Geopolitics Meets Monetary Policy:

Decoding Their Impact on Cross-Border Bank Lending*

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October 2025

Abstract: We use bilateral cross-border bank claims by nationality to assess the effects of geopolitics on cross-border bank flows. We show that a rise in geopolitical tensions between countries — disagreements in UN voting, sanctions, or geopolitical risk sentiments — significantly dampens cross-border bank lending. Elevated geopolitical tensions also amplify the international transmission of monetary policies of major central banks, especially when geopolitical tensions coincide with monetary policy tightening. Overall, our results suggest that geopolitics is roughly as significant as monetary policy in driving cross-border lending.

Keywords: Monetary policy; Geopolitical tensions; Cross-border claims; Diff-in-diff estimations

JEL Codes: E52; F34; F42; F51; F53; G21

* The views expressed in this paper are solely those of the authors and shall not be interpreted as reflecting the views of the Board of Governors of the Federal Reserve System or of the Bank for International Settlements (BIS). We thank Jessica Ye for excellent assistance. We are grateful for comments from Dario Caldara, Henry Jérôme, Artur Doshchyn, and Goetz von Peter, from colleagues at the BIS and the Federal Reserve Board, and from seminar participants at the Bank for International Settlements, the Federal Reserve Board, the University of Hawaii at Manoa, the International Monetary Fund, the Durham-Bristol Banking Policy Forum, Hamilton College, the Hungarian Economic Association, Annual Financial Markets and Liquidity Conference in Budapest, the International Finance and Banking Society 2025 Conference at Saïd Business School, Oxford University, and the University of Glasgow - European Central Bank - International Banking Research Network Joint Workshop on Financial Stability and Regulation.

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1 Introduction

Geopolitical tensions have soared over the past decade: we have witnessed the proliferation of geopolitical fragmentation, and, even the onset of wars. These geopolitical tensions threaten economic activity as they drive uncertainty higher and divert trade and investments along geopolitical fault lines. The realization of geopolitical risks, such as disagreements, sanctions, or wars, further weighs on macroeconomic outcomes across the world. However, the effects of geopolitics in shaping capital flows, in particular bank flows, have been little studied so far. Indeed, how large is the impact of these geopolitical tensions on cross-border bank lending? Do they strengthen or weaken the impact of monetary policy of major central banks on cross-border bank lending?

We study these questions by focusing on three measures of geopolitical tensions: (1) UN voting disagreement between country pairs, captured by an ideal point distance following the Bailey et al. (2017) methodology, which serve as a measure of materialized geopolitical tensions; (2) trade, financial, military, and other bilateral sanctions, which serve as another measure of materialized geopolitical tensions; and (3) geopolitical risk in lender and borrower countries, captured by Caldara and Iacoviello (2022)'s geopolitical risk indices (GPRs), which serve as a measure for unrealized geopolitical tensions.

We find that geopolitical tensions affect cross-border bank flows in an economically and statistically significant way. The rise in geopolitical tensions directly dampens cross-border bank lending. Furthermore, it also interacts with and amplifies the international transmission of monetary policy. Both the direct effects and the interaction effects with monetary policy are stronger for *materialized* geopolitical tensions (i.e. bilateral UN voting disagreement and bilateral sanctions) than for *unrealized* geopolitical tensions (as measured by the difference in GPRs of

country pairs or by GPRs of borrower countries). Specifically, we show that UN voting disagreement has the largest effect, followed by sanctions. To provide context, we also estimate the international transmission of monetary policy of major central banks, identified in Takats and Temesvary (2020). These monetary policy effects provide a benchmark for geopolitical effects.

We investigate the joint effects of geopolitical tensions and monetary policy based on the bank lending channel (Kashyap and Stein, 2000). The bank lending channel posits that monetary policy tightening, i.e. a rise in interest rates, and the subsequent tightening in liquidity conditions affect constrained banks more. The intensification of geopolitical tensions could exacerbate the effects in constrained banks further, as they might be perceived to be even riskier in the new environment – and as such, these banks might find acquiring additional liquidity more costly. Hence, constrained banks could cut their lending even more when geopolitical tensions and monetary tightening coincide.

Our empirical results support the bank lending channel-based theory: geopolitical tensions amplify the international transmission of monetary policy and the interaction is particularly strong when a rise in geopolitical tensions coincide with monetary policy tightening. We show that the interaction of the effects of monetary policy and geopolitics explains nearly as much of the variation in bilateral lending flows as monetary policy alone does. The interaction effects are again stronger for materialized geopolitical tensions than for unrealized tensions.

Our unique identification strategy relies on the currency dimension of the international bank lending channel: monetary policy of a currency issuer will affect cross-border flows in that currency even when neither the lender banking system nor the borrowers' country uses the currency as its own. In other words, we look at cross-border bank lending flows between third-country pairs. As an example, we look at how U.S. monetary policy interacts with geopolitical

tensions between the U.K. and Russia in driving U.K. banks' dollar lending to borrowers in Russia. We posit that monetary policies of reserve currency issuers are independent of geopolitical tensions among third-party countries. In our example, U.S. monetary policy is independent of the geopolitical tensions between the U.K. and Russia. Therefore, our approach avoids confounding monetary policy and geopolitical tensions.[1]

Our identification strategy is afforded by detailed data on the network of cross-border bank claims of lending banking systems on bank and non-bank borrowers in individual foreign countries by currency denomination (USD, EUR, JPY, GBP and CHF).[2] These data are only accessible at the Bank for International Settlements (BIS). We combine the bank flow data with (1) country pair-specific quarterly measures of geopolitical tensions and risk; and (2) with shadow policy interest rate measures for USD, EUR, JPY, GBP, and CHF from Krippner (2024).

Our findings hold up to extensive robustness checks. The results prevail across lending to both financial and non-financial borrowers; across borrowers in advanced and emerging economies; and when accounting for cross-currency monetary policy effects and common trends in geopolitical risk.

[1] To further strengthen our identification, we exclude each reserve currency issuer country's banking system's lending in their own currency. As an example, we exclude U.S. banks' lending in U.S. dollars which could have confounding effects with U.S. monetary policy. We also control for source country monetary policy and currency valuation. Finally, as fiscal policy has notable effects on monetary policy transmission (Pradhan et al, 2024), we account for fiscal policy effects via inclusion of fiscal controls (in levels and interactions) and extensive fixed effects.

[2] We use granular data from the Stage 1 and Stage 2 enhancements to the international locational banking statistics by nationality (LBSN) of the BIS. Our data is characterized as "unrestricted" – by definition, including all confidential observations that reporting countries provided for use only by the BIS. Stage 1 enhancements include a breakdown of counterparties by country and local currency positions by bank nationality, starting from 2012:Q2, also covering counterparty sector breakdowns such as banks, interoffice, central banks, unrelated banks, and aggregated nonbanks. Stage 2 enhancements, introduced in 2013:Q4, add a subsector breakdown for the nonbank sector, distinguishing between non-bank financial institutions and non-financial sectors, with further details, on an encouraged basis, for corporates, governments, and households.

