REM WORKING PAPER SERIES

Echoes of Instability: How Geopolitical Risks Shape Government Debt Holdings

António Afonso, José Alves, Sofia Monteiro

REM Working Paper 0333-2024

July 2024

REM – Research in Economics and Mathematics
Rua Miguel Lúpi 20,
1249-078 Lisboa,
Portugal

ISSN 2184-108X

REM – Research in Economics and Mathematics

Rua Miguel Lupi, 20
1249-078 LISBOA
Portugal

Telephone: +351 - 213 925 912
E-mail: rem@iseg.ulisboa.pt

https://rem.rc.iseg.ulisboa.pt/

https://twitter.com/ResearchRem

https://www.linkedin.com/company/researchrem/

https://www.facebook.com/researchrem/

Echoes of Instability: How Geopolitical Risks Shape Government Debt Holdings*

António Afonso† José Alves‡ Sofia Monteiro§

July 2024

Abstract

Recognizing the profound influence of geopolitical risks and world uncertainty on financial investment behaviour, this study uses a comprehensive approach to assess the impact of rising geopolitical risk on sovereign debt holdings for a panel of 24 OECD economies from Q1 2004 to Q4 2023. To do so, we employ Ordinary Least Squares (OLS) fixed effects and Quantile Regression techniques within a panel data framework to capture the nuanced effects on both domestic and foreign entities. We find that escalating geopolitical tension decreases government debt holdings among domestic entities, notably domestic Banks, while foreign investors increase their ownership. This phenomenon is more pronounced for high proportion levels of debt in investor's portfolios. Our results allow us to conclude that while domestic economic agents display clearer risk aversion, foreign economic agents have a more risk-taking behaviour in what concerns the financial investment on government debt.

JEL: C23; E44; G32; H63
Keywords: Sovereign Debt; Geopolitical Risk; World Uncertainty; OLS; Quantile Regression.

* This work was supported by the FCT (Fundação para a Ciência e a Tecnologia) [grant number UIDB/05069/2020]. The opinions expressed herein are those of the authors and do not necessarily reflect those of the authors' employers. Any remaining errors are the authors' sole responsibility.
† ISEG – School of Economics and Management, Universidade de Lisboa; REM – Research in Economics and Mathematics, UECE – Research Unit on Complexity and Economics. CESifo (Center for Economic Studies and Ifo Institute). email: aafonso@iseg.ulisboa.pt
‡ ISEG – School of Economics and Management, Universidade de Lisboa; REM – Research in Economics and Mathematics, UECE – Research Unit on Complexity and Economics. (Center for Economic Studies and Ifo Institute). email: jalves@iseg.ulisboa.pt
§ ISEG – School of Economics and Management, Universidade de Lisboa; REM – Research in Economics and Mathematics, UECE – Research Unit on Complexity and Economics. email: asmonteiro@iseg.ulisboa.pt

1. Introduction

There is extensive literature analysing the impact of geopolitical risk on economic and financial sectors (Alsagr and Almazor, 2020). Geopolitical risk is widely recognized as a primary driver of market dynamics and plays a crucial role in the management of investment strategies (Caldara and Iacoviello, 2022). Market participants, policymakers, and central bank officials acknowledge the significant influence of geopolitical risks on sovereign policy decisions and their effects on stock market fluctuations (Agoraki, 2022; Bergman et al., 2019; Caldara and Iacoviello, 2022; Subramaniam, 2022; Gupta et al., 2019). For instance, the former governor of the Bank of England identified geopolitics as one of the three key uncertainties impacting global economic performance in 2016 (Bank of England, 2023). In 2023, Christine Lagarde, President of the European Central Bank (ECB), highlighted the pivotal role of geopolitics in shaping a new economic landscape globally (European Central Bank, 2023).

Investment decisions are strongly influenced by market and global instability, underscoring the importance of evaluating the impact of geopolitical tensions on portfolio composition (Merler and Pisani-Ferry 2012; Afonso et al., 2024). Specifically, when considering ownership of government debt, investor perceptions of geopolitical and uncertainty risks facing a country play a pivotal role in shaping strategic investment decisions (Acharya and Steffen, 2015; Fang et al., 2023). Understanding these dynamics is crucial for effectively navigating volatile economic environments and optimizing investment strategies.

In this study, we investigate the influence of geopolitical tensions on government debt holdings from 2004 Q1 to 2023 Q4 across 24 OECD countries.

Our methodological approach utilizes Ordinary Least Squares (OLS) Fixed Effects techniques within a panel data framework. Additionally, we analyse the dynamics of sovereign debt ownership across different country groupings. Specifically, we examine the effects of the logarithm of the World Uncertainty Index (WUI) on government debt holdings at both the national income level (advanced, emerging, and low-income economies) and regional level (Africa, Asia and the Pacific, Europe, Middle East and Central Asia, and Western Hemisphere). We also investigate whether the patterns of debt holding change in response to global tensions and during periods of escalating geopolitical risk. Moreover, through robustness analysis, we explore how the relationship between geopolitical risk and government debt holdings varies across different quantiles of the distribution using Quantile Regression analysis.

Our empirical findings indicate that heightened geopolitical tensions, such as conflicts or trade disputes, significantly decrease domestic entities' holdings of government debt, particularly domestic financial institutions. In contrast, foreign entities increase their holdings of government debt amidst rising geopolitical risk, driven by potential higher returns, strategic hedging, or long-term investment strategies.

As World Geopolitical risk rises, domestic entities typically decrease investments in their own sovereign debt, while foreign investors increase holdings, reflecting strong international trade ties. Interestingly, during prolonged periods of geopolitical tension, domestic entities tend to increase their government debt holdings, whereas foreign banks tend to be more cautious. This suggests domestic entities may invest more in sovereign debt to manage risk and support local stability, while foreign banks take a more conservative approach.

Furthermore, investor risk attitudes vary based on their exposure to government debt. High exposure among domestic investors leads to reduced holdings under geopolitical tensions. The same occurs for foreign investors with higher debt allocations which act prudently, while those with lower allocations increase their risk-taking behaviour during periods of heightened geopolitical tensions.

From a policy standpoint, policymakers must consider these differing impacts on domestic and foreign investment behaviours. Therefore, effective debt management strategies would be needed to mitigate adverse effects on domestic financial stability during times of global uncertainty.

The paper is organised as follows. Section 2 presents a literature review on the topic. Section 3 presents the data and methodology used. Section 4 reports the empirical analysis, a robustness analysis, and our findings. Section 5 presents the main conclusions of our study.

2. Literature Review

2.1. Debt Ownership

The composition of government debt has significant financial and economic policy implications. Recent literature underscores that analysing the structure of government debt, classified by its holders, provides valuable insights into various issues. These include risk diversification in government debt issuance, the strength of the sovereign-bank nexus, overall financial stability (Pavot and Valenta, 2021), the likelihood and effectiveness of sovereign debt restructuring (Acharya et al., 2014; Gennaioli et al, 2014;

Farhi and Tirole, 2018), income inequality (Arbogast, 2020), and the size of fiscal multipliers (Broner et al., 2019).

Typically, banks hold substantial amounts of government debt, which can have significant implications for both the banking sector and the broader economy, affecting financial markets stability and monetary policy effectiveness (Dell'Ariccia et al., 2014; Acharya and Steffen, 2015; De Marco, 2019).

However, studies by Popov and van Horen (2013), Gennaioli et al. (2014) and De Marco (2021) show that banks heavily invested in sovereign debt might face downgrades in their credit ratings, affecting their ability to raise capital and extend credit to the private sector. This can have broader economic implications, as reduced lending capacity can slow down economic growth and recovery.

For instance, during the Global Financial Crisis (GFC) of 2007-2008, many European banks increased their holdings of government debt, as highlighted by Merler and Pisani-Ferry (2012), Crosignani (2021) and Haan and Vermeulen (2021). Specifically, Merler and Pisani-Ferry (2012) note that domestic banks have notably increased their holdings of domestic government debt since the GFC. This trend raises the risk of adverse feedback loops between sovereign stress and banking stress. Brunnermeier et al. (2016) called this phenomenon a "diabolic loop", when a decline in sovereign creditworthiness reduced the market value of domestic sovereign debt held by banks, diminishing their balance sheet value and perceived solvency, and limiting their lending activity. This bank distress raised the likelihood of government bailouts, intensifying sovereign distress and creating a "bailout loop". Additionally, the recession caused by the credit crunch led to decreased tax revenue, further weakening government solvency, and triggering a "real-economy loop".

In fact, in 2011, European banks experienced an average decline of 40% in their market value. Following this substantial loss, they divested billions of euros in assets to bolster their regulatory capital ratios (Acharya and Steffen, 2015). However, according to Wolff (2011), banks' market valuations between July and October 2011 were not influenced by their holdings of government debt from Italy, Spain, Portugal, and Ireland. Nevertheless, a clear link existed between Greek debt holdings and market valuation (Angeloni and Wolff, 2012).

Arslanalp and Tsuda (2014) examined the distribution of sovereign debt holdings across various countries, distinguishing between domestic and foreign investors. Their study revealed a significant drop in foreign holdings of Irish and Portuguese debt

following multiple rating downgrades during the sovereign debt crisis. In many instances, domestic banks or official institutions stepped in to replace the retreating foreign investors. This drop in foreign ownership of euro-area government debt differed from the surge that occurred with the introduction of the euro (Wolswijk and De Haan, 2005; Guerrieri et al., 2013).

In contrast to these studies, Fang et al. (2023) demonstrate that non-banks increase their holdings of Euro area sovereign debt in response to rising yields between 2013 and 2020, highlighting the growing importance of non-bank entities in this market. Afonso et al. (2023) also show that when sovereign risk increases, the share of domestic banks' portfolio of public debt also rises and the percentage holdings in the case of central banks decrease. The authors also show that better sovereign ratings also increase (decrease) the share of commercial (central) banks' holdings.

Moreover, the GFC underscored the vulnerabilities associated with high levels of sovereign debt held by domestic banks, emphasizing the need for careful monitoring and management of government debt composition (Fang et al., 2023).

The European Central Bank (ECB) has played a pivotal role in the sovereign debt market, especially through its quantitative easing programs. For instance, Afonso and Pereira (2023) report that European banks more exposed to government debt securities had higher growth of loans and loans relative to total assets than less exposed banks. In addition, according to De Santis (2020), the ECB's purchases of government debt, which increased substantially after 2015 (Haan et al., 2021), have significantly influenced sovereign debt markets, lowering borrowing costs for member states, addressing low inflation and affecting the distribution of debt ownership across different sectors and market participants. Hence, this intervention by the ECB illustrates how central bank policies can alter the landscape of debt ownership and its associated risks.

