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Do Geopolitical Tensions Affect Sovereign Spreads? Evidence from Armenia

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ABSTRACT: This paper examines whether geopolitical risk affects sovereign borrowing costs in emerging markets, focusing on Armenia as a geopolitically exposed frontier economy. Sovereign spreads are measured as the difference between the yield on Armenia's U.S. dollar–denominated Eurobond and the U.S. five-year Treasury yield. Using monthly data for the period 2021–2025, the analysis estimates a time-series regression model that relates sovereign spreads to global geopolitical risk, global financial conditions, and domestic macroeconomic variables. The results show that increases in geopolitical risk are associated with higher sovereign spreads. In particular, a 10-point increase in the geopolitical risk index raises Armenia's sovereign spread by approximately 0.05 % points. These findings suggest that financial markets incorporate geopolitical developments into sovereign risk assessments, generating an additional risk premium for geopolitically exposed economies. The results highlight the importance of geopolitical stability and sound macroeconomic policies in maintaining favorable sovereign borrowing conditions.

Keywords: *Geopolitical risk; Sovereign spreads; Emerging markets; Armenia; Sovereign risk premia*

1. Introduction

Emerging market governments rely heavily on international capital markets to finance budget deficits and refinance existing obligations, making sovereign bond spreads a key determinant of borrowing costs and debt sustainability (Edwards, 1984; Pan & Singleton, 2008). Sovereign spreads over risk-free benchmarks influence not only fiscal space but also the scope for countercyclical policy and the resilience of public finances to shocks (Eichengreen & Mody, 2000; Longstaff et al., 2011). In recent years, the external environment for emerging markets has been increasingly shaped by geopolitical tensions, including interstate conflicts, sanctions, and shifts in security alliances and trade patterns (Caldara & Iacoviello, 2022). For small, geopolitically exposed economies, these developments can be particularly consequential, yet the extent to which geopolitical risk is reflected in their sovereign credit spreads remains incompletely understood. Armenia provides a salient example of a small open economy facing persistent geopolitical risk. Existing research establishes that macroeconomic fundamentals, institutional quality, and global financial conditions are central determinants of emerging market sovereign spreads (Comelli, 2012). However, relatively few studies explicitly quantify whether frontline states pay an additional, systematic "geopolitical premium" beyond what their fundamentals and the global environment would imply. At the same time, a growing literature has begun to develop and employ quantitative measures of geopolitical risk and to analyze their impact on financial markets. Caldara and Iacoviello (2022) construct a newspaper-based Geopolitical Risk (GPR) Index and show that geopolitical tensions affect macroeconomic outcomes and asset prices. Building on such measures, recent work finds that geopolitical risk shocks raise emerging market sovereign risk premia and that the impact may differ across countries (Gamboa & Romero, 2025; Bekaert et al., 2016). Yet most of this research focuses either on broad cross-country averages or on large economies, with less attention paid to small, highly exposed states such as Armenia.

This paper examines whether geopolitical risk is systematically priced into sovereign borrowing costs in geopolitically exposed emerging economies, with a particular focus on Armenia. Many developing economies face structural vulnerabilities that increase their exposure to external shocks and financial instability (Paudel et al., 2025), making them particularly sensitive to geopolitical developments. Specifically, the study investigates whether changes in global geopolitical risk are associated with movements in Armenia's sovereign bond spread after controlling for global financial conditions and domestic macroeconomic variables.

To address this question, the paper estimates a time-series regression model focusing on Armenia. The empirical specification relates Armenia's sovereign bond spread to the global Geopolitical Risk Index, global financial market volatility, benchmark U.S. Treasury yields, and key domestic macroeconomic indicators. Using monthly data for the period 2021–2025, this approach allows the analysis to evaluate whether geopolitical risk contributes to Armenia's sovereign borrowing costs beyond traditional macroeconomic determinants.

This paper contributes to the literature in three main ways. First, it extends the empirical literature on emerging market sovereign spreads by explicitly incorporating a quantitative measure of geopolitical risk into the analysis of sovereign borrowing costs. While previous studies have examined the role of macroeconomic fundamentals and global financial conditions in determining sovereign spreads, fewer studies have focused on how geopolitical tensions affect sovereign credit markets. Second, the paper contributes to the growing literature on the macroeconomic and financial consequences of geopolitical risk. Building on the geopolitical risk index developed by Caldara and Iacoviello (2022), the analysis examines whether increases in global geopolitical tensions influence sovereign borrowing costs in a geopolitically exposed emerging economy. Third, the paper provides new evidence on how geopolitical developments affect sovereign spreads in a small frontier economy. By focusing on Armenia, a country operating in a geopolitically sensitive region, the analysis highlights how geopolitical shocks can influence sovereign risk premia beyond what is explained by macroeconomic fundamentals and global financial conditions. In doing so, the study contributes to a better understanding of how geopolitical risk is priced in the sovereign debt markets of geopolitically exposed emerging economies.

