panel Data; Portfolio choice

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1 Introduction

Geopolitical events are no longer peripheral shocks to financial markets; in the past decade, they have become central forces shaping risk, return, and capital allocation. From trade disputes and sanctions to military conflicts and shifting alliances, political developments increasingly dictate investor sentiment and asset pricing. Traditional financial models often assume risk as a function of economic fundamentals, yet evidence shows that geopolitical uncertainty can trigger volatility spikes, too ([Elsayed and Helmi \(2021\)](#), [Caldara and Iacoviello \(2022\)](#), [Ren et al. \(2023\)](#)).

As a consequence, the stability of the financial system has been increasingly challenged by geopolitical events. Over the past decade, a series of regional conflicts have documented adverse market reactions to heightened geopolitical threats, such as the Russia–Ukraine war ([Federle et al. \(2024\)](#), [Martins et al. \(2023\)](#), [Ahmed et al. \(2023\)](#)) and the Israel–Palestine conflict ([Goyal and Soni \(2024\)](#)). Within an event-study framework, [IMF \(2025\)](#) reports an average decline of approximately 1% in stock returns following major geopolitical shocks, with the effect being considerably more pronounced - around 2.5% - in emerging markets. Beyond these episodic episodes, the global financial environment has witnessed a structural transformation of geopolitical risk. Instead of manifesting itself only during rare, tail events, the GeoPolitical Risk (GPR) index and the firm-level exposure has been considered as a potential pricing factor that shape investors' sentiments ([He \(2023\)](#)) and capital allocation decisions as it could interfere with the direction of international investment flows ([Wang et al. \(2021\)](#), [Babic \(2023\)](#)) or exhibit heterogeneous correlations across asset classes ([Chiang \(2021\)](#)). This highlights the pertinence of these risks for asset pricing as well as for financial stability.

However, the existing literature largely treats geopolitical risk as an aggregate shock, with an implicit assumption that the markets and firms are exposed to homogeneous level of uncertainty. Such an assumption does not accommodate the observed reality, given the diversity lying in the geographical distance, cultural difference, supply chain concentration and political position across different jurisdictions or firms ([Pellegrino et al. \(2025\)](#), [Zhu et al. \(2025\)](#)). Realizing this issue, [Caldara and Iacoviello \(2022\)](#) constructs country-specific geopolitical risk indexes for 44 countries using the proportion of key relevant words mentioned in selected newspapers. While there is still no consensus in the literature regarding the optimal construction of local geopolitical risk proxies ([Bondarenko et al. \(2024\)](#)), the country geopolitical indexes calculated by [Caldara and Iacoviello \(2022\)](#) does allow us to examine the persistent effects of geopolitical risk across countries and, potentially, at the firm level. Building on this framework, we move beyond viewing geopolitical risk as a collection of isolated events or as a purely aggregate measure. We examine the lasting effects of geopolitical risk on individual stocks and global equity markets, with an emphasis on cross-country and cross-firm heterogeneity. By doing this, we provide a more nuanced understanding of the role of geopolitical risk in asset pricing by illuminating how variations in geopolitical exposure translate into return dynamics and investment implications.

First, our study starts by investigating the impact of geopolitical risk on equity returns at the aggregate market level. The variable of interest in our panel (38 countries) is the surprise in GPR measured as the residual from an AR(1) model. Control variables include four macro economic factors (economic growth, monetary policy, inflation and default risk) as the control variables. Our regression results show that the impact of geopolitical shocks on the

overall market returns are negative and immediate. Every one unit rise in GPR residual could result in the market return decrease by approximately 1%. Our analysis by country and group shows that the negative link is not homogeneous and that emerging markets experience more pronounced effects.

Second, we conduct a stock-level analysis to examine how geopolitical risk propagates across financial markets. Controlling for standard Fama–French risk factors and the momentum factor, we relate individual stock returns to country-level geopolitical risk. The estimated coefficients again capture substantial heterogeneity, but this time in firms’ exposure to geopolitical risk. This reflects dispersion in the intensity and timing of its impact. Our results show that in most countries, firms experience an immediate negative response to increases in geopolitical risk. Over a one-month horizon, however, the effects diverge across markets. Stocks in developed economies tend to react contemporaneously, whereas those in emerging markets exhibit a more delayed response.

Third, we examine the investment implications of firms’ sensitivity to geopolitical risk by constructing portfolios based on their estimated exposure. Focusing on the U.S. and Chinese equity markets, we extract rolling firm-level geopolitical risk betas and implement a screening strategy that selects large-cap firms with positive exposure. Portfolios formed using contemporaneous information outperform the market benchmark, while those based on lagged estimates largely track benchmark performance. This means that it is possible to benefit from geopolitical surprises only when they can be anticipated, which is far from evident. Our results remain robust when extending the sample to cover the longer period starting in 1984 but without credit data. The negative effect of geopolitical risk remains statistically significant after accounting for potential multicollinearity.

The contributions of the paper are threefold. First, we document substantial heterogeneity in the impact of geopolitical risk across financial markets. While the average effect of geopolitical risk on equity returns is negative, it does not apply uniformly across countries. Differences emerge not only in the magnitude of the response but also in its timing, with systematic contrasts between developed and emerging markets. Second, we extend the existing literature, which has largely focused on event-driven analyses, by showing that geopolitical risk acts as a persistent factor in equity pricing. Our findings highlight the importance of accounting for geopolitical uncertainty beyond crisis periods, as its influence remains economically meaningful even during relatively normal times. Third, we translate the estimated exposure to geopolitical risk into a portfolio setting and propose an investment approach based on firms’ sensitivity to GPR surprises. Unfortunately, we show that it is only possible to outperform the market if prior knowledge of GPR occurrence. All in all, this paper could be of interest to portfolio managers seeking to account for geopolitical risk in asset allocation, as well as to researchers and regulators interested in understanding how persistent geopolitical uncertainty shapes financial markets.

The rest of the paper is organized as follows. Section 2 reviews the existing literature on the impact of GPR on the economic and financial systems. Section 3 demonstrates and visualizes the GPR proxy, equity returns and macro variables which are inserted as control variables in the baseline analysis. Section 4 shows the empirical evidence on both market index level and single stock level, with robustness check with samples on a longer time span given in Section 5. Lastly, Section 6 concludes.

2 Literature Review

Several contributions identify geopolitics as a major source of risk to the global economic system. In a seminal speech, [Carney \(2016\)](#) highlights geopolitical uncertainty as a key factor with the potential to destabilize economic activity. Empirical evidence provided by [Caldara and Iacoviello \(2022\)](#) shows that heightened geopolitical risk is associated with lower investment and a higher probability of economic disasters. Focusing on Russia, [Bondarenko et al. \(2024\)](#) construct a country-specific GPR index and document negative effects on economic performance operating through supply disruptions, adjustments in central bank policy rates, and real exchange rate movements. In the context of persistently low economic growth, [Fontana and Sawyer \(2024\)](#) find that geopolitical risk further complicates growth prospects by undermining both domestic and international cooperation. Moreover, [Caldara et al. \(2025\)](#) show that geopolitical risk is associated with increased inflation uncertainty. Finally, [Pellegrino et al. \(2025\)](#) identify geopolitical distance as a significant barrier to global capital allocation, estimating that its removal (along with other frictions) could generate substantial gains in global output.

Beyond its macroeconomic implications, geopolitical risk (GPR) plays a central role in global financial markets. The literature shows that its effects operate primarily through channels of financial stability and market connectedness. [Chiang \(2021\)](#) examines multiple asset classes in China and finds that increases in GPR raise gold returns and strengthen stock–gold correlations. Adopting a dynamic spillover framework, [Elsayed and Helmi \(2021\)](#) show that financial markets in the Middle East and North Africa exhibit significantly stronger spillover responses during major geopolitical events. In a related vein, [Shahzad et al. \(2023\)](#) document that connectedness between commodity markets and GPR increases sharply during the Russia–Ukraine war, with GPR acting as a net transmitter of shocks to financial markets. More recently, [Khan et al. \(2025\)](#) analyze the dynamic connectedness between GPR and a broad set of asset classes during recent conflicts, finding that shock transmission from GPR to financial assets is limited on average but heterogeneous across horizons.

While much of the literature emphasizes market interdependence, a related strand highlights geopolitical risk as a fundamental determinant of asset prices. [Salisu et al. \(2022\)](#) document that equity markets in G7 economies exhibit pronounced sensitivity to GPR shocks. [Hirshleifer et al. \(2025b\)](#) introduce a war factor and show that it carries significant pricing power beyond standard asset pricing models. Extending this framework, [Hirshleifer et al. \(2025a\)](#) provide evidence of a time-varying war premium that has risen in recent years. Using portfolios sorted on geopolitical risk betas, [Sheng et al. \(2025\)](#) find that assets with greater exposure to geopolitical risk earn higher expected returns. At the global level, [Brogaard et al. \(2020\)](#) show that political uncertainty surrounding U.S. elections depresses international equity returns, while increasing sovereign bond returns and inducing currency depreciations in affected countries. Beyond equities and fixed income, [Li et al. \(2025\)](#) present evidence that geopolitical risk contributes to the formation of commodity price bubbles.

Prior research has developed GPR indices that are conceptually distinct from measures of economic policy uncertainty (see [Baker et al. \(2016\)](#)), and these indices have been widely adopted in subsequent empirical work (e.g., [Caldara et al. \(2016\)](#)). The availability of such measures has facilitated a rapidly expanding literature on the economic and financial consequences of geopolitical risk. Most existing approaches rely on media-based methodologies,

extracting information from news coverage through the identification of event-related reporting or keyword-based sentiment. In a seminal contribution, [Caldara and Iacoviello \(2022\)](#) construct a GPR index based on the share of geopolitically relevant articles in ten major U.S. newspapers relative to total news coverage, and extend the framework to produce country-specific indices for 44 economies. Building on a similar approach, [Bondarenko et al. \(2024\)](#) develop country-level GPR indices using national newspapers from five countries, adapting keyword dictionaries to local languages. Relatedly, [Sheng et al. \(2025\)](#) construct a GPR measure using articles from the *Wall Street Journal*, identifying geopolitically relevant content through a predefined dictionary-based classification.

This paper examines the impact of country-specific geopolitical risk on equity returns. While existing studies provide valuable data sources and empirical foundations for our analysis, important gaps remain in the literature. First, prior research largely relies on global or aggregate geopolitical risk measures, with limited attention to country-specific geopolitical risk indices and their interactions with domestic financial markets. Second, the effects of geopolitical risk on equity returns across different levels of granularity—from market indices to individual stocks—remain insufficiently explored. This study addresses these two gaps by focusing on country-level geopolitical risk and examining equity returns at both the aggregate and firm-specific levels.

3 Data and Descriptive Statistics

3.1 Country-Level Data

Our analysis first hinges on panel data spanning a comprehensive cross-section of countries. We resort to data sampled at the monthly frequency from the LSEG Workspace and consider two different samples, one shorter and one longer. The rationale for this is the availability of CDS data, which is a natural choice of control variable. The short dataset, which we use for our baseline results, includes CDS data and 38 financial markets (both developed and emerging), but only starts in March 2009. The dependent variable will be the return of the major market index and the corresponding descriptive statistics are compiled in Table 1. Across this baseline sample, all indices except that of Ukraine exhibit positive average returns. Israel, the United States, and Hungary stand out with relatively higher mean returns of 1.06%, 1.05%, and 1.04%, respectively.

The long sample, which will mostly serve for robustness checks, starts in February 1985 and encompasses 40 countries, but excludes CDS information. Both samples end in June 2025. The summary statistics for this extended sample are postponed to Table A.1 in the Appendix.

We employ the monthly geopolitical risk (GPR) indices introduced by [Caldara and Iacoviello \(2022\)](#) which provide country-specific measures based on newspaper coverage of adverse geopolitical events.¹ The country-specific indices are text-based, computed as the monthly share of articles in ten leading newspapers that discuss geopolitical tensions and related threats. To circumvent the potential issue of serial correlation in GPR series, we follow both [Caldara and Iacoviello \(2022\)](#) and [Zhang et al. \(2024\)](#) and resort to the residuals of an

¹Data downloaded from <https://www.matteoiacoviello.com/gpr.htm> on September, 2025.