For the US and the UK, the Federal Reserve and the Bank of England began increasing their share of public debt earlier, with central banks expanding their holdings while domestic banks reduced theirs since 2010 (Afonso et al., 2023). This intervention altered the structure of sovereign debt holdings. By 2020, during the health pandemic, central banks' holdings exceeded those of domestic banks as a share of total outstanding sovereign debt in each country, aligning with Fang et al. (2023).

2.2. Geopolitical Tensions and the Banking Sector

The analysis of geopolitical dynamics is well-established in the literature. The term "geopolitics" was introduced in the early 20th century by Swedish political scientist Rudolf Kjellén, who recognized that geography is more than just a backdrop for international politics; it fundamentally influences state behavior (Björk, 2021). This insight was particularly significant during the two World Wars and the Cold War. However, in today's geopolitical landscape, Kjellén's observations remain pertinent. See, for instance, the escalating tensions between China and the United States since 2018 (see notably Afonso et al., 2024b), the global ramifications of the Covid-19 pandemic in 2020 (Bouri et al., 2023), the international conflicts such as the war in Ukraine in 2022 (Shen & Hong, 2023; Khan et al., 2023; Mokdadi et al., 2023; Johnson et al., 2023; Zhukov, 2023), tensions between NATO and Russia, Middle East conflicts and the war in Israel in 2023.

Given the increasing significance of uncertainty and political instability at the global scale, numerous studies have examined their impact on macroeconomy dynamics and economic growth (Handley and Limao, 2012; Clance et al., 2019; Hoang et al.,2023), on fiscal (im)balances (Fernández-Villaverde et al. (2015); Nguyen et al. (2023); Afonso et al., 2024a), on the unemployment (Bloom, 2009), on stock market dynamics (Caldara and Iacoviello, 2022), among others. Extensive literature also explores the impact of political risk and economic policy uncertainty on bank risk and performance, as seen in studies by Bordo et al. (2016) and Biswas and Zhai (2020).

More recently, research has focused on the direct impact of geopolitical risk on bank stability. For instance, Alsagr and Almazor (2020), Demir and Danisman (2021), Phan et al. (2022), and Nguyen (2023) have made significant contributions in this area. Demir and Danisman (2021) demonstrate that while economic uncertainty diminishes overall bank credit growth in emerging economies, geopolitical risk does not have the same effect. Conversely, Phan et al (2022) show that an increase in geopolitical risk is associated with a decline in bank stability, however, the impact is less pronounced in large and well-capitalized banks. Nguyen and Thuy (2023) observe that geopolitical risk is associated with higher loan prices and more stringent nonprice loan terms. Lu et al. (2020) also showed that geopolitical risk negatively affects domestic credit lending. Additionally, Shabir et al. (2023) indicate that these tensions adversely impact bank's risk. Trinh and Tran (2023) argue that country governance and institutional quality are key factors in mitigating the adverse effects of geopolitical tensions on the banking sector.

Although there is substantial literature on the impact of geopolitical tensions on banks, few studies analyse how this risk affects the composition of debt. Those that do focus primarily on the dynamics of debt ownership in the corporate sector rather than the banking side, as seen in studies by Khoo (2021), Cao et al. (2022), and Shrestha et al. (2024). Therefore, one needs further research on geopolitical risk and debt ownership dynamics.

Geopolitical risk is traditionally assessed using the Geopolitical Risk Index (GPR), introduced by Caldara and Iacoviello (2022). Renowned for its robust capabilities, the GPR offers a comprehensive measure of geopolitical risk, encompassing a wide range of events such as wars and significant economic or climatic crises. Unlike indices developed by private entities, the GPR is publicly accessible, transparent in its construction, open to feedback and critique, and based on an extensive historical database.

In addition, the World Uncertainty Index (WUI), developed by Ahir et al. (2022), serves as a critical indicator for measuring global economic instability and uncertainty. This index focuses on assessing political and economic instability worldwide and is highly valued for its rigorous methodology and facilitation of comprehensive data collection.

3. Data and Methodology

3.1. Data

This study employs data from 24 OECD economies, spanning the period from 2004 Q1 to 2023 Q3. The countries included in the analysis are Australia, Austria, Belgium, Canada, Czechia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, Netherlands, New Zealand, Norway, Portugal, Slovenia, Spain, Sweden, Switzerland, United Kingdom, and United States. The selection of these nations is dictated by the data availability.

The dependent variable analysed in our study is the percentage of general government gross debt held by investors, expressed as a proportion of GDP and was extracted from the data source of Arslanalp and Tsuda (2014).

The investor base, which holds sovereign debt, is categorized into two distinct groups: domestic and foreign investors. The domestic category is further divided into central banks, domestic commercial banks, and domestic non-banks. The foreign category is subdivided into foreign commercial banks, foreign officials (including central banks, securities markets, and official loans), and foreign non-banks.

The primary explanatory variable of interest in this study is geopolitical risk. As mentioned above, to measure this variable, we utilize the Geopolitical Risk Index (GPR) developed by Caldara and Iacoviello (2022) and the World Uncertainty Index (WUI) created by Ahir et al. (2022).

The GPR index is constructed from news-based data, specifically by tallying the monthly occurrences of words associated with geopolitical risk. This data is compiled from a selection of 11 prominent international newspapers: The Boston Globe, the Chicago Tribune, The Daily Telegraph, the Financial Times, The Globe and Mail, The Guardian, the Los Angeles Times, The New York Times, The Times, The Wall Street Journal, and The Washington Post (Caldara and Iacoviello, 2022). The GPR index effectively captures a wide range of exogenous global uncertainties, including military threats, wars, terror attacks, and trade disputes, as noted by Balcilar et al. (2018). The GPR data, initially collected on a monthly basis, is transformed into quarterly data by averaging every three months and we use the logarithm.

The WUI index tracks global uncertainty by text-mining the country reports of the Economist Intelligence Unit. It is calculated by determining the percentage occurrence of the word "uncertain" (and its variants) in these reports on a quarterly basis, and then rescaling by multiplying by 1,000,000 and logarithmized. A higher WUI value indicates greater uncertainty.

We also included in our study global measures of geopolitical risk, the World total GPR, time series of the World Uncertainty Index (WUI) at the global level (GDP weighted average), income level (advanced, emerging, and low-income economies), and regional level (Africa, Asia and the Pacific, Europe, Middle East and Central Asia, and Western Hemisphere). The series by income and regional level are unbalanced, use a GDP weighted average, and are used as a logarithm.

In our analysis, we incorporate several control variables: the logarithm of the inflation rate (Inflation), calculated as the change in the quarterly average of headline consumer price inflation, and the logarithm of the real effective exchange rate (Reer), which generally captures credit risk arising from general macroeconomic disequilibrium. An increase in Reer indicates a real exchange rate appreciation. This variable was transformed into a growth rate to capture its dynamics. We also include the three-month short-term interest rate (Int. rate) and the output gap (Output Gap), computed as actual GDP less potential GDP as a percent of potential GDP. Additionally, the logarithm of sovereign credit ratings (Ratings) is included, following the approach of Afonso et al.

(2015). This approach transforms qualitative ratings from Moody's, Standard & Poor's, and Fitch credit agencies into a quantitative scale from 1 (low quality, ≤ B-) to 17 (high quality, AAA), with the overall measure being the simple average of the sovereign credit ratings from these three main credit agencies for each country.

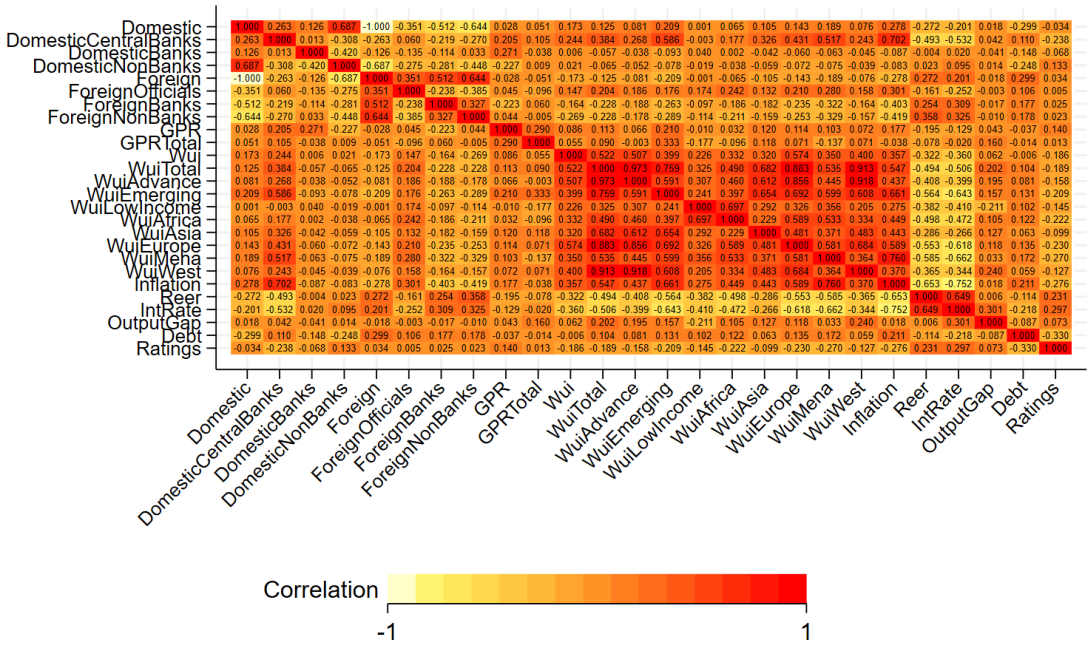
Furthermore, we consider the general government debt-to-GDP ratio (Debt) to account for fiscal dynamics. Data for these control variables are obtained from the World Bank database, IMF, OECD and Eurostat. All variables are measured at a quarterly frequency.

