The Impact of Geopolitical Tensions on International Investment and Asset Prices

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Abstract

We examine the effects of geopolitical tensions on investment decisions and asset prices by studying the holdings of international mutual funds as well as the returns of the assets they trade. We show that increases in tensions between geopolitical adversaries lead to significant divestment between the two countries involved. In addition, the prices of assets that are divested from fall. Through studying mutual fund disclosures, we find that the decision to divest in response to a rise in tensions is driven by concerns about the adversaries' fundamental prospects, suggesting that investors may become relatively more pessimistic about the fundamental prospects of adversaries when tensions are high. Applying our reduced-form estimates to aggregate cross-country investment data, we estimate that, in response to the geopolitical tension shock caused by the Russian invasion of Ukraine, mutual funds domiciled in Western countries divested assets worth 1% of the Russian equity market at that time, coinciding with an additional 13% decline in the Russian index in the first quarter of 2022.

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1 Introduction

The last decade has been characterized by rising geopolitical tensions between, and an accompanying fragmentation into, two opposing blocs – a primarily Western bloc led by the US and one centered around China and, to a lesser extent, Russia. The prior literature has found that an economic fragmentation in trade flows, capital, and foreign direct investment has occurred simultaneously [Aiyar et al., 2023]. We show that this fragmentation has also occurred within financial markets: between 2015 and 2021, mutual funds rebalanced significantly out of assets domiciled in the opposing bloc. We tie this divestment directly to increases in geopolitical tensions. Concretely, on domestic news increasing their reporting of an adversary's involvement in defense-related events, domestic mutual funds divest from the assets of that adversary. This financial fragmentation affects asset prices: we find that assets that are held more by mutual funds domiciled in countries of the opposing bloc significantly underperform those that are not when geopolitical tensions rise. What motivates such divestment from adversaries when geopolitical tensions rise? We answer this by looking at mutual fund disclosure reports to their investors and examining the reasons fund managers report to their investors for divesting from certain countries. We find that funds report this voluntary divestment to be driven mostly by changed fundamental beliefs about that country's future performance. Lastly, using data on aggregate international cross-country equity holdings, we use our previous empirical estimates to construct a back-of-the-envelope calculation for the total effect of divestment during the Russian invasion of Ukraine.

We begin by more carefully defining geopolitical tensions. Intuitively, we wish to capture the explicitly negative focus of one country on another in a foreign policy context, e.g., if British public discourse discusses Russia negatively in the context of its foreign policy, then we consider that as evidence of heightened tensions from Britain to Russia. Note that, somewhat contrary to common discussions of geopolitical tensions, we think of tensions as being potentially asymmetric – Britain might be a lot more concerned with Russia than vice versa. To give tensions a more economic interpretation and to outline in more detail the mechanism we believe is driving our empirical findings, we formally define geopolitical tensions as the degree to which one country wishes to influence the fundamental outcomes of another country negatively. Hence, high geopolitical tensions from one country to another will lead it to implement policies designed to harm that particular country, whether through diplomatic actions designed to isolate that country, through trade sanctions, or through open conflict.

Next, we focus on measuring geopolitical tensions at the directional country-pair level using international news data. To our knowledge, we are the first paper to do so. News data naturally lends itself to measuring our definition of geopolitical tensions if we think that news reports reflect the priorities of public discourse in that country at any given time. For this, we use the Global Database of Events, Language and Tone (GDELT) [Leetaru and Schrodt, 2013]. GDELT collects, translates, and classifies international news articles. For our sample period of 2015 to 2022, we have just under 1.5 billion news articles. We then use this international news data to measure, for news coming out of each country in any given quarter, the co-occurrence of mentions of other countries and 'Defense-related' language. For coverage of geopolitical adversaries, we interpret this coverage as a measure of geopolitical tensions. Following Fletcher et al. [2024], we use data on weapon exports of the Stockholm International Peace Research Institute (SIPRI) [SIPRI, 2024] to identify adversarial geopolitical relationships. After appropriate normalizations of the co-occurrences in the news data, we use these to construct AR(1) innovations to geopolitical tensions 'from' one country to another. We express these in terms of standard deviations of the co-occurrence of that pair over our sample period.

Next, we use international mutual fund holdings data from Morningstar to study how investors change their geographic allocations in response to shocks to geopolitical tensions. We find that mutual funds actively rebalance out of foreign adversaries in response to shocks to geopolitical tensions. For a one standard deviation shock to our geopolitical tension measure, mutual funds reduce their holdings in the adversary by 2.15% in the contemporaneous quarter. Likely due to the slow speed with which mutual funds rebalance their portfolios, this effect grows significantly over time, reaching a cumulative 37% reduction a year out.

We then investigate whether these shifts in holdings in response to shocks to geopolitical tensions coincide with negative returns for the assets being divested from. We do so by constructing asset-level exposures to these shocks, i.e., for each stock, in each quarter, we find the holdings-weighted shock to geopolitical tensions it experiences. We show that if an asset is wholly owned by mutual funds domiciled in adversaries that experience a one standard deviation shock to geopolitical tensions, then its value falls by 33% in that quarter relative to the stock market of that country. More concretely, if tensions between the US and Russia increased by one standard deviation, then we find that, in our sample, a Russian asset held entirely by US investors falls by an additional 33% compared to the return of the aggregate Russian stock market.

Finally, we use our reduced form results in combination with the Coordination Portfolio Investment Survey (CPIS) data of the IMF to determine the aggregate costs to the Russian equity market. Specifically, if

we treat mutual fund investors as representative of other investors in their response to geopolitical tensions, then we can use CPIS' aggregate cross-country holdings to determine the aggregate size of the impact. We estimate that in the first quarter of 2022, in response to sharply rising geopolitical tensions with Russia, western countries divested Russian assets worth 1% of the aggregate Russian equity market at that time. In turn, our closed-form estimates suggest that this would have coincided with an additional 13% decline in the Russian stock market in the first quarter of 2022.

1.1 Literature Review

We contribute to a growing literature documenting geoeconomic fragmentation – that is, the reversal of economic integration in response to geopolitical tensions – across a spectrum of economic relationships. Aiyar et al. [2023] find signs of such fragmentation in trade, financial markets, and foreign direct investment. Aiyar et al. [2024] show that, in particular since the beginning of the US-China trade war, FDI flows have been more likely to go toward geopolitically aligned countries. Fletcher et al. [2024] document fragmentation explicitly along geopolitical blocs in German foreign direct investment flows. Catalán and Tsuruga [2023] document such fragmentation in aggregate cross-border investment and banking flows, and Bianchi et al. [2025] do the same for official investment. Evenett and Pisani [2023] find that Western corporations significantly divested from operations in Russia following the invasion. Panibratov and Gaur [2022] find that the degree of this divestment from Russia depended on the political alignment of the country of origin. Clayton et al. [2023] and Clayton et al. [2024] analyze how countries use their financial and trade relationships to achieve geopolitical goals in a theoretical context. We add to this literature by empirically tying shocks to geopolitical tensions directly to a fragmentation of cross-country financial investments.

We also contribute to the literature measuring geopolitical tensions. Most prominently in this literature, Caldara and Iacoviello [2022] introduce a news-based measure of adverse geopolitical risks. This is constructed from US- and UK-based newspapers. We extend this literature by creating similar indices for a large set of country pairs, enabling us to measure geopolitical tensions between individual country pairs rather than just global geopolitical risk. Bondarenko et al. [2024] expand the GPR index using non-US/UK sources; that is, they construct additional GPR-like indices using non-US/UK news sources. However, unlike us, their measures concern geopolitical risk perceived by a country in general, rather than tensions between country pairs. We produce a novel measure of country-pair geopolitical tensions and are the first to document the effects of geopolitical tensions on the prices of global equity markets in association with country-pair

geopolitical tensions. The closest measure to ours is that of Alonso Alvarez et al. [2025], who deconstruct GPR into bilateral measures of tensions. Huang [2025] also produces a bilateral geopolitical risk measure between the US and China, and studies how mutual funds respond.

We also add to a large literature studying the impact of geopolitical tensions on a variety of economic outcomes, including asset prices. Wang et al. [2019] find that that firms reduce their corporate investment when geopolitical uncertainty, as measured by the GPR index, is high. Feng et al. [2023] and Kim and Lim [2023] study capital flows in response to increases in the GPR and find a flight-to-safety effect from emerging to advanced economies.Converse and Mallucci [2025] use country-specific GPR measures to show that bond mutual-funds rebalance out of countries in response to geopolitical shocks. Liu and Zhang [2024] find a geopolitical risk factor in currency returns. Liu et al. [2019] and Smales [2021] study the impact of geopolitical risk on the oil market. Liu et al. [2024] find that Chinese mutual funds take on less risk in response to increases in geopolitical risk. Cai et al. [2024] find a similar result for Chinese households. Yarovaya and Mirza [2022] show that, in response to the Russian invasion of Ukraine, mutual funds domiciled in Russia and NATO states performed worse than those domiciled in other countries. Crosignani et al. [2025] use U.S. export controls to study how mutual funds respond to increased geoeconomic risk.

We also relate to a broad literature studying global capital flows. Coppola et al. [2021] use international holdings data to study the role of cross-border financing. Maggiori et al. [2020] use mutual fund holdings to study the role of currencies in cross-border holdings. See Florez-Orrego et al. [2023] for a recent survey of the literature on global capital allocation. We add to this by showing that a recent important determinant of capital flows has been the geopolitical alignment of the countries involved. Broner et al. [2013] study international capital flows and find that flows are procyclical. Caballero and Simsek [2020] develop a model explaining such 'fickle' capital flows and exploring its implications for global financial stability. Fu [2024] ties the fickleness of capital flows to currency risks. Adding to this literature, we find that capital is fickle not only during economic downturns but also when geopolitical tensions are high.

Lastly, we contribute to a literature that studies the asset-pricing impacts of large, difficult-to-measure trends, such as climate change or global conflict. Alekseev et al. [2022] use US mutual fund holdings and local climate events to study the impact of climate news on asset prices and to construct portfolios that hedge climate risk. Like Alekseev et al. [2022], we also use N-CSR investor disclosures to explore the motivations behind the rebalancing we observe.

2 Relating Geopolitical Tensions, International Holdings, and Asset Prices

2.1 Defining Geopolitical Tensions

To study the impact of geopolitical tensions on mutual fund holdings and asset prices, we first need to define what geopolitical tensions represent in our context. This section concretely defines geopolitical tensions and then outlines a simple model specifying how we think of them in our setting. We then connect this to how we empirically measure geopolitical tensions and why we believe that they would affect mutual fund holdings and asset prices at all.

Intuitively, we think of geopolitical tensions as representing an explicitly negative concern of one country for another in a foreign policy context. For example, if British public discourse discusses Russia negatively in the context of its foreign policy, then this may be indicative of heightened tensions from Britain to Russia. Contrary to common discussions of geopolitical tensions, our concept of tensions is directional and may not be symmetric. One country may be more concerned about another than vice versa. In our example, Britain might be very concerned about Russia. However, Russia might see Britain as only one of many potential adversaries. To give our definition of tensions a more precise economic interpretation, we interpret a 'negative concern' for another country as a desire to dampen that country's fundamentals. Formally, we define geopolitical tensions as the degree to which one country wishes to negatively influence the fundamental outcomes of another country[1]. Hence, high geopolitical tensions from one country to another would coincide with its government implementing policies designed to harm that particular adversary, whether through diplomatic actions designed to isolate that country, through trade sanctions, or through open conflict.

We now spell out this intuition more concretely to establish a language and notation that we will use throughout the rest of the paper. We begin by focusing on a single country i, which has friendly relations with a set of countries $F^+(i)$ and adversarial relations with a set of countries $F^-(i)$. The policy maker in country i has a preference vector χ_t^i over the next-period fundamentals θ_{t+1}^j (such as the size of its economy, its military capabilities, etc., 'national power') of all other countries, each individual entry represented as $\chi_t^{i\to j}$. By assumption, this is zero (or perhaps negative) for all countries $F^+(i)$, which implies that i would prefer its allies to do well fundamentally. But, again by assumption, it will be positive for countries $F^-(i)$, implying

[1]The ultimate goal of this may be, for example, achieving a regime change in another country. We do not specify this further.

that i wants to see the fundamentals of adversaries decrease. Hence, if $\chi_t^{i\to j}$ is high, then i wants to – within its capacity – inflict damage onto j's fundamentals θ^j next period. Correspondingly, if $\Delta\chi_t^{i\to j}$ is positive, that implies that i dislikes j more than it did in the previous period (perhaps because j itself did something to damage θ^i in the previous period). Specifically, i's policy maker wants to minimize $\chi_t^i * E_t[\theta_{t+1}]$. $\chi_t^{i\to j}$ is what we consider to be *geopolitical tensions*, as it reflects the degree to which country i wishes to negatively influence the future outcomes of country j. Once again, note that geopolitical tensions in our framework are directional, i.e., $\chi_t^{i\to j}$ need not be equal to $\chi_t^{j\to i}$. Lastly, to give tensions a more interpretable magnitude, we define that, for all i, the sum of their tensions towards adversarial countries $F^-(i)$ has to add up to one, $\sum_k^{j\in F^-(i)} \chi_t^{i\to k} = 1$. This is equivalent to assuming that tensions represent a share of a fixed 'budget' of effort that the country can expend to hurt its adversaries. Moreover, because we use news data to measure geopolitical tensions, this translates naturally to the concept of a fixed amount of attention to be spent: We do not care about the number of news articles on any one country but the proportion of news articles reporting on it.

2.2 An Empirical Framework from Tensions to Holdings and Returns

Next, we focus on exploring how geopolitical tensions may impact the holdings of mutual funds and the returns of the assets they hold and how this should inform our empirical strategy for identifying any effect. Specifically, we focus on the channel from tensions $\chi_t^{i\to j}$ through foreign holdings $q_t^{i\to j}$ to prices p_t^j, which outlines how investors' holdings in country i respond to tensions toward country j and how the prices of these assets respond to the changes in holdings. Suppose there are N countries, each with a representative investor and a representative asset. Moreover, each country belongs to one of two geopolitical blocs A or B, that is, for all the countries in the bloc A, $F^+(i)$ is the set of all other countries in A and $F^-(i)$ is the set of all countries in B. Each investor/country i has a share of global wealth ω_i.