Our results are policy relevant. For policy makers in reserve currency-issuing countries, understanding the effects of geopolitical tensions on monetary policy transmission can help gauge changes in global liquidity conditions in their currency. For policy makers in the source countries of lending banks, understanding the effects of geopolitical tensions can help gauge cross-border bank lending activities of their banks and thus, domestic credit conditions. For policy makers in borrowers' countries, understanding the effects of geopolitical tensions can help gauge credit supply via cross-border bank lending to their country, to better manage periods of volatile bank flows.

The paper proceeds as follows. In Section 2, we review our contributions in the context of the related literature. In Sections 3 and 4, we describe the data and methods. In Section 5 we show detailed results, and in Section 6 we offer robustness checks. We conclude with policy implications in Section 7.

2 Literature review and hypothesis development

We develop our hypotheses along three main strands of the literature: 1) studies on the bank lending channel and its international extension; 2) the nascent literature linking geopolitical tensions and capital flows, and 3) the trade literature investigating the impact of geopolitical tensions.

The first strand of literature that we build on is the bank lending channel of monetary policy, which, in the domestic context, originates from Kashyap and Stein (2000). The bank lending channel posits that a rise in monetary policy rates increases the cost of borrowing for banks across the board. However, balance sheet-constrained banks (e.g. those with lower liquidity or

capital) experience a larger cost increase, due to being perceived as riskier by investors in financial markets. As a result, the constrained banks cut their lending more than their unconstrained peers. Subsequently, papers on the international impact of domestic monetary policy have identified cross-border bank lending as a spillover channel (Cetorelli and Goldberg, 2012; Forbes and Warnock, 2012; Bruno and Shin, 2015a; 2015b; Temesvary et al., 2018).

Focusing on the bank lending channel, Takats and Temesvary (2020) identify the currency dimension of the international bank lending channel (CDIBL): a rise in interest rates associated with a reserve currency reduces cross-border lending in that currency across the globe, even among lenders and borrowers that do not use that currency as their own. More broadly, studying lending in various currencies, several papers have shown that the monetary policy of a currency issuer can also transmit into lending in that currency in foreign countries via various channels (Ongena et al., 2021; Avdjiev and Takats, 2019). Based on the CDIBL, our Hypothesis 1 posits that *a tightening in the monetary policy associated with a reserve currency of lending leads to subsequently lower bilateral cross-border lending flows in that currency.* These effects can be particularly strong for banking systems exposed to heightened geopolitical risk. Banks exposed to geopolitical risks, due to the heightened uncertainty arising from geopolitical escalation, can see a disproportionate rise in funding costs in global financial markets, causing them to adjust their lending flows more. Therefore*, we expect the negative lending effects of monetary policy to be stronger among country pairs with higher geopolitical tensions or risk.*

The second strand of literature that we build upon focuses on the impact of factors other than monetary policy on cross-border lending. While a large body of literature has studied source and borrowers' country-specific drivers of cross-border bank lending (De Haas and van Lelyveld, 2014; Rose and Wieladek, 2014; Cetorelli and Goldberg, 2012; Giannetti and Laeven, 2012; De

Haas and van Horen, 2012; Buch et al., 2014; Cerutti et al., 2015; Cerutti et al., 2017), papers that examine the role of geopolitical risk and tensions in banks' cross-border lending decisions are still relatively scarce. For example, Catalan et al. (2024) analyze the effects of geopolitical tensions on capital flows in a gravity model and show that rising geopolitical tensions lead to a decline of capital flows. In addition, Goldberg and Hannaoui (2024) and Ferbermayr et al. (2020) study how geopolitical tensions and financial sanctions, respectively, affect the share of U.S. dollars in foreign official reserves. Niepmann and Shen (2024) show that when geopolitical risk increases, domestic lending by U.S. banks is negatively affected.

The third strand of literature that we build on focuses on international trade and geopolitical tensions. Bosone and Stamato (2024) show that geopolitical fragmentation weighs on international trade in manufactured goods. Febermayr et al. (2020) introduce a comprehensive global sanctions database. Syropoulos et al. (2024) update this database and document a dramatic increase in the number of sanctions over the 2019-2022 period. The authors also apply a gravity model and find that bilateral trade sanctions significantly limit international trade. Afesorgbor (2019) studies the differential effects of threatened vs. imposed sanctions. In the macroeconomic literature, Fernández-Villaverde et al (2024) show that geopolitical fragmentation negatively impacts the global economy. Caldara and Iacoviello (2022) develop a seminal news-based measure of geopolitical risks and show that such risks cause declines in employment and in economy-wide and firm-level investment. Wang et al. (2019) show a negative relationship between geopolitical risk and firm-level investment, too. On the finance side, Afonso et al. (2024) find that geopolitical tensions contribute to the rise of European countries' sovereign risk and that this relationship is more pronounced during turbulent times. Yilmazkuday (2024) shows that an adverse shock to

global geopolitical risk reduces stock prices in the year following the shock, and that this stock price response depends on the country's degree of involvement in the geopolitical event.

Building on the above literature, in our Hypothesis 2, *we posit a negative relationship between our measures of geopolitical tensions/risk and cross-border bank flows.* The conjectured negative relationship between geopolitical tensions/risk and bank lending flows is consistent with Catalan et al. (2024)'s findings for UN voting disagreement.

Furthermore, based on the three streams of literature described above, we conjecture in our Hypothesis 3 that the *negative connection between increasing geopolitical tensions/risk and cross-border bank lending is particularly strong in tightening monetary policy environments.* This hypothesis is novel and is also intuitive: borrower economies face a double whammy as escalating geopolitical tensions boost uncertainty. Tighter financial conditions make it harder to cope with this increased uncertainty, as contractionary monetary policy aggravates the cost of acquiring liquidity. Therefore, following a monetary policy tightening, banks cut back lending especially hard to borrowers in countries affected by geopolitical tensions.

3 Data

3.1 Dependent variable: Cross-border bank lending

We use granular bilateral data from the BIS international banking statistics by nationality (LBSN) (see, Takats and Temesvary, 2020; 2021). This dataset includes restricted (only for sharing among reporting countries) as well as confidential observations (that reporting countries provide only for use by the BIS).[3] It also offers a breakdown of counterparties by country and local currency

[3] However, since late 2015, the BIS releases some of these data, but with a limited scope, for confidentiality reasons (see Avdjiev et al., 2015). A significant share of the reported bilateral data remains restricted and confidential. The BIS ceased receiving data from public authorities in Russia after 28 February 2022.

positions by bank nationality, starting from 2012:Q2. The dataset shows counterparty sector, that is, the sectors to which banks lend, along the following dimensions: banks, interoffice (lending to the bank's own office in another country), central banks, unrelated banks, and nonbanks. Beginning in 2013:Q4, the data include a subsector breakdown for the nonbank sector, distinguishing between non-bank financial institutions and non-financial sectors.