Table 1: Descriptive Statistics of Global Financial Indices

Country	Index	No.	Mean	Std.	Median	Min.	Max.	1st quan.	3rd quant.
Argentina	S&P Merval	71	0.0090	0.1420	0.0170	-0.8419	0.3101	-0.0560	0.0948
Australia	S&P/ASX 200	64	0.0049	0.0627	0.0102	-0.2972	0.1566	-0.0288	0.0403
Belgium	BEL20	184	0.0043	0.0530	0.0084	-0.1839	0.2103	-0.0312	0.0357
Brazil	Bovespa Index	243	0.0023	0.0940	0.0041	-0.5067	0.2681	-0.0509	0.0595
Canada	S&P/TSX Composite	98	0.0060	0.0521	0.0063	-0.2435	0.1967	-0.0239	0.0395
Chile	S&P/CLX IPSA	243	0.0047	0.0686	0.0077	-0.2195	0.1849	-0.0430	0.0511
China (Mainland)	CSI 300	184	0.0002	0.0706	-0.0004	-0.2770	0.2194	-0.0400	0.0414
Colombia	COLCAP Index	227	0.0007	0.0791	0.0053	-0.4629	0.1850	-0.0404	0.0486
Denmark	OMX Copenhagen	241	0.0081	0.0571	0.0169	-0.1694	0.1834	-0.0269	0.0452
Finland	OMX Helsinki	184	0.0050	0.0567	0.0048	-0.1974	0.2253	-0.0261	0.0440
France	CAC40	184	0.0050	0.0577	0.0083	-0.1885	0.2072	-0.0358	0.0449
Germany	Deutsche Boerse Dax	184	0.0091	0.0596	0.0169	-0.2143	0.1637	-0.0331	0.0474
Hungary	BUX Index	241	0.0104	0.0798	0.0122	-0.3074	0.2364	-0.0238	0.0569
India	BSE Sensex	208	0.0085	0.0613	0.0071	-0.2999	0.3024	-0.0290	0.0417
Indonesia	Jakarta Composite	243	0.0055	0.0580	0.0066	-0.3115	0.2708	-0.0205	0.0353
Israel	TA-35	146	0.0106	0.0833	0.0159	-0.2321	0.2338	-0.0332	0.0598
Italy	FTSE MIB	184	0.0057	0.0696	0.0112	-0.2538	0.2304	-0.0369	0.0506
Japan	Nikkei 225	241	0.0054	0.0452	0.0060	-0.1206	0.1437	-0.0178	0.0366
Malaysia	FTSE Bursa Malaysia	137	0.0012	0.0451	0.0056	-0.1603	0.1506	-0.0266	0.0273
Mexico	IPC	243	0.0052	0.0681	0.0067	-0.3689	0.1729	-0.0349	0.0444
Netherlands	AEX Index	184	0.0058	0.0522	0.0112	-0.1591	0.1517	-0.0266	0.0360
Norway	OBX Index	438	0.0028	0.0643	0.0062	-0.2438	0.2092	-0.0351	0.0419
Peru	S&P/BVL General	127	0.0038	0.0660	0.0085	-0.2283	0.1778	-0.0375	0.0474
Philippines	PSEI	207	0.0033	0.0590	0.0114	-0.2417	0.1696	-0.0304	0.0409
Poland	WIG20	241	0.0084	0.0791	0.0048	-0.2369	0.2347	-0.0380	0.0589
Portugal	PSI 20	184	0.0021	0.0607	0.0045	-0.2172	0.1784	-0.0370	0.0459
Saudi Arabia	TASI	217	0.0047	0.0521	0.0100	-0.1902	0.1790	-0.0279	0.0389
South Africa	FTSE/JSE	239	0.0050	0.0652	0.0102	-0.2675	0.1785	-0.0373	0.0436
South Korea	KOSPI	245	0.0041	0.0687	0.0060	-0.2081	0.2369	-0.0397	0.0429
Spain	IBEX 35	184	0.0042	0.0666	0.0125	-0.2508	0.2484	-0.0335	0.0487
Sweden	OMXS30	241	0.0058	0.0591	0.0069	-0.1601	0.1789	-0.0295	0.0407
Switzerland	Swiss Market Index	212	0.0062	0.0434	0.0107	-0.1188	0.1123	-0.0223	0.0369
Thailand	SET Index	243	0.0028	0.0584	0.0006	-0.2128	0.1923	-0.0312	0.0375
Turkey	BIST 100	100	0.0029	0.0949	0.0036	-0.3279	0.2449	-0.0570	0.0691
United Kingdom	FTSE 100	212	0.0044	0.0466	0.0078	-0.1805	0.1454	-0.0243	0.0357
United States	S&P500	250	0.0105	0.0429	0.0177	-0.1337	0.1194	-0.0152	0.0365
Ukraine	PFTS Index	214	-0.0046	0.0789	-0.0014	-0.3428	0.4146	-0.0245	0.0151
Vietnam	VN-Index	144	0.0064	0.0657	0.0123	-0.3084	0.2381	-0.0273	0.0405

AR(1) process as follows. For each country i , we regress the raw GPR series against its past realization:

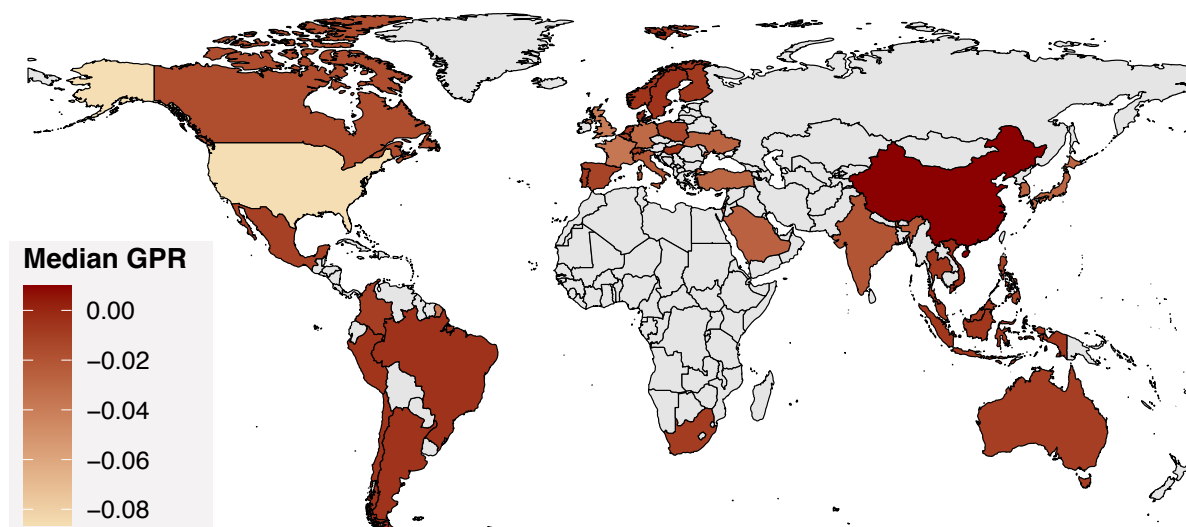
$$\text{GPR}_{i,t}^{\text{raw}} = \alpha \text{GPR}_{i,t-1}^{\text{raw}} + \text{GPR}_{i,t}, \quad (1)$$

and the residuals GPR will serve as the independent variable of interest.

Throughout the paper, we use this GPR innovation variable as the proxy for geopolitical risk, as illustrated in Figure 1. Panel A reports the median values across the 38 sample countries, indicating that the United States is typically subject to relatively mild risks, whereas China (Mainland) exhibits higher levels. Panel B presents the 90th percentile values to capture the dynamics under extreme conditions. In contrast to the normal-time pattern, the United States records the highest 90th percentile among the sample, suggesting that its financial mar-

ket is particularly vulnerable to geopolitical shocks during turbulent periods. Within Europe, both the United Kingdom and Ukraine display relatively elevated exposures to geopolitical risk. Among emerging markets, mainland China and Saudi Arabia exhibit relatively high 90th percentile values.

Panel A: Geopolitical Risk - Median Values by Market



Panel B: Geopolitical Risk - 90th Percentile Values by Market

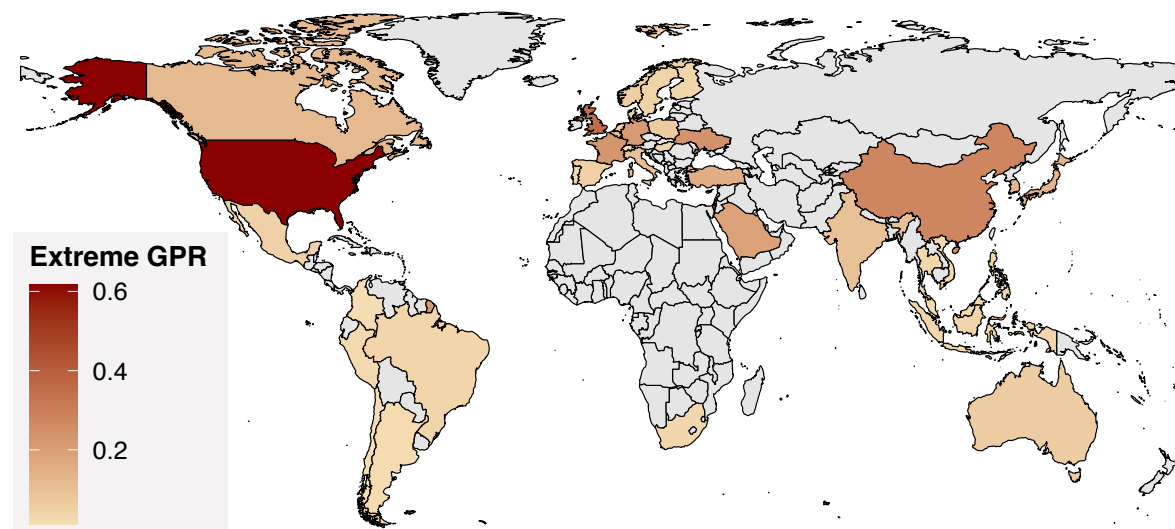


Figure 1: Geopolitical Risk by Market: Median and 90th Percentile Values.

Figure 2 presents the dynamics of GPR shocks from February 1985 to September 2025, with eight major adverse events highlighted by dotted vertical lines. Panels A and B display, respectively, the median and the 12-month rolling volatility of the GPR proxy for five key

countries. Both the median and volatility of the United States reach historical highs during the Gulf War and the 9/11 attack. A further notable spike is observed in Ukraine’s index in February 2022, coinciding with the outbreak of the Russia–Ukraine war, while the most recent peak is recorded for Israel in October 2023 during the Israel–Hamas conflict. Panel C reports median values aggregated by region, showing a sharp rise in Europe in late 1985, likely reflecting the combined effect of the U.S. bombing of Libya and the Chernobyl nuclear disaster. The Middle East, in turn, records the highest concentration of GPR peaks, consistent with the frequency of conflicts in the region. Finally, Panel D compares developed and emerging economies, where more extreme GPR values are evident in the developed country group.

To account for country-specific effects, we include four macroeconomic controls when examining the relationship between geopolitical risk and equity returns: (i) economic growth, measured by real GDP year-on-year growth (GDP); (ii) inflation, measured by CPI year-on-year growth (CPI); (iii) sovereign credit risk, proxied by the 5-year Credit Default Swap mid spread (CDS); and (iv) monetary policy, measured by M2 year-on-year growth (M2). Data are obtained from LSEG Workspace, FRED, and the IMF. Table 2 reports the correlations between equity index returns, GPR, and the macro variables. We find that GPR is negatively correlated with equity returns, r_{index} . By contrast, geopolitical risk is positively correlated with economic growth, indicating that weaker growth does not necessarily coincide with higher geopolitical risk, consistent with the evidence reported in [Jha et al. \(2024\)](#).

	r_{index}	GPR	GDP	CPI	M2	CDS
r_{index}	1.0000					
GPR	-0.0230	1.0000				
GDP	-0.0271	0.0134	1.0000			
CPI	0.0318	-0.0002	-0.0096	1.0000		
M2	0.0089	-0.0090	0.0124	0.1775	1.0000	
CDS	-0.0645	-0.0138	0.0412	0.5357	0.1728	1.0000

Table 2: **Correlation Coefficients.**

3.2 Firm-Level Data

In addition to aggregate market data, our study will rely on more granular stock-level returns. We extract stock prices across 40 countries from November 1990 to July 2025, again from LSEG Workspace. Table 3 presents the summary statistics for the corresponding monthly stock returns. The sample spans both developed and emerging markets and contains a large cross-sectional variation in market size. Countries such as the United States, Japan, China (Mainland), and major European economies account for several thousand stocks, whereas smaller or less developed markets are represented by more limited cross-sections. This imbalance reflects structural differences in market depth and listing activity across countries.