Assume that investors of type i are myopic and have CARA preferences and heterogenous expectations that depend on the vector of tensions χ_t^i. Let q_t^i be the vector of allocations from i to each j. Each agent maximizes:

$$\max_{q_t^i} \mathbb{E}_t^i[r_{t+1} - r_f]' q_t^i - \frac{\gamma^i}{2}(q_t^i)'\Sigma(q_t^i)$$

After taking the first-order condition of the investor's problem, we get the standard mean-variance

portfolio result. We expand $\mathbb{E}_t^i[r_{t+1}]$ using the Campbell-Shiller approximation, where d_t is the asset's dividend. Assume that tensions χ_t^i influence the expectations of agent i regarding the asset's dividend. For simplicity of exposition, we also assume that tensions are i.i.d. each period. Assume that unconditional expectations for future dividends and prices are $\bar{d}_t$ and $\bar{p}_t$. We will remain agnostic about the dynamics of the dividend process.

$$q_t^i = \frac{1}{\gamma^i}\Sigma^{-1}\Big(\underbrace{\kappa + \rho\bar{p}_t + (1-\rho)(\bar{d}_t + \psi\chi_t^i) - p_t}_{\mathbb{E}_t^i[r_{t+1}]} - r_f\Big)$$

In addition to the simplifying assumptions we have already made, assume that the assets are in perfectly elastic total supply $\bar{q}$. Each agent i has wealth w_t^i. Therefore, we can write the market-clearing equation as follows:

$$\Sigma\bar{q} = \left(\sum_i \frac{w_t^i}{\gamma^i}\right)(\kappa + \rho\bar{p}_t + (1-\rho)\bar{d}_t - p_t - r_f) + \psi(1-\rho)\sum_i \frac{w_t^i}{\gamma^i}\chi_t^i$$

We can rearrange this equation so that today's price is a function of current tensions χ_t^i and fundamentals $\bar{d}_t$ and $\bar{p}_t$, where α_t^i is the risk-aversion-weighted share of the wealth that agent i holds.

$$p_t = \kappa + \rho\bar{p}_t + (1-\rho)\bar{d}_t - \frac{\Sigma\bar{q}}{\left(\sum_i \frac{w_t^i}{\gamma^i}\right)} + \psi(1-\rho)\sum_i \alpha_t^i\chi_t^i$$

Now suppose that there is a shock to fundamentals and to tensions, we can derive the return as-follows.

$$\Rightarrow \quad r_t := \Delta p_t = \underbrace{\rho\Delta\bar{p}_t + (1-\rho)\Delta\bar{d}_t}_{\text{fundamentals}} + \underbrace{\psi(1-\rho)\sum_i \alpha_t^i\Delta\chi_t^i}_{\text{tensions}} \tag{1}$$

Hence, asset returns in our model are characterized by changes to fundamentals and by changes to the wealth-weighted geopolitical tensions towards adversaries. For example, in the first quarter of 2022, $\chi_t^{i\to Russia}$ rose sharply for Russia's adversaries (e.g., the United States), prompting wide-scale divestment from Russian assets by investors in those countries and, in turn, depressing Russian asset prices.

3 Measuring Geopolitical Tensions using News Data

We now discuss how to measure geopolitical tensions $\chi_t^{i\to j}$ – i.e., the degree to which country i wishes to negatively influence the future outcomes of country j. We approximate $\chi_t^{i\to j}$ as $x_t^{i\to j}$ from international news data, measuring the frequency with which news of a country i co-report on another country j and news regarding defense/national security. We begin by discussing the news data that we use and then elaborate on how we construct the series and innovations.

3.1 GDELT

In line with previous work in this field, we approximate geopolitical tensions by examining news coverage and measuring the degree to which it is concerned with topics of geopolitical significance (see, e.g., Caldara and Iacoviello [2022]). However, in contrast to previous work in this field, our study uses *international* news data: rather than using US news as a proxy for, e.g., geopolitical tensions in Japan, we explicitly look at reporting by Japanese outlets, which is mostly conducted in Japanese, not English. This critically allows us to go beyond measuring aggregate, or at most country-level, geopolitical tensions, and instead permits us to focus on tensions between specific country pairs. To do so, we use the Global Database of Events, Language, and Tone (GDELT) of Leetaru and Schrodt [2013], which collects and analyzes international news articles from 65 languages at 15-minute intervals. The part of the data we use spans from early 2015 to early 2024. The main feature of GDELT is its event database, which transcribes and categorizes events from the collected news data. We use the 'Global Knowledge Graph' (GKG), which is their news-article level data.

We restrict the part of the data we use in several ways to ensure stability across time. First, the total number of articles collected varies significantly over the sample period, particularly for non-English articles. This is because the set of sources that are being monitored at a given time varies widely. Part of this could be natural: new news outlets are formed and incumbent ones may go out of business. However, it could also be driven by other factors relating to the technical infrastructure of both GDELT and the sources they monitor. However, for our analysis, it is critical that the set of sources remains stable over time so that changes in our measure are driven only by changes in actual news coverage, not by changes in news monitored. Hence, we only include articles from sources in our data set that we observe to have published an article at least once a week for the entirety of our sample period. Lastly, there were several weeks in which GDELT appeared to have experienced widespread outages, leading to a much lower number of collected articles than usual. We

exclude these periods from our analysis and from our source selection process.

Unfortunately, we do not observe the full text of the articles. However, we do observe enough useful information to measure the co-occurrence of another country and defense-related news. For each news article, we observe:

- the 15-minute interval within which it was published
- its source and origin country [1]
- the total word count
- the number of mentions of each country j
- the number of words associated with each topic of Albugh et al. [2013] [2]

The Defense topic most closely captures the topics we are concerned with, as it includes terms such as 'national security', 'war', 'military', or 'espionage'. We then construct, for a given source origin country i and quarter t, the average fraction of words in an article that cover the Defense topic and country j. We also construct the variance of this fraction for each j. Last and most importantly, we construct the covariance of the fractions for each country j with the Defense topic. These covariances are our principal object of interest. Specifically, we interpret the covariance of the fraction of words associated with the Defense topic and the fraction of mentions of China in articles of US-based news sources in quarter t as a measure of how strongly the US public associates China with issues of Defense in that quarter. This covariance is what we use as our measure of geopolitical tensions $\chi_t^{i\to j}$:

$$X_t^{i\to j} = Cov_{t,i}\left(\frac{Mentions_j}{WordCount}, \frac{DefenseWords}{WordCount}\right) \tag{2}$$

However, because stale news coverage leads to autocorrelation, we use the AR(1) innovations in these covariances $X_t^{i\to j}$ as shocks in our regressions.

$$X_t^{i\to j} = \alpha^{i\to j} + \rho^{i\to j} * X_{t-1}^{i\to j} + \epsilon_t^{i\to j} \tag{3}$$

[1] We can associate a country of origin to each source by examining which country this source mentioned the most over our sample period. This is the procedure recommended by the creators of GDELT.

[2] The topic dictionaries of Albugh et al. [2013] are specifically designed for political and economic news. There are 28 topics: 'Macroeconomics', 'Civil Rights', 'Healthcare', 'Agriculture', 'Forestry', 'Labour', 'Immigration', 'Education', 'Environment', 'Energy', 'Fisheries', 'Transportation', 'Crime', 'Social Welfare', 'Housing', 'Finance', 'Defense', 'Sstc', 'Foreign Trade', 'International Affairs', 'Government Operations', 'Land and Water Management', 'Culture', 'Provincial and Local', 'Intergovernmental', 'Constitutional National Unity', 'Aboriginal', and 'Religion'. We focus on 'Defense'.

As each covariance should, in expectation, be zero if the coverage of country j by country i is no more related to 'Defense' than that of any other country, the intercept $\alpha^{i\to j}$ represents the mean direction of an event to the defense-covariance during our period. $\epsilon_t^{i\to j}$ represent the shock to tensions at time t. However, the covariance itself does not have an interpretable magnitude. Hence, to make them comparable across time and countries, we express these innovations in terms of standard deviations of their respective underlying covariance. We term these normalized shocks $\Delta x_t^{i\to j}$, which represent our ultimate measure of shocks to geopolitical tensions. Hence, a unit shock to a hypothetical $x_t^{i\to j}$ represents a one standard deviation rise in the coverage of geopolitical tensions in terms of its historical variability. This has several advantages. First, we can compare shocks to small and large countries on the same scale, as, e.g., a small country will likely have lower base rates of coverage and hence lower variability than a large country. Additionally, it means that countries whose coverage we think is potentially poorly measured are naturally down-weighted. However, it has the downside that for countries that truly experienced large swings in their tensions with other countries, we may be unjustly underestimating the magnitude of their shocks.

$$\frac{\epsilon_t^{i\to j}}{Std(X^{i\to j})} \equiv \Delta x_t^{i\to j} \tag{4}$$

As we use news articles focused on defense-related topics to approximate $\chi_t^{i\to j}$, our proxies $x_t^{i\to j}$ are likely to capture only positive $\chi_t^{i\to j}$, that is, negative tensions with adversaries. At the same time, we are unlikely to pick up on negative $\chi_t^{i\to j}$, that is, positive feelings towards allies. Hence, it seems natural to think of the relationship between true tensions $\chi_t^{i\to j}$ and our metric $x_t^{i\to j}$ in the following way:

$$x_t^{i\to j} = \begin{cases} \chi_t^{i\to j} + \nu_t^{i\to j} & \text{if } j \in F^-(i) \\ 0 + \nu_t^{i\to j} & \text{if } j \notin F^-(i) \end{cases} \tag{5}$$

$\nu_t^{i\to j}$ is an uncorrelated measurement error. We can still pick up on negative $\Delta x_t^{i\to j}$ but are unlikely to say anything meaningful about the way in which relationships between allied countries are changing.

3.2 Tension Measures Over Time

In this section, we show the tension measure over time for various country pairings. We find that the tension measure spikes during important geopolitical events between countries. For US/China and US/Russia

tensions, we look at the largest positive tension shocks and investigate specifically which events caused the increase. These exercises are meant to give more confidence that the measure is picking up geopolitical tensions.

Figure 1 shows directional tension measures for different pairs of countries. One can notice that tensions differ by direction. For example, the "US to China" metric is clearly different from the "China to US" metric. Notice that the "Russia to US" metric seems to lower in volatility after the start of the Ukraine war. This is due to the way that the tension metric is constructed as a fixed fraction of an attention budget. Since more attention is devoted by Russia to Ukraine due to the war, relatively less attention is devoted to the United States.

We also consider the "US to China" and the "US to Russia" measures in more detail in order to understand the types of events that cause the tension measure to spike. In Figure 2, we show a plot of the weekly US to China tension measure with vertical lines denoting the largest positive shocks from 2016-2021. These shocks correspond cleanly with important geopolitical activity between the United States and China over the same time period. Some of the largest shocks correspond to Congresswoman Nancy Pelosi's controversial visit to Taiwan, and US freedom of navigation exercises. In Figure 3 we show a similar plot and table for the US to Russia tension measure. Finally, Figure 9 shows a comparison between these bilateral tension measures and country-specific GPR. We find that these are broadly similar measures.

4 Tensions and Holdings

Next, we proceed to test whether investors rebalance out of adversaries when their geopolitical tensions towards them rise, that is, whether $\gamma < 0$ as specified in the previous section. For this, we examine the active changes in the investments of international mutual funds.

4.1 Data

Through Morningstar, we have monthly/quarterly holdings data of mutual funds from all over the world. Our sample is truly global: at the end of 2021, we have more than 50,000 funds in the US, 20,000 in the UK, 15,000 in China, and 5,000 in Germany. We have their total reported holdings of equities, bonds, and cash. In terms of investment destination, in order by count, investments are in the US, China, the UK, Brazil, Japan, France, Canada, Germany, etc. For our exercises, we restrict ourselves to equity holdings of mutual

funds, as we only have comprehensive, international return series for equities. Our individual asset return data comes from Refinitiv and is accessible through WRDS. For daily returns to world equity indices, we use WRDS. The indices include dividends and are with respect to their local currency. To classify countries into geopolitical blocs, we use arms transfer data from the Stockholm Peace Research Institute [SIPRI, 2024].

4.2 Constructing Geopolitical Blocs

How do we classify countries into geopolitical blocs, that is, how do we distinguish the set of $F^+(i)$ and $F^-(i)$ for any i? Following Fletcher et al. [2024], we use arms transfers between countries to assign them to a 'US-led', a 'China-Russia', or to an 'Unaligned' bloc. We concentrate only on countries that are in the US-led or China-Russia blocs, which we here treat as being 'opposed' to each other. In other words, for a country i in the US-led bloc, all other countries in that bloc are in its set $F^+(i)$, while all countries in the China-Russia bloc are in its set $F^-(i)$. We exclude the 'Unaligned' bloc from our analysis. The data on arms transfers come from the Stockholm International Peace Research Institute [SIPRI, 2024]. Their magnitudes are expressed in a unit called 'TIV' ('trend-indicator values'), which are intended to represent the military capabilities transferred rather than just the equipment's monetary value at any point in time.

The blocs are constructed as follows. For the period from 1991 (the fall of the Soviet Union) to 2022, the ten largest arms exporters are assigned to the two blocs by hand. These ten exporters – in order of the size of their total exports over that period: the US, Russia, France, Germany, the UK, China, Italy, the Netherlands, Israel, and Spain – account for over 90% of exports during that time. Of the ten, China and Russia are assigned to the China-Russia bloc, while the remaining eight fall into the US-led bloc. Then, outside of the top ten exporters, any country that imports more than two-thirds of its weapons from the top ten exporters belonging to either of the two blocs in a given year is assigned to that bloc itself. If neither bloc exceeds this threshold, the country is assigned to the Unaligned bloc. Figure 4 from Fletcher et al. [2024] shows these bloc assignments if we use exports from 2013 to 2022 to classify each country.