Our use of nationality-based data rather than residence-based data is suitable as we assess that the strongest geopolitical effects on a bank occur at the level of the decision-making unit, i.e. the banking conglomerate as a whole. As an example, a bank will react to a sanction imposed by its headquarter jurisdiction more strongly than to a similar sanction imposed in the jurisdiction of one of its subsidiaries. In other words, we are interested in how geopolitical developments in the home country of the parent bank, on a consolidated basis, affect its lending decisions vis-à-vis borrowers' countries.[4]

We focus on major lenders among advanced economies that include the U.S. and European bank lending systems. Our lending sample consists of bilateral cross-border exposures of these lending banking systems to borrowers in over 180 countries during the 2012:Q2–2023:Q4 period. As described above, for each lending banking system and country of borrowers, our dataset is broken down by currency denomination and borrower sector. We focus on the top five currencies of global lending (USD, EUR, JPY, GBP, and CHF) and the two main target sectors of borrowers (banks and non-banks). We also separate out the interoffice sub-category from the "banks" target sector and delineate non-bank financial institutions (NBFIs) from the non-financial sector (NFS) in the "non-banks" target sector. There is active lending in all five currencies across all the dimensions of our data – allowing us to focus on the intensive margin of lending in our analysis.

[4] Other papers in the banking literature also posit that lenders conduct risk management at the highest level of consolidation—for example, see Lee et al. (2022).

This dataset is unique as it simultaneously provides an overlay of the four dimensions that we need to answer our research questions: (A) the currency composition of cross-border claims; (B) the residence of borrowers, (C) the sector breakdown of borrowers, and (D) the nationality of lending banking systems. Dimension (A), currency composition, allows us to map the relevant networks and flows in each currency, that is, to map bilateral claims in USD, EUR, JPY, GBP, and CHF and their evolution over time, controlling for valuation effects. Dimension (B), the residence of borrowers, enables us to account for the (borrowers') country-specific drivers of cross-border bank lending. As such, we can even apply borrowers' country*time fixed effects in most of our estimations to account for changes in credit demand. Dimension (C), the sector of borrowers, allows us to identify effects across sectors, an important feature as the bank and non-bank sectors can have notably different economic relevance. Dimension (D), the lender's nationality, enables us to identify the headquarter, i.e. the highest-level banking entity in the corporate chain, of the lending banking systems. This allows us to identify the decision-making unit (Fender and McGuire, 2010; Cecchetti et al., 2010; Committee on the Global Financial System, 2011) and to control for the possible confounding effects of financial centers.

While we do not focus on the role of fiscal policies, we control for fiscal effects as the literature shows they are a significant determinants of cross-border bank flows (Pradhan et al., 2024). Our sample set of source banking systems is defined by the availability of consistent data coverage for fiscal statistics. We concentrate on the 16 advanced-economy lending banking systems in the Eurostat database and add the United States – therefore, our home (source) countries encompass the two largest currency areas, the USD and the EUR. The included set of source countries (European Union countries; Nordic countries; and the United States) make up over 50 percent of total cross-border bank claims (54 percent of claims on banks and 56 percent of claims

on non-banks).[5] In our estimations, we exclude claims that are denominated in the banking system's own currency (for instance, we exclude euro area banks' EUR claims) due to policy endogeneity concerns.

The currency composition of claims in our sample is closely comparable to the composition observed in the full dataset. As Graph 1.C shows, among the five currencies on which we focus in our sample, the USD and EUR are clearly dominant, with shares of 49 percent and 28 percent, respectively at end-2022 (comparable respective shares in the full dataset are 51 percent and 36 percent). The other three currencies in our sample have lower shares: the GBP, JPY, and CHF make up 12 percent, 8 percent, and 3 percent, respectively, at end-2022 (Graph 1.C).

In terms of borrowers' sectors, lending to banks and non-banks make up 55 percent and 45 percent of claims in our sample, respectively, at end-2022 (the sectors have about equal shares in the full dataset). Since 2012, the share of claims on banks has declined and the share of claims on non-banks has increased in both our sample and the full dataset. Graphs 1.A and 1.B show the currency breakdown of claims by target sector over time.

We define bilateral cross-border lending flows (the main outcome/dependent variable of interest) as the quarterly percent change in bilateral cross-border bank claims from a source banking system to borrowers in a given country, denominated in one of the five reserve currencies. Importantly, we adjust flows for the effects of exchange rate changes as follows: before we calculate the quarterly percent changes in bilateral claims, we convert the (reported) dollar value of claims back to the original currency amount, using the contemporaneous exchange rate between the USD and the original currency of lending.

[5] While other proprietary sources contain imputed quarterly values for a small set of additional countries, their calculations rely on assumptions and source-specific methods; therefore, we choose to focus solely on the set of countries included in the Eurostat coverage and the United States, to ensure data consistency. In additional regressions (available by request) we repeat our estimations on the full sample and find consistent results.

There is substantial variation in quarterly (exchange rate-adjusted) cross-border lending flows. The average quarterly bilateral flow (in quarterly percentage change) is -0.13 percent and has a standard deviation of 55 percent (Table 1). Across countries, the average flows vary over time as well, ranging from -5 percent to 5 percent at times.

3.2 Changes in monetary policy

For part of our sample period, the Federal Reserve, the European Central Bank, the Bank of Japan, the Bank of England, and the Swiss National Bank continued to ease monetary policy using unconventional or balance sheet tools even after the headline monetary policy rates reached zero (or went negative). Therefore, to measure monetary policy changes, we cannot simply use changes in the headline monetary policy rates. Given that the interaction and transmission of monetary policy effects can be very different during unconventional monetary policy regimes (Takats and Temesvary, 2020) and fiscal policy regimes (Hofmann et al., 2021; Wang, 2018), it is important to capture liquidity conditions accurately even when the policy rate is at the zero lower bound.

Therefore, as is now standard in the related banking literature (Buch et al. 2019, Temesvary et al., 2018; Lhuissier et al., 2019, among others), we use shadow interest rates to measure changes in financial market liquidity conditions related to monetary policy actions during periods of binding effective lower bounds. We employ shadow rates constructed by Krippner (2024) which are available consistently across the five major reserve currencies over our full sample period. In robustness checks, we employ the Wu-Xia shadow rates (Wu and Xia, 2016) as alternative measures – which, however, are available only for a subset of the currencies that we examine.