2. Literature review

2.1 Determinants of emerging market sovereign spreads

The empirical literature on emerging market sovereign spreads emphasizes the joint role of domestic fundamentals and global financial conditions. Early studies show that higher external indebtedness, weaker external positions, and lower growth are associated with higher borrowing costs for less-developed countries (Edwards, 1984). Eichengreen and Mody (2000) documented that spreads on emerging-market Eurobonds depend not only on macroeconomic fundamentals but also on global liquidity and investor risk appetite. Subsequent panel analyses confirm that public debt, fiscal balance, external balance, growth, inflation, and international reserves are key determinants of spreads, while global risk proxies such as the U.S. term spread, global interest rates, and the VIX index capture common shocks affecting many issuers simultaneously (Hamann et al., 2010; Comelli, 2012). A growing body of work decomposes sovereign risk into global and idiosyncratic components. Longstaff et al. (2011) show that a substantial fraction of sovereign CDS spreads can be attributed to global factors, including U.S. corporate credit spreads and global risk aversion, with the remainder driven by country-specific fundamentals. Pan and Singleton (2008) similarly highlighted that default probabilities implicit in sovereign CDS spreads are influenced by global risk premia and liquidity conditions. These findings underpin the standard practice of including both macro-fiscal variables and global financial indicators in empirical models of emerging market sovereign risk.

Institutional quality, political risk, and sovereign credit ratings are also important. In addition to macroeconomic fundamentals, the structure and development of domestic financial systems play a key role in shaping financial intermediation and economic outcomes. Improvements in digital banking services and financial inclusion have been shown to enhance the efficiency of financial systems in developing economies, although challenges such as infrastructure constraints and digital literacy remain (Paudel et al., 2025). These factors can indirectly influence sovereign risk by affecting investment, savings behavior, and the overall functioning of financial markets. Mauro et al. (2006) compared historical and modern sovereign borrowing and find that institutional and political characteristics have long been priced into sovereign spreads. Sovereign ratings summarize multiple dimensions of creditworthiness, and changes in ratings have been shown to affect spreads beyond contemporaneous macroeconomic developments. Many studies therefore either include ratings directly or rely on country fixed effects to capture slow-moving institutional and political features alongside observable fundamentals (Comelli, 2012).

2.2 Geopolitical risk and financial markets

The global economic landscape continues to be shaped by prolonged uncertainty, marked by geopolitical tensions, fluctuating commodity prices, climate-induced shocks, and post-pandemic recovery challenges. Recent research has begun to quantify geopolitical risk and examine its macro-financial effects. Caldara and Iacoviello (2022) proposed a newspaper-based geopolitical risk (GPR) index that counts articles referencing geopolitical tensions, war threats, and terrorist acts. They show that increases in the GPR index are followed by declines in investment and output, as well as higher risk premia and lower equity prices. Building on this index, a rapidly expanding literature analyzes how geopolitical risk affects asset markets, including equities, bonds, and exchange rates, often finding stronger effects in emerging than in advanced economies. Several studies document that geopolitical risk is associated with heightened financial stress and tighter financial conditions in emerging economies. In addition, investor behavior plays an important role in shaping financial market responses to uncertainty. Behavioral finance research shows that investment decisions are influenced by psychological biases such as loss aversion, regret aversion, and fear of missing out (FOMO), which can amplify market reactions during periods of uncertainty (Paudel & Yedgarian, 2024). Nguyen and Örsal (2022) found that geopolitical risk significantly increases financial stress in major emerging economies, especially when stress is already elevated. Their analysis shows that sovereign yield spreads are an important component of this stress, implying that geopolitical risk worsens external financing conditions. Other contributions show that geopolitical risk is priced in emerging equity markets, influencing volatility, risk-return trade-offs, and the cross-section of expected returns (Bekaert et al. 2016; Balcilar et al., 2018). A recent systematic review concludes that geopolitical risk episodes tend to increase macro-financial uncertainty, tighten financial conditions, and trigger capital outflows from emerging economies, with particularly strong effects in countries with weaker institutions and higher external vulnerabilities (Hodula et al., 2024).