4.3 Constructing Holdings Changes

We observe funds' entire holdings at set intervals – monthly, quarterly, semi-annually, or annually, depending on the country of domicile and other fund characteristics. The standard method of defining changes in holdings in the literature is 'active changes' [Coval and Stafford, 2007]. For a fund f, we define the active

change in holdings $q^{f,a}$ of asset a between periods $t-1$ and t to be

$$ActiveChange_t^{f\to a} = p_{t-1}^a * q_t^{f,a} - p_{t-1}^a * q_{t-1}^{f,a}, \tag{6}$$

that is, the change in holdings valued at yesterday's prices.

How do we deal with different countries – or sometimes even funds within the same country – reporting their holdings at different times? We focus on the quarterly frequency, as we find this gives us the best trade-off between maintaining reasonable coverage and a sufficiently frequent time series. Funds that report at less than quarterly frequencies are excluded. For funds that report at quarterly or higher frequencies, we only consider their latest report in any given calendar quarter.

Finally, for our exercise in holdings, we aggregate active changes at the country-to-country level. We express country-to-country active changes as a fraction of the total amount invested in that country by mutual funds in our sample at the end of the previous quarter. For the set of funds $f \in \mathcal{F}(i)$ domiciled in country i and set of assets $a \in \mathcal{A}(j)$ domiciled in country j,

$$ActiveChange_t^{i\to j} = \sum^{f\in\mathcal{F}(i)} \sum^{a\in\mathcal{A}(j)} \frac{ActiveChange_t^{f\to a}}{p_{t-1}^a * q_{t-1}^{f,a}} \tag{7}$$

4.4 Do Geopolitical Tensions with Adversaries Lead Investors to Scale Back Exposures?

We now investigate the relationship between innovations to geopolitical tensions and the active changes in mutual fund portfolios. To do so, we estimate the following regression specification:

$$\begin{aligned} ActiveChange_t^{i\to j} &= \gamma_0 \Delta x_t^{i\to j} + \gamma_1 \mathbb{1}_{\{bloc_i \neq bloc_j\}} \\ &+ \gamma_2 \mathbb{1}_{\{bloc_i \neq bloc_j\}} \times \Delta x_t^{i\to j} + \beta r_t^j + \alpha_{i,t} + \epsilon_{i,j,t} \end{aligned} \tag{8}$$

We are interested in estimating the coefficient γ_2, which measures the impact of rising geopolitical tensions with adversaries on active changes in mutual fund holdings.

$\Delta x_t^{i\to j}$ captures the change in attention paid by country i to geopolitical events in country j. As discussed in Section 3.1, this is formally defined as the AR(1) innovation of the defense-covariance with j in articles originating in country i in quarter t, scaled by the standard deviation of the defense-covariance with j.

$\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ is an indicator variable that switches on when country i and country j are in opposing blocs. When this indicator variable switches on, $\Delta x_t^{i \to j}$ can be interpreted as a measure of geopolitical tensions between countries i and j. $ActiveChange_t^{i \to j}$ captures active rebalancing by investors in country i into securities in country j. This is the sum of $ActiveChange_t^{f,a}$ as defined in Section 4.3 across all funds f domiciled in country i, in all assets a domiciled in country j. We scale this dollar amount by the size of investors in country i's position in assets in country j as of the end of period $t-1$, $TotalNetAssets_t^{i \to j}$. The main specification includes date by origin country i fixed effects, as denoted by $\alpha_{i,t}$. To control for fundamental effects correlated with geopolitical tensions, in the baseline specification, we also include the return of the equity index of the destination country j, denoted by r_t^j. In reference to Equation 1 in Section 2.2, note that if all $\Delta \chi_t^{i \to j} = 0$, then $r_t^j = \rho \Delta \bar{p}_t + (1-\rho)\Delta \bar{d}_t$. Hence, we can replace $\rho \Delta \bar{p}_t + (1-\rho)\Delta \bar{d}_t$ with r_t^j in our empirical setup to control for this directly.

The results of the estimation of Equation 11 are shown in Table 1. The main specification is shown in column 6. The coefficient on $\Delta x_t^{i \to j}$ alone, γ_0, is not statistically different from zero. This indicates that for countries of the same bloc, an increase in attention paid by country i to geopolitical events in country j has no impact on holdings of assets in country j by investors in country i. This suggests that when country j is engaged in geopolitical events that are covered in the news media of an allied country i, this does not lead investors in that allied country to divest from country j. For example, even if Germany is engaged in a conflict, and this is covered by news outlets in the US, this does not lead US investors to divest from Germany.

The main coefficient of interest is γ_2, the coefficient on the interaction term between $\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ and $\Delta x_t^{i \to j}$. This coefficient captures the effect of experiencing an increase in geopolitical tensions with another country, as measured by an increase in attention paid by a country to geopolitical events in a country that is in the opposite bloc, on investors' holdings in that country. If an increase in geopolitical tensions between two countries leads investors in one country to actively rebalance out of assets in the other country, then we would expect γ_2 to be negative. In terms of magnitudes, the estimated coefficient $\hat{\gamma}_2$ represents a $\hat{\gamma}_2$‰ increased inflow into country j by funds of country i in terms of the total holdings of funds of country i in j the previous period, for a one standard deviation increase in the defense-covariance with country j in the news sources of country i when the two countries are in opposing geopolitical blocs. The estimated coefficient for γ_2 is negative and statistically significant, suggesting that following an increase in geopolitical tensions between country i and j from the perspective of country i, investors in country i actively rebalance

out of assets in country j. In terms of magnitudes, for a one standard deviation increase in geopolitical tensions between two countries i and j, holdings of equities in country j by investors in country i fall by 2.15%, expressed as a percentage of the previous position of investors in equities in country i in assets of country j, holding i's total wealth invested in foreign assets fixed (due to the origin-time fixed-effect).

The coefficient on $\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ alone, γ_1 is negative and statistically significant, indicating that, on average during our sample period, investors in opposing geopolitical blocs are divesting from each other. In fact, this coefficient is very large in magnitude. In our preferred specification, its coefficient implies that during our sample period from 2015 to 2021, funds reduce their holdings in geopolitical adversaries by 4.2% each quarter. Cumulatively, funds reduced their holdings in geopolitical adversaries by 70% between 2015 and the end of 2021. This result confirms that the geoeconomic fragmentation observed in other areas, such as foreign direct investment or trade flows (see, e.g., Aiyar et al. [2023]), has also occurred in financial markets. In the context of increasing aggregate geopolitical tensions, mutual funds have withdrawn funds from assets domiciled in their geopolitical adversaries.

These results are robust to several variations of the specification. For example, in columns (1)-(3), the coefficients are re-estimated without r_t^j, a control for returns of the equity market in country j. The main coefficient of interest on the interaction term remains negative and statistically significant, using various combinations of fixed effects. In columns (4) and (5), the results are re-estimated with only time fixed effects and separate time and origin country fixed effects instead. The coefficient on the interaction term remains very similar in magnitude and statistically significant compared to the baseline specification in column (6). Hence, we can conclude that mutual funds actively rebalance out of foreign adversaries when their geopolitical tensions towards them rise.

4.5 How Do Investors Rebalance Between Allies and Adversaries When Geopolitical Tensions Rise?

Next, we investigate how investors rebalance following an increase in their average geopolitical tensions with other countries. Do they rebalance into other countries in the same bloc, and do they generally rebalance out of countries in the opposite bloc?

We first construct a country level measure of geopolitical tensions with all other countries, $Tensions_{i,t}$, which is defined as follows:

$$Tensions_{i,t} = \frac{\sum_{j \neq i} \mathbb{1}_{\{bloc_i \neq bloc_j\}} \times \Delta x_t^{i \to j}}{\sum_{j \neq i} \mathbb{1}_{\{bloc_i \neq bloc_j\}}}, \tag{9}$$

where $\Delta x_t^{i \to j}$ is defined as in Equation 4. The numerator sums the shock to attention paid by country i to defense topics related to country j for all countries j that are in the opposing geopolitical bloc to country i. The denominator is the number of countries that are in the opposite bloc of country i. So $Tensions_{i,t}$ can be thought of as an average of geopolitical tensions that country i perceives in quarter t with countries that are in the opposite bloc.

We investigate these questions by estimating the following baseline specification:

$$\begin{aligned} ActiveChange_t^{i \to j} = {} & \gamma_1 Tensions_{i,t} + \gamma_2 \mathbb{1}_{\{bloc_i \neq bloc_j\}} \times Tensions_{i,t} + \gamma_3 \mathbb{1}_{\{bloc_i = bloc_j\}} \times Tensions_{i,t} \\ & + \gamma_4 \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \gamma_5 \mathbb{1}_{\{bloc_i = bloc_j\}} + \alpha_{j,t} + \epsilon_{i,j,t}, \end{aligned} \tag{10}$$

where $ActiveChange_t^{i \to j}$ is defined as before, for country i rebalancing into country j between $t-1$ and $t+4$, one year later. The coefficient γ_1 estimates how much investors in country i rebalance into their own country following a general increase in geopolitical tensions from country i's perspective The coefficient γ_2 estimates how much investors in country i rebalance into a country j when they are in the opposing bloc, relative to how much they rebalance into their own country, following a general increase in geopolitical tensions from country i's perspective. The coefficient γ_3 estimates how much investors in country i rebalance into countries j when they are in the same bloc, relative to how much they rebalance into their own country, following a general increase in geopolitical tensions from country i's perspective. $\alpha_{j,t}$ are destination country by time fixed effects. We also estimate a version with $\alpha_{i,t}$ fixed effects; in this case the $Tensions_{i,t}$ term is absorbed.

The results of the estimation are shown in Table 2. Across specifications, following a general increase in geopolitical tensions that a country experiences, investors in that country actively rebalance into assets that are domiciled in other countries that are within their bloc, as shown by significant coefficients on $\mathbb{1}_{\{bloc_i = bloc_j\}} \times Tensions_{i,t}$. There is less evidence that they rebalance out of other countries that are not within their own bloc, as shown by the insignificant coefficients on $\mathbb{1}_{\{bloc_i \neq bloc_j\}} \times Tensions_{i,t}$. There is also no evidence that they rebalance into their own countries, as shown by the insignificant coefficients on

$Tensions_{i,t}$ in columns 1-3.

4.6 Persistence

So far, we have investigated the contemporaneous relationship between an increase in geopolitical tensions and rebalancing during the same quarter. It is also interesting to investigate whether the divestment found above persists or whether it is unwound over longer periods. To investigate this, we estimate the following specification:

$$\begin{aligned} ActiveChange^{i\to j}_{t-1\to t+l} &= \gamma_0 \Delta x^{i\to j}_t + \gamma_1 \mathbb{1}_{\{bloc_i \neq bloc_j\}} \\ &+ \gamma_2 \mathbb{1}_{\{bloc_i \neq bloc_j\}} \times \Delta x^{i\to j}_t + \beta r^j_{t-1\to t+l} + \alpha_{i,t} + \epsilon_{i,j,t} \end{aligned} \tag{11}$$

We estimate this specification separately for lags $l = \{-2, -3\}$ and leads $l = \{1, 2, 3, 4, 5\}$, that is, up to three quarters before the shock to geopolitical tensions and up to five quarters after. $ActiveChange^{i\to j}_{t-1\to t+l}$ is the cumulative active rebalancing by investors in country i in assets in country j between the end of quarter $t-1$ and quarter $t+l$, scaled as before by the investors' position in country j as of the end of $t-1$. $\Delta x^{i\to j}_t$ and $\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ are defined as before. $r^j_{t-1\to t+l}$ is the cumulative return of the equity index in country j between the end of quarter $t-1$ and quarter $t+l$. Again, we include this to control for any changes in the fundamentals of country j due to the change in geopolitical tensions.

The main coefficients of interest are again those on the interaction term, γ_2, now estimated separately for each holdings horizon l. They capture how investors actively rebalance out of assets in another country in the quarters before and following an increase in geopolitical tensions with that country. The estimated coefficients on the interaction term are plotted in Figure 5 for the various lags and leads. The results of the estimation are also reported in Table 3.

The estimates shown in column (3) are as above, showing the contemporaneous relationship between experiencing an increase in geopolitical tensions with another country and divestment in assets of that country. The estimates in the other columns explore the dynamics of this relationship. First, there is no evidence of pre-trends, as shown by the insignificant coefficients on the interaction term in columns (1) and (2). This suggests that before an increase in geopolitical tensions between a country-pair, there is no difference in active rebalancing between these countries compared to other country-pairs. Second, following

an increase in geopolitical tensions with a country in the opposite bloc, there is evidence of significant and prolonged divestment from assets in that other country. The majority of the divestment occurs after the initial quarter, which suggests that investors take some time to adjust their positions following the shock. In terms of magnitudes, for a one standard deviation increase in geopolitical tensions between two countries i and j, holdings of equities in country j by investors in country i fall by 21% a year later, expressed as a percentage of the position of investors in equities in country i in assets of country j right before the increase in tensions occurred. Therefore, divestment in another country following an increase in geopolitical tensions does not appear to revert quickly but rather persists over the following year.

We also estimate the dynamics of rebalancing following a general increase in geopolitical tensions. To do so, we estimate the following specification for values $\ell = (-3, ..., 5)$:

$$\begin{aligned} ActiveChange^{i\to j}_{t-1\to t+\ell} = {} & \gamma_1 \mathbb{1}_{\{bloc_i \neq bloc_j\}} \times Tensions_{i,t} + \gamma_2 \mathbb{1}_{\{bloc_i = bloc_j\}} \times Tensions_{i,t} \\ & + \gamma_3 \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \gamma_4 \mathbb{1}_{\{bloc_i = bloc_j\}} + \alpha_{i,t} + \alpha_{j,t} + \epsilon_{i,j,t}, \end{aligned} \tag{12}$$

The results are shown in Figure 6, for rebalancing into countries that are in the opposite bloc in Panel (a) and rebalancing into countries that are in the same bloc in Panel (b). We observe that in the case of rebalancing into countries that are in the same bloc, it takes several quarters for investors to rebalance following an increase in geopolitical tensions, and that this rebalancing does not revert quickly.