As the short-term shadow rates are not subject to a lower bound, they can capture expansionary monetary policy actions by turning negative (Graph 2). By construction, the shadow

rates are nearly identical to the policy rates during conventional periods (when policy rates are positive), and negative in times of unconventional monetary easing. All five shadow rates fell below zero during the period when monetary conditions continued to ease, and the headline policy interest rates hit their zero lower bound. During our sample period, the average short-term shadow rate was -0.69 percent; in contrast, the average central bank policy rate for the major reserve currencies was 1.32 percent.

We measure changes in the monetary policy stance as quarterly changes (from one quarter to the next, in percentage points) in the currency-specific shadow interest rates. Across currencies, monetary policy was characterized by a slightly contractionary stance in our sample (albeit among broadly ample liquidity conditions), with average quarterly increases of 12 basis points, ranging from -1.8 to 2.6 percents in the sample (Table 1).

Our sample corresponds to years of ample liquidity. However, while policy rates hovered near zero, we also have meaningful coverage of contractionary monetary policies: for instance, U.S. monetary policy saw a tightening cycle in the second half of the 2010s. In addition, central banks corresponding to all but one currency in our sample rapidly tightened monetary policy in the post-COVID years of our coverage. Reflecting the balance of easing and tightening periods, changes in shadow rates were indeed near zero on average. Furthermore, we note that the presence of ample financial market liquidity could lead to attenuation bias during our sample; yet, we find economically and statistically significant results.

3.3 Measures of geopolitical tensions and risks

3.3.1 UN voting disagreement: Ideal point distance (IPD)

To measure political disagreement between two countries based on their UN voting patterns, we use Bailey et al. (2017)'s estimated absolute distances between the "ideal points" of country pairs. The political science literature defines an ideal point as a (latent) political position of an actor on a political spectrum, estimated from discrete choice models. The absolute distance between a pair of ideal points is then a natural measure of political disagreement between two actors. Turning to Bailey et al. (2017), they employ a novel dynamic ordinal spatial model to estimate ideal points for countries on a single dimension that reflects country positions toward the U.S.-led liberal order based on United Nations General Assembly (UNGA) votes. Their approach is particularly appealing because it controls for the content of the UNGA's voting agenda and thus it does a better job at separating signal from noise in identifying foreign policy shifts than earlier approaches (for example, the S-score approach). The Bailey et al. (2017) measure has been widely used in the political science literature, and it is becoming increasingly prevalent in the international economics literature as well (Catalan et al., 2024; Goldberg and Hannaoui, 2024). IPDs vary broadly across country pairs and over time, as shown by the descriptive statistics in Table 1.

3.3.2 Bilateral sanctions

We use measures of bilateral sanctions (including total, financial, military, travel, trade, and other sanctions) from Felbermayr et al. (2020) and Syropoulos et al. (2024). The Global Sanctions Database tallies bilateral and multilateral sanctions globally, across three dimensions: type, political objective, and extent of success. Overall, countries imposed more and increasingly diverse sanctions over time. The use of sanction has further accelerated after 2019, particularly by the United States. Financial and trade sanctions became increasingly prevalent over the past decade,

the latter driven by the sharp increase in trade sanctions on Russia. Overall, European countries impose sanctions the most frequently.

3.3.3 Geopolitical Risk Index (GPR)

We use Caldara and Iacoviello (2022)' GPR index by country to quantify geopolitical risks. Their index is a news-based measure of adverse geopolitical events and associated risks. Higher geopolitical risk foreshadows lower investment and employment and implies higher disaster probability and more severe downside risks. Quarterly changes in GPRs in our sample vary from -5.95 to 7.17, with a standard deviation of 0.52 (Table 1).

3.4 Fiscal controls

As discussed above, our data coverage is defined by the consistent availability of data for an important control variable: the fiscal stance of source countries (Pradhan et al., 2024). Our fiscal measure is defined as quarterly changes in (source) country government debt-to-GDP ratios (in percentage points) from the Eurostat statistical database and from FRED. Across countries and over time, in our sample government debt-to-GDP ratios stood at 88 percent; but with substantial variation, ranging from 20 percent to over 200 percent. The quarterly change in debt-to-GDP ratios also ranged widely, from a decline of 10 percentage points to an increase of 26 percentage points across all countries and time periods (Table 1).

3.5 Exchange rate adjustments and other controls

We take several steps to control for valuation effects arising from the data's feature that the claims are reported after conversion to U.S. dollars. As discussed above, we calculate the quarterly

bilateral flows only after converting the claims back to the original currency amount at contemporaneous exchange rates. In addition, we include quarterly changes in the exchange rate between the USD and the currency of lending as a control. On average and across currencies, the USD appreciated slightly against the other reserve currencies.

Furthermore, we include changes in the bilateral exchange rate between the currencies of the source country and borrowers' country among our controls. The reason is that such valuation changes can confound the estimate of monetary policy transmission and its interactions (Leith and Wren-Lewis, 2008). For instance, domestic currency appreciation could make foreign assets cheaper in domestic currency terms, and the substitution between domestic and foreign assets could lead to cross-border lending outflows. Across currencies and on average, source country currencies appreciated relative to the currencies of borrowers' countries during our sample period.

Lastly, we add quarterly changes in the central bank policy rate of the source country of banking systems, as controls. During the sample period, on average, the central bank policy rates of the source lending systems increased by 58 basis points per quarter (Table 1).

4 Estimation methodology

A challenge in our estimations is the endogeneity of monetary policy to geopolitical tensions, as we describe above. To address this endogeneity, we need to focus on a monetary policy that is not connected to and is not affected by the geopolitical situation between source bank lending systems and borrowers' countries. Therefore, we focus on the monetary policy of the issuer of the reserve currency and not that of the country of the lending banking system, as in Takats and Temesvary (2020; 2021) or Pradhan et al. (2024).

Our main dependent variable is quarterly changes in bilateral cross-border claims. This variable, *Δclaims* is the quarterly change in the natural logarithm of bilateral claims between the source lending banking system and the borrowers' country, denominated in one of the five reserve currencies. Our main explanatory variables are (1) the change in the source and borrowers' country-specific (bilateral) geopolitical tension measure (*GeoPol)*, as defined in Section 3 above, and (2) the change in the monetary policy stance (*monetary*) associated with the major currencies of lending (USD, EUR, JPY, GBP, and CHF) as measured by the Krippner (2024) shadow policy interest rates. The identification assumption is that the monetary policy of the currency issuer is not connected to and is not affected by the geopolitical situations between source bank lending system and borrowers' countries. We consistently add four lags of the dependent variable to the set of regressors to address possible time persistence.