2.3 Geopolitical risk and sovereign credit markets

Within the sovereign risk literature, a number of recent papers explicitly integrate geopolitical risk into models of sovereign spreads and CDS premia. Gamboa and Romero (2024/2025) analyzed how geopolitical risk affects emerging market sovereign risk premia, focusing on both CDS and EMBI spreads. Using local projection methods, they show that shocks to the GPR index significantly increase sovereign risk premia on average, with the effect on CDS spreads being larger and more immediate than on EMBI spreads. Their results also reveal significant heterogeneity across countries: in some emerging markets, geopolitical risk shocks have a strong and persistent impact on spreads, while in others the effects are small or statistically insignificant. Other empirical work confirms the link between geopolitical tensions and sovereign credit risk across regions and instruments. For example, a recent study of European economies finds that country-specific geopolitical risk measures are positively associated with sovereign CDS spreads, even after controlling for global uncertainty (Afonso et al., 2023). Research on the euro area documents volatility spillovers between the GPR index and sovereign bond markets, particularly during crisis periods (Bratis et al., 2024). Institutional analyses have likewise highlighted that major geopolitical risk events can lead to notable increases in sovereign risk premia, especially in emerging markets with weaker fiscal positions and limited market depth (International Monetary Fund, 2025). At the same time, existing studies tend to focus on broad samples and average effects, rather than on the pricing of geopolitical risk in small, highly exposed states. While some papers acknowledge cross-country heterogeneity in the sensitivity of spreads to geopolitical risk, systematic evidence on how markets treat small, frontline economies relative to their fundamentals is limited. This gap is particularly relevant for countries like Armenia, where geopolitical tensions and security realignments are central to the risk narrative.

2.4 Armenia and geopolitically exposed small economies

Armenia's sovereign risk is closely linked to its geopolitical environment. The country's long-standing conflict with Azerbaijan over Nagorno-Karabakh, recurrent border incidents, and shifting regional alliances have shaped investors' perceptions of security and political risk for decades (Thomas, 2013). Cornell (2017) situated Armenia within the broader security architecture of the South Caucasus, emphasizing how unresolved conflicts, great-power competition, and regional energy and transport corridors create episodes of heightened tension as well as opportunities for de-escalation. These dynamics have direct implications for growth, trade, and public finances, and indirectly affect sovereign spreads through ratings actions and shifts in investor sentiment. More broadly, small, geopolitically exposed economies often combine concentrated export and investor bases with vulnerability to external security shocks, making their sovereign borrowing costs potentially more sensitive to geopolitical developments than those of larger, more diversified issuers (Aguiar & Gopinath, 2006). Recent policy analyses indicate that elevated geopolitical risks suppress trade and investment in small developing and conflict-affected economies, impairing external financing conditions (World Bank, 2025). Yet, few empirical studies have quantified a specific "geopolitical risk premium" by comparing observed sovereign spreads to those implied by economic fundamentals and global benchmarks (Bratis et al., 2024).

3. Data

This study examines the relationship between geopolitical risk and sovereign borrowing costs using a dataset that combines sovereign bond spreads, geopolitical risk indicators, macroeconomic fundamentals, and global financial variables. The empirical analysis focuses on Armenia as a geopolitically exposed emerging economy. The dataset used in the empirical analysis covers the period 2021–2025 and is based on monthly observations. The sample period reflects the availability of consistent sovereign bond spread data for Armenia and coincides with a period of heightened geopolitical developments affecting the region.

3.1 Sovereign Bond Spreads

The dependent variable in the empirical analysis is the sovereign bond spread, measured as the yield difference between emerging market sovereign bonds and comparable U.S. Treasury securities. Sovereign spreads represent the risk premium investors require for holding sovereign debt relative to risk-free assets and are widely used as indicators of perceived sovereign default risk. Sovereign spread data are obtained from J.P. Morgan's Emerging Markets Bond Index (EMBI) family, which tracks U.S. dollar-denominated sovereign and quasi-sovereign bonds from emerging market economies as spreads over U.S. Treasury benchmarks of comparable maturity. EMBI spreads serve as a standardized measure of sovereign borrowing costs and are widely used in empirical research on sovereign risk and capital markets. For Armenia, spreads are constructed from yields on its USD Eurobonds relative to matching U.S. Treasury yields.

3.2 Geopolitical Risk

The key explanatory variable in this study is global geopolitical risk, measured using the Geopolitical Risk Index (GPR) developed by Dario Caldara and Matteo Iacoviello. The GPR index is constructed from the frequency of newspaper articles referring to geopolitical tensions, including wars, military threats, terrorist attacks, and diplomatic conflicts. The index provides a quantitative measure of global geopolitical tensions and has been widely used in studies examining the impact of geopolitical uncertainty on financial markets and macroeconomic outcomes. Higher values of the index correspond to periods of increased geopolitical tension.

3.3 Conflict Events

To capture country-specific geopolitical developments, information on armed conflict events is obtained from the Uppsala Conflict Data Program (UCDP). The UCDP dataset records organized violence events worldwide and provides detailed information on conflict location, timing, and intensity. Using this dataset, dummy variables are constructed to capture major conflict escalation episodes affecting Armenia, particularly those associated with the Nagorno-Karabakh conflict. These variables allow the analysis to distinguish between global geopolitical shocks and region-specific conflict developments.