5 Tensions, Exposures, and Returns

5.1 Constructing Asset Exposures

Having established that mutual funds divest from adversaries when tensions with them are high, we now ask whether this also coincides with negative returns for the assets that are being divested from. We do so by generating a measure of 'exposure' for each asset at each point in time and then examine whether the returns of more exposed assets differ from those less exposed. Exposures capture the degree to which assets are held by investors domiciled in foreign adversaries and whether those adversaries experience increases in tensions with the asset's country of domicile.

For an asset a (domiciled in country i) between times $t-1$ and t, the asset's exposure to geopolitical

tension shocks that period is:

$$Exposure_t^a = \sum \omega_{t-1}^{a,j} * \Delta x_t^{j \to i} * \mathbb{1}_{\{bloc_i \neq bloc_j\}}, \tag{13}$$

where $\omega_{t-1}^{a,j}$ is the fraction of the asset's shares held by investors in country j at $t-1$, i.e., right before the shock occurred. We count both domestic and unobserved holdings as 0. Note that $\omega_{t-1}^{a,j}$ is determined using the last available holdings data for each active institution at or before $t-1$ (which may lead, in some rare edge cases, to weights that sum to more than 1, for example, when an institution reports a holding, but then immediately sells it to another institution that then reports holding those shares again in that same quarter).

To offer some more insight into the magnitude of our constructed exposures, consider an asset that is entirely held by funds domiciled in foreign adversaries, and all those foreign adversaries simultaneously experience a one standard deviation shock to their tensions with the country of domicile of the asset. Then, the asset's exposure for that period is exactly one. In contrast, if only 5% is held by adversaries and those still experience a one standard deviation shock, then the exposure is a mere 0.05.

5.2 Main Return Regression

We regress asset returns on contemporaneous asset exposures. To identify the difference in returns of an asset being held by a foreign investor in the opposite geopolitical bloc as opposed to a foreign investor in the same geopolitical bloc, we also regress returns on exposure to all countries ($\sum \omega_{t-1}^{a,j} \Delta x_t^{j \to i}$, i.e., exposure above without the indicator variable capturing whether the asset and the investor are in opposing blocs). To identify the difference in returns of an asset being held by a foreign investor in the opposite bloc when there are geopolitical tensions, as opposed to an asset being held by a foreign investor in the opposite bloc when there are no geopolitical tensions, we also regress returns on the share of the asset that was held by investors domiciled in adversaries last period ($\sum \omega_{t-1}^{a,j} \mathbb{1}_{\{bloc_i \neq bloc_j\}}$, i.e., exposure above without $\Delta x_t^{j \to i}$). We also include country index returns[3] as well as ISIN and year-quarter fixed effects.

Our baseline return regressions are contemporaneous, using the holdings of the previous period. For example, for a regression concerned with the second quarter of a particular year, we use returns from the beginning to the end of the second quarter on the left-hand side, the geopolitical shock from the beginning to the end of the second quarter on the right-hand side, and weights ω constructed from fund holdings as of

[3] If foreign assets are chosen randomly in line with market capitalization, then we should expect the coefficient on index returns to be 1, representing the market beta.

the end of the first quarter. We only consider funds that rebalance at least quarterly. This is in line with our specification for the regression of active holdings changes on geopolitical tensions in the previous section.

$$\begin{aligned} r_t^a = \lambda_0 \sum \omega_{t-1}^{a,j} \Delta x_t^{j \to i} + \lambda_1 \sum \omega_{t-1}^{a,j} \mathbb{1}_{\{bloc_i \neq bloc_j\}} \\ + \lambda_2 \sum \Delta x_t^{j \to i} \omega_{t-1}^{a,j} \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \beta r_t^i + \alpha_t + \alpha_a + \epsilon_{a,t} \end{aligned} \tag{14}$$

The results of the estimation can be seen in Table 4. λ_0 is weakly positive and insignificant, suggesting that the returns of assets held by foreign investors of the same bloc are not significantly different from those of the aggregate stock market when geopolitical tensions rise. λ_1 is strongly and negatively significant. This implies that during our sample period, assets that are held by foreign adversaries generally do poorly. This is in line with the positive γ_1 we observed for holdings – during our sample period, funds continuously rebalance out of adversaries. λ_2 is significantly negative, suggesting that assets held more by foreign investors in the opposite geopolitical bloc experience more negative returns during periods of geopolitical tensions. This means that precisely those assets that foreign investors of the opposing bloc rebalance out of experience the most negative returns when geopolitical tensions rise. In terms of magnitudes, during our sample period, if 1pp more of an asset's outstanding shares are held by investors in a country with whom the asset's country of domicile experiences a one standard deviation increase in geopolitical tensions with, that asset experiences a 0.29pp greater decline in returns during the initial quarter following the increase in tensions.

Although we cannot directly tie these asset pricing effects to the divestment of mutual funds, by controlling for the returns of the host country's stock market, we capture a return effect that is above and beyond any changes in fundamentals common to the entire country, controlled for by r_t^i in our regression. This offers suggestive evidence that these price changes are the result of price pressure following the divestment of foreign funds. If this were not the case, and these assets do worse than other assets in their country of domicile for fundamental reasons during periods of heightened geopolitical tensions, then this would require foreign funds domiciled in the opposing bloc to invest precisely in those assets that are most fundamentally vulnerable to heightened geopolitical tensions between their country and the host country. To us, this seems unlikely. Hence, we think it is likely that the negative returns of these exposed assets in excess of that of their country's stock market indices are the result of the divestment documented in the previous section. However, we cannot conclude this with full certainty.

5.3 Persistence

We are also interested in whether the negative returns coinciding with funds' rebalancing out of adversaries due to heightened tensions persist or revert. To do so, we estimate a dynamic version of the above regression:

$$\begin{aligned} r^{a}_{t-1\to t+l} = \lambda_0 \sum \omega^{a,j}_{t-1} \Delta x^{j\to i}_{t} + \lambda_1 \sum \omega^{a,j}_{t-1} \mathbb{1}_{\{bloc_i \neq bloc_j\}} \\ + \lambda_2 \sum \Delta x^{j\to i}_{t} \omega^{a,j}_{t-1} \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \beta r^{i}_{t-1\to t+l} + \alpha_t + \alpha_a + \epsilon_{a,t-1\to t+l} \end{aligned} \tag{15}$$

where $r^{a}_{t-1\to t+l}$ is the cumulative return of asset a between end of quarter $t-1$ and l quarters later. We estimate this regression specification for two quarters before the shock takes place ($l = -2$) until five quarters after the shock takes place ($l = 5$). This is to check whether there are any pre-trends in the returns of assets that are more or less exposed to geopolitical tensions and to analyze how returns of more exposed assets evolve over the five quarters following a shock to geopolitical tensions. Similar to the static regression design estimated in the previous section, we control for the cumulative returns between the end of quarter $t-1$ and l quarters later for country i, the country asset a is domiciled in. This is denoted by $r^{i}_{t-1\to t+l}$.

The results of the estimation are shown in Table 5, and the estimates of the coefficient λ_2 for different values of l are plotted in Figure 5. We find no evidence of differential pre-trends, as the coefficient λ_2 is statistically insignificant for $l < 0$. We find evidence that the difference in asset returns between more and less exposed assets persists for multiple quarters following the shock to geopolitical tensions. This suggests that the negative returns experienced by assets held by foreign adversaries coinciding with their divestment from these assets persist. In terms of magnitudes, if 1pp more of an asset's total market capitalization is held by investors in a country with whom the asset's domicile country experiences a one standard deviation increase in geopolitical tensions with, this coincides with the asset experiencing a 1pp greater decline in cumulative returns over the five quarter following the increase in tensions.

Once again, we believe these negative returns to likely be the result of the price pressure caused by foreign funds' decision to divest, but we cannot show this conclusively. Another supporting factor to this interpretation is that the dynamics of the rebalancing effect in Figure 5 closely mirror that of the return effect in Figure 7, showing that the negative returns of exposed assets continue to coincide with the divestment by funds domiciled in foreign adversaries several quarters out.

6 Why do Investors Rebalance?

Why do investors decrease their holdings in foreign adversaries when geopolitical tensions rise?

At first, it appears that the most obvious reason is that the assets of foreign adversaries simply become less attractive if it is more likely to be involved in a geopolitical conflict. Geopolitical conflict may lead to costly trade wars, sanctions, or even military conflict, all of which are likely to reduce the future cash flows of a foreign adversary's assets (or at least make them more uncertain). However, we can rule out this explanation for our empirical findings because this would affect all investors equally. Indeed, if it were the case that investors rebalance out of foreign adversaries simply because they become less attractive, then we should also see all other investors attempting to rebalance out of the countries in question. In equilibrium, holdings would not change. However, asset prices would fall in response to geopolitical tensions. After all, a drop in future cash flows is equally unattractive to all investors, independent of their country of origin. Hence, we can rule out this particular story when trying to explain our results. Nevertheless, we include the aggregate stock market return of the asset's country of domicile into our regressions to capture any fundamental effects at the country level.

Since relative holdings do change and do so along the lines of geopolitical blocs, we must look to factors that make the asset appear more unattractive to a specific investor type, those of the opposing bloc. There are several possibilities for why an asset may become less attractive to an investor who is domiciled in a country belonging to the opposing bloc:

1. country-of-origin-specific regulatory risk, e.g., expropriation of foreign assets (such as Russian currency controls) by the foreign government or sanctions on holding assets of a foreign adversary by the domestic government

2. reputational risks, e.g., a US investor that divests from Russian assets to avoid being seen as supporting the actions of the Russian government

3. country-specific belief shifts, i.e., as geopolitical tensions rise with another country, domestic investors become more (perhaps overly) pessimistic about that country's outlook than the investors of other countries that do not experience rising tensions with that country, causing holdings to shift from the former to the latter

All of these are difficult to distinguish directly through empirical tests, and it is likely that all three play some part in generating the effects we observe. To shed some light on which of these factors may be relatively more important, however, we examine the (semi-)annual investor disclosures (N-CSR reports) of US mutual funds around both the Russian invasion of Ukraine in the first quarter of 2022 and the escalation of trade tensions with China in 2018. We find that mutual funds almost exclusively report on their changing beliefs about the outlook of the adversaries' economies as reasons for changing their allocations.

Moreover, divestment due to both regulatory and reputational risks, but not due to idiosyncratic shifts in beliefs, suggests that the optimal exposure – that is, the exposure that the fund manager in question would like to have in the absence of these risks – to the foreign adversary's stock market has not fundamentally changed. As such, we can gauge the degree to which these factors are at work through the following exercise: if divestment occurs purely due to regulatory and reputational risks, then we should see investors rebalance into assets that replicate their previously optimal exposure. For example, following a divestment from sanctioned Russian assets, such an investor should seek to find other ways to gain exposure to the Russian economy that are not under sanctions. For example, a US investor who previously had direct holdings in Russia might disinvest from these and instead buy an Austrian bank stock with a large presence in Russia. Hence, we can examine whether, following divestment, the foreign asset market return exposures of the mutual funds' portfolios actually fall. We find that for the Russian invasion of Ukraine, fund exposures indeed changed significantly. Combined with the evidence from N-CSR reports, it thus suggests that the effect – divestment from geopolitical adversaries in response to heightened tensions – may be driven chiefly by investors becoming more pessimistic about the fundamentals of their adversaries than investors of other countries. This behavior is unlikely to be fully rational. However, we do not explicitly test for this.

6.1 Studying Investor Disclosures

While we have shown that changes in public news coverage change mutual fund investment behavior worldwide, we now, using the sub-sample of funds domiciled in the United States, want to examine in more detail how funds self-report on their behavior and motivations during these periods. This will help us understand the root motivations behind the behavior that we observe in the data. Using qualitative examples from mutual fund reports to their investors, we find that when funds change their allocations to foreign adversaries, they appear to justify this with changes in their fundamental beliefs about those countries' outlook.

Form N-CSR is a set of investor disclosures that mutual funds (and other registered investment management companies) need to file at least annually with the SEC, although some in our sample file them semiannually. It is filed shortly after the publication of the (semi-)annual report to investors, which it includes. This is the part of the form that we are interested in for our purposes, as it discusses a fund's past performance, outlook, and any changes made in light of them. We obtain these filings from the SEC's online archive. For the 11-year period from 2013 to 2023 (inclusive), we obtain 72,892 individual N-CSR filings, with a median word count of 18,114. Analogously to GDELT, we record, for each report, the number of words belonging to GDELT's Defense dictionary (see Section 3.1 for more detail) in order to make it as comparable as possible to the measures of tensions we use above. Similarly, we record the number of country mentions in each report.

We begin by examining the average fraction of Defense words within each report. We see two clear jumps in the data: one in 2018 and one in 2022. Looking at excerpts of reports during those two spikes, it quickly becomes clear that they are associated with the following two events:

- 2018: the beginning of the trade war between the United States and China during the first Trump administration
- 2022: the Russian invasion of Ukraine

Due to their prominence in the aggregate, we will examine these two events to study why funds were divesting from China and Russia, respectively, during these periods.

6.1.1 China-US Tensions in 2018

Here, we present some excerpts from fund statements that frequently mention both China and defense-associated words in 2018. Several things stand out. First, we find that mutual fund managers report that the geopolitical tensions between China and the US have materially changed their outlook on the future performance of Chinese assets, mostly by decreasing their future outlook on the performance of Chinese assets. Second, as early as 2018, funds frequently discuss the possibility of escalating tensions between the two powers and the potential for future conflict. This shows us that geopolitical tensions have been a concern for mutual fund managers for quite some time. We now proceed by showing several excerpts from funds' reports during this period.