Table 1: Summary Statistics

	Mean	Median	S. D.	Min	Max
Domestic	0.577	0.579	0.194	0.099	0.965
Dom. Cent. Banks	0.084	0.042	0.099	0.000	0.460
Domestic Banks	0.196	0.189	0.102	0.002	0.605
Dom. Non-Banks	0.297	0.242	0.198	0.005	0.828
Foreign	0.423	0.421	0.194	0.035	0.901
Foreign Officials	0.170	0.133	0.141	0.016	0.820
Foreign Banks	0.073	0.055	0.071	0.001	0.486
Forei. Non-Banks	0.181	0.152	0.135	0.000	0.661
GPR	0.322	0.106	0.568	0.000	4.432
GPR Total	0.989	0.917	0.260	0.584	1.981
WUI	0.215	0.175	0.194	0.000	1.757
WUI Total	0.021	0.019	0.009	0.008	0.056
WUI Advance	0.022	0.020	0.011	0.005	0.064
WUI Emerging	0.020	0.018	0.008	0.007	0.043
WUI Low Income	0.023	0.022	0.007	0.010	0.039
WUI Africa	0.033	0.031	0.015	0.010	0.073
WUI Asia	0.015	0.014	0.007	0.003	0.041
WUI Europe	0.025	0.022	0.011	0.007	0.067
WUI Mena	0.015	0.014	0.006	0.004	0.029
WUI West	0.024	0.021	0.014	0.005	0.072
Inflation	4.588	4.602	0.104	4.330	5.003
Reer	4.582	4.594	0.095	4.024	4.876
Int. Rate	1.506	0.904	1.865	-0.899	8.827
Output Gap	0.036	0.000	1.930	-7.488	8.456
Debt	0.643	0.523	0.531	0.000	2.393
Ratings	2.585	2.752	0.432	0.000	2.833

Notes: This table presents the summary statistics of the variables under study for the period of 2004 Q1 to 2023 Q4. Specifically, we report the mean, median, Standard deviation (SD), the maximum, and the minimum of the holdings of Domestic and Foreign investors over GDP (Central Banks, Banks, Non-Banks and Officials), the GPR by country, the global GPR, the WUI by country, Global WUI, WUI at the income level (advanced, emerging, and low-income economies), and regional level (Africa, Asia and the Pacific, Europe, Middle East and Central Asia, and Western Hemisphere), the logarithm of the harmonised index of consumer prices (Inflation), the logarithm of the real effective exchange rate (REER), the logarithm of the short-run 3-month interest rate, (Int. rate), the difference between the actual level of GDP against the full employment level GDP (Output Gap), the government debt over GDP (Debt) and the logarithm of the sovereign credit Ratings (Ratings).

Figure 1: Correlation Map



Notes: This figure reports the correlation coefficients between the variables used in this study, which are: the holdings of Domestic and Foreign investors over GDP (Central Banks, Banks, Non-Banks and Officials), the GPR by country, the global GPR, the WUI by country, Global WUI, WUI at the income level (advanced, emerging, and low-income economies), and regional level (Africa, Asia and the Pacific, Europe, Middle East and Central Asia, and Western Hemisphere), the logarithm of the harmonised index of consumer prices (Inflation), the logarithm of the real effective exchange rate (REER), the logarithm of the short-run 3-month interest rate, (Int. rate), the difference between the actual level of GDP against the full employment level GDP (Output Gap), the government debt over GDP (Debt) and the logarithm of the sovereign credit Ratings (Ratings). A warmer colour means a correlation that is closer to 1 (red) and a lighter one is closer to -1 (light yellow). Source: The Authors' own computations.

Table 1 summarizes the relevant features of the data used in this study. The dataset comprises quarterly observations spanning the period from 2004 Q1 to 2023 Q4, totalling approximately 2,000 observations for each variable. Comprehensive documentation is provided for all 24 countries included in the study.

The data reveal that government debt is predominantly held by domestic entities, particularly by non-bank investors. Regarding our variables of geopolitical risk, we observe that the Geopolitical Risk Index (GPR) and the World Uncertainty Index (WUI) exhibit only positive values and an average close to its median, indicating a symmetrical distribution, with relatively low standard deviation. The regions with the highest average WUI are Africa and European countries. The control variables align with expected values.

Figure 1 presents the map of correlations between the variables under study. In this map, warmer colours (red) represent stronger positive correlations, while lighter colours (yellow) indicate more correlations that are negative. A similar trend is observed with Debt; as it increases, domestic investors tend to reduce their holdings. The measures of

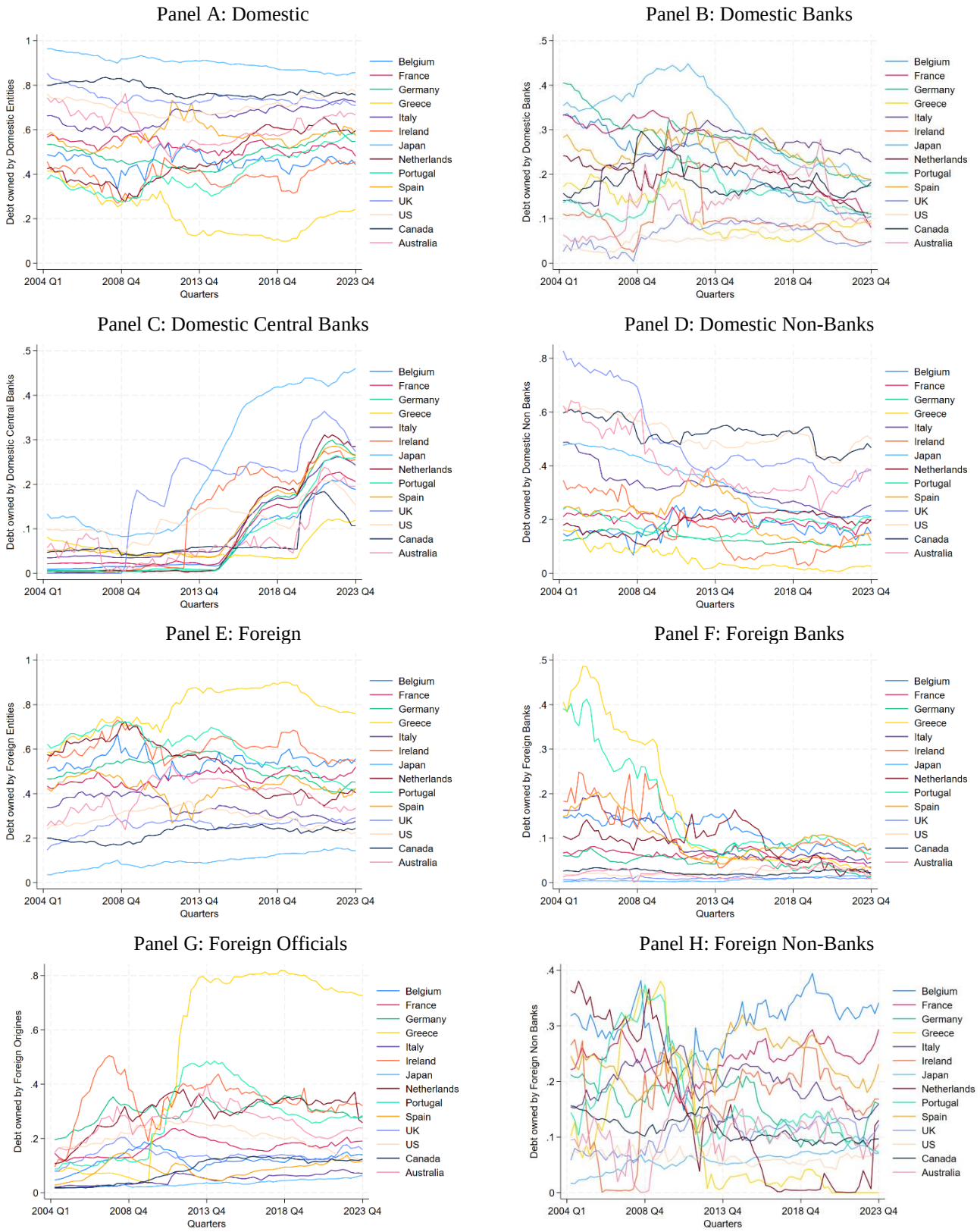
debt holdings and geopolitical tensions exhibit mixed results in their correlation coefficients; however, these values are generally small.

Figure 2 illustrates the dynamics of debt ownership by domestic and foreign investors, specifically detailing Domestic (Panel A), Domestic Banks (Panel B), Domestic Central Banks (Panel C), Domestic Non-Banks (Panel D), Foreign (Panel E), Foreign Banks (Panel F), Foreign Officials (Panel G), and Foreign Non-Banks (Panel H) holdings. The period under analysis covers the full sample period from 2004 Q1 to 2023 Q4. The figure includes 14 representative countries from our sample, with each line representing one of these countries.

Domestic entities (Panel A) have had relatively unchanging holdings over time. Notably, Belgium, Canada, and the UK have consistently had more than 80% of their debt held by domestic investors, in contrast to foreign investors (Panel E) which represent only 20%. On the other hand, Greece, Portugal, and Ireland have the majority of their debt held by external investors (between 60% and 90%). For most countries, however, debt ownership is fairly distributed between domestic and foreign investors. Within Domestic entities, Domestic Banks and Non-Banks (Panels B and D) have typically decreased their holdings. In contrast, Domestic Central Banks have increased their investments, especially after the subprime crisis in 2008 and the subsequent sovereign debt crisis in Europe. The countries with the most significant increases in Central Bank holdings are Belgium and the UK, driven by the European Central Bank's strategy to address the effects of the subprime crisis.

Regarding Foreign government debt ownership, Foreign Banks (Panel F) have decreased their holdings, particularly in Greece and Portugal. However, Foreign Officials have substantially expanded their investments during financial crises, with Greece's foreign official holdings escalating from 5% to 80% and Portugal's from 10% to 50%. These increases are attributed to the recovery plans instituted by the International Monetary Fund (IMF) for these countries.