To avoid using observations where common factors influence both monetary policy and bank lending in a given currency, we exclude own currency lending from all our estimations. For example, we exclude U.S. banks' USD lending because domestic economic developments can drive both U.S. monetary policy and U.S. banks' USD lending decisions. We also exclude "same country" lending (in the terminology of Takats and Temesvary, 2020) – lending relationships in which foreign subsidiaries of global banks lend back to their home country. The reason to exclude same country lending is that it may be driven by intra-bank liquidity management considerations unrelated to geopolitical tensions. Lastly, as noted above, there is active lending in all five currencies across all the dimensions of our data – allowing us to focus on the intensive margin of lending in our analysis.

4.1 Baseline estimations

Our benchmark estimation examines bank lending flows $\Delta claims_{ijct}$ as a function of changes in geopolitical measures between bank lending system *i* and borrowers' country *j* ($\Delta GeoPol_{ijt}$), as well as a function of the monetary policy by currency issuer *c* ($\Delta monetary_{ct}$). We formulate Equation (1) as:

$$(1) \quad \Delta claims_{ijct} = \sum_{k=1}^{4}(\gamma_{1k}\Delta monetary_{ct-k} + \gamma_{2k}\Delta GeoPol_{ijt-k} + \\ + \gamma_{3k}\Delta cb\_rate_{it-k} + \gamma_{4k}Controls_{i/j/c/t-k}) + FE_{i/j/c/t} + \varepsilon_{ijct}$$

Our set of control variables in $Controls_{i/j/c/t-k}$ include (a) monetary policy changes associated with the source lending system *i* (Δcb_rate_{it}); (b) valuation effects between the USD and the currency of lending *c* ($\Delta exch\_rate_{c,t}$); (c) valuation effects between the currency of source lending system *i* and that of borrowers' country *j* ($\Delta exch\_rate_{ijt}$); and (d) changes in the debt-to-GDP ratio in source lending system *i* ($\Delta Debt/GDP_{it}$).

The set $FE_{i/j/c/t}$ includes various combinations of source country *i*, borrowers' country *j*, currency *c*, and time *t* fixed effects, as well as subsets of source country*borrowers' country, borrowers' country*time, and borrowers' country*currency*time fixed effects. The inclusion of changes in bilateral geopolitical measures that are contemporaneous to changes in reserve currency monetary policy helps to further mitigate endogeneity concerns. We predict the cumulative effects of interest rate changes and bilateral geopolitical changes to be both negative: $\sum_{k=1}^{4}\gamma_{1k} < 0$ and $\sum_{k=1}^{4}\gamma_{2k} < 0$.

In Equation (2), we also include the interaction of our two key explanatory variables: $\Delta monetary_{ct} * \Delta GeoPol_{ijt}$, as follows:

$$(2)\quad \Delta claims_{ijct} = \sum_{k=1}^{4}(\delta_{1k}\Delta monetary_{ct-k} * \Delta GeoPol_{ijt-k} + \delta_{2k}\Delta monetary_{ct-k} + \\ + \delta_{3k}\Delta GeoPol_{ijt-k} + \delta_{4k}Controls_{i/j/c/t-k}) + FE_{i/j/c/t} + \eta_{ijct}$$

Based on our hypotheses outlined above, we expect to find a negative sum of coefficients on the interaction terms: $\sum_{k=1}^{4}\delta_{1k} < 0$.

4.2 Estimations by borrowers' sector

Next, we examine how the effect of geopolitical measures and their interactions with monetary policy effects depend on the target sector of lending. We write Equation (3) as:

$$(3)\quad \Delta claims^{S}_{ijct} = \sum_{k=1}^{4}(\phi_{1k}\Delta monetary_{ct-k} * \Delta GeoPol_{ijt-k} + \phi_{2k}\Delta monetary_{ct-k} + \\ + \phi_{3k}\Delta GeoPol_{ijt-k} + \phi_{4k}\, Controls_{i/j/c/t-k}) + FE^{S}_{i/j/c/t} + \upsilon_{ijct}$$

where the superscript *S* denotes the target sector of lending. As discussed in the hypothesis development above, we expect that monetary policy transmission and geopolitical tensions' effects vary across target sectors. For instance, bilateral sanctions may affect lending to the non-financial sector more than loans to banks and non-bank financial institutions.

4.3 Country-specific geopolitical risk measures

In some estimations, we examine source and borrowers' country-specific geopolitical risks separately, rather than the role of bilateral measures. Accordingly, we estimate Equation (4) as follows:

$$(4) \quad \Delta claims_{ijct} = \sum_{k=1}^{4}(\beta_{1k}\Delta monetary_{ct-k} * \Delta GeoPol_{i/jt-k} + \beta_{2k}\Delta monetary_{ct-k} + \\ + \beta_{3k}\Delta GeoPol_{i/jt-k} + \beta_{4k}Controls_{i/j/c/t-k}) + FE_{i/j/c/t} + \nu_{ijct}$$

where $\Delta GeoPol_{i/jt-k}$ is now specific to source country *i* or borrowers' country *j*, rather than a bilateral measure.

4.4 Saturating the model with increasingly stringent fixed effects

As we build up our estimation models, we include increasingly stringent sets of fixed effects to strengthen identification. Specifically, we add various combinations of source country *i*, borrowers' country *j*, currency *c,* and time *t* fixed effects, as well as subsets of source country*borrowers' country, borrowers' country*time, or borrowers' country*currency*time fixed effects:

- In Model 1, we include time fixed effects for each quarter (FE_t) to control for unobserved global factors. Our inclusion of time fixed effects controls for time-varying global shocks—for example, a global component of geopolitical tensions. We also add in fixed effects for each borrowers' country *j* (FE_j) to capture any time-invariant level differences.
- In Model 2, we include borrowers' country* time fixed effects (FE_{jt}) to control for any potential time-varying credit demand changes in the borrowers' country. This fixed effect absorbs any macro-related changes at the level of the borrowers' country *j*. Inclusion of these fixed effects expands the logic outlined in Khwaja and Mian (2008), where identification relies on a firm borrowing from different banks. In our analysis, borrowers in a country obtain credit from different source lending systems. This feature allows us to control for borrower-specific demand factors through fixed effects.