The CSOP Trust, for the reporting period ending on the 30th of September 2018, discusses fears that China and the US are headed toward a wider conflict. They express a negative short-term outlook for Chinese assets, but ultimately have a positive outlook for the medium- to long-run.

> Dear Shareholder, Graham Allison [...] argued that China and the United States were "currently on a collision course for war". [...] President Trump's aggression towards China turned many people's sweet dream to a nightmare. [...] Thucydides' Trap [refers] to when a rising power like Athens (China) causes fear in an established power like Sparta (the US) and results in a war. [...] [However,] we believe once the two parties figure out solutions to the trade disputes, the market sentiment will improve.

The John Hancock Investment Trust, for the reporting period ending on the 30th of April 2018, reports a shift of their holdings within China from assets that are exposed to trade with the United States to those that are more likely to benefit from an 'economic recovery story in China.'

> Although we do not expect a full-blown trade war, we do anticipate an extended period of negotiation between the two countries. Consequently, we are reducing our exposure to companies and industries, such as textiles and selected technology hardware, that are more reliant on trade with the United States, and increasing our holdings of companies poised to benefit from the economic recovery story in China.

From January 2018 to July 2018, the fund decreased their portfolio allocation to Industrials from 8.7% to 6.4% and instead increased their exposure to Financials from 22.7% to 23.8%; shifting away from industries heavily reliant on trade between the United States and China.

Some mutual funds, while acknowledging the tensions, also point to a perceived overreaction to events by others and write that they plan to continue to hold their current positions in China and are, in fact, bullish in their outlook for China. Such bullish reports should also assuage our fears that the effect is entirely driven by concerns about reputation.

The Asia Pacific Fund, for the reporting period ending on the 31st of March 2018, reports a belief that, while the outlook for Chinese assets is very unpredictable in the near term, their long-term outlook for China remains very positive, in particular, due to Xi Jinping's consolidation of power. Hence, they see the then-current pullback as an opportunity to 'gradually accumulate China-related stocks.' Concurrently, the

fund increased its portfolio allocation to China from 53.4% at the end of June 2017 to 65.3% at the end of June 2018.

> President Xi Jinping has succeeded in further consolidating his power and ushering in a strong and steady leadership. [...] [This] clears away political uncertainties, so that the administration can refocus on economic development.[...] [However,] escalating Sino-US trade tension disrupted the market again in the latter half of the first quarter. Near-term market sentiment suffers as the outcome of the trade dispute remains unclear [...]. The two sides will likely resolve the dispute at the negotiating table and avoid a full-blown trade war. By then, China-related stocks could stage a solid recovery. Therefore, the near-term market pull back presents long-term investors with a chance to gradually accumulate China-related stocks.

6.1.2 Russia-US Tensions in 2022

Similar to reports coinciding with high China-US tensions in 2018, when we look at reports immediately following the Russian invasion of Ukraine in early 2022, we find that fund managers have strong opinions on how the events in question will change the future economic outlook. As before, but perhaps somewhat less surprising in 2022, fund managers also appear to be concerned about a widening of the conflict and fear a wider confrontation between the US and Russia as well as China. We now again proceed by showing some specific excerpts from funds' reports during this period.

FMI Funds, for the reporting period ending on the 31st of March 2022, reports that they do not expect Russian belligerence to decrease and further suggest that a 'two-pronged cold war with China and Russia has been underway for some time.' This, they say, will force the West to move production to domestic or friendly regimes. FMI Funds already had no investments in either Russia or China prior to the invasion, citing China's 'authoritarian government' as a major roadblock.

> China and Russia substantially increased their belligerence toward the U.S. (and the "West") in recent years. A new two-pronged cold war with China and Russia has been underway for some time. [...] We don't expect Putin to change course because of sanctions or exposure of war atrocities, but perhaps Xi Jinping has taken notice and pauses any moves on Taiwan. [...] [B]oth politically and strategically, the West will need to secure more production domestically or with friendly regimes – whether it be in energy, materials, or manufactured goods [...].

Neuberger Berman Equity Funds, for the reporting period ending on February 28th 2022, report that their performance was negatively impacted by their initially overweight position in Russia. Importantly, they also stress that they are actively selling out of these positions now and that they are more generally 'evaluating the new geopolitical backdrop.' The portfolio allocation to Russia of their Emerging Markets Fund dropped from 6.4% in August 2021 to 0.7% at the end of February 2022 to zero in August 2022.

> February saw a precipitous drop, as Russian border hostilities and then the invasion of Ukraine sent geopolitical concerns, energy prices, and risk aversion climbing. [...] By country, stock selection and an initial period overweight to Russia versus the Index (even given rapid selling) detracted, as did stock selection in Brazil and Taiwan. [...] Our team had been actively selling out of Russia, with the weighting at the end of the reporting period at 0.7%. [...] More broadly, we are evaluating the new geopolitical backdrop.

To conclude, we qualitatively examine US investor disclosures during heightened tensions with China in 2018 and with Russia in 2022, respectively. We find that they frequently express concerns about rising geopolitical tensions and stress that this affects their outlook on the assets they hold and causes them to reevaluate their positions. We do not frequently find mentions of reputational or regulatory risks. This suggests that our results may be driven primarily by a negative effect of geopolitical tensions on investor beliefs about the future outcomes of geopolitical adversaries.

6.2 Examining Mutual Fund Return Exposures

One potential concern is that even if mutual funds report that they are divesting from a country due to concerns about their future fundamental performance, their true motive for divestment may, in fact, be concerns about their reputation, which they shield behind statements about fundamentals to protect their image and/or to fulfill their mandate to investors. To address this, we ask if mutual funds truly reduced their portfolios' exposures to the countries in question or, as they would if their concerns are merely reputational or regulatory, reallocated capital to other assets mirroring this exposure. For example, rather than being invested in Chinese companies directly, mutual funds that still wish to invest in China but do not wish to do so directly due to reputational concerns may do so indirectly by, e.g., increasing their exposure to US firms with large revenue/supply chain exposures to China. In that case, we would observe a divestment from Chinese assets by US mutual funds, but we would not expect their portfolios' exposure – as measured by a

return beta residual of SPY – to the Chinese stock market to meaningfully decrease. However, we provide suggestive evidence that, on the contrary, their exposures indeed fall, although the final results are noisy.

To do so, we investigate whether mutual funds truly reduced their portfolios' exposures to Russia/China following the spikes in tension in 2022/2018 or reallocated capital to other assets mirroring this exposure. To start, we pick the top 5% of funds that spend the largest fraction of their reports discussing defense and the country in question during that period. For both, we use the quarter during which mentions peak, i.e., reports submitted in 2022Q1 and 2018Q2 respectively. We then retrieve the daily returns of these funds from Morningstar (each report may cover multiple funds of the same fund family, in which case, we include all funds in that particular fund family in our exercise) and equal-weight these to construct an aggregate portfolio. We then regress these returns on both the SPY and the index of the country in question: the SSE Composite Index for China and the MOEX Index for Russia. For both events, we use a period of three years centered around the suspected breakpoint.

To test for a breakpoint, we specify the following daily return regression:

$$\begin{aligned} r_t^{aggfunds} = \beta^{SPY} r_t^{SPY} + \beta^{CountryOI} r_t^{CountryOI} \\ + \beta^{Break} r_t^{CountryOI} \mathbb{1}\{t > startdate\} + \epsilon_t \end{aligned} \tag{16}$$

β^{SPY} here reflects the beta of mutual fund returns on the aggregate US market. We expect this to be large and positive. $\beta^{CountryOI}$ represents the exposure to the aggregate stock market of the country of interest (China and Russia, respectively) before the break-point. Although we do not expect this to be as large as β^{SPY}, we nevertheless expect it to be positive and significant. β^{Break} is the difference in exposure to the country of interest before and after the break-point (June 2018 and February 2022 respectively). This, if funds are indeed reducing their exposures to these countries following the two events, we expect to be negative and significant and of smaller but similar magnitude to $\beta^{CountryOI}$.

For the regression regarding mutual funds' exposures to Chinese assets in 2018, we find that the funds in question do have positive exposure to China in the lead-up to 2018, that is, $\beta^{CountryOI}$ is positive and significant. However, while β^{Break} has the correct sign and magnitude – offering weak evidence that funds, in response to the tensions with China, may have reduced their exposure to the Chinese stock market by a third –, the coefficient itself is insignificant.

However, for the regression regarding mutual funds' exposures to Russian assets in 2022, we do find

a negative and highly significant β^{Break}. Moreover, the magnitude of β^{Break} compared to $\beta^{CountryOI}$ suggests that mutual funds completely eliminated their exposure to Russian assets following the Russian invasion of Ukraine.

This provides additional suggestive evidence that funds' divestment from geopolitical adversaries was driven at least in part by fundamental belief shifts.

Following our empirical results, we want to shed more light on why exactly mutual funds choose to rebalance out of foreign adversaries in response to rising geopolitical tensions. By qualitatively examining (semi-)annual mutual fund investor disclosures in the aftermath of the Russian invasion of Ukraine, we find that managers frequently report that their fundamental outlook on the Russian economy has substantially worsened. We find similar examples for 2018 where the US' trade tensions with China experienced a significant spike in response to tariffs imposed by the Trump administration. This induces us to interpret our empirical findings of mutual fund divestment as that geopolitical tensions cause mutual funds to darken their fundamental outlook of the foreign adversary's economy by more than mutual funds domiciled in other countries during that time period; that is, investors seem to become perhaps disproportionally pessimistic about the outlook of their adversaries' fundamentals when tensions are high.

7 Aggregation

In the previous sections, we established that mutual funds divest from the equities of foreign adversaries when geopolitical tensions with those adversaries rise. We also showed that the equities divested from experienced poor returns relative to the country's index during our sample, coinciding with the divestment by foreign adversaries. So far, we have only studied individual securities and the investment decisions of mutual fund investors. We now want to use our reduced form estimates for the mutual fund sector to gauge the total magnitude of the divestment and the coinciding negative returns by performing a 'back-of-the-envelope' aggregation using data on aggregate cross-country investment holdings. Specifically, to concretely illustrate the magnitude of this channel for a salient event, we examine the potential impact of the spike in geopolitical tensions in the first quarter of 2022 surrounding the Russian invasion of Ukraine. Specifically, we estimate the magnitude of divestment from Russia by its foreign adversaries and the size of the negative returns coinciding with this divestment, as a fraction of the total market capitalization of the Russian equity market. Similarly, we estimate the magnitude of divestment from the US by its foreign adversaries as well as the

coinciding negative return on the US stock market.

To obtain cross-country investment holdings, we use the IMF's Coordinated Portfolio Investment Survey (CPIS) data. Through this, we obtain, for each country participating in the survey, at semiannual intervals, the total value of equity securities held by other foreign countries, specifying the amount each country holds. To obtain the total value of all public equity securities issued, we use data on equity market capitalization from the World Bank.

We begin by estimating the magnitude of divestment from Russia and the US, respectively, due to geopolitical tensions with their adversaries in the first quarter of 2022. From Section 4, we know that for a one standard deviation shock to geopolitical tensions, funds domiciled in foreign adversaries divest $\gamma_2 = 2.17\%$ of their assets held in that bloc. Beginning by looking at the implications for Russian equities, we obtain the aggregate equity holdings of US-bloc investors in Russia prior to the event. US-bloc investors held 130 billion USD worth of Russian equities at the end of 2021, out of a total Russian market capitalization of 842 billion USD prior to the beginning of the invasion. Next, we compute the holdings-weighted average geopolitical tension shock towards Russia by its foreign adversaries during the first quarter of 2022, which was 2.84 standard deviations. We can then calculate, under the assumption that mutual fund investor behavior is representative of that of other investors, the aggregate divestment in USD as:

$$\gamma_2 * \sum^{j \in F^-(Russia)} Holdings_{t-1}^{i \to Russia} * \Delta x_t^{i \to Russia} \tag{17}$$

This amounts to a reduction of assets of 8 billion USD by US-bloc investors. At that time, this represented 0.94% of Russia's total equity market capitalization.

Performing the same exercise for the holdings of China/Russia-bloc investors in the US, we find that they held a similar 255 billion USD worth of US equities at the end of 2021, out of a much larger total US market capitalization of 48.5 trillion USD. Moreover, the holdings-weighted average geopolitical tension shock toward the US by China/Russia-bloc investors was only 0.77 standard deviations in that quarter. Together, these implied a much smaller reduction of assets worth 4 billion USD by China/Russia-bloc investors. This represented, at the time, around 1 basis point of US market capitalization.

We now continue by estimating the size of the negative returns that, in our empirical exercise, coincide with the divestment by funds domiciled in foreign adversaries. We estimate the impact implied by the geopolitical tension shocks in the first quarter of 2022 on the returns of the aggregate Russian and US equity

markets. From Section 5, we know that for an equity security that is held wholly by adversaries that all experience a one standard deviation shock to geopolitical tensions with its country of domicile, we observe a negative return of $\lambda_2 = 29.2\%$ relative to the market during that same quarter. Analogous to the above, we can now construct a market-wide exposure of the Russian stock market to US-bloc investors and their geopolitical tension shocks towards Russia. $\omega^{i \to Russia}$ represents the share of all Russian equities held by investors of country i. Multiplying the exposure by λ_2 gives us the return of the Russian market that we would expect to coincide with the divestment due to geopolitical tension shocks towards Russia in that period.

$$\lambda_2 * \sum^{j \in F^-(Russia)} \omega_{t-1}^{i \to Russia} * \Delta x_t^{i \to Russia} \tag{18}$$

This implies a return reduction of 12.8% for the Russian stock market in the first quarter of 2022. In dollars, this would represent a loss of value worth 108 billion USD. Similarly, for the US, we find a return reduction of 12 basis points, representing a potential loss of value worth 57 billion USD.