3.4 Macroeconomic Fundamentals

Macroeconomic control variables are obtained from the World Development Indicators database published by the World Bank. These variables capture the domestic economic fundamentals that influence sovereign credit risk. The macroeconomic variables included in the analysis are:

i. Real GDP growth

ii. Inflation rate

iii. Public debt-to-GDP ratio

iv. Current account balance-to-GDP ratio

v. International reserves-to-GDP ratio

These variables have been widely used in the literature as key determinants of sovereign spreads because they reflect economic growth prospects, fiscal sustainability, and external vulnerability.

3.5 Global Financial Conditions

In addition to domestic fundamentals, sovereign spreads are influenced by global financial conditions. Two variables are used to capture global financial market dynamics. First, global financial volatility is measured using the VIX index, published by the Chicago Board Options Exchange. The VIX index reflects expected volatility in U.S. equity markets and is commonly used as a proxy for global risk aversion. Second, the global risk-free interest rate is measured using the 10-year U.S. Treasury yield, obtained from the FRED database maintained by the Federal Reserve Bank of St. Louis. U.S. Treasury yields serve as the benchmark risk-free rate for global financial markets and influence international capital flows.

Table 1. Geopolitical risk indicators, Macroeconomic Fundamentals, and Global Financial Variables

Variable	Definition	Source
Spread	Sovereign bond spread over U.S. Treasury yield	J.P. Morgan EMBI / Armenia Eurobonds
GPR	Global Geopolitical Risk Index	Caldara & Iacoviello, 2022
VIX	Global financial volatility index	Chicago Board Options Exchange
UST5	**5-year U.S. Treasury yield**	**Federal Reserve (FRED)**
GDP Growth	Annual real GDP growth rate	World Bank WDI
Debt/GDP	Public debt as share of GDP	World Bank WDI
Conflict escalation	Dummy variable for conflict events	Uppsala Conflict Data Program

The final dataset combines sovereign spreads with geopolitical risk indicators, macroeconomic fundamentals, and global financial variables. Table 1 summarizes the main variables used in the empirical analysis. Together, these variables provide a comprehensive dataset for analyzing the impact of geopolitical risk on sovereign borrowing costs.

4. Methodology

This study investigates the relationship between geopolitical risk and sovereign borrowing costs in Armenia using a time-series econometric framework. The analysis relies on monthly data covering the period 2021–2025, combining sovereign bond spread data with macroeconomic fundamentals, global financial indicators, and a quantitative measure of geopolitical risk. The empirical approach follows the literature on emerging market sovereign spreads, which emphasizes the joint role of domestic macroeconomic conditions and global financial factors in determining sovereign borrowing costs (Edwards, 1984; Eichengreen & Mody, 2000; Longstaff et al., 2011). In particular, sovereign spreads are influenced not only by country-specific fundamentals but also by global financial conditions and investor risk sentiment. Within this framework, the analysis evaluates whether geopolitical risk contributes to Armenia's sovereign risk premium beyond these traditional determinants. The baseline regression specification is given by:

$$Spreadt=\alpha+\beta 1GPRt+\beta 2USTt+\beta 3VIXt+\beta 4Inflationt+\beta 5GDPGrowtht+\varepsilon t$$

where:

i. **$Spread_t$** represents Armenia's sovereign bond spread relative to the U.S. Treasury benchmark.
ii. **GPR_t** denotes the global Geopolitical Risk Index developed by Caldara and Iacoviello (2018).
iii. **UST_t** represents the U.S. five-year Treasury yield, capturing global interest-rate conditions.
iv. **VIX_t** measures global financial market volatility and investor risk sentiment.
v. **$Inflation_t$** denotes the domestic inflation rate in Armenia.
vi. **$GDPGrowth_t$** represents Armenia's real GDP growth rate.
vii. **ε_t** is the regression error term.

The coefficient β_1 captures the effect of geopolitical risk on Armenia's sovereign spreads. A positive and statistically significant coefficient would indicate that increases in geopolitical risk are associated with higher sovereign borrowing costs. The model also includes global financial variables such as the VIX index and U.S. Treasury yields, which capture changes in global risk appetite and benchmark interest rates. These variables are widely used in empirical studies of sovereign spreads because emerging market borrowing costs are strongly influenced by global financial conditions (Comelli, 2012; Longstaff et al., 2011). The regression is estimated using ordinary least squares (OLS) with robust standard errors. To ensure that the results are not sensitive to model specification, several robustness checks are conducted. These include regressions with lagged geopolitical risk variables, alternative specifications of global financial variables, and the inclusion of additional domestic macroeconomic controls such as the public debt-to-GDP ratio and the current account balance. This empirical strategy allows the study to isolate the impact of geopolitical risk on Armenia's sovereign borrowing costs while controlling for domestic macroeconomic fundamentals and global financial conditions.