- In Model 3, we include, in addition to time fixed effects, a fixed effect for each source lending system–borrowers' country pair (FE_{ij}), to capture any potential bias stemming from historical lending relationships. For instance, this controls for the time-invariant specifics of the U.S.-U.K. lending relationship.[6]
- In Model 4, we include a fixed effect for each source lending system–borrowers' country –time combination (FE_{ijt}). This formulation captures any potential bias stemming from historical lending relationships (subsuming Model 3). In addition, it accounts for unobservable shocks to credit demand (subsuming Model 2). Lastly, it accounts for any source lending system-specific time-variant factors (source*time fixed effects).
- In Model 5, we include a fixed effect for each borrowers' country–currency–time combination (FE_{jct}) in addition to time fixed effects. We thus capture any unobservable shocks to demand in borrowers' countries for credit denominated in a particular currency. For example, this controls for the specifics of lending to borrowers in Malaysia in 2019:Q4 in U.S. dollars. Model 5 is the most extensive specification possible, where identification comes solely from variation across source lending systems. In other words, these fixed effects control for changes in the demand side of credit to the fullest extent possible in our data – effectively allowing us to isolate the credit-supply side effects of monetary policy and geopolitical developments. As such, this formulation subsumes borrowers' country*time fixed effects (Model 3). In addition, it incorporates currency*time fixed effects (FE_{ct}) which address the potential concern that some unobserved changes across the main reserve currencies may drive our result. These strict

[6] In Model 3, our inclusion of source-recipient country fixed effect can also be effective in mitigating endogeneity/reverse causality concerns (Catalan et al., 2024); namely, that meaningful cross-border claims could cause countries to try and limit geopolitical tensions in order to keep those investments safe. With these bilateral fixed effects, we take the strength of relationships as given, and identify effects from changes over time.

fixed effects also absorb the effects of currency-specific monetary policy changes, and the individual currency and time fixed effects.

5 Results

We present the main results in Tables 2 to 7. Tables 2, 3, and 4 show our benchmark results for UN voting disagreement, broad sanctions, and relative borrower GPR, respectively. In each table, there are two columns for each model described in Section 4 above: one without the geopolitical-monetary interaction term (corresponding to Equation (1)) and one including the interaction term (corresponding to Equation (2)). Moving from left to right in the tables, each set of two columns includes increasingly stringent fixed effects. Table 5 summarizes the economic significance of the results of the benchmark Tables 2, 3 and 4.

Next, we decompose cross-border lending by target sector corresponding to Equation (3). Table 6 examines lending to non-banks and Table 7 describes results for lending to banks.[7]

5.1 Benchmark results: UN voting disagreement

Table 2 shows the cumulative direct effects of three variables: (i) changes in UN voting disagreement (captured by IPDs), (ii) changes in the monetary policy associated with the currency of lending, and (iii) the interaction of these two variables.

Confirming our international bank lending channel hypothesis (Hypothesis 1), we find evidence that monetary policy tightening lowers cross-border bank lending. More precisely, an increase in the shadow interest rate associated with the currency of lending over a four-quarter

[7] The results presented in Tables 2 and 3 and described in Section 5 are based on quarterized annual values of the IPD and total sanctions measures, respectively. In alternative specifications (available by request), we repeat these estimations using interpolated quarterly values for these variables and find that the results are highly comparable.

period leads to subsequently lower cross-border lending flows in a currency (first row of Table 2). The result is consistent with the liquidity-reducing effect of monetary policy tightening.

The direct negative monetary policy effects are particularly strong in the specifications with interaction terms. Focusing on these interaction specifications, the marginal effect of a 100-basis point increase in the short-term shadow interest rate over four quarters on subsequent lending flows ranges from a lending decline of 2.73 percentage points (henceforth, pp; column 6, with borrowers' country*time fixed effects) to 4.58 pp (in column 8, with the demanding source country*borrowers' country*time fixed effects).[8]

The aim of our paper is to understand how the transmission strength of monetary policy and geopolitical tensions depend on one another. Our bank lending channel Hypothesis 1 above posits that a worsening of bilateral UN voting disagreement amplifies monetary policy transmission; this is in part due to worsening geopolitical tensions leading to heightened investor risk perception of constrained banking systems. The negative and significant interaction effects in the second row of Table 2 show consistent evidence that worsening UN voting disagreement amplifies the transmission of monetary policy. This is in line with Hypothesis 1.

Next, we turn to the interaction effect, which helps us understand how the transmission of monetary policy and UN voting disagreement depend on one another. Our Hypothesis 2 above posits that intensifying disagreements may amplify monetary policy transmission, partly owing to worsening disagreements fueling heightened investor risk perception of banking system constraints.

[8] Recall that the CDIBL does not necessarily require such significant direct monetary policy effect; it posits only a significant interaction of this direct effect with measures of constraints. The reason is that the identification of the CDIBL is based on differing policy responses across more vs. less constrained source bank lending systems.

The interaction coefficient is large. To illustrate, consider a material rise in geopolitical tensions: a five-standard deviation (or about 1/5th of a unit) rise in the IPD subsequently increases the negative effect of a 100 bp monetary policy tightening on lending flows by a magnitude ranging from 2.81 pp[9] (in column 2) to 15.1 pp (in column 10).

Turning to economic significance, we quantify the marginal effects of the interaction of the UN voting disagreement and monetary policy effects. The first three columns of Table 5 show marginal effects corresponding to the three most complete specifications in Table 2 (that is, corresponding to columns 6, 8, and 10 in Table 2). We examine the differentiating role of UN voting disagreement in the lending effect of tightening monetary policy. For instance, the top rows in column 2 of Table 5 show that at small changes in bilateral IPD (at the 10th percentile of the IPD distribution), a 100 bp rise in the shadow interest rate lowers cross-border lending by 3.87 pp. The corresponding effect at significant worsening of bilateral IPD (at the 90th percentile) is a decline of 5.4 pp.

Next, we examine the differentiating role of monetary policy in the lending effect of worsening UN voting disagreement based on Table 5. Our Hypothesis 2 posits that increasing UN voting disagreement has direct negative effects on cross-border lending flows, and Hypothesis 3 suggests that this relationship is especially strong in the context of tightening monetary policy. Indeed, row 4 across the first three columns of Table 5 shows that at the sample median change in the shadow interest rate (corresponding to a 6 basis point quarterly tightening), rising UN voting disagreement leads to a decline in lending of about 3.6 pp.[10] At stronger monetary policy tightening (at the 75th percentile, as shown in column 3, row 5, corresponding to a 39 bp rise in rates), a five-

[9] Obtained by taking the coefficient value in Table 2, column 2 (-14.06) and multiplying by (1/5).
[10] Obtained by taking the coefficient value in row 4 of Table 5, column 3 (-17.94) and multiplying by (1/5).

standard deviation rise in IPD leads to an 8.2 pp decline in lending flows.[11] To the backdrop of significant monetary policy tightening (at the 90th percentile of shadow rate changes), a five-standard deviation rise in IPD leads to an 15.2 pp decline in lending flows (column 3, row 6).

The target sector-specific estimations for the role of UN voting disagreement in Tables 6 and 7 (first two columns) suggest that such disagreement primarily affects lending to the financial sector (that is lending to both banks and non-bank financial institutions). For instance, columns 2 of Tables 6 and 7 show that a five-standard deviation rise in UN voting disagreement leads to a 5.27 pp and a 13.55 pp stronger effect of a 100 bp monetary policy tightening on cross-border flows to NBFIs and to inter-office banks, respectively.

5.2 Benchmark results: Sanctions

Table 3 shows the cumulative direct effects of three variables: (i) changes in bilateral sanctions, (ii) changes in the monetary policy associated with the currency of lending, and (iii) the interaction of these two variables.