Lastly, note that our return regressions in Equation 14 represent the return impact relative to the performance of the aggregate stock market in that country because we include the return of the market on the right-hand side of our regression. Hence, the negative return coefficient we estimate represents the negative return relative to the market. This is relevant for the aggregation because if, for a given country and time period, the constituent securities of the local index all experience negative shocks due to rising geopolitical tensions, then the market as a whole also decreases, and this does not show up in λ_2, but instead is partially absorbed by the β on the stock market. Hence, our aggregate return estimates are a lower bound, only capturing the return effect coinciding with the divestment of foreign investors.

8 Conclusion

We study the geographic investment decisions of international mutual funds in response to increases in geopolitical tensions, as measured by news data. We find that, in response to increases in tensions with foreign adversaries, mutual funds withdraw investments from those countries. Moreover, we find that, coincident with this divestment, assets held by investors from foreign adversaries perform poorly compared to the rest of the market. We then examine US fund disclosure reports and find suggestive evidence that funds' decisions to divest from foreign adversaries in response to rising tensions appear to be driven by a

more pessimistic outlook on those countries' fundamental prospects rather than a concern for, e.g., regulatory scrutiny or reputational risks. Lastly, we examine aggregate cross-country investments and, by aggregating our reduced form results, estimate that, in response to sharply increasing geopolitical tensions, US-allied investors divested Russian equities worth 1% of the Russian stock market capitalization during the first quarter of 2022. Our estimates suggest that this divestment would have coincided with an additional 13% decline in the Russian index during that quarter.

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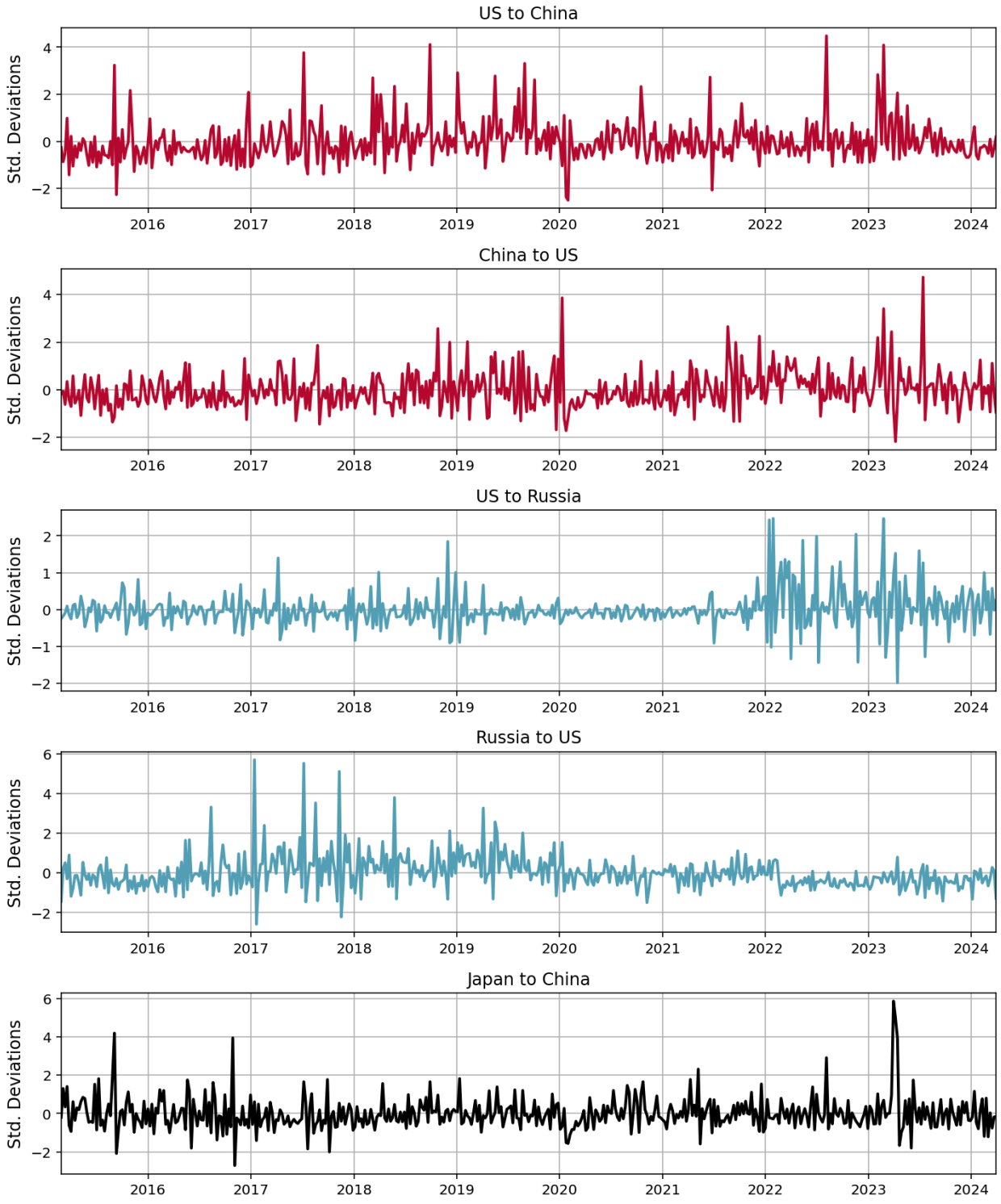
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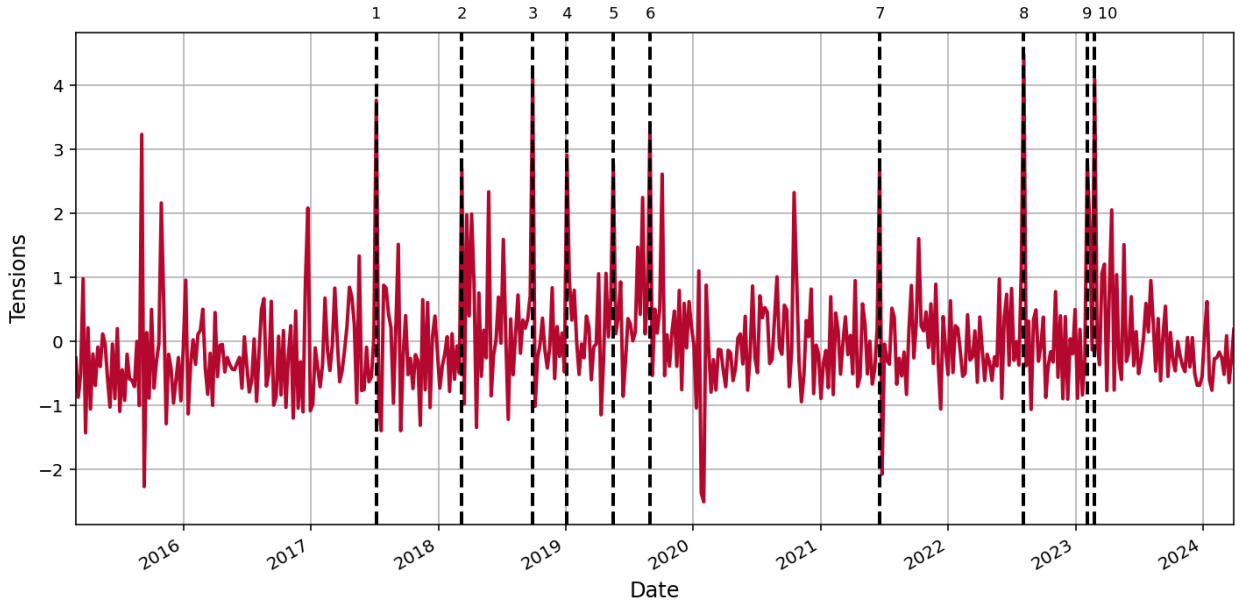
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Figure 1: BILATERAL TENSIONS BETWEEN COUNTRIES (2015-2024)



Note: This figure plots our directional bilateral tension measure for different country pairs over time. For example, the "US to China" measure is our directional bilateral tension measure representing attention from US towards China regarding geopolitical topics.

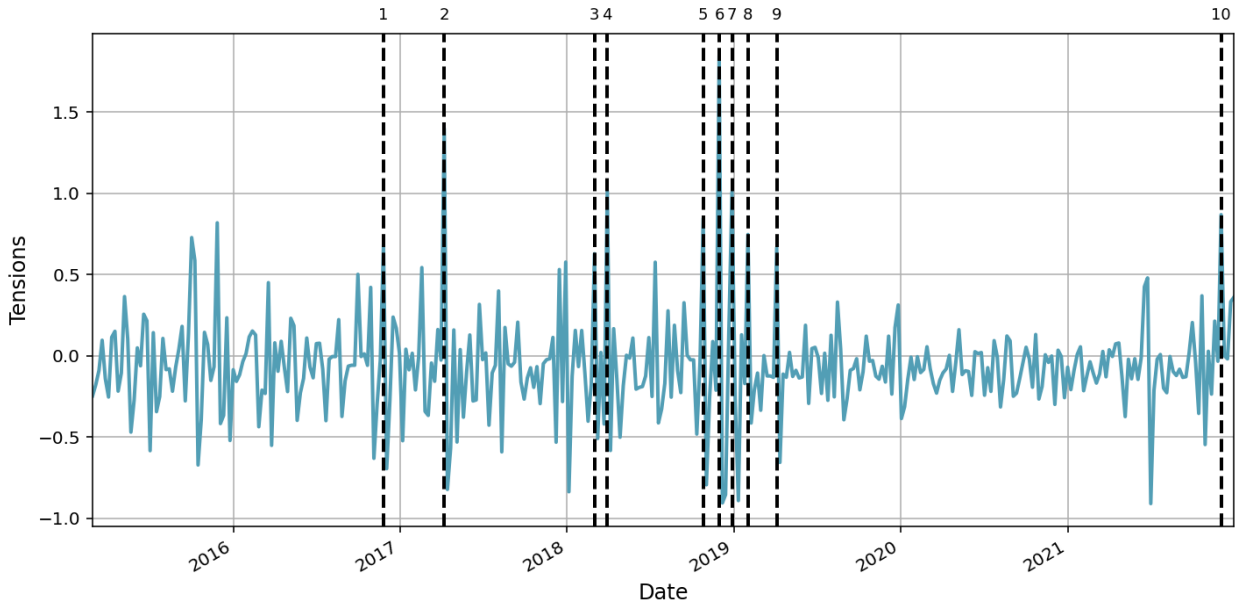
Figure 2: Weekly tensions measure, US to China and marked events (2015-2024)



Event Number	Week Date	Shock Size	Event Description
1	Jul 7 2017	3.77	U.S. Navy sails in contested waters near China.
2	Mar 9 2018	2.70	U.S. announces tariffs on steel and aluminum.
3	Sep 28 2018	4.12	China cancels U.S. Secretary of Defense trip to Beijing amid tensions.
4	Jan 4 2019	2.91	China detains several Canadians after arrest of Huawei executive.
5	May 17 2019	2.78	U.S.-China Trade talks end without a deal.
6	Aug 30 2019	3.31	Escalation of trade war, including Chinese retaliation to U.S. measures.
7	Jun 18 2021	2.72	China mans its new space station.
8	Aug 5 2022	4.48	Nancy Pelosi visits Taiwan
9	Feb 3 2023	2.84	U.S. general sends memo to officers predicting war with China by 2025.
10	Feb 24 2023	4.09	China considers sending weapons to assist Russia in Ukraine

Note: The plot on top shows the weekly tension measure for US to China from 2015-2024. The ten largest positive shocks are marked with vertical lines. The table on the bottom gives events that are associated with these positive shocks.

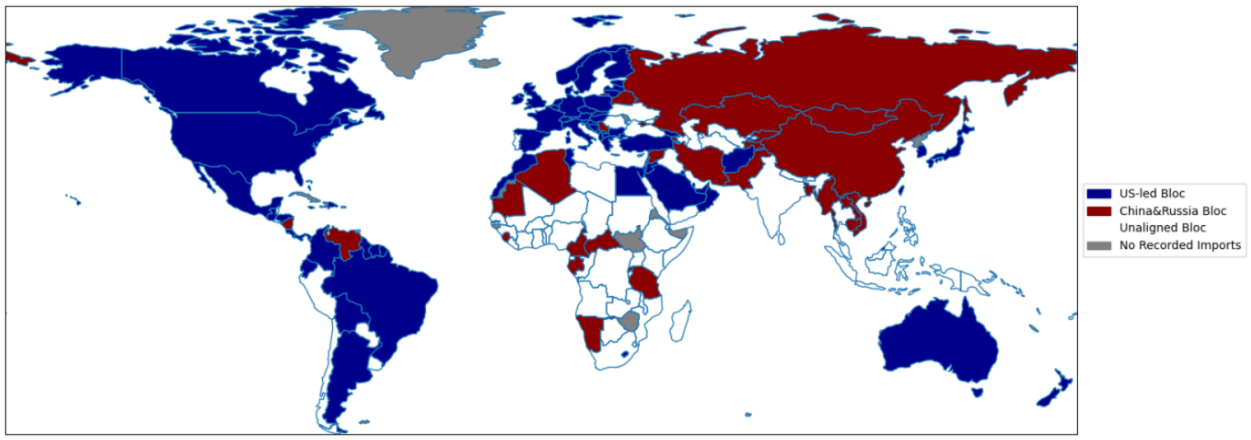
Figure 3: Weekly tensions measure, US to Russia and marked events (2015-2021)



Event Number	Week Date	Shock Size	Event Description
1	Nov 25 2016	0.68	New Russian anti-ship missiles deployed to Kaliningrad.
2	Apr 7 2017	1.40	U.S. strikes Shayrat Airbase in Syria, a Russian ally at the time.
3	Mar 2 2018	0.63	Russia unveils new nuclear weapons.
4	Mar 30 2018	1.01	U.S. expels Russian diplomats in the wake of Russian nerve agent attack in the U.K.
5	Oct 26 2018	0.85	U.S. pulls out from the 1987 Intermediate Range Nuclear Forces (INF) treaty.
6	Nov 30 2018	1.85	Altercation in the Sea of Azov between Ukrainian and Russian forces.
7	Dec 28 2018	1.01	Russia tests new hypersonic missile system.
8	Feb 1 2019	0.75	Russia follows the U.S. in pulling out of the INF treaty.
9	Apr 5 2019	0.66	Russia sends soldiers to support the Maduro regime in Venezuela.
10	Dec 3 2021	0.87	Biden administration voices alarm about preparations for Russian invasion of Ukraine.