Figure 2: Debt Ownership Dynamics by Country, 2004 Q1 to 2023 Q4

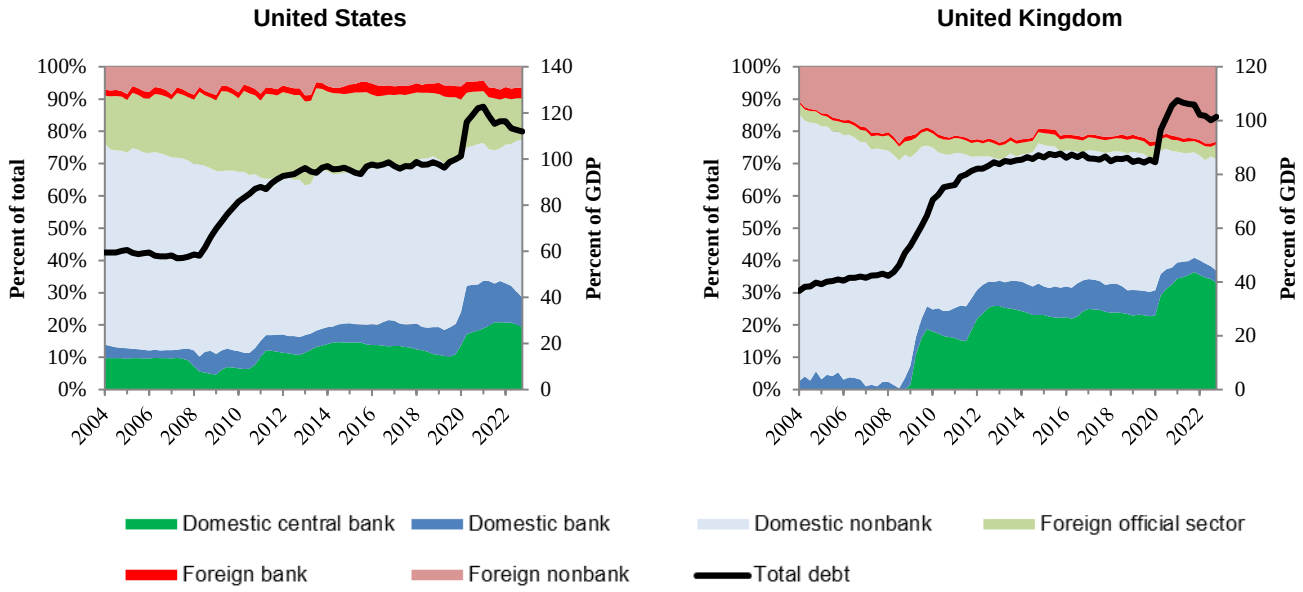


Notes: This figure reports the Debt Ownership dynamics disaggregated by Domestic (Panel A), Domestic Banks (Panel B), Domestic Central Banks (Panel C), Domestic Non-Banks (Panel D), Foreign (Panel E), Foreign Banks (Panel F), Foreign Officials (Panel G) and, Foreign Non-Banks (Panel H) by country (represented by each line) for the full sample period of 2004 Q1 to 2023 Q4. Source: The Authors' own computations.

Figure 3 complements the analysis of Figure 2, where we report the dynamic behaviour of Domestic Central Banks, Domestic banks, Domestic Non-Banks, Foreign officials, Foreign Banks and Foreign Non-Banks for the US and the UK between 2004 Q1 to 2023 Q4.

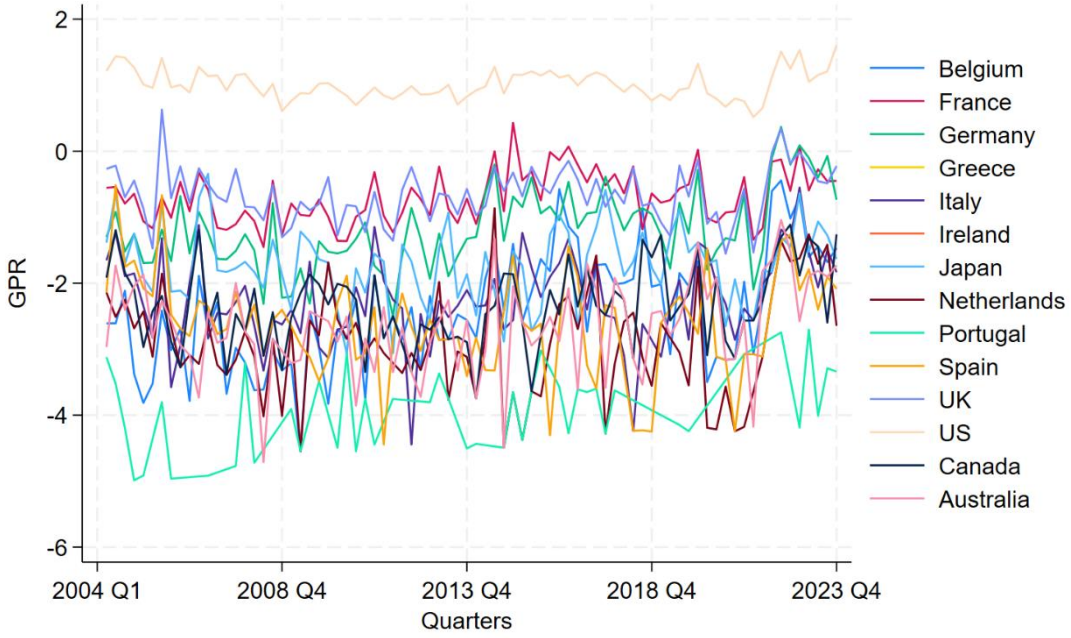
The dynamics of bank holdings' composition over the last three decades reveal that domestic banks' holdings of sovereign debt increased notably after 2008. This rise can be attributed to governments expecting the financial sector to absorb new debt issuances as sovereign risk rises, often at below-market interest rates, a phenomenon known as financial repression (Shaw, 1973; McKinnon, 1973). Additionally, in response to the global financial crisis, many economies increased their government debt, which led to general economic stress, reduced tax revenues, and decreased bank credit availability (Becker et al., 2018; Molyneux et al., 2021). In contrast, foreign holdings remained relatively stable over time for both countries.

Figure 3: Debt owned by Domestic and Foreign Holds, 2004 Q1 to 2023 Q4



Notes: This figure shows the holders of two Advanced Economy Government Debt, 2004-2022 (Components in percent; total in percent of GDP). Source: Arslanalp and Tsuda (2014).

Figure 4: Geopolitical Risk by Country, 2004 Q1 to 2023 Q4



Notes: This figure reports the Dynamics of logarithm of Geopolitical Risk (GPR) by country (represented by each line) for the full sample period of 2004 Q1 to 2023 Q4. Source: The Authors' own computations.

Figure 4 depicts the dynamic behaviour of the logarithm of Geopolitical Risk (GPR) for 14 countries in our sample, covering the period from 2004 Q1 to 2023 Q4. Each line represents one country.

From this graphical representation, it is evident that the US, France, the UK, and Germany report the highest GPR values. This can be attributed to these countries being among the largest economies in the world. As such, they typically receive extensive media attention and serve as benchmarks for many other nations. Consequently, events such as tensions or disputes in these countries are subject to greater scrutiny and coverage. Portugal, Spain, and the Netherlands report the smallest values throughout the all-sample period.

3.2. Methodology

For testing the quarterly relationship between the sovereign debt holdings and the Geopolitical risk that governments face, we estimate equation (1):

$$Debt_{i,t,k} = \alpha_0 + \beta_1 . Geopolitical_{i,t,n} + \beta_2 . X_{i,t} + \phi_i + \eta_t + \varepsilon_{i,t} \qquad (1)$$

where $Debt_{i,t,k}$ represents the debt holdings in country i and period t, by each type of k investors type, where k is Domestic, Domestic Banks, Domestic Central Banks, Domestic Non-Banks, Foreign, Foreign Banks , Foreign Officials and, Foreign Non-Banks, $risk_n$ is each type of risk n, where n is Geopolitical Risk Index (GPR), World Uncertainty Index (WUI), and its disaggregates, X are the set of the abovementioned control variables, ϕ and η are the country (i) and time (t) specific effects and ε is the error term.

Equation (1) is estimated employing a fixed-effect panel data approach for each investor type. Moreover, standard errors are corrected for heteroskedasticity and serial correlation. Additionally, we also estimate equation (1) using Machado and Santos Silva (2019) quantile regression approach to assess possible non-linear relationships between debt holders' composition and Geopolitical risks.

4. Empirical Analysis

In this section, we present an empirical analysis of the effect of geopolitical risk on the dynamics of sovereign debt ownership. To achieve this, we provide OLS estimates with country and year fixed effects. Additionally, to offer a comprehensive view of the dynamics of sovereign debt holdings, we report the estimation results of the OLS fixed effects model for the World Uncertainty Index (WUI) at the income level (advanced, emerging, and low-income economies) and regional level (Africa, Asia and the Pacific, Europe, Middle East and Central Asia, and Western Hemisphere). We also include results for global risk and the growth rate of risk. As a robustness check, we present the results using quantile regression estimates.

4.1. Geopolitical risk Impact

In Table 2, we present the results on the impact of geopolitical risk on the holding of government debt by domestic and foreign investors for the period from 2004 Q1 to 2023 Q4. Our findings reveal that an increase in geopolitical tensions, such as wars, territorial disputes, or trade wars, negatively affects the holding of governmental debt by domestic entities, particularly domestic banks. This can be attributed to a home bias effect that discourages domestic banks from holding government debt during periods of heightened tension. We argue that this behaviour may stem from local information advantages, political pressures, relative funding reasons, direct government ownership, and the influence of executive boards by politicians (Becker et al., 2018). Further, geopolitical tensions can strain a government's fiscal position. Increased military spending, economic

sanctions, or disruptions in trade due to geopolitical conflicts can negatively impact a government's ability to manage its debt and finances effectively. This can lead to concerns about the sustainability of government debt and potential default risks, which makes domestic banks cautious about holding such debt.

In contrast, foreign entities appear to increase their holdings of government debt as geopolitical risk rises. This may be due to risk-loving behaviour or the prospect of higher returns and more attractive yields. It may be a strategic hedging behaviour or a long-term investment strategy. Additionally, an increase in the interest rate seems to reduce domestic banks' debt holdings while increasing central bank participation.