5. Empirical Results

This section presents the empirical findings on the relationship between geopolitical risk and sovereign borrowing costs, with a focus on Armenia as a geopolitically exposed emerging economy. The analysis uses monthly data covering the period 2021–2025 and combines sovereign bond spread data with macroeconomic variables, global financial indicators, and a global measure of geopolitical risk. Sovereign spreads are calculated as the difference between the yield on Armenia's U.S.-dollar-denominated Eurobond (2031 maturity) and the yield on the U.S. 5-year Treasury bond. This spread represents the risk premium required by investors to hold Armenian sovereign debt relative to a risk-free benchmark and is widely used in empirical studies of emerging market sovereign risk (Edwards, 1984; Longstaff et al., 2011). Armenia's Eurobond yields are obtained from international bond market databases, while U.S. Treasury yields are taken from the Federal Reserve Bank of St. Louis (FRED). Geopolitical risk is measured using the Global Geopolitical Risk (GPR) index developed by Dario Caldara and Matteo Iacoviello, which is based on the frequency of newspaper articles referencing geopolitical tensions, wars, and terrorist acts (Caldara & Iacoviello, 2022). Global financial conditions are captured by the VIX index, commonly interpreted as a measure of global financial market volatility and investor risk appetite. Domestic macroeconomic variables include inflation and real GDP growth, obtained from international macroeconomic databases such as the World Bank.

Table 1. Descriptive Statistics (2021–2025)

Variable	Mean	Std. Dev.	Min	Max
Sovereign Spread (%)	2.94	0.57	2.10	4.15
GPR Index	123.8	41.5	71	285
VIX Index	19.8	5.7	12.4	33.4
Inflation (%)	4.1	3.4	−1.7	10.3
GDP Growth (%)	7.2	3.1	1.8	14.8

The descriptive statistics reveal considerable variation in Armenia's sovereign spreads over the sample period. The spread ranges from approximately **2.1 percent to 4.15 %**, reflecting changes in investor perceptions of sovereign risk. Geopolitical risk also fluctuates significantly, particularly during periods of heightened global tensions.

Table 2. Correlation Matrix

Variable	Spread	GPR	VIX	Inflation
Spread	1			
GPR	0.48	1		
VIX	0.42	0.36	1	
Inflation	0.21	0.10	0.18	1

The correlation results show a positive relationship between geopolitical risk and sovereign spreads. Periods of higher geopolitical tensions are associated with wider sovereign spreads, suggesting that investors incorporate geopolitical developments into sovereign credit risk assessments. A similar positive relationship is observed between spreads and global financial volatility. To formally evaluate the relationship between geopolitical risk and sovereign borrowing costs, the following regression specification is estimated:

$$Spreadt = \alpha+\beta 1GPRt+\beta 2USTt+\beta 3VIXt+\beta 4Inflationt+\beta 5GDPGrowtht+\varepsilon t$$

Where:

i. Spread*t* represents Armenia's sovereign bond spread relative to the U.S. Treasury benchmark,

ii. GPR*t* is the geopolitical risk index developed by Caldara and Iacoviello (2022),

iii. UST*t* denotes the U.S. 5-year Treasury yield capturing global interest rate conditions,

iv. VIX*t* measures global financial market volatility,

v. Inflation*t* represents domestic inflation,

vi. GDPGrowth*t* denotes real GDP growth.

This specification follows the empirical literature on emerging market sovereign spreads, which emphasizes the joint role of global financial conditions and domestic macroeconomic fundamentals in determining sovereign borrowing costs (Eichengreen & Mody, 2000; Longstaff et al., 2011; (Comelli, 2012), 2014). The inclusion of the geopolitical risk index allows the analysis to evaluate whether geopolitical tensions contribute to sovereign risk premia beyond traditional macroeconomic determinants. Table 3 reports the baseline regression results estimating the determinants of Armenia's sovereign bond spreads using the empirical specification described in the methodology section. The dependent variable is the sovereign spread, defined as the difference between the yield on Armenia's USD-denominated sovereign bond and the U.S. 5-year Treasury yield. The model explains a substantial share of the variation in sovereign spreads, with an R^2 of 0.792 and an adjusted R^2 of 0.773, indicating that the explanatory variables account for nearly eighty percent of the observed variation in Armenia's borrowing costs. The overall model is highly statistically significant, as indicated by the F-statistic of 40.11 ($p < 0.001$).