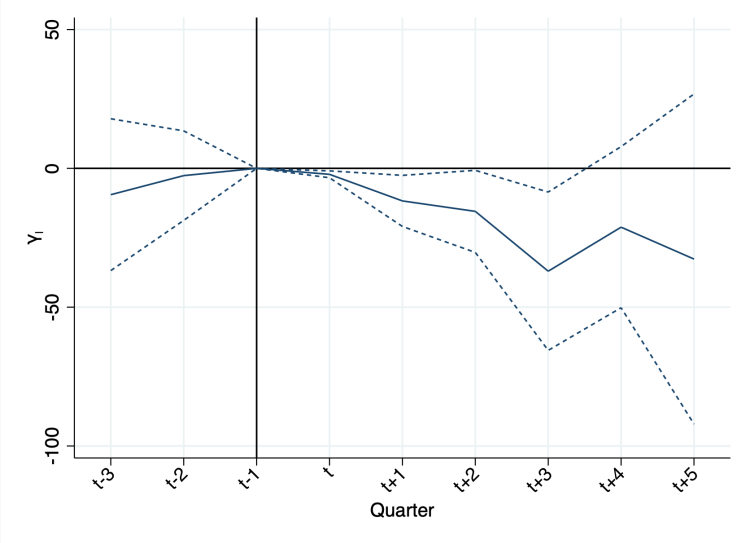
Note: The plot on top shows the weekly tension measure for US to Russia from 2015-2024. The ten largest positive shocks within the period 2016-2021 are marked with vertical lines. The table on the bottom gives events that are associated with these positive shocks.

Figure 4: Bloc Assignments Based on SIPRI Arms Imports (2013-2022)



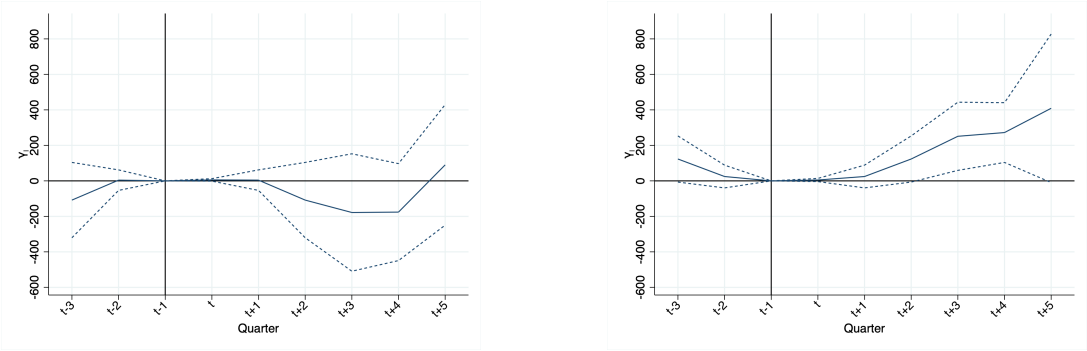
Note: This map from Fletcher et al. [2024] shows the bloc assigned to each country using the methodology of Fletcher et al. [2024], which uses the Stockholm Peace Research Institute data on arms transfers [SIPRI, 2024].

Figure 5: Direct Rebalancing Following Geopolitical Tensions



Note: This figure shows the estimation results of coefficient γ_2 for different lags and leads l of the following specification: $ActiveChange^{i\to j}_{t-1\to t+l} = \gamma_0 \Delta x^{i\to j}_t + \gamma_1 \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \gamma_2 \mathbb{1}_{\{bloc_i \neq bloc_j\}} \times \Delta x^{i\to j}_t + \beta r^j_{t-1\to t+l} + \alpha_{i,t} + \epsilon_{i,j,t}$. $\Delta x^{i\to j}_t$ is defined as the AR(1) innovation of the defense-covariance with j in articles originating in country i in quarter t, scaled by the standard deviation of the defense-covariance with j. $\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ is an indicator variable that switches on when country i and country j are in opposing blocs. $ActiveChange^{i\to j}_{t-1\to t+l}$ is the cumulative active rebalancing by investors in country i in assets in country j between the end of quarter $t-1$ and l quarters later, scaled as before by the investors' position in country j as of the end of $t-1$. The main specification includes date by origin country i fixed effects, denoted by $\alpha_{i,t}$ and controls for the cumulative return of the equity index of the destination country j between the end of quarter $t-1$ and l quarters later, denoted by $r^j_{t-1\to t+l}$. The dashed lines indicate 90% confidence intervals.

Figure 6: Other Rebalancing Following Geopolitical Tensions

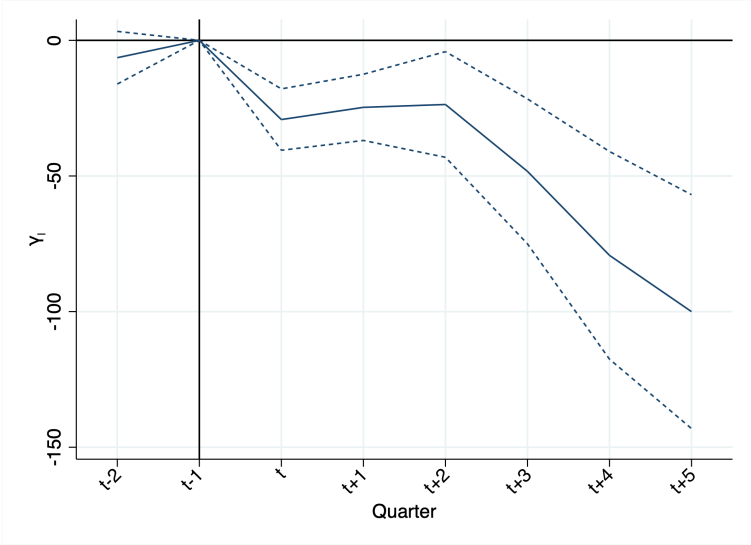


(a) Rebalancing into Opposite Bloc

(b) Rebalancing into Same Bloc

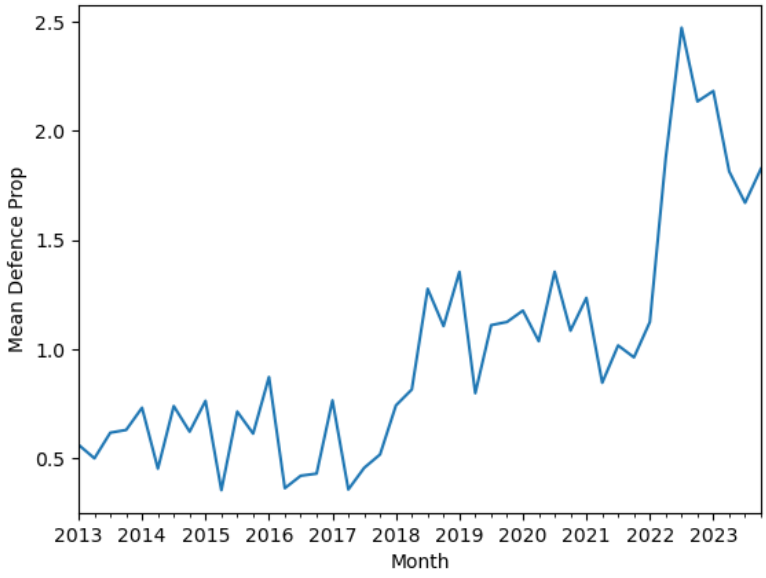
Note: This figure shows the estimation results of coefficient γ_2 for different lags and leads l of the following specification: $ActiveChange^{i\to j}_{t-1\to t+l} = \gamma_1 \mathbb{1}_{\{bloc_i \neq bloc_j\}} \times Tensions_{i,t} + \gamma_2 \mathbb{1}_{\{bloc_i = bloc_j\}} \times Tensions_{i,t} + \gamma_3 \mathbb{1}_{\{bloc_i = bloc_j\}} + \gamma_4 \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \alpha_{i,t} + \alpha_{j,t} + \epsilon_{i,t}$. $\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ is an indicator variable that switches on when country i and country j are in opposing blocs. $ActiveChange^{i\to j}_{t-1\to t+l}$ is the cumulative active rebalancing by investors in country i in assets in country j between the end of quarter $t-1$ and l quarters later, scaled as before by the investors' position in country j as of the end of $t-1$. The main specification includes date by origin country i fixed effects, denoted by $\alpha_{i,t}$ and controls for the cumulative return of the equity index of the destination country j between the end of quarter $t-1$ and l quarters later, denoted by $r^{j}_{t-1\to t+l}$. The dashed lines indicate 90% confidence intervals.

Figure 7: Effect of Rebalancing On Returns



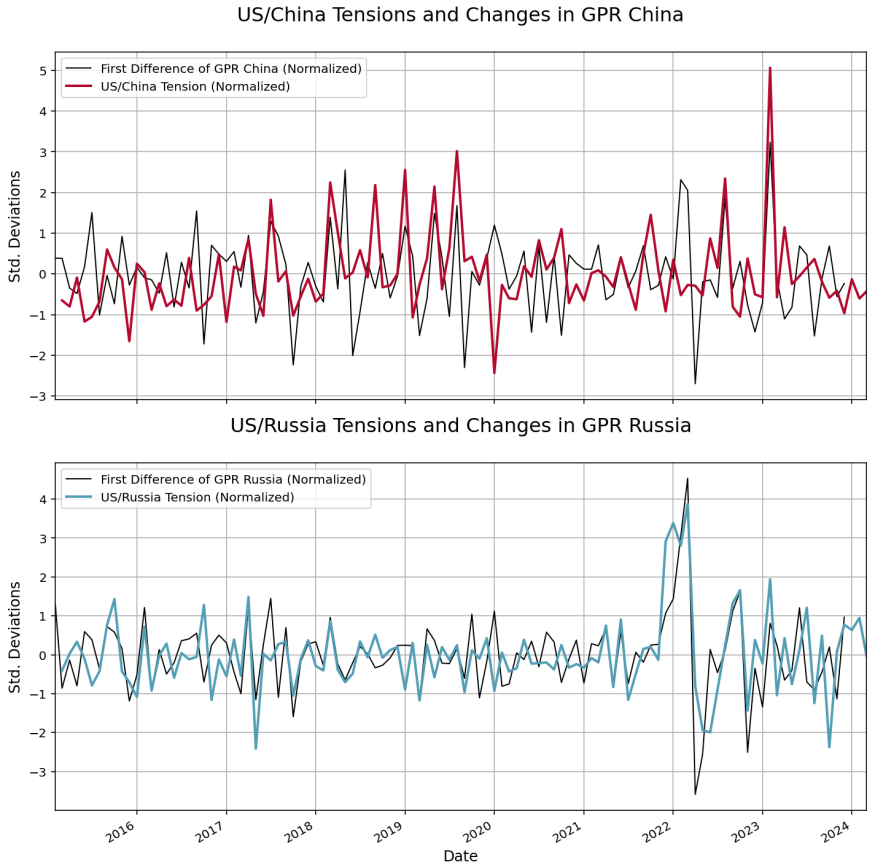
Note: This figure shows the estimation results of coefficient γ_2 for different lags and leads l the following specification: $r^{a}_{t-1\to t+l} = \lambda_0 \sum \omega^{a,j}_{t-1} \Delta x^{j\to i}_{t} + \lambda_1 \sum \omega^{a,j}_{t-1} \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \lambda_2 \sum \Delta x^{j\to i}_{t} \omega^{a,j}_{t-1} \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \beta r^{i}_{t-1\to t+l} + \alpha_t + \alpha_a + \epsilon_{a,t-1\to t+l}$. $\Delta x^{j\to i}_{t}$ is defined as the AR(1) innovation of the defense-covariance with i in articles originating in country j in quarter t, scaled by the standard deviation of the defense-covariance with i. $\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ is an indicator variable that switches on when country i and country j are in opposing blocs. $r^{a}_{t-1\to t+l}$ is the cumulative return of asset a between end of quarter $t-1$ and l quarters later. The specification includes time fixed effects α_t, and CUSIP fixed effects α_a, and controls for the cumulative return of the equity index of the destination country i between the end of quarter $t-1$ and l quarters later, denoted by $r^{i}_{t-1\to t+l}$. The dashed lines indicate 90% confidence intervals.

Figure 8: N-CSR Defense Topic Quarterly Average



Note: This graph plots the quarterly average of the proportion of words associated with the Defense topic in each N-CSR report. The reports are equal-weighted when constructing the quarterly average so as to not give undue weight to reports that are far longer than others.

Figure 9: Comparison of GDELT tension measure to country-specific GPR measures



Note: We plot the US to China and US to Russia tension measure on a monthly basis, and compare to the first-difference of the monthly GPR measure of the corresponding country.