Table 2: Results of Geopolitical Risk affecting Domestic and Foreign Holdings, 2004 Q1 to 2023 Q3, OLS-FE

	Domestic				Foreign			
Variables	Domestic	Domestic Banks	Domestic Central Banks	Domestic Non-Banks	Foreign	Foreign Officials	Foreign Banks	Foreign Non-Banks
GPR	-0.006*	-0.005*	0.001	-0.002	0.006*	0.007**	-0.003*	0.003
	(0.004)	(0.003)	(0.002)	(0.003)	(0.004)	(0.003)	(0.002)	(0.005)
Inflation	0.231	-0.343**	0.792***	-0.218	-0.231	-0.836***	0.111	0.494**
	(0.186)	(0.151)	(0.153)	(0.156)	(0.186)	(0.126)	(0.079)	(0.211)
Reer	0.299***	-0.305***	-0.287***	0.891***	-0.299***	0.115*	-0.225***	-0.188**
	(0.090)	(0.070)	(0.060)	(0.086)	(0.090)	(0.068)	(0.033)	(0.093)
Int.Rate	-0.051***	0.040***	0.015**	-0.106***	0.051***	-0.019***	0.020***	0.049***
	(0.010)	(0.011)	(0.007)	(0.014)	(0.010)	(0.006)	(0.004)	(0.010)
Output Gap	-0.005**	-0.000	0.002*	-0.008***	0.005**	-0.001	-0.002*	0.009***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.003)
Debt	-0.001***	-0.001***	0.000***	-0.001**	0.001***	-0.000	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ratings	-0.082***	-0.144***	0.006	0.056***	0.082***	-0.059**	0.228***	-0.087***
	(0.017)	(0.014)	(0.007)	(0.021)	(0.017)	(0.023)	(0.012)	(0.027)
Constant	-1.546*	3.577***	-2.246***	-2.877***	2.546***	3.449***	-0.048	-0.855
	(0.835)	(0.643)	(0.582)	(0.562)	(0.835)	(0.543)	(0.364)	(0.977)
Observations	649	649	649	649	649	649	649	649
R-squared	0.880	0.793	0.889	0.936	0.880	0.852	0.812	0.686

Notes: This table reports the OLS Fixed Effects results for the impact of the logarithm of the Geopolitical Risk (GPR) on Sovereign debt holdings for the period of 2004 Q1 to 2023 Q4. The variables used are: the holdings of Domestic and Foreign investors over GDP (Central Banks, Banks, Non-Banks and Officials), the GPR by country, the logarithm of the harmonised index of consumer prices (Inflation), the logarithm of the real effective exchange rate (REER), the logarithm of the short-run 3-month interest rate, (Int. rate), the difference between the actual level of GDP against the full employment level GDP (Output Gap), the government debt over GDP (Debt) and the logarithm of the sovereign credit Ratings (Ratings). * indicates the level of significance of 10%, ** a level of 5% and *** a level of 1%. In brackets, we report the robust standard errors. Observations are the observations for each regression.

Additionally, an increase in the interest rate originates a reduction on domestic holdings but increases central banks participation. Similar conclusions can be made for the Output Gap and the level of debt, as an increase on both seems to reduce Domestic holdings. In contrast, for Foreign holdings, an increase in the interest rate, output gap and Debt ratio, rises their participation. Further, an appreciation on the real exchange rate has

a positive impact on Domestic holdings but a negative impact on Foreign investments. Table 3 completes the analysis of Table 2 and presents the OLS Fixed Effects results on the impact of the logarithm of the World Uncertainty Index (WUI) at both the income level (advanced, emerging, and low-income economies) and regional level (Africa, Asia and the Pacific, Europe, Middle East and Central Asia, and Western Hemisphere) on sovereign debt holdings for the period from 2004 Q1 to 2023 Q4. The results clearly indicate that as uncertainty rises across all regions, domestic entities reduce their investment in home sovereign debt, while foreign investors increase their holdings. This phenomenon is supported by the notion that uncertainty in these regions has a detrimental impact on our OECD sample economies, particularly due to their established commercial and trade connections (Afonso et al., 2024a).

Table 4 similarly reinforces previous findings. The table presents the impact of the World Geopolitical Risk (GPR) on domestic and foreign holdings. Consistently, the results indicate that higher world geopolitical risk reduces the holdings of domestic entities while increasing the holdings of foreign investors, especially banks and officials.

Lastly, Table 5 presents the OLS Fixed Effects results analysing the impact of the growth rate of the Geopolitical Risk (GPR) relative to the previous year's corresponding quarter on sovereign debt holdings from 2004 Q1 to 2023 Q4. Contrary to findings in previous tables, the results indicate that increasing geopolitical tensions lead to an increase in holdings by domestic entities while reducing the holdings of foreign banks.

This pattern can be justified by considering that domestic entities, including Banks, may perceive increased geopolitical tensions as a signal to invest more heavily in domestic government debt as a form of risk management and support for local stability. On the other hand, foreign banks may become more cautious during periods of rising geopolitical risk, reducing their exposure to government debt in countries perceived as more volatile or risky. This behaviour reflects strategic responses to perceived risks and opportunities associated with geopolitical dynamics.

Table 3: Results of World Uncertainty by region, 2004 Q1 to 2023 Q3, OLS-FE

	Advance Econ.		Emerging Econ.		Low Income Econ.		Africa		Asia		Europe		MENA		West	
Variables	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign
WUI	-0.430**	0.913***	-0.201**	0.427***	-0.859**	1.820***	-0.649**	1.376***	-0.373**	0.790***	-0.212**	0.449***	-0.142**	0.301***	-0.443**	0.939***
	(0.190)	(0.249)	(0.089)	(0.116)	(0.379)	(0.496)	(0.287)	(0.375)	(0.165)	(0.215)	(0.094)	(0.123)	(0.063)	(0.082)	(0.195)	(0.256)
Inflation	0.489***	-0.515***	0.489***	-0.515***	0.489***	-0.515***	0.489***	-0.515***	0.489***	-0.515***	0.489***	-0.515***	0.489***	-0.515***	0.489***	-0.515***
	(0.111)	(0.178)	(0.111)	(0.178)	(0.111)	(0.178)	(0.111)	(0.178)	(0.111)	(0.178)	(0.111)	(0.178)	(0.111)	(0.178)	(0.111)	(0.178)
Reer	-0.089	0.019	-0.089	0.019	-0.089	0.019	-0.089	0.019	-0.089	0.019	-0.089	0.019	-0.089	0.019	-0.089	0.019
	(0.089)	(0.055)	(0.089)	(0.055)	(0.089)	(0.055)	(0.089)	(0.055)	(0.089)	(0.055)	(0.089)	(0.055)	(0.089)	(0.055)	(0.089)	(0.055)
Int.Rate	-0.036***	0.006	-0.036***	0.006	-0.036***	0.006	-0.036***	0.006	-0.036***	0.006	-0.036***	0.006	-0.036***	0.006	-0.036***	0.006
	(0.008)	(0.004)	(0.008)	(0.004)	(0.008)	(0.004)	(0.008)	(0.004)	(0.008)	(0.004)	(0.008)	(0.004)	(0.008)	(0.004)	(0.008)	(0.004)
Output Gap	-0.003**	0.003	-0.003**	0.003	-0.003**	0.003	-0.003**	0.003	-0.003**	0.003	-0.003**	0.003	-0.003**	0.003	-0.003**	0.003
	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)
Debt	-0.000*	0.000*	-0.000*	0.000*	-0.000*	0.000*	-0.000*	0.000*	-0.000*	0.000*	-0.000*	0.000*	-0.000*	0.000*	-0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ratings	0.055***	-0.251***	0.055***	-0.251***	0.055***	-0.251***	0.055***	-0.251***	0.055***	-0.251***	0.055***	-0.251***	0.055***	-0.251***	0.055***	-0.251***
	(0.008)	(0.014)	(0.008)	(0.014)	(0.008)	(0.014)	(0.008)	(0.014)	(0.008)	(0.014)	(0.008)	(0.014)	(0.008)	(0.014)	(0.008)	(0.014)
Constant	-3.278***	6.668***	-2.362***	4.726***	-5.343***	11.047***	-4.362***	8.967***	-3.148***	6.393***	-2.366***	4.735***	-2.226***	4.438***	-3.296***	6.707***
	(0.963)	(1.703)	(0.608)	(1.189)	(1.839)	(2.883)	(1.418)	(2.321)	(0.910)	(1.630)	(0.610)	(1.191)	(0.561)	(1.114)	(0.970)	(1.713)
Observations	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050
R-squared	0.890	0.831	0.890	0.831	0.890	0.831	0.890	0.831	0.890	0.831	0.890	0.831	0.890	0.831	0.890	0.831

Notes: This table reports the OLS Fixed Effects results for the impact of the logarithm of the World Uncertainty index (WUI) at the income level (advanced, emerging, and low-income economies), and regional level (Africa, Asia and the Pacific, Europe, Middle East and Central Asia, and Western Hemisphere), on Sovereign debt holdings for the period of 2004 Q1 to 2023 Q4. The variables used are: the holdings of Domestic and Foreign investors over GDP (Central Banks, Banks, Non-Banks and Officials), the GPR by country, the logarithm of the harmonised index of consumer prices (Inflation), the logarithm of the real effective exchange rate (REER), the logarithm of the short-run 3-month interest rate, (Int. rate), the difference between the actual level of GDP against the full employment level GDP (Output Gap), the government debt over GDP (Debt) and the logarithm of the sovereign credit Ratings (Ratings). * indicates the level of significance of 10%, ** a level of 5% and *** a level of 1%. In brackets, we report the robust standard errors. Observations are the observations for each regression.