In terms of return characteristics, average monthly returns are modest across most markets, while return volatility differs substantially. Emerging markets generally exhibit higher standard deviations and more pronounced tail risks, as evidenced by larger absolute minimum and maximum returns. The dispersion between the first and third quartiles further

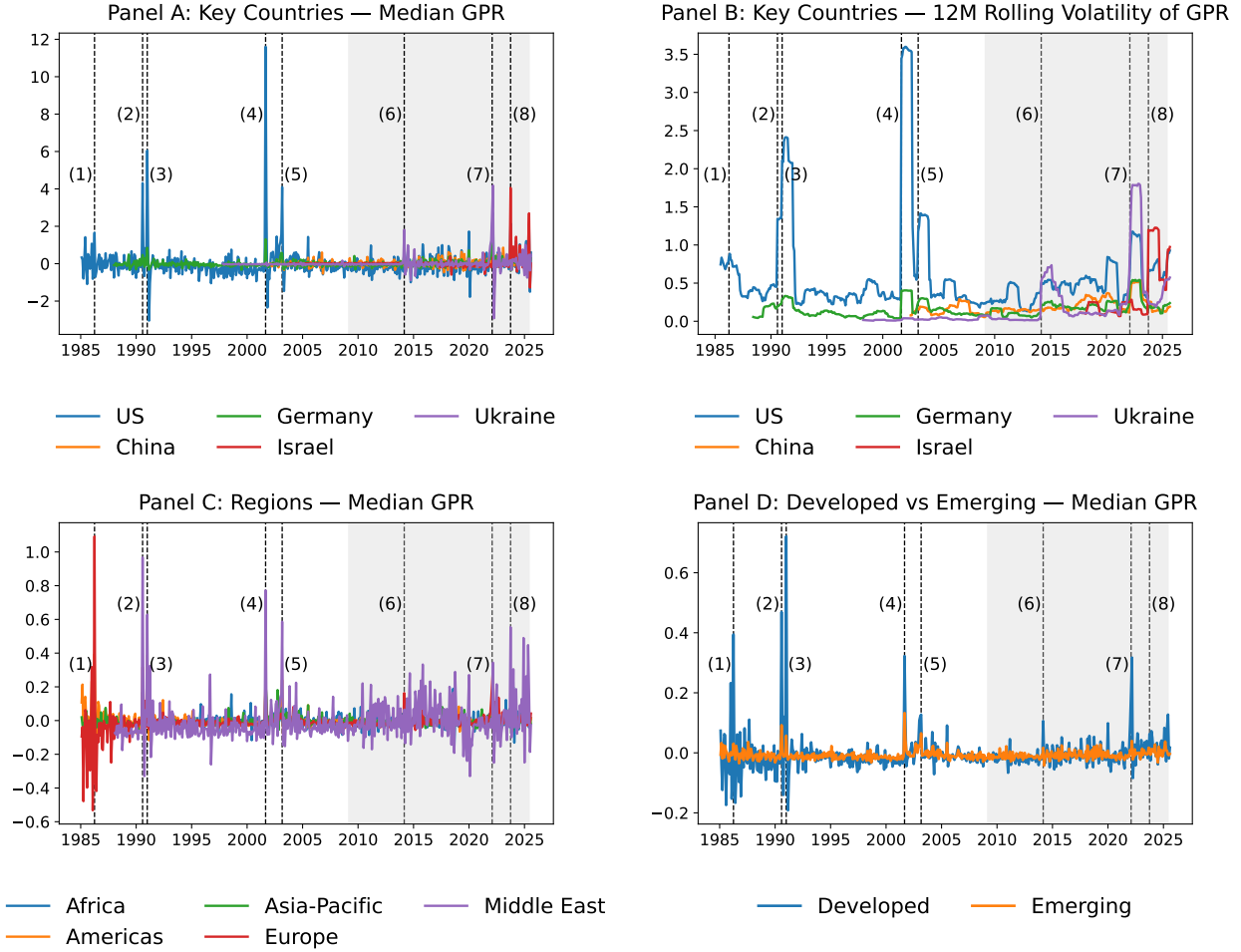


Figure 2: Time-Series of Geopolitical Risk Innovations. We plot the time-series of the GPR index for important countries and clusters thereof (regions and income groups). The figure shows the longer time span (October 1985 to June 2025) while data of the shorter time span (March 2009 to June 2025) used in this section are highlighted in gray. The numbers in brackets highlight eight adverse events:

- | | |
|--|---|
| (1): April 1986: Bombing of Libya & Chernobyl disaster | (2): August 1990: Iraq-Kuwait conflict |
| (3): January 1991: Gulf war | (4): September 2001: 9/11 terror attack |
| (5): March 2003: War in Irak | (6): March 2014: Russian annexation of Crimea |
| (7): February 2022: Russian invasion of Ukraine | (8): October 2023: Israel-Hamas escalation |

indicates non-negligible asymmetry and fat-tailed behavior in return distributions. Overall, these descriptive patterns suggest that equity markets differ markedly in both risk and return dynamics, motivating our subsequent analysis of heterogeneous responses to geopolitical risk at both the market and stock levels.

Finally, to control for the standard asset pricing anomalies, we resort to the series of the five [Fama and French \(2015\)](#) factors as well as on the momentum factors, all downloaded from

Country	No. of Stocks	Mean	Std.	Median	Min.	Max.	1st quan.	3rd quant.
Argentina	167	0.0145	0.2470	0.0081	-7.0187	5.6550	-0.0723	0.0942
Australia	3,048	-0.0121	0.2495	-0.0225	-6.3577	9.2103	-0.1252	0.0930
Belgium	614	-0.0060	0.2712	-0.0002	-9.9570	8.2272	-0.0493	0.0475
Brazil	744	0.0209	0.3765	0.0063	-11.2898	12.6115	-0.0732	0.0905
Canada	7,804	-0.0161	0.3074	-0.0273	-14.2855	5.9045	-0.1542	0.1141
Chile	212	0.0031	0.1496	0.0014	-4.6066	3.9120	-0.0462	0.0513
China (Mainland)	5,370	0.0014	0.1416	-0.0031	-3.1540	2.6678	-0.0739	0.0719
Colombia	78	0.0102	0.2176	0.0027	-3.3416	6.8354	-0.0457	0.0513
Denmark	461	-0.0039	0.1565	-0.0036	-8.6827	2.9034	-0.0574	0.0545
Finland	353	-0.0002	0.1338	-0.0016	-3.9120	2.6080	-0.0579	0.0569
France	2,987	-0.0063	0.1967	-0.0032	-7.1854	7.8478	-0.0654	0.0582
Germany	2,848	-0.0195	0.2984	-0.0070	-11.7895	9.3480	-0.0800	0.0605
Hungary	113	-0.0042	0.2247	-0.0066	-6.8648	5.6085	-0.0683	0.0562
India	7,182	-0.0011	0.2249	-0.0105	-13.2185	6.1638	-0.1054	0.0928
Indonesia	929	-0.0020	0.2000	-0.0047	-2.5130	3.3262	-0.0816	0.0701
Israel	945	-0.0070	0.2118	0.0159	-14.3808	10.3518	-0.0754	0.0682
Italy	740	-0.0061	0.1394	-0.0071	-11.0470	2.4170	-0.0596	0.0471
Japan	5,278	-0.0017	0.1240	-0.0032	-6.7429	2.3111	-0.0564	0.0507
Malaysia	1,456	-0.0041	0.1632	-0.0110	-3.9120	4.5695	-0.0700	0.0574
Mexico	301	0.0031	0.1614	0.0030	-4.7396	5.5292	-0.0505	0.0601
Netherlands	660	-0.0033	0.1552	0.0021	-4.8710	3.9179	-0.0474	0.0502
Norway	856	-0.0141	0.2565	-0.0075	-7.3132	7.4384	-0.0829	0.0721
Peru	291	0.0109	0.2322	0.0043	-4.3441	5.2550	-0.0674	0.0786
Philippines	326	0.0019	0.2059	-0.0124	-4.8463	7.0031	-0.0788	0.0659
Poland	1,713	-0.0085	0.2027	-0.0138	-4.8866	3.3868	-0.0889	0.0690
Portugal	137	-0.0039	0.2219	-0.0044	-5.4530	4.3944	-0.0588	0.0533
Russia	1,994	0.0057	0.1414	0.0087	-12.2248	7.4543	-0.0529	0.0669
Saudi Arabia	255	0.0020	0.1251	-0.0016	-1.5041	1.2663	-0.0567	0.0592
South Africa	936	-0.0035	0.2185	0.0028	-9.0240	6.3969	-0.0741	0.0742
South Korea	4,326	-0.0086	0.2137	-0.0093	-8.2965	3.9179	-0.0874	0.0720
Spain	584	-0.0050	0.2152	-0.0013	-8.0472	6.9087	-0.0503	0.0487
Sweden	1,817	-0.0113	0.1981	-0.0097	-5.4240	5.5215	-0.0870	0.0686
Switzerland	657	-0.0021	0.1503	0.0025	-5.6453	5.6168	-0.0463	0.0500
Thailand	1,224	-0.0057	0.1723	-0.0098	-7.2599	7.6393	-0.0671	0.0522
Tunisia	63	0.0000	0.1035	-0.0058	-2.1167	1.5202	-0.0447	0.0379
Turkey	1,168	0.0067	0.1953	-0.0021	-5.1160	4.7875	-0.0797	0.0881
United Kingdom	4,896	-0.0121	0.1969	-0.0099	-12.5461	9.2229	-0.0800	0.0633
United States	13,689	0.0004	0.1666	0.0051	-6.9078	5.1855	-0.0655	0.0709
Ukraine	64	0.0084	0.1780	0.0105	-5.1548	4.9822	-0.0425	0.0613
Vietnam	1,482	0.0032	0.1766	-0.0018	-6.8565	4.8283	-0.0763	0.0797

Table 3: Descriptive Statistics of Global Stock Returns.

[Kenneth French's website](#). The geographical splitting follows the rules outlined in Appendix B.

4 Empirical Evidence

4.1 Baseline Results

We first investigate the relationship between country GPR and market index return by running panel regressions. Our baseline results are compiled in Table 4, with both fixed-effect and pooled models. To test for predictive power, we also consider predictive models in which the independent variables are lagged (see columns (3) and (4)).

The results differ markedly between synchronous ($k = 0$) and lagged ($k = 1$) specifications. In the contemporaneous regression, geopolitical risk is found to exert a negative effect on stock market returns, regardless of whether fixed effects are included or not. Specifically, a one-unit increase in country-level geopolitical risk is associated with a 1.04% decline in the equity index return (0.94% under pooled OLS) within the same period. In contrast, when the GPR and controls are lagged, the signs remain negative, but the statistical significance vanishes, suggesting that markets price GPR instantly rather than slowly. When extending the data to earlier periods, the results are essentially the same (see Section 5.1).

To address potential concerns related to multicollinearity between geopolitical risk and macro variables, we conduct diagnostic tests, which are reported and discussed in Section 5.2. Although our baseline specifications include several potentially correlated covariates, diagnostic tests indicate that multicollinearity does not drive our results.

4.2 Heterogeneity between Countries

We next conduct time-series regressions separately for each country to explore potential heterogeneity in the link between country-specific GPR and market index returns. To ensure sufficient sample length across countries, the regressions are implemented over the longer period from February 1985 to September 2025, thus omitting CDS as control variable. As reported in Table 5, market indices in several countries - such as Argentina, Australia, Mainland China, Finland, Germany, Hungary, Italy, the Philippines, Portugal, Tunisia, and the United Kingdom - exhibit a negative sensitivity to geopolitical risk. Among them, Argentina, Italy, Tunisia, and Hungary appear most affected, with coefficients below -0.1 .

For the lagged specification, the results become more heterogeneous. Market returns in some countries, including Australia, Chile, Israel, Mexico, Portugal, Tunisia, the United Kingdom, and Vietnam, show a positive response to lagged GPR, whereas Norway and Sweden exhibit a negative one. In most cases, however, these relationships are statistically insignificant. Notably, in countries such as Australia, Portugal, Tunisia, and the United Kingdom, the sign of the relationship reverses when shifting from contemporaneous to lagged GPR.