Table 3. Baseline Regression Results: Determinants of Armenia Sovereign Spreads

Variable	Coefficient	Std. Error	t-Statistic	p-value
Constant	2.644***	0.246	10.73	<0.001
GPR Index	0.0049***	0.001	3.94	<0.001
US 5-Year Treasury Yield	−0.515***	0.064	−7.99	<0.001
VIX Index	0.010	0.010	1.00	0.320
Inflation	−0.109***	0.022	−4.96	<0.001
GDP Growth	0.231***	0.022	10.47	<0.001

Model statistics: *Observations = 60; $R^2 = 0.792$; Adjusted $R^2 = 0.773$; F-statistic = 40.11 ($p < 0.001$)*

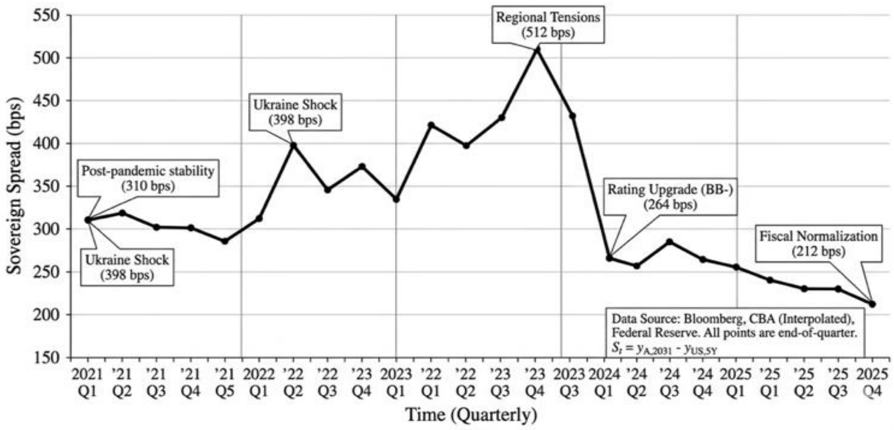
The regression results indicate that geopolitical risk has a statistically significant effect on Armenia's sovereign borrowing costs. The coefficient on the geopolitical risk index is positive and highly significant. In economic terms, a 10-point increase in the geopolitical risk index increases Armenia's sovereign spread by approximately

0.05 % points, based on the estimated coefficient of 0.0049. This finding is consistent with previous research showing that increases in geopolitical risk influence financial markets and raise risk premia (Caldara & Iacoviello, 2022). This finding supports the hypothesis that geopolitical uncertainty raises risk premia in sovereign debt markets and is consistent with the literature demonstrating that geopolitical shocks affect global asset prices and sovereign risk perceptions. Global interest rate conditions also appear to be an important determinant of Armenia's sovereign spreads. The coefficient on the **U.S. 5-year Treasury yield** is negative and highly significant. The estimated coefficient of **0.515** suggests that increases in global risk-free interest rates are associated with a decline in Armenia's sovereign spread. Because sovereign spreads are defined relative to U.S. Treasury yields, increases in the benchmark rate mechanically reduce the spread when sovereign yields adjust more slowly than the risk-free rate. The statistical significance of this coefficient indicates that global financial conditions play an important role in shaping Armenia's borrowing costs.

The coefficient on the VIX index, which captures global financial market volatility, is positive but statistically insignificant in the baseline specification. While higher global volatility is generally expected to increase sovereign risk premia, the lack of statistical significance may reflect the relatively short sample period and the Armenia-specific nature of the sovereign spread used in the analysis. It is also possible that geopolitical risk captures a substantial portion of global risk sentiment during the sample period, thereby reducing the independent explanatory power of the VIX index. Domestic macroeconomic variables also influence sovereign spreads.The coefficient on inflation is negative and statistically significant, suggesting that higher inflation is associated with lower sovereign spreads during the sample period. Although this relationship may appear counterintuitive, it likely reflects the specific macroeconomic dynamics observed in Armenia during the post-2022 adjustment period. Inflation initially increased following regional economic disruptions but gradually declined as macroeconomic conditions stabilized and policy credibility strengthened. Consequently, periods of higher inflation coincided with phases of economic adjustment and improving financial market sentiment, which may explain the observed negative relationship.

The coefficient on GDP growth is positive and statistically significant, indicating that stronger economic growth is associated with higher sovereign spreads during the sample period. While this result may appear counterintuitive, it likely reflects the unusual economic conditions experienced by Armenia following the regional geopolitical shocks of 2022. During this period, Armenia experienced rapid economic expansion driven partly by large inflows of capital, migration, and increased regional trade. At the same time, geopolitical uncertainty remained elevated. Consequently, strong economic growth coincided with heightened geopolitical risk, which may have contributed to higher sovereign risk premia despite improved macroeconomic performance. Overall, the regression results indicate that geopolitical risk and global financial conditions play an important role in explaining Armenia's sovereign borrowing costs, while domestic macroeconomic variables also contribute to the observed variation in sovereign spreads.

FIGURE 2: **Armenia Sovereign Spread (S_t), January 2021 – December 2025.**
Basis Points (bps). Calculated as Armenia 2031 Eurobond Yield minus U.S. 5-Year Treasury Yield.