Table 4: Results of Geopolitical Risk Total affecting Domestic and Foreign Holdings, 2004 Q1 to 2023 Q3, OLS-FE

	Domestic				**Foreign**			
Variables	***Domestic***	***Domestic Banks***	***Domestic Central Banks***	***Domestic Non-Banks***	***Foreign***	***Foreign Officials***	***Foreign Banks***	***Foreign Non-Banks***
GPR Total	0.112	0.079	-0.069	0.102	-0.112	-0.375***	0.333***	-0.069
	(0.073)	(0.055)	(0.067)	(0.076)	(0.073)	(0.115)	(0.045)	(0.104)
Inflation	0.419***	0.016	0.290***	0.113	-0.419***	-0.490**	0.440***	-0.369**
	(0.105)	(0.076)	(0.097)	(0.109)	(0.105)	(0.190)	(0.064)	(0.157)
Reer	0.111	-0.246***	-0.274***	0.631***	-0.111	0.036	-0.100***	-0.048
	(0.072)	(0.058)	(0.054)	(0.075)	(0.072)	(0.068)	(0.034)	(0.078)
Int.Rate	-0.041***	0.018***	-0.025***	-0.033***	0.041***	0.005	-0.004	0.040***
	(0.008)	(0.004)	(0.004)	(0.005)	(0.008)	(0.004)	(0.003)	(0.008)
Output Gap	-0.003**	-0.000	-0.001	-0.001	0.003**	0.003	-0.003***	0.003
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)	(0.001)	(0.002)
Debt	-0.000*	0.000	0.000	-0.000***	0.000*	0.000*	-0.000**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ratings	0.047***	0.011*	0.015**	0.021***	-0.047***	-0.251***	0.145***	0.059***
	(0.009)	(0.006)	(0.006)	(0.005)	(0.009)	(0.016)	(0.008)	(0.011)
Constant	-2.659***	0.799*	0.346	-3.804***	3.659***	4.542***	-3.289***	2.406**
	(0.633)	(0.430)	(0.608)	(0.585)	(0.633)	(1.307)	(0.423)	(1.034)
Observations	994	994	994	994	994	994	994	994
R-squared	0.896	0.822	0.808	0.927	0.896	0.833	0.800	0.703

Notes: This table reports the OLS Fixed Effects results for the impact of the logarithm of the Global Total Geopolitical Risk (GPR) on Sovereign debt holdings for the period of 2004 Q1 to 2023 Q4. The variables used are: the holdings of Domestic and Foreign investors over GDP (Central Banks, Banks, Non-Banks and Officials), the GPR by country, the logarithm of the harmonised index of consumer prices (Inflation), the logarithm of the real effective exchange rate (REER), the logarithm of the short-run 3-month interest rate, (Int. rate), the difference between the actual level of GDP against the full employment level GDP (Output Gap), the government debt over GDP (Debt) and the logarithm of the sovereign credit Ratings (Ratings). * indicates the level of significance of 10%, ** a level of 5% and *** a level of 1%. In brackets, we report the robust standard errors. Observations are the observations for each regression.

Table 5: Results of Geopolitical Risk Growth affecting Domestic and Foreign Holdings, 2004 Q1 to 2023 Q3, OLS-FE

	Domestic				Foreign			
Variables	***Domestic***	***Domestic Banks***	***Domestic Central Banks***	***Domestic Non Banks***	***Foreign***	***Foreign Oficials***	***Foreign Banks***	***Foreign Non Banks***
GPR Growth Rate	0.001**	0.002**	0.007	0.002	-0.002**	0.003	0.001	-0.002*
	(0.009)	(0.008)	(0.005)	(0.007)	(0.009)	(0.009)	(0.005)	(0.001)
Inflation	0.089	-0.261*	0.806***	-0.456***	-0.089	-0.853***	0.157**	0.607***
	(0.167)	(0.135)	(0.140)	(0.145)	(0.167)	(0.127)	(0.072)	(0.201)
Reer	0.285***	-0.343***	-0.313***	0.941***	-0.285***	0.105	-0.199***	-0.191**
	(0.080)	(0.065)	(0.061)	(0.083)	(0.080)	(0.067)	(0.030)	(0.084)
Int.Rate	-0.053***	0.036***	0.013**	-0.102***	0.053***	-0.021***	0.021***	0.054***
	(0.009)	(0.010)	(0.007)	(0.014)	(0.009)	(0.007)	(0.003)	(0.009)
Output Gap	-0.003	0.002	0.002*	-0.008***	0.003	-0.002	-0.002**	0.008***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.003)
Debt	-0.001***	-0.001***	0.000***	-0.000**	0.001***	-0.000	0.001***	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ratings	-0.071***	-0.157***	0.010	0.077***	0.071***	-0.097***	0.233***	-0.065**
	(0.016)	(0.013)	(0.006)	(0.021)	(0.016)	(0.023)	(0.011)	(0.027)
Constant	-0.879	3.459***	-2.189***	-2.148***	1.879**	3.636***	-0.398	-1.360
	(0.757)	(0.580)	(0.515)	(0.493)	(0.757)	(0.542)	(0.330)	(0.909)
Observations	733	733	733	733	733	733	733	733
R-squared	0.879	0.783	0.885	0.933	0.879	0.824	0.827	0.661

Notes: This table reports the OLS Fixed Effects results for the impact of growth rate of the Geopolitical Risk (GPR) on Sovereign debt holdings for the period of 2004 Q1 to 2023 Q4. The variables used are: the holdings of Domestic and Foreign investors over GDP (Central Banks, Banks, Non-Banks and Officials), the GPR by country, the logarithm of the harmonised index of consumer prices (Inflation), the logarithm of the real effective exchange rate (REER), the logarithm of the short-run 3-month interest rate, (Int. rate), the difference between the actual level of GDP against the full employment level GDP (Output Gap), the government debt over GDP (Debt) and the logarithm of the sovereign credit Ratings (Ratings). * indicates the level of significance of 10%, ** a level of 5% and *** a level of 1%. In brackets, we report the robust standard errors. Observations are the observations for each regression.

4.2. Robustness Check

In this sub-section, we report a robustness analysis employing a Quantile analysis. Traditional OLS regression assumes a normal distribution of residuals and may be sensitive to outliers. Quantile regression, however, does not require these assumptions and can provide robust estimates even in the presence of non-normality or outliers in the data. These regressions further allow us to examine how the relationship between geopolitical risk and sovereign debt holdings varies across different segments of the distribution. This is particularly valuable when the relationship may differ significantly at different points of the distribution, such as during periods of extreme risk or stability. Results are reported in Table 6.

For domestic investors, including domestic Banks and Non-Banks with high levels of debt in their portfolios, an increase in geopolitical tensions significantly reduces their holdings. For lower levels of debt holdings, the results are mixed. Specifically, for domestic Banks and total domestic investors, increased tensions lead to a decrease in debt

ownership, indicating more cautious behaviour. Conversely, for Central Banks and Non-Banks, increased tensions result in higher debt holdings, reflecting risk-seeking behaviour.

Regarding foreign holdings, the proportion of debt in investors' portfolios influences their risk attitudes. For total foreign investors and foreign banks with high levels of debt ownership, increased geopolitical risk is associated with more prudent behaviour. In contrast, foreign investors and non-bank investors with a smaller share of their portfolios allocated to government debt exhibit risk-taking behaviour under increased geopolitical tensions.

Table 6. Quantile results for sovereign debt bank holdings, by type

	Domestic			Domestic Banks			Domestic Central Banks			Domestic Non-Banks		
Variables	*25th quantile*	*50th quantile*	*75th quantile*	*25th quantile*	*50th quantile*	*75th quantile*	*25th quantile*	*50th quantile*	*75th quantile*	*25th quantile*	*50th quantile*	*75th quantile*
GPR	-0.032***	-0.005	-0.012***	-0.038***	-0.029***	-0.027***	0.006***	0.010***	0.004	0.019***	-0.007**	-0.057***
	(0.008)	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)	(0.001)	(0.002)	(0.002)	(0.004)	(0.003)	(0.009)
Inflation	0.317*	0.329***	0.253***	-0.352***	-0.340***	-0.235*	0.039*	0.234***	0.526***	-0.038	-0.074*	-0.151
	(0.189)	(0.095)	(0.084)	(0.072)	(0.061)	(0.128)	(0.024)	(0.067)	(0.063)	(0.056)	(0.043)	(0.140)
Reer	-0.581*	-0.668***	-0.474***	0.140	-0.117	-0.072	-0.063*	-0.287**	-0.233***	-0.015	-0.214**	-0.483***
	(0.331)	(0.157)	(0.178)	(0.127)	(0.131)	(0.157)	(0.036)	(0.132)	(0.061)	(0.186)	(0.096)	(0.162)
Int.Rate	0.006	-0.001	-0.003	-0.008**	-0.006*	0.001	-0.001	-0.009***	-0.007***	0.010**	-0.003	-0.001
	(0.010)	(0.007)	(0.008)	(0.003)	(0.003)	(0.005)	(0.001)	(0.002)	(0.002)	(0.004)	(0.002)	(0.007)
Output Gap	-0.006	-0.003	-0.003	0.001	0.000	-0.003*	0.003**	0.012***	0.000	-0.003	-0.001	-0.005
	(0.007)	(0.003)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)	(0.002)	(0.005)
Debt	-0.001***	-0.002***	-0.001***	-0.000***	-0.000**	-0.000***	0.000	-0.000*	-0.000**	0.000***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ratings	-0.118**	0.006	0.038	-0.124***	-0.057***	-0.032***	-0.051***	-0.022	-0.004	-0.051**	0.016	0.184***
	(0.059)	(0.026)	(0.025)	(0.015)	(0.011)	(0.009)	(0.011)	(0.015)	(0.014)	(0.025)	(0.014)	(0.039)
Constant	2.093	2.181**	1.582*	1.600**	2.563***	1.827*	0.283	0.410	-1.190**	0.534	1.538***	2.684**
	(1.728)	(0.911)	(0.841)	(0.733)	(0.596)	(0.969)	(0.235)	(0.830)	(0.530)	(0.836)	(0.438)	(1.163)
Observations	744	744	744	744	744	744	744	744	744	744	744	744

Table 6. Quantile results for sovereign debt bank holdings, by type (continued)