Table 1: Direct Rebalancing Following Geopolitical Tensions

	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta x_t^{i\to j}$	-0.119	-0.168	-0.135	0.176	0.123	0.253
	(-0.51)	(-0.73)	(-0.57)	(0.76)	(0.54)	(1.13)
$\mathbb{1}\{Bloc_i \neq Bloc_j\}$	-4.753***	-6.501***	-6.512***	-2.674***	-4.017***	-4.160***
	(-4.85)	(-6.00)	(-5.97)	(-2.97)	(-4.40)	(-4.36)
$\Delta x_t^{i\to j} \times \mathbb{1}\{Bloc_i \neq Bloc_j\}$	-1.372**	-1.149**	-1.411**	-2.171***	-1.972***	-2.149***
	(-2.45)	(-2.05)	(-2.44)	(-3.21)	(-2.95)	(-2.86)
r_t^j				-0.269***	-0.266***	-0.267***
				(-5.01)	(-4.94)	(-4.93)
Time FE	✓	✓		✓	✓	
Origin Country FE		✓			✓	
Time x Origin Country FE			✓			✓
R^2	0.006	0.018	0.049	0.067	0.082	0.140
N	37,059	37,059	37,035	20,869	20,869	20,832

Note: This table shows the estimation results of the following specification: $ActiveChange_t^{i\to j} = \gamma_0 \Delta x_t^{i\to j} + \gamma_1 \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \gamma_2 \mathbb{1}_{\{bloc_i \neq bloc_j\}} \times \Delta x_t^{i\to j} + \beta r_t^j + \alpha_{i,t} + \epsilon_{i,j,t}$. $\Delta x_t^{i\to j}$ is defined as the AR(1) innovation of the defense-covariance with j in articles originating in country i in quarter t, scaled by the standard deviation of the defense-covariance with j. $\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ is an indicator variable that switches on when country i and country j are in opposing blocs. $ActiveChange_t^{i\to j}$ captures active rebalancing by investors in country i into securities in country j, scaled by the size of investors in country i's position in assets in country j as of the end of period $t-1$. The main specification includes date by origin country i fixed effects, denoted by $\alpha_{i,t}$, and controls for the return of the equity index of the destination country j, denoted by r_t^j. Standard errors are reported in the parentheses. * denotes significance at the 10% level, ** at the 5% level and *** at the 1% level.

Table 2: Other Rebalancing Following Geopolitical Tensions

	(1)	(2)	(3)	(4)	(5)
$Tensions_t^i$	-210.4	-183.5	-172.1		
	(-0.97)	(-0.93)	(-0.84)		
$\mathbb{1}\{Bloc_i = Bloc_j\}$	-377.8**	-382.3*	-257.5	-391.9*	-265.1
	(-2.18)	(-1.75)	(-1.18)	(-1.70)	(-1.12)
$\mathbb{1}\{Bloc_i \neq Bloc_j\}$	-312.8*	-353.5*	-291.8	-363.2	-286.1
	(-2.03)	(-1.73)	(-1.58)	(-1.67)	(-1.40)
$Tensions_t^i \times \mathbb{1}\{Bloc_i = Bloc_j\}$	472.6*	412.5**	416.2**	300.4*	272.3**
	(1.97)	(2.08)	(2.03)	(2.00)	(2.15)
$Tensions_t^i \times \mathbb{1}\{Bloc_i \neq Bloc_j\}$	96.13	69.54	52.97	-102.6	-176.0
	(0.41)	(0.35)	(0.26)	(-0.76)	(-0.97)
Time FE	✓	✓	✓		
Origin Country FE		✓	✓		
Destination Country FE			✓		
Time x Origin Country FE				✓	✓
Time x Destination Country FE					✓
R^2	0.001	0.006	0.053	0.029	0.213
N	27,860	27,860	27,858	27,823	27,604

Note: This table shows the estimation results of the following specification: $ActiveChange_{t-1\to t+4}^{i\to j} = \gamma_1 \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \gamma_2 \mathbb{1}_{\{bloc_i = bloc_j\}} + \gamma_3 \mathbb{1}_{\{bloc_i \neq bloc_j\}} \times Tensions_{i,t} + \gamma_4 \mathbb{1}_{\{bloc_i = bloc_j\}} \times Tensions_{i,t} + \alpha_{i,t} + \alpha_{j,t} + \epsilon_{i,j,t}$. $Tensions_{i,t}$ is defined as the mean of all AR(1) innovations of the defense-covariance with countries $j \neq i$ in articles originating in country i in quarter t, scaled by the standard deviation of the defense-covariance with j. $\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ is an indicator variable that switches on when country i and country j are in opposing blocs. $\mathbb{1}_{\{bloc_i = bloc_j\}}$ is an indicator variable that switches on when country i and country j are in the same bloc. $ActiveChange_t^{i\to j}$ captures active rebalancing by investors in country i into securities in country j, scaled by the size of investors in country i's position in assets in country j as of the end of period $t-1$. The main specification includes date by origin country i fixed effects, denoted by $\alpha_{i,t}$, and date by destination country j fixed effects, denoted by $\alpha_{j,t}$. Standard errors are reported in the parentheses. * denotes significance at the 10% level, ** at the 5% level and *** at the 1% level.

Table 3: Persistence of Direct Rebalancing Following Geopolitical Tensions

	(1) t-3	(2) t-2	(3) t	(4) t+1	(5) t+2	(6) t+3	(7) t+4	(8) t+5
$\Delta x_t^{i\to j}$	24.478	8.785	0.253	4.446*	9.614**	20.919**	3.147	8.959
	(17.332)	(5.704)	(0.224)	(2.590)	(4.388)	(10.576)	(8.885)	(17.928)
$\mathbb{1}\{Bloc_i \neq Bloc_j\}$	41.843	20.765	-4.160***	-2.403	20.065	52.175	78.008	98.378
	(29.654)	(14.914)	(0.954)	(8.242)	(21.034)	(36.409)	(56.460)	(91.260)
$\Delta x_t^{i\to j} \times \mathbb{1}\{Bloc_i \neq Bloc_j\}$	-9.482	-2.620	-2.149***	-11.727**	-15.490*	-37.046**	-21.183	-32.663
	(16.621)	(9.798)	(0.751)	(5.593)	(8.983)	(17.332)	(17.638)	(36.143)
$r^j_{t-1\to t+l}$	-3.768	-1.966**	-0.267***	-1.061***	-1.040	-0.625	0.264	1.539
	(3.130)	(0.879)	(0.054)	(0.363)	(0.815)	(1.028)	(1.274)	(2.262)
Time x Origin Country FE	✓	✓	✓	✓	✓	✓	✓	✓
R^2	0.067	0.114	0.140	0.130	0.098	0.120	0.123	0.131
N	16,322	20,034	20,832	16,963	13,339	10,218	8,934	7,685

Note: This table shows the estimation results of the following specification, with estimates for different lags and leads l displayed in each column: $ActiveChange^{i\to j}_{t-1\to t+l} = \gamma_0 \Delta x_t^{i\to j} + \gamma_1 \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \gamma_2 \mathbb{1}_{\{bloc_i \neq bloc_j\}} \times \Delta x_t^{i\to j} + \beta r^j_{t-1\to t+l} + \alpha_{i,t} + \epsilon_{i,j,t}$. $\Delta x_t^{i\to j}$ is defined as the AR(1) innovation of the defense-covariance with j in articles originating in country i in quarter t, scaled by the standard deviation of the defense-covariance with j. $\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ is an indicator variable that switches on when country i and country j are in opposing blocs. $ActiveChange^{i\to j}_{t-1\to t+l}$ is the cumulative active rebalancing by investors in country i in assets in country j between the end of quarter $t-1$ and l quarters later, scaled as before by the investors' position in country j as of the end of $t-1$. The main specification includes date by origin country i fixed effects, denoted by $\alpha_{i,t}$ and controls for the cumulative return of the equity index of the destination country j between the end of quarter $t-1$ and l quarters later, denoted by $r^j_{t-1\to t+l}$. Standard errors are reported in the parentheses. * denotes significance at the 10% level, ** at the 5% level and *** at the 1% level.

Table 4: Effect of Rebalancing On Returns

	(1)	(2)	(3)
$\sum \omega^{a,j}_{t-1} \Delta x_t^{j\to i}$	3.825	5.891	5.225
	(0.98)	(1.51)	(1.53)
$\sum \Delta x_t^{j\to i} \omega^{a,j}_{t-1} \mathbb{1}_{\{bloc_i \neq bloc_j\}}$	-29.27***	-35.26***	-29.20***
	(-4.20)	(-8.92)	(-4.24)
$\sum \omega^{a,j}_{t-1} \mathbb{1}_{\{bloc_i \neq bloc_j\}}$	-1.714	-33.09***	-32.98***
	(-0.47)	(-13.86)	(-13.01)
r_t^i	0.910***	1.242***	0.958***
	(9.50)	(17.44)	(9.35)
Time FE	✓		✓
CUSIP FE		✓	✓
R^2	0.192	0.271	0.291
N	208,314	205,626	205,626

Note: This table shows the estimation results of the following specification: $r_t^a = \lambda_0 \sum \omega^{a,j}_{t-1} \Delta x_t^{j\to i} + \lambda_1 \sum \omega^{a,j}_{t-1} \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \lambda_2 \sum \Delta x_t^{j\to i} \omega^{a,j}_{t-1} \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \beta r_t^i + \alpha_t + \alpha_a + \epsilon_{a,t}$. $\Delta x_t^{j\to i}$ is defined as the AR(1) innovation of the defense-covariance with i in articles originating in country j in quarter t, scaled by the standard deviation of the defense-covariance with i. $\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ is an indicator variable that switches on when country i and country j are in opposing blocs. $\omega^{a,j}_{t-1}$ is the fraction of asset a's shares held by investors in country j at $t-1$. The main specification includes time fixed effects, denoted by α_t, and CUSIP fixed effects, denoted by α_a. Controls for the return of the equity index of the destination country i, denoted by r_t^i, are also included. Standard errors are reported in the parentheses. * denotes significance at the 10% level, ** at the 5% level and *** at the 1% level.

Table 5: Persistence of Effect of Rebalancing On Returns

	(1) t-2	(2) t	(3) t+1	(4) t+2	(5) t+3	(6) t+4	(7) t+5
$\sum \omega_{t-1}^{a,j} \Delta x_t^{j \to i}$	-2.280	5.225	1.774	4.730	5.867	2.791	1.961
	(2.378)	(3.421)	(3.259)	(7.391)	(10.586)	(9.518)	(11.279)
$\sum \Delta x_t^{j \to i} \omega_{t-1}^{a,j} \mathbb{1}_{\{bloc_i \neq bloc_j\}}$	-6.393	-29.199***	-24.696***	-23.637*	-48.297***	-79.255***	-100.003***
	(5.899)	(6.879)	(7.419)	(11.837)	(16.249)	(23.277)	(26.209)
$\sum \omega_{t-1}^{a,j} \mathbb{1}_{\{bloc_i \neq bloc_j\}}$	5.069	-32.985***	-51.701***	-104.709***	-139.806***	-190.586***	-179.526***
	(4.788)	(2.535)	(4.296)	(10.543)	(16.289)	(24.503)	(28.152)
$r_{t-1 \to t+l}^{i}$	0.861***	0.958***	0.868***	0.912***	0.899***	0.959***	1.032***
	(0.111)	(0.102)	(0.100)	(0.127)	(0.196)	(0.223)	(0.281)
CUSIP FE	✓	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓	✓
R^2	0.309	0.291	0.337	0.400	0.426	0.450	0.483
N	144,962	205,626	142,530	101,998	76,111	62,124	50,713

Note: This table shows the estimation results for different lags and leads l the following specification: $r_{t-1 \to t+l}^{a} = \lambda_0 \sum \omega_{t-1}^{a,j} \Delta x_t^{j \to i} + \lambda_1 \sum \omega_{t-1}^{a,j} \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \lambda_2 \sum \Delta x_t^{j \to i} \omega_{t-1}^{a,j} \mathbb{1}_{\{bloc_i \neq bloc_j\}} + \beta r_{t-1 \to t+l}^{i} + \alpha_t + \alpha_a + \epsilon_{a,t-1 \to t+l}$. $\Delta x_t^{j \to i}$ is defined as the AR(1) innovation of the defense-covariance with i in articles originating in country j in quarter t, scaled by the standard deviation of the defense-covariance with i. $\mathbb{1}_{\{bloc_i \neq bloc_j\}}$ is an indicator variable that switches on when country i and country j are in opposing blocs. $r_{t-1 \to t+l}^{a}$ is the cumulative return of asset a between end of quarter $t-1$ and l quarters later. The specification includes time fixed effects α_t, and CUSIP fixed effects α_a, and controls for the cumulative return of the equity index of the destination country i between the end of quarter $t-1$ and l quarters later, denoted by $r_{t-1 \to t+l}^{i}$. Standard errors are reported in the parentheses. * denotes significance at the 10% level, ** at the 5% level and *** at the 1% level.

Table 6: Fund Return Exposures Regression

	Russia (2022)	China (2018)
r_t^{SPY}	0.6394***	0.6028***
	(0.007)	(0.006)
$r^{CountryOI}$	0.0321***	0.0363***
	(0.009)	(0.008)
$r^{CountryOI} * \mathbb{1}\{t > startdate\}$	-0.0322***	-0.0100
	(0.009)	(0.010)
R^2	0.914	0.938
N	714	700

Note: This table shows the estimation results of the following specification: $r_t^{aggfunds} = \beta^{SPY} r_t^{SPY} + \beta^{CountryOI} r_t^{CountryOI} + \beta^{Break} r_t^{CountryOI} \mathbb{1}\{t > startdate\} + \epsilon_t$. The first column concerns $CountryOI$ Russia, with $r^{CountryOI}$ being the return of the MOEX Index. This regression uses a breaking point ($startdate$) of February 2022. The second column concerns $CountryOI$ China, with $r^{CountryOI}$ being the return of the SSE Composite Index. This regression uses a breaking point ($startdate$) of June 2018. Both regressions use a period of three years centered around their respective breakpoints. Standard errors are reported in the parentheses. * denotes significance at the 10% level, ** at the 5% level and *** at the 1% level.

A Comparing GPR Measure and GDELT Tension Measure

In this section we compare the GDELT tension measure constructed in this paper to the measure found in Caldara and Iacoviello [2022], dubbed GPR. We compare the country-specific GPR measures for China and Russia to the GDELT tension measures for US to China and US to Russia. In Figure 9, we compare the two measures in plots. The GPR measure is shown in first-differences, so it is comparable to the GDELT measure. The two measures are normalized by mean and standard deviation within the sample. We find that the two measures are positively correlated. For example, the China measures have a correlation coefficient of $\rho = 0.29$, and the Russia measures have a correlation coefficient of $\rho = 0.63$.