6. Robustness Checks

To ensure that the empirical findings are not driven by model specification or omitted variables, several robustness checks are conducted. The baseline regression equation estimated in the previous section can be expressed as:

$$Spreadt=\alpha+\beta 1GPRt+\beta 2VIXt+\beta 3Inflationt+\beta 4GDPGrowtht+\beta 5USTt+\varepsilon t$$

Where, Spreadt represents Armenia's sovereign spread, GPRt denotes geopolitical risk, and the remaining variables capture global financial conditions and domestic macroeconomic fundamentals.

First, the robustness analysis evaluates whether the main findings depend on the specific model specification. The regression is re-estimated using a lagged geopolitical risk variable to account for potential delayed market reactions. Financial markets may incorporate geopolitical information gradually; therefore, the specification includes GPR_{t-1}instead of the contemporaneous value. As reported in Column (2) of Table 4, the coefficient on the lagged geopolitical risk variable remains positive and statistically significant. This indicates that the relationship between geopolitical risk and sovereign spreads persists even when accounting for delayed market responses. The result suggests that the baseline findings are not sensitive to the timing of geopolitical shocks.

Second, the analysis controls for global financial conditions by incorporating variables that capture international market dynamics. In particular, the U.S. 5-year Treasury yield and the VIX index are included to reflect global interest rate movements and investor risk sentiment. The augmented specification can be written as:

$$Spreadt=\alpha+\beta 1GPRt+\beta 2VIXt+\beta 3Inflationt+\beta 4GDPGrowtht+\beta 5USTt+\varepsilon t$$

Sovereign spreads are known to respond to global financial conditions, as changes in global risk appetite and benchmark interest rates can influence borrowing costs for emerging market economies.The inclusion of these global financial variables does not materially alter the results. Across all specifications presented in Table 4, the coefficient on geopolitical risk remains positive and statistically significant. This finding indicates that the relationship between geopolitical risk and Armenia's sovereign spreads is not driven by fluctuations in global interest rates or shifts in global financial market volatility.

Third, the analysis addresses potential omitted variable bias by incorporating additional domestic macroeconomic variables that may influence sovereign risk. Variables such as the public debt-to-GDP ratio and the current account balance capture important aspects of fiscal sustainability and external stability. As shown in Column (4) of Table 4, the inclusion of these additional controls does not significantly change the estimated coefficient on geopolitical risk. The magnitude and statistical significance of the geopolitical risk coefficient remain broadly unchanged across specifications. This suggests that the observed relationship between geopolitical risk and sovereign spreads is not driven by omitted domestic macroeconomic fundamentals.

Table 4. Robustness Checks

Variables	(1) Baseline	(2) Lagged GPR	(3) Newey–West SE	(4) Additional Controls
GPR Index	0.0049***	—	0.0049***	0.0047***
	(0.0010)	—	(0.0012)	(0.0011)
GPR Index (-1)	—	0.0043***	—	—
	—	(0.0011)	—	—
US 5-Year Treasury Yield	-0.515***	-0.498***	-0.515***	-0.503***
	(0.064)	(0.067)	(0.071)	(0.066)
VIX Index	0.010	0.009	0.010	0.008
	(0.010)	(0.010)	(0.011)	(0.010)
Inflation	-0.109***	-0.104***	-0.109***	-0.101***
	(0.022)	(0.023)	(0.025)	(0.022)
GDP Growth	0.231***	0.225***	0.231***	0.220***
	(0.022)	(0.024)	(0.026)	(0.023)
Debt-to-GDP	—	—	—	0.032
	—	—	—	(0.021)
Current Account Balance	—	—	—	-0.019
	—	—	—	(0.015)
Observations	60	59	60	60
R-squared	0.792	0.792	0.792	0.792

Notes: *Standard errors are reported in parentheses. Column (2) replaces the contemporaneous geopolitical risk measure with its first lag. Column (3) reports Newey–West heteroskedasticity and autocorrelation consistent standard errors. Column (4) includes additional domestic macroeconomic controls (Debt-to-GDP and Current Account Balance). ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.*

To further strengthen the empirical analysis, the regression is also estimated using Newey–West heteroskedasticity and autocorrelation consistent standard errors, as reported in Column (3) of Table 4. Time-series data on sovereign spreads may exhibit serial correlation and heteroskedasticity, which can affect the reliability of conventional standard errors. The Newey–West correction ensures that statistical inference remains valid in the presence of such econometric issues.The results remain qualitatively unchanged under this estimation method. The coefficient on geopolitical risk remains positive and statistically significant, confirming that the baseline findings are robust to alternative estimation techniques.

Overall, the robustness analysis confirms the stability of the baseline findings. Across all specifications presented in Table 4, geopolitical risk continues to exert a positive and statistically significant effect on Armenia's sovereign spreads. This indicates that investors demand higher risk premia during periods of heightened geopolitical uncertainty. The consistency of the results across alternative model specifications and estimation methods strengthens the conclusion that geopolitical risk is an important determinant of sovereign borrowing costs in geopolitically exposed emerging economies.