To examine potential heterogeneity across country groups, we conduct separate panel regressions for developed versus emerging markets, as well as across different regions. The results, reported in Table 6, provide clear contrasts. Panel A shows that the negative association between index returns and GPR is primarily concentrated in emerging markets, while no significant effect is found for the developed group. Within the emerging group, a one-unit increase in GPR corresponds to a 1.62% decline in index returns. Panel B extends the analysis by dividing countries into regional panels. The evidence suggests that equity markets in all regions, except Asia-Pacific, are adversely affected by GPR. The degree of vulnerability, however, varies across regions. Among them, Africa appears most vulnerable, with an estimated

	No lag: $k = 0$ (synchronous)		Lag: $k = 1$ (predictive)	
Variable	(1)	(2)	(3)	(4)
GPR	-0.0104*** (0.0040)	-0.0094*** (0.0034)	-0.0040 (0.0029)	-0.0006 (0.0025)
GDP	-0.0407 (0.0259)	-0.0654** (0.0333)	-0.0117 (0.0311)	-0.0698** (0.0275)
CPI	-0.0126 (0.0357)	-0.0703* (0.0418)	-0.0176 (0.0322)	-0.1510*** (0.0177)
CDS	-0.0045*** (0.0015)	-0.0013 (0.0013)	0.0060* (0.0000)	0.0046*** (0.0010)
M2	0.0011 (0.0013)	-0.0001 (0.0010)	0.0020*** (0.0006)	0.0006 (0.0007)
Time Effect	Yes	No	Yes	No
Entity Effect	Yes	No	Yes	No
R-square	0.0043	0.0067	0.0034	0.0085
No. of Obs.	6445	6445	6406	6406

Table 4: Panel Estimates. This table reports the regression results with market index return as the dependent variable and the country GPR as the explanatory variable. The model for columns (1) and (3) is:

$$r_{i,t} = \lambda_i + \iota_t + \beta_1 \text{GPR}_{i,t-k} + \beta_2 \text{GDP}_{i,t-k} + \beta_3 \text{CPI}_{i,t-k} + \beta_4 \text{CDS}_{i,t-k} + \beta_5 \text{M2}_{i,t-k} + \epsilon_{i,t},$$

with both entity effects λ_i and time effects ι_t , while the pooled OLS models (columns (2) and (4)) are:

$$r_{i,t} = \beta_0 + \beta_1 \text{GPR}_{i,t-k} + \beta_2 \text{GDP}_{i,t-k} + \beta_3 \text{CPI}_{i,t-k} + \beta_4 \text{CDS}_{i,t-k} + \beta_5 \text{M2}_{i,t-k} + \varepsilon_{i,t},$$

where k equals to either 0 (synchronous regression) or 1 (predictive regression). Standard errors, clustered at the entity level, are reported in parentheses. Significance levels for p -values are coded as follows: ***<0.01<**<0.05<*<0.1.

coefficient of -14.42%, while the Middle East also displays a relatively large negative effect of -2.38%.

4.3 Firm-Level Analysis

We next refine the analysis to the firm level. For each company j , we estimate the following time-series regression model:

$$r_{j,i,t} = \beta_0 + \beta_{1,j} \text{GPR}_{i,t} + \sum_{m=1}^6 \beta_j^{[m+1]} \text{FF}_{j,t}^{[m]} + \varepsilon_t, \quad (6)$$

where $r_{j,i,t}$ denotes the return of firm j in country i during month t . The coefficient $\beta_{1,j}$ captures the firm-specific sensitivity to geopolitical shocks, while exposures to the [Fama and](#)

	No lag: $k = 0$ (synchronous)			Lag: $k = 1$ (predictive)		
Country	Coefficient	No. of Obs.	R^2	Coefficient	No. of Obs.	R^2
Argentina	-0.7883**	72	0.0756	0.1232	71	0.0522
Australia	-0.1033*	89	0.0235	0.2022**	88	0.0328
Belgium	-0.0211	185	0.0125	0.0224	184	0.0178
Brazil	0.0810	318	0.0094	0.0132	317	0.0096
Canada	-0.0221	367	0.0053	0.0027	366	0.0039
Chile	-0.0556	366	0.0228	0.4423***	365	0.0291
China (Mainland)	-0.0409**	186	0.0224	0.0082	184	0.0322
Colombia	0.0530	240	0.0314	0.1359	240	0.0126
Denmark	-0.0679	303	0.0229	0.0901	302	0.0267
Finland	-0.0803**	185	0.0468	-0.0497	184	0.0429
France	-0.0154	185	0.0153	-0.0097	184	0.0275
Germany	-0.0252*	185	0.0420	0.0005	184	0.0240
Hungary	-0.1771**	327	0.0183	-0.0324	326	0.0086
India	0.0523	255	0.0131	-0.0063	254	0.0011
Indonesia	0.0254	245	0.0180	-0.0090	244	0.0228
Israel	-0.0306	147	0.0561	0.0513***	147	0.1449
Italy	-0.2249***	185	0.1059	-0.0366	184	0.0070
Japan	-0.0114	316	0.0190	-0.0295	315	0.0269
Malaysia	0.1143	138	0.0305	-0.1295	137	0.0799
Mexico	-0.0092	318	0.0058	0.1706***	317	0.0225
Netherlands	-0.0576	185	0.0591	-0.0000	184	0.0449
Norway	0.0754	513	0.0379	-0.1164**	512	0.0281
Peru	-0.0625	127	0.0447	-0.0777	127	0.0385
Philippines	-0.0777*	282	0.0049	-0.0757	281	0.0066
Poland	0.0215	289	0.0235	-0.0022	288	0.0359
Portugal	-0.4128**	185	0.0156	0.5022**	184	0.0272
Russia	-0.0033	129	0.0889	-0.0077	128	0.0518
Saudi Arabia	0.0052	218	0.0080	0.0218	217	0.0167
South Africa	-0.0311	314	0.0196	-0.0939	313	0.0213
South Korea	-0.0167	320	0.0250	-0.0276	319	0.0215
Spain	-0.1042	185	0.0254	0.0469	184	0.0217
Sweden	-0.0826	316	0.0356	-0.1360**	315	0.0447
Switzerland	-0.0592	370	0.0321	-0.0290	369	0.0270
Thailand	0.0175	305	0.0380	0.1905**	304	0.0399
Tunisia	-0.1173***	312	0.0321	0.0596**	311	0.0274
Turkey	-0.0897	222	0.0180	0.1388*	221	0.0350
United Kingdom	-0.0145***	370	0.0338	0.0051*	369	0.0232
United States	-0.0016	324	0.0465	0.0017	323	0.0502
Ukraine	-0.0093	215	0.0551	0.0008	214	0.0466
Vietnam	-0.1209	145	0.0340	0.4677***	145	0.0363

Table 5: **Country Heterogeneity Analysis: Time-Series Regression by Country.** This table reports the regression results with market index return as the dependent variable and the country GPR as the explanatory variable. The regression model is written as:

$$r_t = \beta_1 \text{GPR}_{t-k} + \beta_2 \text{GDP}_{t-k} + \beta_3 \text{CPI}_{i,t-k} + \beta_4 \text{M2}_{i,t-k} + \text{resid}_t. \quad (3)$$

The reported coefficient is β_1 and k equals to either 0 or 1. Standard errors are computed following [Newey and West \(1987\)](#). Significance level is noted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Panel A: Developed vs Emerging Countries					
Group	Coefficient	No. of Entities	No. of Dates	No. of Obs.	R^2
Developed	-0.0065 (0.0046)	20	465	5242	0.0064
Emerging	-0.0162*** (0.0038)	20	316	4696	0.0070
Panel B: Regional Analysis					
Region	Coefficient	No. of Entities	No. of Dates	No. of Obs.	R^2
Africa	-0.1442*** (0.0000)	2	265	626	0.0331
Americas	-0.0122*** (0.0043)	8	465	2132	0.0265
Asia-Pacific	-0.0104 (0.0087)	10	269	2281	0.0021
Europe	-0.0083*** (0.0018)	17	350	4312	0.0055
Middle East	-0.0238*** (0.0035)	3	315	587	0.0551

Table 6: **Country Group Heterogeneity Analysis: Fixed-Effect Panel OLS.** The table presents the regression results with the following model:

$$r_{i,t} = \lambda_i + \iota_t + \beta_1 \text{GPR}_{i,t} + \beta_2 \text{GDP}_{i,t} + \beta_3 \text{CPI}_{i,t} + \beta_4 \text{M2}_{i,t} + \text{resid}_{i,t}, \quad (5)$$

with both entity effect and time effect controlled. Standard errors, clustered at the entity level, are reported in parentheses. The country list of each group is reported in Appendix B. Significance level is noted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

[French \(2015\)](#) five factors and the momentum factor, $\text{FF}_{j,t}$, are controlled.²

Figure 3 presents the distributions of estimated GPR coefficients across the 12 countries with the largest number of listed firms. On average, firms in the US, in Japan, UK, South Korea, France, Russia, Germany and Vietnam exhibit negative sensitivities to geopolitical risk. In contrast, and surprisingly, firms in India and Australia display positive average responses while China (Mainland) and Canada show effects close to zero. This suggest a profound het-

²Factor loadings are estimated from 60-month rolling regressions using the six factors obtained from [Kenneth R. French's data library](#). If a 60-month-long window is not available in the data, at least 24-month valid points are required to run the regression. Following [Fama and French \(2012\)](#), regional factors are assigned to the corresponding countries, with developed markets grouped into North America, Japan, and Europe (Ukraine and Russia are classified into Europe given their geographical proximity). For emerging markets, the Fama-French emerging market factors are employed, which encompass Mexico and South Korea. Israel does not fall into either the regional or emerging groups and is therefore assigned to the global factors.

erogeneity in the impact of geopolitical risk even among main economies, which is consistent with the evidence reported in Table 6. Moreover, Figure 3 highlights differences in the dispersion of coefficients across countries. For the United States, Japan, China (Mainland), the United Kingdom, South Korea, France, Russia and Germany, the estimates are tightly concentrated around zero. By contrast, in Canada, Australia and Vietnam, a substantial share of coefficients exceed an absolute value of five, indicating that certain firms in these markets are particularly exposed to geopolitical shocks.

Table 7 shows the coefficients of GPR on which firm-level stock returns are regressed on a country-by-country basis. Figures 4 and 5 respectively report the t-statistics where the impact is statistically significant under the synchronous and predictive specifications. Unlike the market-level indices, the direction of GPR's influence varies across countries. Stock returns in a majority of countries negatively respond to the contemporaneous geopolitical risk, which is seen in the United States, the United Kingdom, Sweden, South Korea and other sixteen countries. In contrast, firms in India, Poland and Malaysia tend to benefit from rising geopolitical risk. Unlike aggregate indices, the contemporaneous and lagged effects of GPR sometimes move in the different direction. This adverse phenomenon is seen in United States, United Kingdom, Japan, Israel, Canada, Germany, Italy, Argentina, Mexico, Netherlands, Peru, Saudi Arabia, Tunisia and Turkey. In some markets, the effect of GPR is delayed, with a significant coefficient seen in the lagged (predictive) case but not in the synchronous models, e.g., in Australia, Denmark, Indonesia, Norway, Philippines, Spain, Thailand and Ukraine.

To better interpret the firm-level heterogeneity in GPR's effects across market groups, Table 8 proposes an analysis that discriminates between developed and emerging economies. In developed markets, stock returns react immediately and negatively to rising geopolitical tensions, yet the relationship turns positive in the subsequent period (when lag=1). In contrast, emerging group displays the opposite timing pattern: the contemporaneous response is positive, while the adverse impact appears with a delay. These asymmetric timing and direction of response indicate that developed and emerging markets absorb geopolitical shocks through potentially distinct mechanisms.