	Foreign			Foreign Officials			Foreign Banks			Foreign Non-Banks		
Variables	*25th quantile*	*50th quantile*	*75th quantile*	*25th quantile*	*50th quantile*	*75th quantile*	*25th quantile*	*50th quantile*	*75th quantile*	*25th quantile*	*50th quantile*	*75th quantile*
GPR	0.012***	0.005	-0.032***	-0.012***	-0.005***	-0.001	0.000	-0.002	-0.008**	0.025***	0.017***	0.007
	(0.004)	(0.006)	(0.008)	(0.003)	(0.002)	(0.004)	(0.001)	(0.002)	(0.004)	(0.003)	(0.006)	(0.005)
Inflation	-0.253***	-0.329**	-0.317**	0.333***	0.459***	0.479***	-0.176***	-0.189***	-0.249***	-0.461***	-0.428***	-0.400***
	(0.091)	(0.129)	(0.149)	(0.047)	(0.066)	(0.166)	(0.031)	(0.057)	(0.062)	(0.091)	(0.057)	(0.144)
Reer	0.474**	0.668***	0.581**	-0.293***	0.143	0.456***	-0.083**	-0.001	-0.043	0.068	0.254**	0.601**
	(0.195)	(0.201)	(0.253)	(0.094)	(0.141)	(0.098)	(0.033)	(0.065)	(0.115)	(0.114)	(0.124)	(0.264)
Int.Rate	0.003	0.001	-0.006	-0.006**	-0.011***	-0.013	0.001	0.002	0.008**	0.012**	0.002	-0.004
	(0.004)	(0.006)	(0.008)	(0.003)	(0.003)	(0.012)	(0.001)	(0.003)	(0.003)	(0.005)	(0.005)	(0.003)
Output Gap	0.003	0.003	0.006	-0.000	-0.000	0.003	0.002*	-0.000	-0.000	-0.004	0.003	0.003*
	(0.002)	(0.002)	(0.004)	(0.001)	(0.002)	(0.008)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.002)
Debt	0.001***	0.002***	0.001***	0.000	-0.000	-0.001***	0.000***	0.000***	0.000***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ratings	-0.038	-0.006	0.118*	0.183***	0.254***	-0.111	-0.025***	-0.014**	0.013*	-0.044	-0.110***	-0.054***
	(0.025)	(0.037)	(0.061)	(0.008)	(0.010)	(0.091)	(0.003)	(0.005)	(0.007)	(0.027)	(0.018)	(0.018)
Constant	-0.582	-1.181	-1.093	-0.577	-3.278***	-3.668***	1.300***	0.958***	1.370**	2.061***	1.273**	-0.570
	(1.142)	(1.276)	(1.220)	(0.514)	(0.821)	(0.831)	(0.211)	(0.358)	(0.603)	(0.785)	(0.636)	(1.742)
Observations	744	744	744	744	744	744	744	744	744	744	744	744

Notes: This table reports the Quantile Regressions results for the impact of the logarithm of the Geopolitical Risk (GPR) on Sovereign debt holdings for the period of 2004 Q1 to 2023 Q4. The variables used are: the holdings of Domestic and Foreign investors over GDP (Central Banks, Banks, Non-Banks and Officials), the GPR by country, the logarithm of the harmonised index of consumer prices (Inflation), the logarithm of the real effective exchange rate (REER), the logarithm of the short-run 3-month interest rate, (Int. rate), the difference between the actual level of GDP against the full employment level GDP (Output Gap), the government debt over GDP (Debt) and the logarithm of the sovereign credit Ratings (Ratings). * indicates the level of significance of 10%, ** a level of 5% and *** a level of 1%. In brackets, we report the robust standard errors. Observations are the observations for each regression.

5. Conclusions

In this study, we assess the impact of Geopolitical tension on Sovereign Debt holdings from 2004 Q1 to 2023 Q4, across 24 OECD Economies. We employed Ordinary Least Squares (OLS) Fixed Effects techniques within a panel data framework.

Furthermore, we analyse the dynamics of government debt ownership across different groups of countries. Specifically, we assess the impact of the logarithm of the World Uncertainty Index (WUI) at both the income level (advanced, emerging, and low-income economies) and regional level (Africa, Asia and the Pacific, Europe, Middle East and Central Asia, and Western Hemisphere) on sovereign debt holdings. Additionally, we studied whether the dynamics of debt holdings change in response to global or worldwide tensions and during periods of escalating geopolitical risk. Finally, through a robustness analysis, we explore how the relationship between geopolitical risk and sovereign debt holdings varies across different segments of the distribution using Quantile Regression analysis.

The empirical results highlight that increasing geopolitical tensions, such as wars, territorial disputes, or trade wars, significantly reduce government debt holdings by domestic entities, particularly domestic Banks. This behaviour may be attributed to local information advantages, political pressures, and political influence on executive boards (Becker et al., 2018).

Conversely, foreign entities increase their holdings of government debt as geopolitical risk rises, driven by potential higher returns, strategic hedging, or long-term investment strategies. As uncertainty rises across all regions, domestic entities reduce their investment in home sovereign debt, while foreign investors increase their holdings, reflecting different levels of risk aversion. This pattern reflects the detrimental impact of uncertainty on OECD economies due to established trade connections.

Additionally, we conclude that higher world geopolitical risk reduces the holdings of domestic entities but increases those of foreign investors, especially Banks and officials. Interestingly, when geopolitical tensions rise for four consecutive quarters, domestic entities increase their holdings of government debt, while foreign banks reduce theirs. This suggests that domestic entities may invest more in government debt to manage risk and support local stability during prolonged periods of heightened risk, while foreign banks adopt a more cautious approach.

Lastly, we observe that investors' risk attitudes are influenced by the proportion of sovereign debt in their portfolios. For domestic investors with high levels of debt in their

portfolios, geopolitical tensions significantly reduce their holdings. For those with lower levels, results are mixed: domestic Banks and total domestic investors tend to decrease their holdings, indicating caution, while central banks and non-banks increase theirs, showing risk-seeking behaviour. In the case of foreign investors, high levels of debt ownership are associated with prudent behaviour, whereas smaller allocations lead to risk-taking under increased geopolitical tensions.

From a policy perspective, policymakers should consider the varying impacts of geopolitical tensions on domestic versus foreign investment behaviours and the potential need for notably debt management strategies that mitigate the adverse effects of such tensions on domestic financial stability.

References

1. Acharya, V., Drechsler, I. & Schnabl, P. (2014). A Pyrrhic Victory? Bank Bailouts and Sovereign Credit Risk. *The Journal of Finance, 69* (6), 2689-2739.

2. Acharya, V. V., & Steffen, S. (2015). The "Greatest" Carry Trade Ever? Understanding Eurozone Bank Risks. *Journal of Financial Economics, 115*(2), 215-236.

3. Afonso, A., Alves, J. & Monteiro, S., (2023). Banks' portfolio of government debt and sovereign risk. *REM Working Paper, 0289-2023.*

4. Afonso, A., Alves, J., & Monteiro, S. (2024a). The pressure is on: how geopolitical tensions impact institutional fiscal and external stability responses. *REM Working Paper, 318-2024*.

5. Afonso, A., Mignon, V., Saadaoui, J. (2024b), "On the time-varying impact of China's bilateral political relations on its trading partners: "doux commerce" or "trade follows the flag?", *China Economic Review*, 85, 102184.

6. Afonso, A., Pereira, F. (2023). "Unconventional Monetary Policy in the Euro Area. Impacts on Loans, Employment, and Investment", *International Journal of Finance and Economics*, forthcoming.

7. Agoraki, M.E.K., Kouretas, G.P., & Laopodis, N.T. (2022). Geopolitical risks, uncertainty, and stock market performance. *Economic and Political Studies 10* (3), 253-265.

8. Ahir, H., Bloom, N., & Furceri, D. (2022). The World Uncertainty Index. *National bureau of Economic Research Working Paper, 29763.*

9. Alsagr, N., & Almazor, S. (2020). Oil rent, geopolitical risk and banking sector performance. *International Journal of Energy Economic Policy 10* (5), 305–314.

10. Angeloni, C., & Wolff, G. B. (2012). Are banks affected by their holdings of government debt? *Bruegel working paper, 2012/07*.

11. Arbogast, T. (2020) Who Are These Bond Vigilantes Anyway? The Political Economy of Sovereign Debt Ownership in the Eurozone, *MPIfG Discussion Paper, 20/2.*

12. Arslanalp, S., & Tsuda, T. (2014). Tracking Global Demand for Advanced Economy Sovereign Debt. *IMF Economic Review, 62*(3), 430-464.

13. Bank of England, (2023). Bank of England website. https://www.bankofengland.co.uk/speech/2016/uncertainty-the-economy-and-policy. (Accessed 13 October2023).

14. Beck, T. (2018). What drives financial sector development? Policies, politics and history. *Handbook of Finance and Development*, 448-476.

15. Bergman, U.M., Hutchison, & M.M., Jensen, S.E.H., (2019). European policy and markets: did policy initiatives stem the sovereign debt crisis in the euro area? *European Journal of Political Economy. 57,* 3-21.

16. Biswas, S., & Zhai, W., (2020). Economic policy uncertainty and cross-border lending. *Journal Corporate Finance, 101867*.

17. Björk, R. (2021). *Territory, State and Nation: The Geopolitics of Rudolf Kjellén*. Berghahn Books.

18. Bloom, N. (2009). The Impact of Uncertainty Shocks. *Econometrica, 77*(3), 623-685.

19. Bordo, M.D., Duca, J.V., & Koch, C. (2016). Economic policy uncertainty and the credit channel: aggregate and bank level US evidence over several decades. *Journal of Financial Stability, 26,* 90–106.

20. Bouri, E., Gabauer, D., Gupta, R., & Kinateder, H. (2023). Global geopolitical risk and Inflation spillovers across European and North American economies. *Research in International Business and Finance, 66,* 102048.

21. Broner, F., Clancy, D., Erce, A. & Martín, A., (2019) Fiscal multipliers and foreign holdings of public debt", *Working Paper Series, No 2255, ECB.*

22. Brunnermeier, M. K., Garicano, L., Lane, P. R., Pagano, M., Reis, R., Santos, T., & Vayanos, D. (2016). The sovereign-bank diabolic loop and ESBies. *American Economic Review, 106*(5), 508-512.

23. Caldara, D., & Iacoviello, M. (2022). Measuring Geopolitical Risk. *American Economic Review, 112*(4), 1194-1225.

24. Cao, Y., Li, C., Liu, X., Lu, M., & Shan, Y. (2022). Economic policy uncertainty and debt allocation within business groups. *Economic Modelling, 116,* 106021.

25. Clance, M.W., Gupta, R., & Wohar, M.E. (2019). Geopolitical risks and recessions in a panel of advanced economies: evidence from over a century of data. *Applied Economic Letters 26* (16), 1317–1321.

26. Crosignani, M. (2021). Bank capital, government bond holdings, and sovereign debt capacity. *Journal of Financial Economics, 141*(2), 693-704.

27. De Marco, F. (2019). Bank lending and the European sovereign debt crisis. *Journal of Financial and Quantitative Analysis, 54*(1), 155-182.

28. De Santis, R. A. (2020). Impact of the ECB's Asset Purchase Programme on Euro Area Government Bond Yields Using Market News. *Journal of European Economic Association, 18*(1), 431-474.

29. Dell'Ariccia, G., Laeven, L., & Marquez, R. (2014). Real interest rates, leverage, and bank risk-taking. *Journal of Economic Theory, 149,* 65-99.

30. Demir, E., Danisman, G. (2021). The impact of economic uncertainty and geopolitical risks on bank credit. *North America Journal Economics Finance, 57*, 101444.