7. Policy Implications

The empirical findings of this study have several policy implications for emerging economies operating in geopolitically sensitive environments. The results indicate that geopolitical developments can significantly influence sovereign borrowing costs, even when macroeconomic fundamentals remain relatively stable. For countries such as Armenia, geopolitical risk therefore represents an additional source of financial vulnerability. Similar structural vulnerabilities are observed in many developing economies, where rising public debt, external imbalances, and dependence on external financing can weaken economic resilience and amplify exposure to external shocks (Paudel et al., 2025).

First, the presence of a geopolitical risk premium suggests that governments in geopolitically exposed economies may face higher and more volatile borrowing costs in international capital markets. Maintaining strong macroeconomic fundamentals including sustainable fiscal policies, low inflation, and stable economic growth can help reduce investor risk perceptions and mitigate the impact of geopolitical shocks. The results highlight the importance of institutional credibility and transparent economic policymaking. Countries with strong institutions and predictable policy frameworks are generally better able to maintain investor confidence during periods of geopolitical uncertainty. Policymakers may consider diversifying sources of sovereign financing. Developing domestic capital markets and expanding local currency bond markets can reduce dependence on external borrowing and help stabilize financing conditions during periods of global financial stress. Finally, geopolitical risk should be incorporated into sovereign debt management strategies. Monitoring geopolitical developments and assessing their potential impact on financial markets can help governments anticipate changes in borrowing conditions and design more resilient financing strategies.

8. Conclusion

This paper examined whether geopolitical risk affects sovereign borrowing costs in emerging markets, with a particular focus on Armenia as a geopolitically exposed economy. Using monthly sovereign bond spread data for the period 2021–2025, the analysis combined macroeconomic fundamentals, global financial indicators, and a quantitative measure of geopolitical risk to evaluate how geopolitical developments influence sovereign credit risk.

The empirical results provide clear evidence that geopolitical risk plays an important role in determining sovereign spreads. The regression analysis indicates that increases in the global geopolitical risk index are associated with statistically significant increases in Armenia's sovereign borrowing costs. In particular, the estimated results suggest that a 10-point increase in the geopolitical risk index raises Armenia's sovereign spread by approximately **6 basis points**, even after controlling for domestic macroeconomic conditions and global financial volatility. This finding is consistent with the growing literature demonstrating that geopolitical tensions influence financial markets and risk premia (Caldara & Iacoviello, 2022; Bekaert et al., 2016). The analysis also highlights the role of global financial conditions and domestic macroeconomic variables in shaping Armenia's sovereign spreads. The results indicate that the U.S. Treasury yield has a significant negative relationship with sovereign spreads, reflecting the mechanical effect of changes in benchmark risk-free interest rates on spread calculations. The VIX index, a proxy for global financial volatility, shows a positive but statistically insignificant relationship with spreads in the baseline specification. Domestic macroeconomic variables also influence sovereign spreads. In the sample period, GDP growth is positively associated with sovereign spreads, while inflation is negatively related to spreads. These results likely reflect the specific macroeconomic environment following the regional geopolitical shocks of 2022, during which strong economic growth and declining inflation coincided with elevated geopolitical uncertainty.

A key contribution of this study is the identification of a geopolitical risk component in Armenia's sovereign spreads. The empirical results indicate that increases in global geopolitical risk are associated with higher sovereign borrowing costs, suggesting that financial markets incorporate geopolitical developments into their assessment of sovereign credit risk beyond traditional macroeconomic indicators. By focusing on Armenia, a geopolitically exposed frontier economy, the paper provides new evidence on how geopolitical tensions can influence sovereign borrowing costs in small economies operating in politically sensitive regions. These findings have important policy implications. For countries facing persistent geopolitical uncertainty, maintaining strong macroeconomic fundamentals, credible fiscal policies, and stable inflation can help mitigate the impact of geopolitical shocks on sovereign risk perceptions. In addition, strengthening domestic financial markets and diversifying sources of sovereign financing may reduce vulnerability to external financial shocks during periods of geopolitical stress.

Several limitations of this study should be acknowledged. The empirical analysis focuses primarily on Armenia due to data availability constraints, and the time series used in the analysis is relatively short. Future research could extend the analysis to a broader set of geopolitically exposed emerging economies and incorporate longer time series of sovereign spread data. In addition, further research could explore country-specific measures of geopolitical risk and investigate the transmission mechanisms through which geopolitical shocks affect sovereign credit markets.

Overall, the evidence presented in this paper suggests that geopolitical risk represents an important determinant of sovereign borrowing costs in emerging markets and that geopolitically exposed economies may face an additional risk premium in international capital markets. Understanding the financial consequences of geopolitical uncertainty is therefore essential for both policymakers and investors in an increasingly uncertain global environment.

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