Consistent with our Hypothesis 1, in our more complete specifications (with interaction effects), we find evidence that monetary policy tightening lowers cross-border bank lending. More precisely, an increase in the shadow interest rate associated with the currency of lending over a four-quarter period leads to subsequently lower cross-border lending flows in a currency (first row of Table 3). The result is consistent with the earlier results shown for UN voting disagreement in Table 2. As the first row shows (Table 3), the effect of a 100-basis point increase in the short-term

[11] In fact, Table 2 reveals that in our more complete specifications (including the interaction effects), a rise in UN voting disagreement over a four-quarter period leads to subsequently lower cross-border lending flows in a currency even without changes in monetary policy. Focusing on the interaction specifications, coefficients in the third row show that the marginal lending effect of a five-standard deviation (about 1/5th of a unit) increase in UN voting disagreement ranges from a decline of 1.22 pp (column 2, with borrowers' country and time fixed effects) to 2.97 pp (in column 6, with borrowers' country*time fixed effects). The direct effects are larger in specifications without interaction terms.

shadow interest rate over four quarters on subsequent lending flows ranges from a decline of 10.15 pp (column 2, with borrowers' country and time fixed effects) to 13.39 pp (in column 8, with the demanding source country*borrowers' country*time fixed effects). These results consistently support Hypothesis 1.

The negative and significant interaction effects in the second row of Table 3 show evidence that worsening bilateral sanctions amplify the transmission of monetary policy, consistent with Hypothesis 2. These interaction coefficients are notable in size. A substantial rise in total sanctions (corresponding to what we could expect to see in the context of a geopolitical event), such as a five-standard deviation increase (which, based on Table 1, is about one-half of a unit), subsequently amplifies the negative effect of a 100 bp monetary policy tightening on lending flows by a magnitude ranging from 7.8 pp (in column 2) to 49.76 pp (in column 8 of Table 3).

Turning to economic significance, we quantify the marginal effects of the interaction of the sanctions and monetary policy effects. The middle three columns of Table 5 show marginal effects corresponding to the three most complete specifications in Table 3 (that is, corresponding to columns 6, 8, and 10). We examine the differentiating role of rising sanctions in the lending effect of tightening monetary policy. For instance, the top rows in column 5 of Table 5 show that at small changes in bilateral sanctions (at the 10^{th} percentile of the sanctions distribution, row 1), a 100 bp rise in the policy interest rate lowers cross-border lending by 12.16 pp. The corresponding effect at a significant rise in sanctions (at the 90^{th} percentile, row 3) is a decline of almost 17 pp.

The last three rows of Table 5, columns 4-6, show the differentiating role of monetary policy in the effect of intensifying bilateral sanctions on cross-border bank lending. Our Hypothesis 2 posits that worsening sanctions can have direct negative effects on cross-border lending flows, and Hypothesis 3 suggests that these effects are stronger in the context of tightening

monetary policy. Indeed, as shown for instance by the last two rows of column 6 of Table 5, to the backdrop of tightening monetary policy (that is, at the 75th and 90th percentiles of interest rate changes, respectively), a marginal increase in sanctions leads to declines in lending. Although the magnitudes are small, these results lend support to our hypotheses. Of note, we see that the sanctions effects appear smaller in magnitude than the effects of UN voting disagreement. This is not unexpected, seeing as disagreements precede sanctions; as such, these two measures exert their effects over somewhat different horizons.

The target sector-specific estimations in Tables 6 and 7 (middle two columns) reveal that the overall lending effects of sanctions are strong for the non-financial sector (borrowers who may be most affected by direct sanctions effects) and banks (who in turn might finance sanctions-impaired borrowers). As we discussed earlier, these are exactly the differential effects we expect.

Importantly, thus far we have described the effects and interactions of sanctions *of all types*. In additional estimations, we examine the effects of changes in bilateral *financial sanctions* (Table A4) and bilateral *trade sanctions* (Table A5). These results show that the marginal effects of changes in financial and trade sanctions are equally significant, and larger in magnitude, than the effects of changes in sanctions *of all types* documented in Table 3.

5.3 Benchmark results: Relative borrower GPR

Table 4 shows the cumulative direct effects of three variables: (i) changes in the difference of borrowers' country GPR and source country GPR (henceforth, relative borrower GPR), (ii) changes in the monetary policy associated with the currency of lending, and (iii) the interaction of these two variables.

Table 4 shows significant evidence, including in the more complete specifications, that monetary policy tightening reduces cross-border bank lending. More precisely, an increase in the shadow interest rate associated with the currency of lending over a four-quarter period leads to subsequently lower cross-border lending flows in that currency. The result is consistent with the earlier results shown for UN voting disagreement and for total sanctions in Tables 2 and 3. The marginal effect of a 100-basis point increase in the short-term shadow interest rate over four quarters on subsequent lending flows ranges from a decline of 3.33 pp (column 2, with borrowers' country and time fixed effects) to 4.84 pp (in column 8, with the demanding source country*borrowers' country*time fixed effects). These results consistently support Hypothesis 1.

The negative and significant interaction effects in the second row of Table 4 show evidence that worsening relative borrower GPRs amplify the transmission of monetary policy, consistent with Hypothesis 2. These interaction coefficients are notable in size. A substantial rise in borrowers' country GPR relative to the GRP of the source lending system (corresponding to what we could expect to see in the context of a geopolitical event), such as a five-standard deviation increase (which, based on Table 1, is about 2.5 units) subsequently amplifies the negative effect of a 100 bp monetary policy tightening on lending flows by a magnitude ranging from 9.45 pp (in column 10) to 25.92 pp (in column 8).[12]

Turning to economic significance, we quantify the marginal effects of the interaction of the worsening relative borrower GPR and monetary policy effects. The last three columns of Table 5 show marginal effects corresponding to the three most complete specifications in Table 4 (that is, corresponding to columns 6, 8, and 10). We examine the differentiating role of worsening relative borrower GPR in the lending effect of tightening monetary policy. For instance, the first row in

[12] For instance, the -9.45 value is obtained as -3.78 (column 10, row 2) times (2.5).

column 8 of Table 5 shows that at small changes in the borrowers' country GPR relative to the source GPR (at the 10th percentile of the relative borrower GPR distribution), a 100 bp rise in the policy interest rate lowers cross-border lending by 2.85 pp. The corresponding effect at significantly worsening relative borrower GPR (at the 90th percentile, in row 3) is a decline of 6.81 pp.

The last three rows of Table 5, columns 7-9, show the differentiating role of monetary policy in the lending effect of intensifying relative borrower GPR. Our Hypothesis 2 posits that worsening relative borrower GPR can have direct negative effects on cross-border lending flows, and Hypothesis 3 suggests that this is especially so in the context of tightening monetary policy. Indeed, as shown for instance by the last row of column 7 of Table 5, to the backdrop of tightening monetary policy (that is, at the 90th percentile of shadow rate changes), a marginal increase in relative borrower GPR leads to a lending decline of 35.6 pp.