31. European Central Bank, (2023). ECB Europe Website. https://www.ecb.europa.eu/press/key/date/2023/html/ecb.sp230123_1~2d9786eedf.en.html. (Accessed 13 October 2023).

32. Fang, X., Hardy, B., & Lewis, K. K. (2023). Who Holds Sovereign Debt and Why It Matters. *NBER Working Paper, 30087.*

33. Farhi, E. & Tirole, J. (2018). Deadly Embrace: Sovereign and Financial Balance Sheets Doom Loops. *Review of Economic Studies, 85*(3), 1781-1823.

34. Fernández-Villaverde, J., Guerrón-Quintana, P., Kuester, K., & Rubio-Ramírez, J. (2015). Fiscal Volatility Shocks and Economic Activity. *American Economic Review, 105*(11), 3352-84

35. Gennaioli, N., Martín, A. & Rossi, S. (2014). Sovereign Default, Domestic Banks, and Financial Institutions. *The Journal of Finance, 69*(2), 819-866.

36. Guerrieri, L., Iacoviello, M., & Minetti, R. (2013). Banks, sovereign debt, and the international transmission of business cycles. *NBER International Seminar on Macroeconomics, 9 (*1), 181-213.

37. Grandia, R., Hänling, P., Lo Russo, M. & Åberg, P., (2019) Availability of high-quality liquid assets and monetary policy operations: an analysis for the euro area, *Occasional Paper Series, 218*, ECB.

38. Gupta, R., Gozgor, G., Kaya, H., & Demir, E. (2019). Effects of geopolitical risks on trade flows: evidence from the gravity model. *Eurasian Economic Review 9,* 515–530.

39. Haan, L., & Vermeulen, R. (2021). Sovereign debt ratings and the country composition of cross-border holdings of euro area sovereign debt. *Journal of International Money and Finance, 119*, 1-23.

40. Handley, K., & Limao, N. (2015). Trade and Investment under Policy Uncertainty: Theory and Firm Evidence. *American Economic Journal: Economic Policy, 7*(4), 189–222.

41. Hoang, D. P., Chu, L. K., & To, T. T. (2023). How do economic policy uncertainty, geopolitical risk, and natural resources rents affect economic complexity? Evidence from advanced and emerging market economies. *Resources Policy, 85*, 103856.

42. Johnson, S., Rachel, L., & Wolfram, C. (2023). Design and implementation of the price cap on Russian oil exports. *Journal of Comparative Economics, 51*(4), 1244-1252.

43. Khan, K., Khurshid, A., & Cifuentes-Faura, J. (2023). Investigating the relationship between geopolitical risks and economic security: Empirical evidence from central and Eastern European countries. *Resources Policy, 85*, 103872

44. Khoo, J. (2021). Does geopolitical uncertainty affect corporate financing? Evidence from MIDAS regression. *Global Finance Journal, 47*, 100519.

45. Lu, Z., Gozgor, G., Huang, M., & Chi Keung Lau, M. (2020). The Impact of Geopolitical Risks on Financial Development: Evidence from Emerging g Markets. *Journal of Competitiveness, 12*(1), 93–107

46. Machado, J. A. F., & Santos Silva, J. M. C. (2019). Quantiles via moments. *Journal of Econometrics, 213*(1), 145-173.

47. McKinnon, R. (1973). *Money and Capital in Economic Development*. Washington D.C. Brookings Institution.

48. Merler, S., & Pisani-Ferry, J. (2012). Sudden stops in the euro area. *Bruegel Policy Contribution* 2012/06, March.

49. Mokdadi, S., & Saadaoui, Z. (2023). Geopolitical uncertainty and the cost of debt financing: the moderating role of information asymmetry. *The Journal of Risk Finance, 24*(5), 684-720.

50. Molyneux, P., Pancotto, L., & Reghezza, A. (2021). A new measure for gauging the riskiness of European Banks' sovereign bond portfolios. *Finance Research Letters, 42,* 101887.

51. Nguyen, T. T. T., Pham, B. T., & Sala, H. (2023). World uncertainty and national fiscal balances. *Journal of Applied Economics, 26*(1), 2242110.

52. Nguyen, T. C., & Thuy, T. H. (2023). Geopolitical risk and the cost of bank loans. *Finance Research Letters, 54,* 103812.

53. Pavot, J., & Valenta, V. (2021). The role of households in financing government debt in euro area. *Economic Bulletin Articles, 3.*

54. Popov, A., & Van Horen, N. (2013). *The impact of sovereign debt exposure on bank lending: Evidence from the European debt crisis.*

55. Phan, D. H. B., Tran, V. T., & Iyke, B. N. (2022). Geopolitical risk and bank stability. *Finance Research Letters, 46*, 102453.

56. Shaw, E. (1973) *Financial Deepening in Economic Development.* New York: Oxford University Press.

57. Shen, L., & Hong, Y. (2023). Can geopolitical risks excite Germany economic policy uncertainty: Rethinking in the context of the Russia-Ukraine conflict. *Finance Research Letters, 51,* 103420.

58. Shrestha, K., Philip, S. S. S., & Khaw, K. L. H. (2024). Impact of geopolitical risk on target debt ratio. *Finance Research Letters, 60*, 104964.

59. Subramaniam, S. (2022). Geopolitical uncertainty and sovereign bond yields of BRICS economies. *Studies Economic Finance 39* (2), 311–330.

60. Trinh, H. H., & Tran, T. P. (2023). Global Banking Systems, Financial Stability and Uncertainty: How have countries coped with Geopolitical Risk?. *Financial Stability and Uncertainty: How have Countries Coped with Geopolitical Risk.*

61. Wolff, G. B. (2011). Is recent bank stress really driven by the sovereign debt crisis? *Bruegel Policy Contribution*, 2011/12.

62. Wolswijk, G., & De Haan, J. (2005). Government debt management in the euro area: recent theoretical developments and changes in practices. *ECB Occasional paper,* (25).

63. Zhukov, Y. M. (2023). Near-real time analysis of war and economic activity during Russia's invasion of Ukraine. *Journal of Comparative Economics*, *51*(4), 1232-1243.

Table A1. Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
Domestic	1.000																									
Dom. Cent. Banks	0.263	1.000																								
Domestic Banks	0.126	0.013	1.000																							
Dom. Non-Banks	0.687	-0.308	-0.420	1.000																						
Foreign	-1.000	-0.263	-0.126	-0.687	1.000																					
Foreign Officials	-0.351	0.060	-0.135	-0.275	0.351	1.000																				
Foreign Banks	-0.512	-0.219	-0.114	-0.281	0.512	-0.238	1.000																			
Forei. Non-Banks	-0.644	-0.270	0.033	-0.448	0.644	-0.385	0.327	1.000																		
GPR	0.028	0.205	0.271	-0.227	-0.028	0.045	-0.223	0.044	1.000																	
GPR Total	0.051	0.105	-0.038	0.009	-0.051	-0.096	0.060	-0.005	0.290	1.000																
WUI	0.173	0.244	0.006	0.021	-0.173	0.147	-0.164	-0.269	0.086	0.055	1.000															
WUI Total	0.125	0.384	-0.057	-0.065	-0.125	0.204	-0.228	-0.228	0.113	0.090	0.522	1.000														
WUI Advance	0.081	0.268	-0.038	-0.052	-0.081	0.186	-0.188	-0.178	0.066	-0.003	0.507	0.973	1.000													
WUI Emerging	0.209	0.586	-0.093	-0.078	-0.209	0.176	-0.263	-0.289	0.210	0.333	0.399	0.759	0.591	1.000												
WUI Low Income	0.001	-0.003	0.040	-0.019	-0.001	0.174	-0.097	-0.114	-0.010	-0.177	0.226	0.325	0.307	0.241	1.000											
WUI Africa	0.065	0.177	0.002	-0.038	-0.065	0.242	-0.186	-0.211	0.032	-0.096	0.332	0.490	0.460	0.397	0.697	1.000										
WUI Asia	0.105	0.326	-0.042	-0.059	-0.105	0.132	-0.182	-0.159	0.120	0.118	0.320	0.682	0.612	0.654	0.292	0.229	1.000									
WUI Europe	0.143	0.431	-0.060	-0.072	-0.143	0.210	-0.235	-0.253	0.114	0.071	0.574	0.883	0.856	0.692	0.326	0.589	0.481	1.000								
WUI Mena	0.189	0.517	-0.063	-0.075	-0.189	0.280	-0.322	-0.329	0.103	-0.137	0.350	0.535	0.445	0.599	0.356	0.533	0.371	0.581	1.000							
WUI West	0.076	0.243	-0.045	-0.039	-0.076	0.158	-0.164	-0.157	0.072	0.071	0.400	0.913	0.918	0.608	0.205	0.334	0.483	0.684	0.364	1.000						
Inflation	0.278	0.702	-0.087	-0.083	-0.278	0.301	-0.403	-0.419	0.177	-0.038	0.357	0.547	0.437	0.661	0.275	0.449	0.443	0.589	0.760	0.370	1.000					
Reer	-0.272	-0.493	-0.004	0.023	0.272	-0.161	0.254	0.358	-0.195	-0.078	-0.322	-0.494	-0.408	-0.564	-0.382	-0.498	-0.286	-0.553	-0.585	-0.365	-0.653	1.000				
Int. Rate	-0.201	-0.532	0.020	0.095	0.201	-0.252	0.309	0.325	-0.129	-0.020	-0.360	-0.506	-0.399	-0.643	-0.410	-0.472	-0.266	-0.618	-0.662	-0.344	-0.752	0.649	1.000			
Output Gap	0.018	0.042	-0.041	0.014	-0.018	-0.003	-0.017	-0.010	0.043	0.160	0.062	0.202	0.195	0.157	-0.211	0.105	0.127	0.118	0.033	0.240	0.018	0.006	0.301	1.000		
Debt	-0.299	0.110	-0.148	-0.248	0.299	0.106	0.177	0.178	-0.037	-0.014	-0.006	0.104	0.081	0.131	0.102	0.122	0.063	0.135	0.172	0.059	0.211	-0.114	-0.218	-0.087	1.000	
Ratings	-0.034	-0.238	-0.068	0.133	0.034	0.005	0.025	0.023	0.140	0.013	-0.186	-0.189	-0.158	-0.209	-0.145	-0.222	-0.099	-0.230	-0.270	-0.127	-0.276	0.231	0.297	0.073	-0.330	1.000