4.4 Implications

In order to provide more implications on the effect of geopolitical risk, we hereafter construct a GPR-beta screening strategy and especially focus on the U.S. and Chinese markets. Choosing these two countries will allow us to provide contrasting perspectives on how investors can exploit GPR exposures in very different markets (one developed and the other still mostly considered as developing). The firm-level GPR beta $\beta_j^{[GPR]}$ is estimated following the 60-month rolling model below:

$$r_{j,i,t} = \alpha_{j,t} + \beta_{j,t}^{[GPR]} \text{GPR}_{i,t-k} + \sum_{m=1}^6 \beta_{j,t}^{[m+1]} \text{FF}_{j,t-k}^{[m]} + \text{resid}_{i,t}. \quad (15)$$

A positive estimate $\hat{\beta}_j^{[GPR]}$ indicates that a firm's stock return tends to increase when geopolitical risk rises, implying that the firm benefits from or is resilient to geopolitical tensions. In contrast, a negative GPR beta suggests that the firm's return declines in periods of heightened geopolitical risk, meaning its business model or investor sentiment is more vulnerable to political uncertainty. Examining the cross-sectional distribution of GPR betas

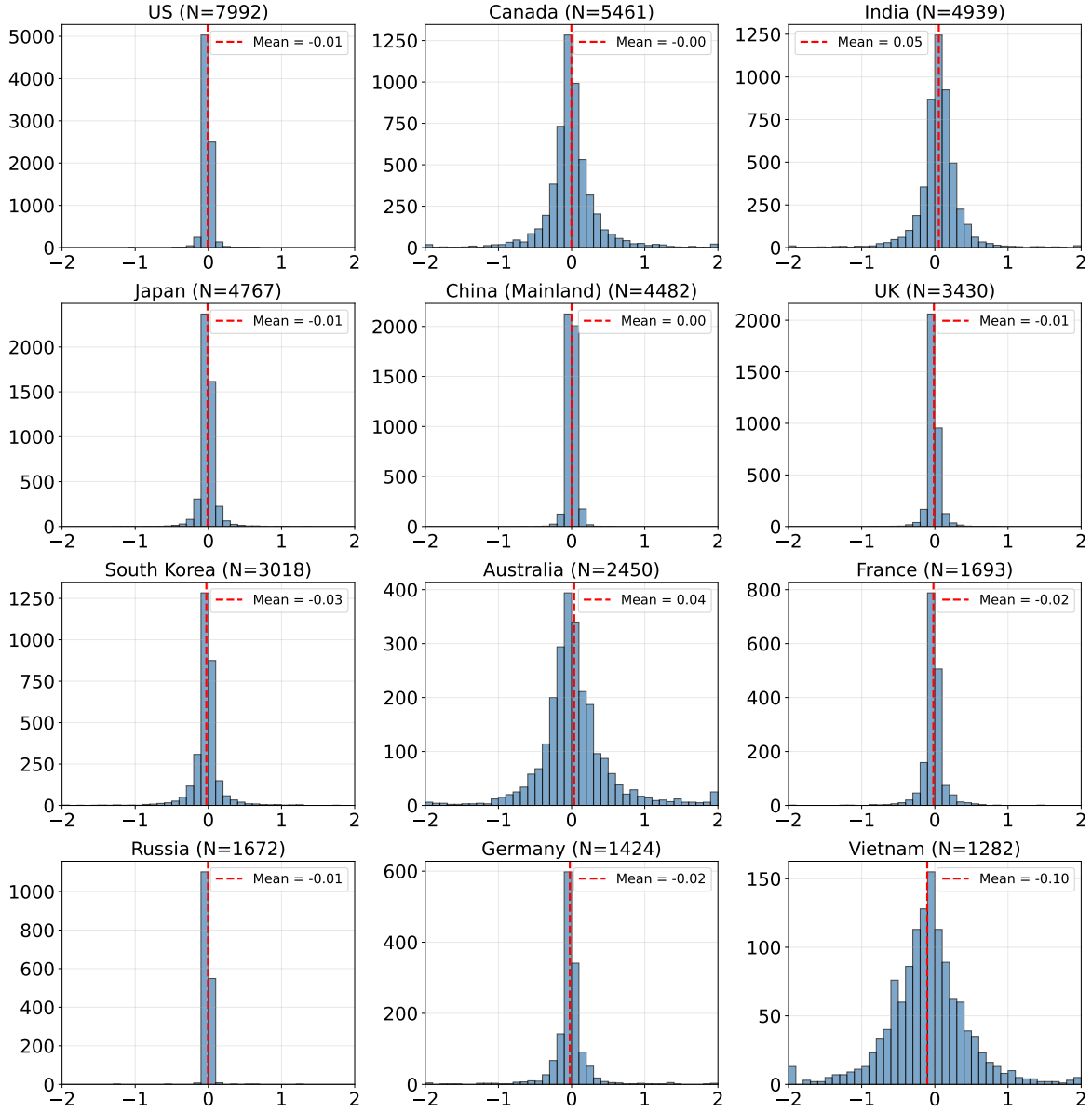


Figure 3: Top 12 Markets: Distribution of GPR Coefficients (Lag=0). We regress company stock return on the GPR residual and the coefficient distribution of 12 top countries $\beta_{1,j}$ are shown in this figure. Fama-French five factors and the momentum factor $FF_{j,t}$ are controlled, based on the 60-month rolling window regression specified below. Standard errors are computed following [Newey and West \(1987\)](#):

$$r_{j,i,t} = \beta_0 + \beta_{1,j} \text{GPR}_{i,t} + \sum_{m=1}^6 \beta_j^{[m+1]} \text{FF}_{j,t}^{[m]} + \text{resid}_t. \quad (8)$$

	No lag: $k = 0$			Lag: $k = 1$		
Country	Coefficient	No. of Obs.	R^2	Coefficient	No. of Obs.	R^2
Argentina	-0.0773	26,199	0.0016	0.4886***	26,103	0.0057
Australia	0.0000	394,614	0.0002	0.0767***	392,164	0.0005
Belgium	-0.0080	57,235	0.0004	0.0123	56,831	0.0004
Brazil	-0.0030	56,361	0.0002	-0.0280	55,948	0.0003
Canada	-0.0279***	787,129	0.0006	0.0049*	781,668	0.0003
Chile	-0.1086***	35,273	0.0013	0.1350**	35,120	0.0020
China (Mainland)	-0.0041***	706,541	0.0039	-0.0386***	702,032	0.0088
Colombia	-0.0132	16,247	0.0025	-0.0078	16,188	0.0022
Denmark	-0.0292	57,762	0.0008	0.0849***	57,458	0.0010
Finland	-0.1091***	44,404	0.0033	-0.0453***	44,157	0.0017
France	-0.0168***	253,518	0.0013	-0.0028**	251,825	0.0006
Germany	-0.0225***	215,376	0.0006	0.0027	213,952	0.0000
Hungary	-0.0332	18,045	0.0018	-0.0142	17,968	0.0017
India	0.0542***	780,795	0.0013	0.0163***	775,856	0.0007
Indonesia	-0.0113	116,437	0.0005	-0.0723***	115,755	0.0009
Israel	-0.0067***	160,901	0.0005	0.0056***	160,033	0.0002
Italy	-0.0994***	82,468	0.0047	0.0090	81,934	0.0012
Japan	-0.0094***	1,133,843	0.0011	0.0135***	1,129,076	0.0010
Malaysia	0.0066*	278,296	0.0008	-0.0037	277,071	0.0009
Mexico	-0.0769***	37,043	0.0021	0.0103	36,856	0.0011
Netherlands	-0.0742***	58,084	0.0017	0.0213	57,731	0.0011
Norway	0.0137	63,470	0.0004	-0.0503***	62,991	0.0004
Peru	-0.1133***	29,910	0.0017	0.0555	29,757	0.0016
Philippines	-0.0287	69,739	0.0010	-0.1099***	69,460	0.0011
Poland	0.0099***	125,641	0.0006	-0.0063*	124,669	0.0007
Portugal	-0.1770***	24,141	0.0027	-0.0088	24,042	0.0017
Russia	-0.0021***	769,967	0.0005	-0.0025***	768,295	0.0005
Saudi Arabia	-0.0120***	32,914	0.0082	0.0139*	32,772	0.0063
South Africa	-0.1326***	89,736	0.0008	-0.0377*	89,054	0.0002
South Korea	-0.0202***	512,957	0.0009	-0.0013	509,939	0.0006
Spain	-0.0061	55,610	0.0042	0.0160**	55,265	0.0042
Sweden	-0.1710***	159,713	0.0028	-0.1237***	158,452	0.0017
Switzerland	-0.0834***	77,987	0.0021	0.0080	77,562	0.0009
Thailand	-0.0070	204,726	0.0024	0.1620***	203,781	0.0025
Tunisia	-0.0864***	10,708	0.0005	0.0473***	10,653	0.0005
Turkey	-0.0088***	218,142	0.0014	0.0238***	217,714	0.0017
United Kingdom	-0.0209***	469,292	0.0032	0.0045***	465,862	0.0004
United States	-0.0095***	1,589,787	0.0031	0.0022***	1,581,795	0.0003
Ukraine	0.0040*	36,599	0.0021	-0.0006	36,584	0.0009
Vietnam	-0.0938***	151,876	0.0004	-0.0406***	150,593	0.0002

Table 7: **Firm-Level Country Heterogeneity Analysis** This table reports the regression results with market index return as the dependent variable and the country GPR as the explanatory variable. The regression model is written as:

$$r_{j,i,t} = \beta_0 + \lambda_j + \beta_{1,j} \text{GPR}_{i,t-k} + \sum_{m=1}^6 \beta_j^{[m+1]} \text{FF}_{j,t-k}^{[m]} + \text{resid}_t \quad (10)$$

The coefficient reported is β_1 . k equals to either 0 or 1. Entity effect is controlled while the time effect is not due to the multicollinearity with the GPR. Standard errors are clustered at the entity level Significance level is noted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

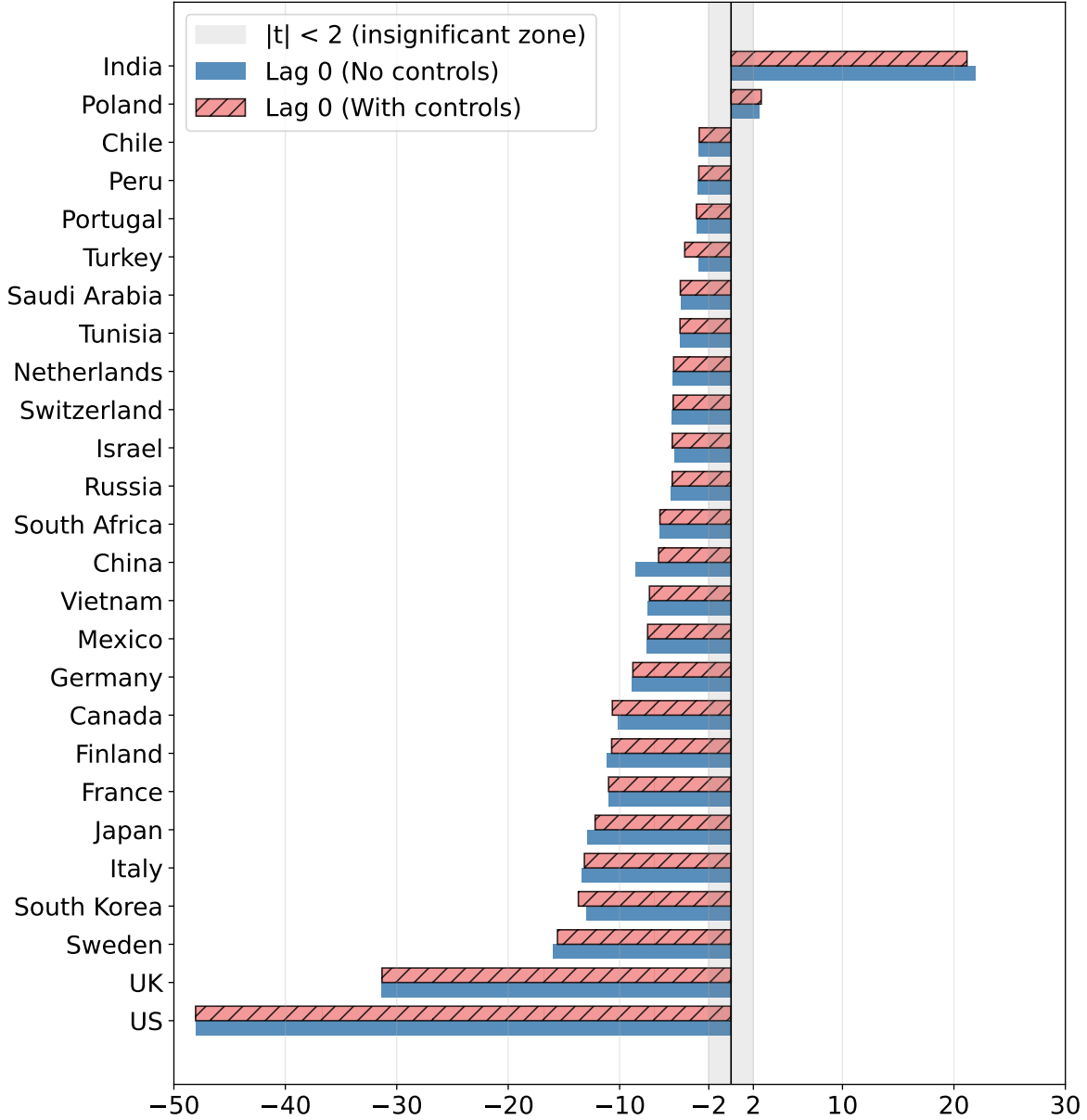


Figure 4: Country-level t -statistics of GPR on Firms' Stock Returns (No lag: $k = 0$). We regress company stock return on the GPR residual in each countries' panel and only the significant coefficients $\beta_{1,j}$ are shown in this figure. In the shaded bars, Fama-French five factors and the momentum factor $FF_{j,t}$ are controlled, based on 60-month rolling window regression. Newey-West standard error is applied. The equation is:

$$r_{j,i,t} = \beta_0 + \beta_j^{[1]} \text{GPR}_{i,t} + \sum_{m=1}^6 \beta_j^{[m+1]} FF_{j,t}^{[m]} + \text{resid}_t.$$

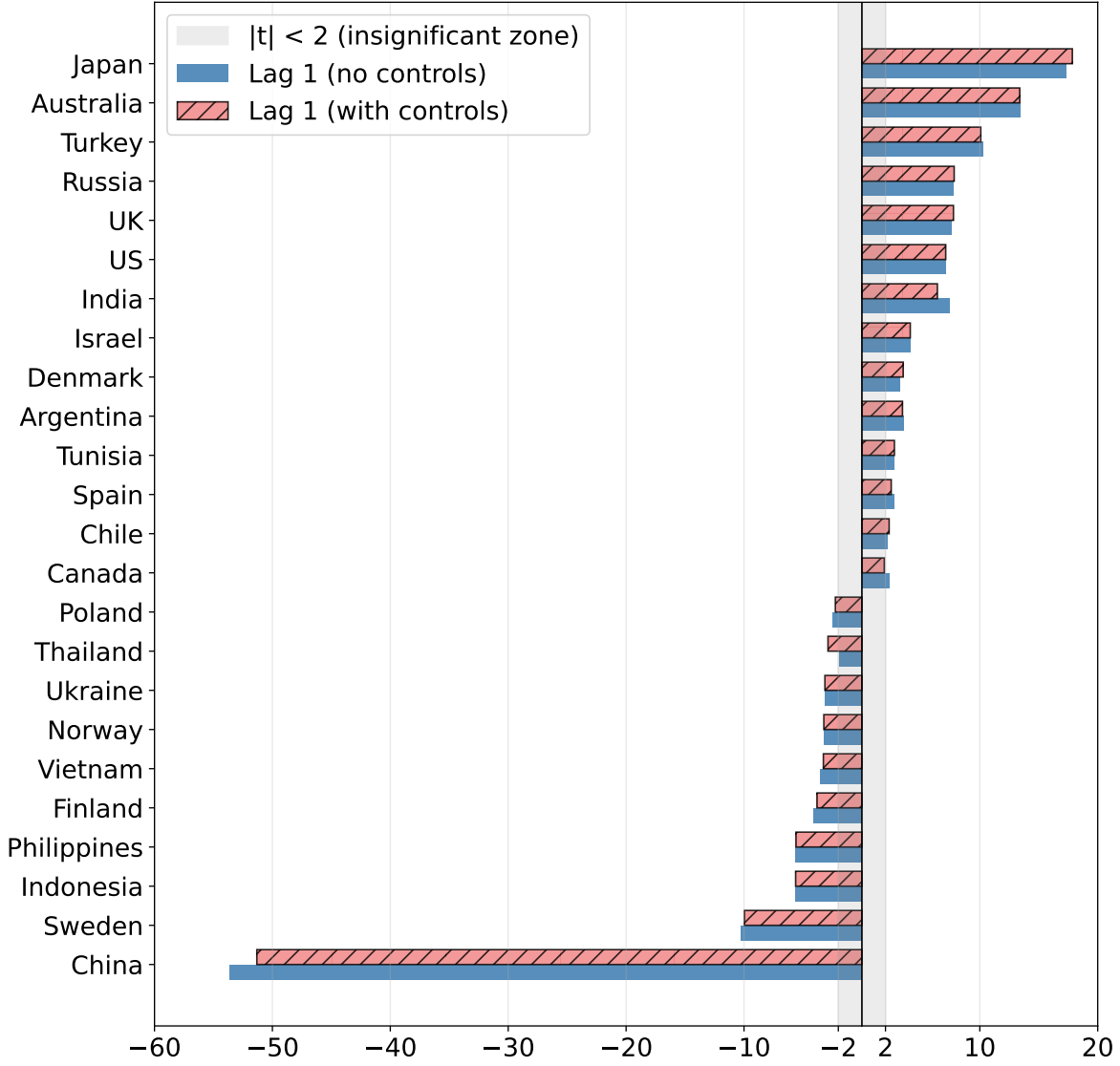


Figure 5: **Country-level t -statistics of GPR on Corporate Stock Returns (Lag: $k = 1$).** We regress company stock return on the GPR residual in each countries' panel and only the significant coefficients $\beta_{1,j}$ are shown in this figure. In the shaded bars, Fama-French five factors and the momentum factor $FF_{j,t}$ are controlled, based on 60-month rolling window regression. Newey-West standard error is applied. The equation is:

$$r_{j,i,t} = \beta_0 + \beta_j^{[1]} GPR_{i,t-1} + \sum_{m=1}^6 \beta_j^{[m+1]} FF_{j,t-1}^{[m]} + \text{resid}_t. \quad (12)$$

therefore helps identify which segments of the market are geopolitically sensitive or hedging in nature. The dynamics of the distributions of GPR betas in the US and Chinese markets

Panel A: Lag = 0 (synchronous)				
Group	Coefficient	No. of Entities.	No. of Obs.	R^2
Developed	-0.0052*** (0.0003)	36,948	6,216,309	0.0003
Emerging	0.0015*** (0.0003)	18,913	3,793,123	0.0002
Panel B: Lag = 1 (predictive)				
Group	Coefficient	No. of Entities.	No. of Obs.	R^2
Developed	0.0003 (0.0002)	36,948	6,180,678	0.0001
Emerging	-0.0017*** (0.0003)	18,913	3,774,268	0.0002

Table 8: **Developed vs Emerging Countries: Firm-Level Analysis** The table presents the regression results with the following model:

$$r_{j,i,t} = \lambda_i + \iota_t + \beta_1 \text{GPR}_{i,t-k} + \sum_{m=1}^6 \beta_j^{[m+1]} \text{FF}_{j,t}^{[m]} + \text{resid}_{i,t}, \quad (14)$$

with both entity effect and time effect controlled. Fama-French factor loadings, including momentum factor loading, are controlled. Standard errors, clustered at the entity level, are reported in parentheses. The country list of each group is reported in Appendix B. Significance level is noted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

are plotted in Figure 6. In the U.S. market, the estimated GPR betas are much more concentrated around zero, particularly for the contemporaneous ($k = 0$) specification, suggesting a relatively balanced exposure to geopolitical risk across firms. In contrast, the Chinese market during the 1990s exhibited more volatile and dispersed beta values. Specifically, the contemporaneous betas ($k = 0$) are skewed toward positive values, whereas the lagged betas ($k = 1$) tend to shift toward the negative side, indicating a delayed and asymmetric market response to geopolitical shocks.

To assess the implications of geopolitical risk for investors, we construct a simple portfolio strategy. Each month, we select from a pool with only the 100 largest companies, buy only the stocks with positive GPR betas, for the reason that their returns rise as the geopolitical risk heightens. Both equally-weighted (EW) and value-weighted (VW) portfolios are constructed and the weights of each stock are written as below:

$$w_i^{(EW)} = \frac{\mathbb{1}_{\{\beta_i^{[\text{GPR}]} > 0\}}}{\sum_j \mathbb{1}_{\{\beta_j^{[\text{GPR}]} > 0\}}}, \quad w_i^{(VW)} = \frac{\text{MV}_i \mathbb{1}_{\{\beta_i^{[\text{GPR}]} > 0\}}}{\sum_j \text{MV}_j \mathbb{1}_{\{\beta_j^{[\text{GPR}]} > 0\}}},$$

where MV_i is the market value of stock i at the time of formation.

We consider two alternative constructions of the GPR beta. Specifically, we again allow

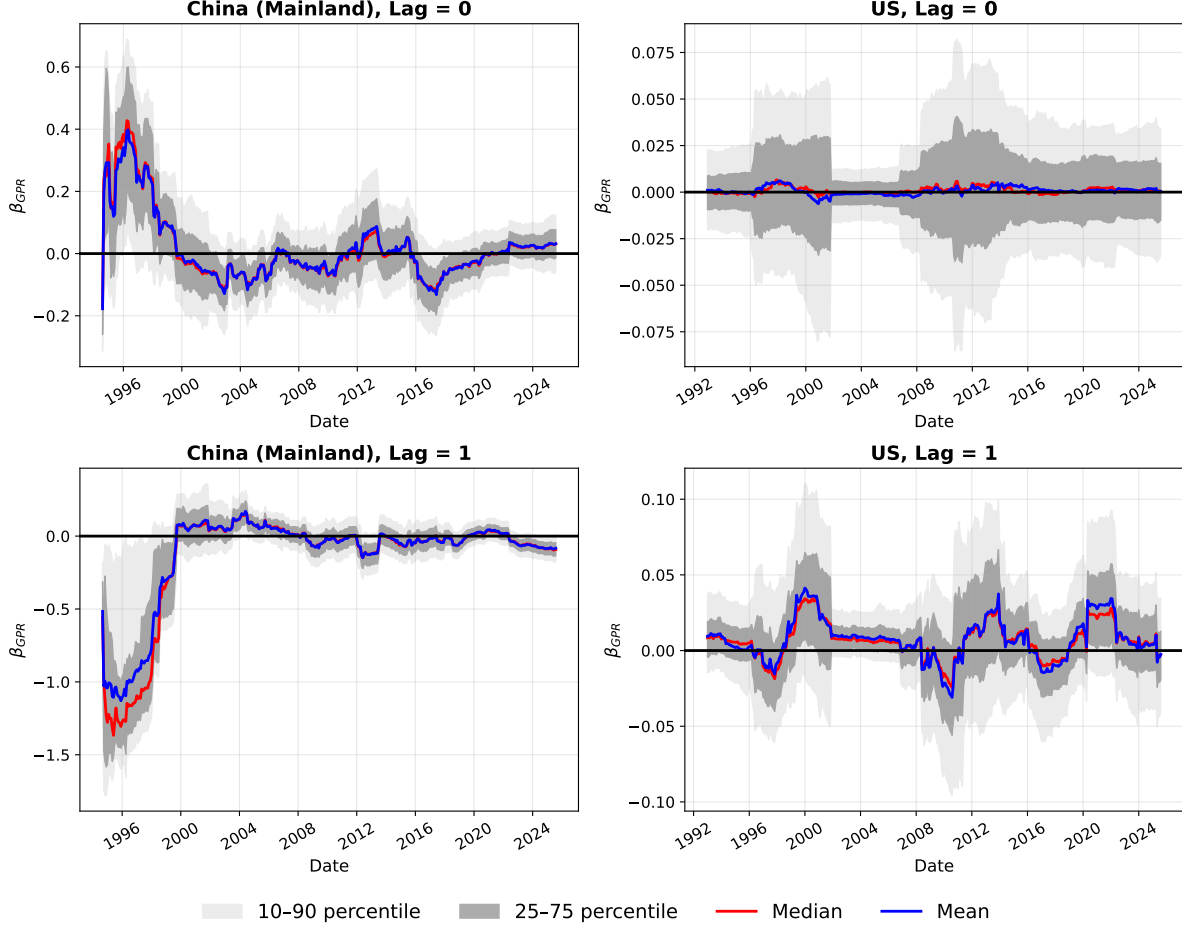


Figure 6: GPR beta Distribution in U.S. and China (Mainland) The figure shows the distribution of firm-level GPR β obtained from the following model with a 60-month rolling window:

$$r_{j,i,t} = \alpha_{j,t} + \beta_{j,t}^{\text{GPR}} \text{GPR}_{i,t-k} + \sum_{m=1}^6 \beta_{j,t}^{[m+1]} \text{FF}_{j,t-k}^{[m]} + \text{resid}_{i,t}, \quad (17)$$

with both entity effect and time effect controlled. Fama-French factor loadings, including momentum factor loading, are controlled. The country list of each group is reported in Appendix B.

both contemporaneous and lagged specifications for the beta estimation, corresponding to the zero lag and lagged models defined in Equations (20) and (21) below. In addition, portfolio formation may rely on information observed either at time t or at time $t-1$. Combining the timing of beta estimation with the timing of portfolio construction yields four distinct strategy designs, which are summarized in Table 9. In particular, Strategies I and III employ the contemporaneous (no-lag) beta estimation as specified in Equation 20. However, they differ in the information set used for portfolio formation: Strategy I constructs portfolios using information available at time t , whereas Strategy III relies exclusively on information observed at time $t-1$, rendering it a fully ex-ante strategy. Similarly, Strategies II and IV are based on the lagged beta estimation in Equation 21. Strategy II uses contemporaneous information for

portfolio construction, while Strategy IV relies solely on lagged information, ensuring that portfolio weights are determined without any look-ahead bias.

Beta Estimation Model	Beta uses data at time t	Beta uses data at time $t - 1$
Contemporaneous Factor Model (Eq. 20)	Strategy I	Strategy III
Lagged Factor Model (Eq. 21)	Strategy II	Strategy IV

Table 9: **GPR *beta* Screening Strategy Matrix.** **Note:** This table summarizes the construction of the GPR beta screening strategies. Firm-level GPR betas are estimated using 60-month rolling-window regressions of stock returns on the geopolitical risk index (GPR) and Fama-French risk factors. The contemporaneous factor model is given by:

$$r_{\tau,i} = \alpha_i + \beta_{i,t}^{\text{GPR}} \text{GPR}_{\tau} + \beta_{i,t}^F \mathbf{FF}_{\tau} + \varepsilon_{\tau,i}, \quad \tau \in [t-w+1, t]. \quad (20)$$

The lagged beta estimation model replaces contemporaneous regressors with one-period lagged values:

$$r_{\tau,i} = \alpha_i + \beta_{i,t}^{\text{GPR}} \text{GPR}_{\tau-1} + \beta_{i,t}^F \mathbf{FF}_{\tau-1} + \varepsilon_{\tau,i}, \quad \tau \in [t-w+1, t] \quad (21)$$

Betas are constructed either using information up to t or up to time $t - 1$. Portfolio strategies differ according to whether betas are estimated using contemporaneous or lagged factors, and whether portfolio formation relies on current or ex-ante beta estimates.

Figures 7 and 8 present the cumulative returns of the GPR beta-screening strategies for the U.S. and Chinese markets, respectively. For each market, we report both equally weighted and value-weighted portfolios, together with the corresponding market benchmark.³ Across both markets, strategies constructed using contemporaneous information (Strategy I and II) generally outperform the market benchmark. This outperformance is particularly pronounced in the Chinese market, where both equal-weighted and value-weighted portfolios exhibit substantially higher cumulative returns. Nevertheless, this superior performance likely comes from a small look-ahead bias, since portfolio returns are, too, computed at time t .

In the U.S. market, as a rebuttal to the size anomaly, the value-weighted portfolios consistently outperform the market benchmark under both no-lag and lagged beta specifications, while the equal-weighted portfolio under the no-lag specification (Strategy I) slightly underperforms the benchmark after 2020. For the ex-ante strategies (Strategy III and IV), the U.S. results indicate performance patterns broadly similar to the market benchmark, albeit with slightly weaker returns. In particular, Strategy-IV-based on lagged beta estimation (and on lagged portfolio formation) closely tracks the market index, suggesting that the informational advantage of GPR exposure becomes limited once both beta estimation and portfolio construction rely solely on *past* information.

In contrast, the Chinese market exhibits weaker performance for both Strategy III and Strategy IV, closely mirroring the behavior of the market benchmark. This pattern is likely

³To ensure comparability, the market benchmark is constructed as the lagged value-weighted return of the top 100 firms in each market.

driven by the pronounced size effect and the relatively lower returns associated with large state-owned enterprises, which dominate the upper tail of market capitalization in China. Overall, these results indicate that incorporating GPR sensitivity into portfolio construction can enhance performance, especially when contemporaneous information is available. At the same time, the effectiveness of such strategies varies substantially across markets, reflecting differences in market structure and the role of geopolitical risk transmission.

5 Robustness Checks

5.1 Longer Time Span

To strengthen our baseline conclusions, we conduct our main regression over a longer sample period, from February 1985 to September 2025. Due to data limitations on CDS, this specification only controls for GDP growth, CPI growth, and M2 growth, but contains 40 countries. The corresponding results are reported in Table 10. In the contemporaneous regression without GPR lags, the negative association between country index returns and country-specific GPR remains statistically significant when the larger sample is considered. In contrast, the lagged regression continues to show no significance, consistent with the baseline findings in Section 4.1.

5.2 Multicollinearity Test

Prior studies have examined the relationship between geopolitical risk and macroeconomic as well as monetary reactions (see, e.g., [Neuenkirch and Neumeier \(2015\)](#), [Costola et al. \(2022\)](#), [Arslanalp et al. \(2023\)](#), [Caldara et al. \(2025\)](#)). In light of this literature, we cannot ignore the potential interplay between GPR and macroeconomic variables. To address possible multicollinearity, we conduct variance inflation factor (VIF) tests. As reported in Table 11, all VIF values fall between 1 and 5, indicating acceptable correlation levels between GPR and the macro controls. This supports the robustness of the estimates presented in Table 4.

6 Conclusion

Geopolitical risk has increasingly been recognized as a major source of threat to financial stability, with its impact varying substantially across countries. Using the country-level geopolitical risk index developed by [Caldara and Iacoviello \(2022\)](#), this paper documents a robust negative relationship between geopolitical risk and stock market performance across a sample of 40 countries. After controlling for a set of macroeconomic variables, we find that contemporaneous market index returns decline significantly with heightened geopolitical risk. The adverse effect of geopolitical risk is particularly pronounced in several countries, including China (Mainland), Italy, the United Kingdom and several other countries. Further heterogeneity analysis reveals that this relationship is mainly driven by emerging markets, where stock market indices exhibit a stronger and more significant sensitivity to geopolitical risk shocks. These findings suggest that financial markets in less developed economies are more vulnerable to geopolitical tensions, especially in recent periods characterized by elevated global uncertainty.

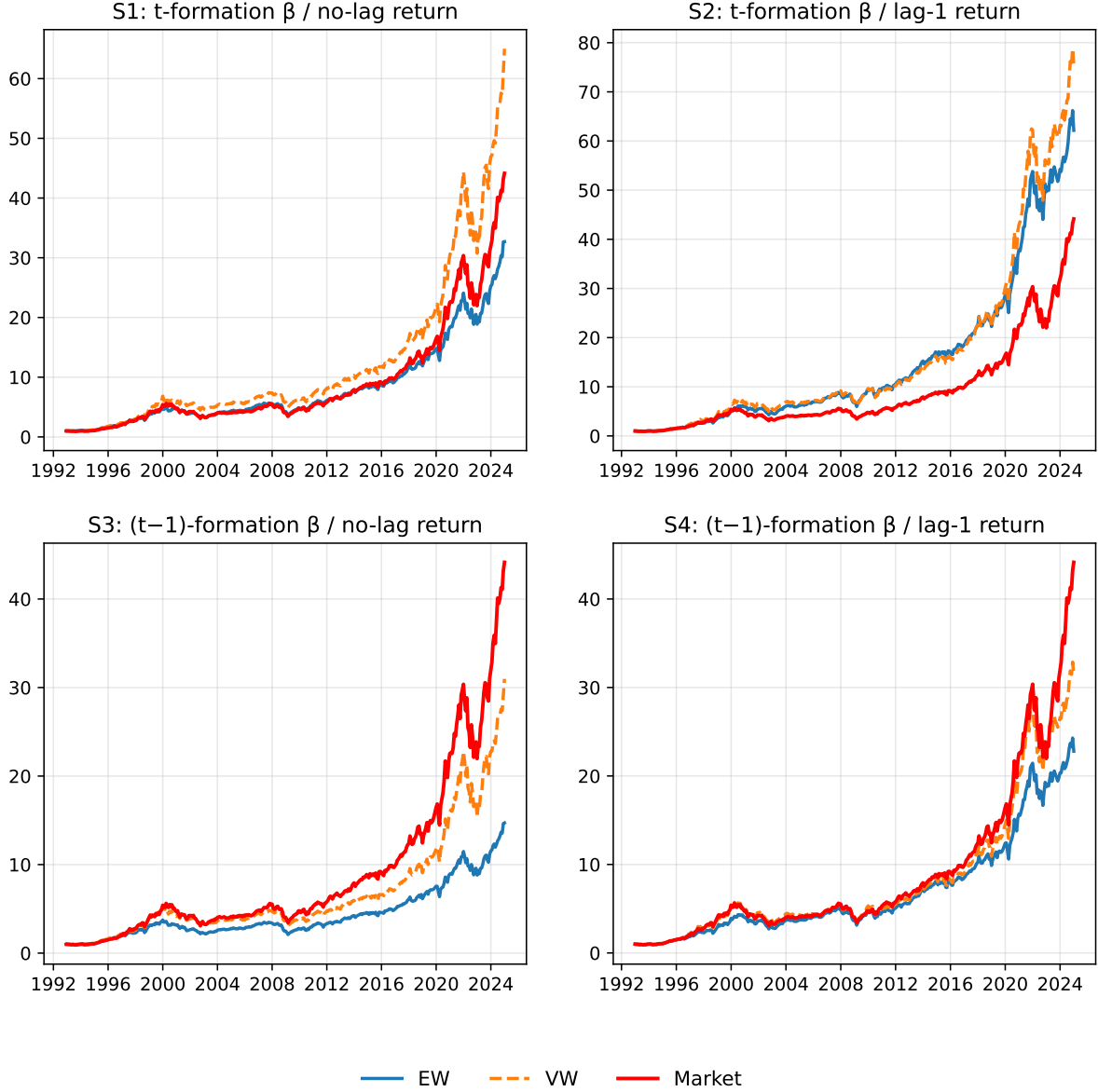


Figure 7: GPR beta screening strategy in the United States This figure plots the cumulative returns of the GPR beta screening strategies in the U.S. market. Strategies (demonstrated in Table 9) differ along two dimensions: (i) the timing of portfolio formation (constructed at time t or at time $t - 1$, and (ii) the specification of GPR beta estimation. Each month, the investment universe consists of the top 100 firms ranked by market capitalization. Portfolios are formed by screening stocks based on their estimated GPR beta, and both equally-weighted (EW) and value-weighted (VW) returns are reported. The market benchmark is constructed as the lagged value-weighted return of the same top 100 firms, using lagged market capitalization as weights. All series are normalized to one at the beginning of the sample.

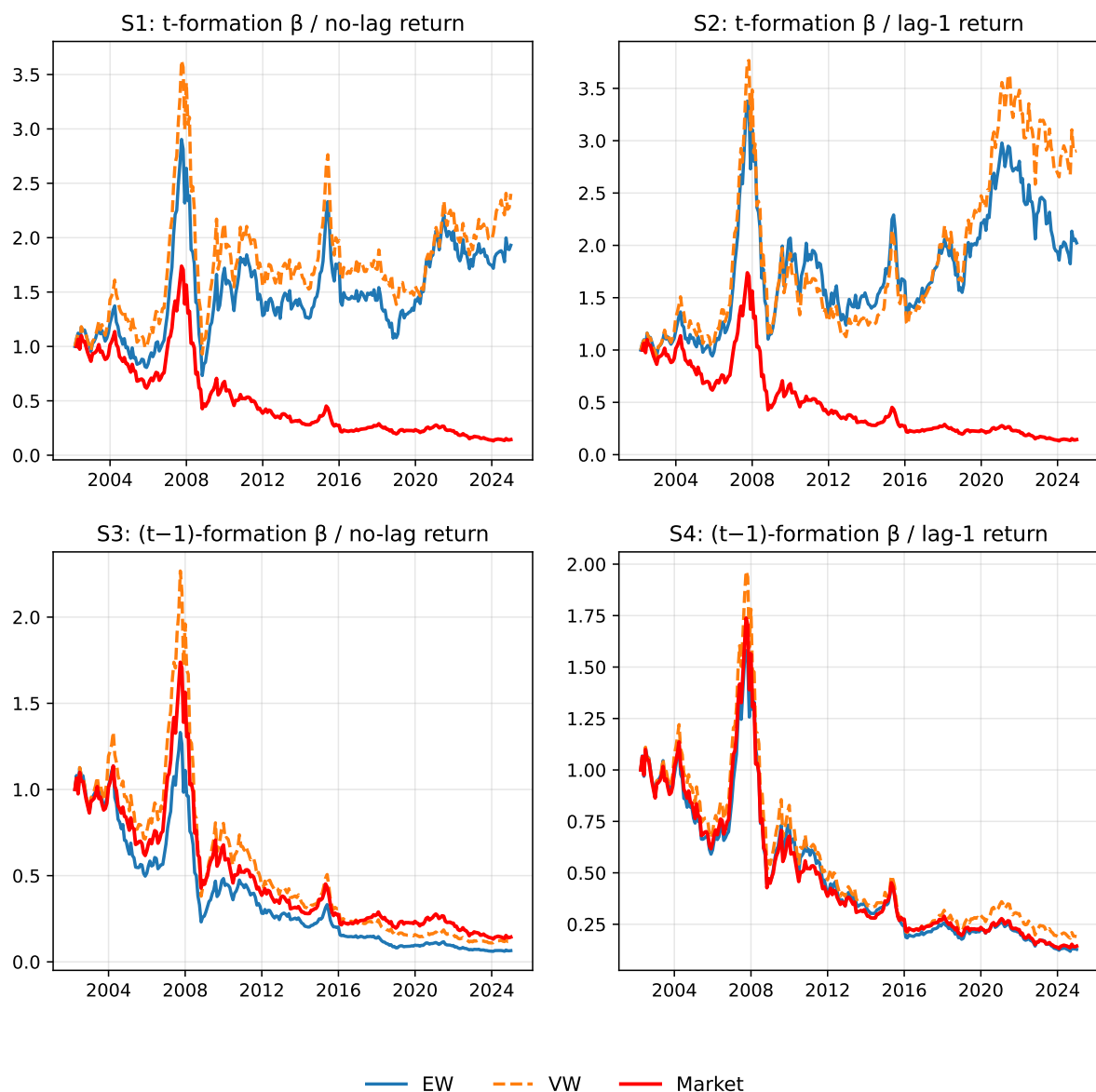


Figure 8: GPR beta screening strategy in China (Mainland) This figure plots the cumulative returns of the GPR beta screening strategies in the China (Mainland) market. Strategies (demonstrated in Table 9) differ along two dimensions: (i) the timing of portfolio formation (constructed at time t or at time $t - 1$), and (ii) the specification of GPR beta estimation. Each month, the investment universe consists of the top 100 firms ranked by market capitalization. Portfolios are formed by screening stocks based on their estimated GPR beta, and both equally-weighted (EW) and value-weighted (VW) returns are reported. The market benchmark is constructed as the lagged value-weighted return of the same top 100 firms, using lagged market capitalization as weights. All series are normalized to one at the beginning of the sample.

	Lag $k = 0$		Lag $k = 1$	
Variable	(1)	(2)	(3)	(4)
GPR	-0.0109*** (0.0037)	-0.0137*** (0.0044)	0.0001 (0.0046)	0.0053 (0.0050)
GDP	-0.0258 (0.0332)	-0.0461 (0.0298)	-0.0165 (0.0369)	-0.0515* (0.0310)
CPI	0.0410 (0.0301)	-0.0031 (0.0191)	0.0467 (0.0293)	-0.0019 (0.0185)
M2	0.0008 (0.0014)	0.0005 (0.0010)	0.0015 (0.0012)	0.0010 (0.0018)
Time Effect	Yes	No	Yes	No
Entity Effect	Yes	No	Yes	No
R-square	0.0043	0.0029	0.0024	0.0015
No. of Obs.	9938	9938	9901	9901

Table 10: **Robustness Check: Regression Results with Country GPR and Market Return on a Longer Time Span** table reports the regression results with market index return as the dependent variable and the country GPR as the explanatory variable. The Fixed-Effect (FE) regression model is written as:

$$r_{i,t} = \lambda_i + \iota_t + \beta_1 \text{GPR}_{i,t-k} + \beta_2 \text{GDP}_{i,t} + \beta_3 \text{CPI}_{i,t} + \beta_4 \text{M2}_{i,t} + \text{resid}_{i,t} \quad (24)$$

with both entity effect λ_i and time effect ι_t controlled, while the pooled OLS model is written as:

$$r_{i,t} = \beta_0 + \beta_1 \text{GPR}_{i,t-k} + \beta_2 \text{GDP}_{i,t-k} + \beta_3 \text{CPI}_{i,t-k} + \beta_4 \text{M2}_{i,t-k} + \text{resid}_{i,t} \quad (25)$$

k equals either 0 or 1. Standard errors, clustered at the entity level, are reported in parentheses. Significance level is noted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

To further examine how geopolitical risk shocks transmit through the financial system, we extend the analysis to the stock-level. The empirical results indicate that geopolitical risk exerts a broadly negative effect on individual stock returns in the contemporaneous (no-lag) specification, a pattern observed in the majority of sample countries. In contrast, the lagged effects display substantial cross-country heterogeneity. In particular, stock markets in developed economies tend to respond negatively and immediately to increases in geopolitical risk, whereas emerging markets appear to exhibit a more muted or even positive short-term response. However, this pattern reverses in the subsequent period: one month after the shock, firms in emerging markets show a significantly negative response to heightened geopolitical risk. To illustrate the role of firm-level GPR sensitivity in portfolio construction, we further develop a GPR-beta screening strategy that selects stocks based on their estimated exposure to geopolitical risk. We evaluate the performance of this strategy in both the U.S. and China

	VIF (no lag: $k = 0$)		VIF (lag: $k = 1$)	
Variable	(1)	(2)	(3)	(4)
GPR_{Resid}	1.0049	1.0019	1.0058	1.0030
GDP	1.1459	1.0103	1.1597	1.0096
CPI	2.0201	1.4330	1.9578	1.3524
CDS	2.1084	1.4368	2.0607	1.3555
M2	1.0482	1.0046	1.0487	1.0040
Time Effect	Yes	No	Yes	No
Entity Effect	Yes	No	Yes	No

Table 11: **Multicollinearity Tests for the Panel Regression.**

(Mainland) markets. The results show that portfolios constructed using contemporaneous information logically outperform the market benchmark, while those based on lagged information (preventing forward-looking biases) closely track, but slightly underperform, the corresponding market indices. These findings underline the value of being able to anticipate geopolitical shocks, e.g., with early warning signals. This is left for future research.

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Online Appendix to the paper titled
*Do Country Geopolitical Risks Drive Equity Returns? Evidence
from Global Panel Data*

A Market Indices over Longer Time Span

Country	Index	No.	Mean	Std.	Median	Min.	Max.	1st quan.	3rd quant.
Argentina	S&P Merval	71	0.0041	0.1357	0.0157	-0.8419	0.7832	-0.0593	0.0792
Australia	S&P/ASX 200	88	0.0038	0.0609	0.0080	-0.3089	0.1566	-0.0280	0.0411
Belgium	BEL20	184	0.0035	0.0548	0.0071	-0.3432	0.2103	-0.0256	0.0387
Brazil	Bovespa Index	317	0.0285	0.1605	0.0195	-0.8247	0.7620	-0.0524	0.0980
Canada	S&P/TSX Composite	366	0.0049	0.0540	0.0078	-0.3157	0.1967	-0.0232	0.0386
Chile	S&P/CLX IPSA	365	0.0055	0.0699	0.0081	-0.3693	0.1860	-0.0384	0.0519
China (Mainland)	CSI 300	184	0.0032	0.0774	0.0026	-0.2983	0.2496	-0.0438	0.0469
Colombia	COLCAP Index	240	-0.0001	0.0811	0.0085	-0.4629	0.1850	-0.0411	0.0483
Denmark	OMX Copenhagen	302	0.0055	0.0584	0.0145	-0.3093	0.1834	-0.0269	0.0438
Finland	OMX Helsinki	184	0.0039	0.0652	0.0056	-0.2358	0.2667	-0.0356	0.0448
France	CAC40	184	0.0038	0.0597	0.0072	-0.2476	0.2148	-0.0337	0.0420
Germany	Deutsche Boerse Dax	184	0.0070	0.0636	0.0139	-0.2885	0.2173	-0.0275	0.0474
Hungary	BUX Index	326	0.0084	0.0898	0.0135	-0.4916	0.4485	-0.0302	0.0597
India	BSE Sensex	254	0.0074	0.0766	0.0086	-0.3248	0.3024	-0.0352	0.0549
Indonesia	Jakarta Composite	244	0.0008	0.0935	0.0051	-0.5150	0.4314	-0.0334	0.0471
Israel	TA-35	147	0.0095	0.0835	0.0126	-0.2321	0.2338	-0.0332	0.0586
Italy	FTSE MIB	184	0.0029	0.0691	0.0059	-0.2804	0.2304	-0.0365	0.0450
Japan	Nikkei 225	315	0.0036	0.0600	0.0067	-0.2045	0.2454	-0.0320	0.0407
Malaysia	FTSE Bursa Malaysia	137	0.0011	0.0707	0.0048	-0.4211	0.3951	-0.0314	0.0344
Mexico	IPC	317	0.0102	0.0974	0.0153	-0.5655	0.3623	-0.0349	0.0638
Netherlands	AEX Index	184	0.0020	0.0582	0.0097	-0.3071	0.1517	-0.0278	0.0361
Norway	OBX Index	512	0.0027	0.0690	0.0071	-0.4085	0.2092	-0.0346	0.0470
Peru	S&P/BVL General	127	0.0041	0.0658	0.0085	-0.2283	0.1778	-0.0372	0.0474
Philippines	PSEI	281	0.0027	0.0830	0.0076	-0.3785	0.4106	-0.0389	0.0465
Poland	WIG20	288	0.0096	0.1051	0.0120	-0.4357	0.7224	-0.0419	0.0665
Portugal	PSI 20	184	0.0029	0.0625	0.0084	-0.3358	0.1797	-0.0327	0.0436
Russia	MOEX Russia Index	128	0.0016	0.1321	0.0152	-1.0172	0.3428	-0.0492	0.0702
Saudi Arabia	TASI	217	0.0059	0.0635	0.0117	-0.2964	0.1790	-0.0263	0.0420
South Africa	FTSE/JSE	313	0.0038	0.0728	0.0104	-0.4139	0.1945	-0.0379	0.0501
South Korea	KOSPI	319	0.0046	0.0886	0.0042	-0.4516	0.5196	-0.0443	0.0546
Spain	IBEX 35	184	0.0046	0.0652	0.0098	-0.2891	0.2484	-0.0323	0.0487
Sweden	OMXS30	315	0.0055	0.0664	0.0087	-0.3024	0.1789	-0.0298	0.0465
Switzerland	Swiss Market Index	369	0.0058	0.0470	0.0079	-0.1712	0.1484	-0.0213	0.0364
Thailand	SET Index	304	0.0028	0.0843	0.0040	-0.3949	0.3386	-0.0376	0.0501
Tunisia	Tunis Stock EXCHANGE Index	311	0.0052	0.0392	0.0035	-0.1826	0.1585	-0.0162	0.0282
Turkey	BIST 100	221	0.0042	0.1411	0.0080	-0.5164	0.5407	-0.0811	0.0799
United Kingdom	FTSE 100	369	0.0044	0.0496	0.0060	-0.2437	0.1495	-0.0251	0.0363
United States	S&P500	323	0.0076	0.0442	0.0122	-0.2454	0.1238	-0.0173	0.0353
Ukraine	PFTS Index	214	-0.0051	0.1071	-0.0011	-0.6206	0.4146	-0.0362	0.0271
Vietnam	VN-Index	145	0.0063	0.0674	0.0123	-0.3084	0.2381	-0.0282	0.0411

Table A.1: Descriptive Statistics of Global Financial Returns (Longer Time Span).

B Country Groups

The analysis by group in Table 6 is following the taxonomy of national markets.

1. Developed vs Emerging

- **Developed (20 countries):** Australia, Belgium, Canada, Denmark, Finland, France, Germany, Hungary, Israel, Italy, Japan, Netherlands, Norway, Portugal, South Korea, Spain, Switzerland, Sweden, United Kingdom, United States;
- **Emerging (20 countries):** Argentina, Brazil, Chile, China (Mainland), Colombia, India, Indonesia, Malaysia, Mexico, Peru, Philippines, Poland, Russia, Saudi Arabia, South Africa, Thailand, Tunisia, Turkey, Ukraine, Vietnam.

2. Regional Taxonomy

- **Africa (2 countries):** South Africa, Tunisia;
- **Americas (8 countries):** Argentina, Brazil, Canada, Chile, Colombia, Mexico, Peru, United States;
- **Asia-Pacific (10 countries):** Australia, China (Mainland), India, Indonesia, Japan, Malaysia, Philippines, South Korea, Thailand, Vietnam;
- **Europe (17 countries):** Belgium, Denmark, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Russia, Spain, Sweden, Switzerland, United Kingdom, Ukraine;
- **Middle East (3 countries):** Israel, Saudi Arabia, Turkey.