The target sector-specific estimations in the last two columns of Tables 6 and 7 reveal that the overall effect of worsening relative borrower GPR appears strongest in lending to the financial sector. For instance, row 2 in column 6 of Table 6 implies that a five-standard deviation (about 2.5 unit) rise in relative borrower GPR leads to a 15.56 pp stronger effect of a 100 bp monetary policy tightening on cross-border flows to NBFIs.

The results so far considered a bilateral measure: changes in borrowers' country GPR relative to changes in source country GPR. In additional estimations, we also examine the lending effects and monetary policy interactions of borrowers' country GPR and source country GPR separately. In Table A6, odd columns show the effects of borrower GPR, and even columns show the effects of source GPR, for our most complete models. While the lending impact of rises in the GPR of both the source lending system and of borrowers' countries is material, Table A6 reveals

that changes in the geopolitical risk of borrowers' countries have generally stronger direct and interaction effects.

5.4 Results for different "states of the world"

Hypothesis 3 posits that the flow of bank credit is hit by a double whammy when escalating geopolitical tensions coincide with monetary policy tightening. Tighter financial conditions make it harder to cope with this increased uncertainty, as contractionary monetary policy magnifies the cost of acquiring liquidity. Therefore, a double whammy, when geopolitical tensions and monetary policy tightening amplify each other's effects, can reduce cross-border bank lending especially hard. In other words, following a monetary policy tightening, banks cut back lending to borrowers in countries affected by geopolitical tensions particularly strongly.

To explore Hypothesis 3, we re-estimate our regression equation with stringent borrowers' country*time fixed effects and including dummies that allow the regression coefficients to be specific to each of the following four "states of the world": (1) tightening monetary policy and worsening geopolitical tensions; (2) tightening monetary policy and improving geopolitical tensions; (3) easing monetary policy and worsening geopolitical tensions; and (4) easing monetary policy and improving geopolitical tensions.

We find that worsening geopolitical tensions significantly amplify the effects of tighter monetary policy. At the same time, we find no evidence that improving geopolitical tensions would cushion the effects of monetary policy tightening (Table 8). We present results corresponding to two states: double-whammy (monetary policy tightens and geopolitical tensions worsen) and policy only-whammy (monetary policy tightens but geopolitical tensions ease).[13] In columns 1, 3,

[13] The full set of specifications for all states are available upon request.

and 5 of Table 8, we show results for the double whammy state, and the even columns present results for the policy-only whammy state. Comparing the estimated interaction coefficients across states for each geopolitical measure, we see that worsening geopolitical tensions significantly amplify the effects of tighter monetary policy but improving geopolitical tensions do not cushion the contractionary monetary policy effects.

The interaction term is negative in the double whammy state of the world for all three measures of geopolitical tensions. For UN voting disagreement and sanctions, the interaction term is insignificant in the policy-only whammy state of the world. For the relative GPR, results are less conclusive at first sight; however, the combined marginal effects of monetary policy and relative GPR are muted in the policy-only whammy state of the world for this measure as well.

5.5 Significance of geopolitical tensions

Our results suggest that geopolitical tensions are economically significant drivers of international bank lending flows. In fact, a variance decomposition exercise reveals that geopolitics is at least as important a driver of cross-border bank lending flows as monetary policy is. Focusing on the portion of variation not explained by our battery of fixed effects, we see that geopolitics directly explains 50 percent of the variation, monetary policy explains around 30 percent, and the geopolitics-monetary policy interaction explains around 20 percent.

6 Alternative specifications and robustness checks

We run a set of additional specifications to ensure the robustness of our results. As we describe below, we explore the role of potential common trends across countries in geopolitical risk and tensions as well as the role of cross-currency effects of monetary policy.

6.1. Common drivers of geopolitical risk and tensions over time

Materialized measures of bilateral geopolitical tensions, i.e. UN voting disagreements or sanctions, are generally specific to pairs of countries. However, in the aftermath of large shocks, immaterialized or prospective geopolitical risk (as measured by the GPR) may also have a global component. For instance, geopolitical risk around the world skyrocketed after Russia's invasion of Ukraine. In other words, there might be common drivers of geopolitical risks (such as the beginning of the Russia-Ukraine war) that cause GPRs to move together across countries around stress events.

We address this issue by running a set of regressions in which we "de-mean" all three of our geopolitical measures. For each measure, we calculate the quarter-specific average of measures (averaged over the cross section of countries) and subtract this average from the measure itself. This approach eliminates concerns about co-movement, as we are examining the effects of geopolitical changes above and beyond those observed commonly across countries. Table A1 shows our de-meaned results for UN voting disagreement (columns 1-3), total sanctions (columns 4-6), and relative borrower GPR (columns 7-9). We find that our benchmark results are strongly robust to this alternative specification.

6.2. Cross-currency effects of monetary policy

Including time fixed effects in all our estimations addresses substitution effects, because we compare the effects of monetary policy changes relative to one another, at a given point in time. Even more so, our inclusion of variations of currency*time fixed effects in our most complete specifications fully controls for substitution effects from other monetary policies. However, to further explore potential substitutions, we directly account for the possibility that currency substitution patterns exist; we explore whether changes in the monetary policy associated with one reserve currency affect lending flows in other reserve currencies. We focus only on cross-reserve currency substitution as the share of non-reserve currencies in cross-border lending is minimal.

We run a set of regressions in which we use "relative interest rate changes" in place of interest rate changes, where the "relative interest rate change" is defined as a change in the shadow rate associated with the currency of lending, minus the (weighted) average change in the other four interest rates. This way, we examine the effects of "relative" monetary policy changes – that is, the effect of changes in the interest rate of one currency above and beyond the average change in the other reserve currency rates. We find that our results are strongly robust to this exercise for all three of our geopolitical measures, as shown in Table A2.

6.3. Cross-currency effects of monetary policy and common drivers of geopolitical risk and tension

Next, we combine the exercises of subsections 6.1 and 6.2 and estimate the individual and interactive effects of de-meaned geopolitical measures and relative interest rate changes (Table A3). The estimations show that our benchmark results are strongly robust to these alternative specifications for all three of our geopolitical measures.

6.4. Borrowers' countries: OECD vs non-OECD

We also delineate our sample by borrowers' country economic development, as captured by OECD membership (Table A7). For UN voting disagreement and relative borrower GPR, our main results hold across both OECD and non-OECD borrowers. In the case of sanctions, we find significant results for non-OECD borrowers but not for OECD borrowers. This might be due to the fact that most sanctions are vis-à-vis non-OECD countries; there are very few sanctions on OECD members.

For better comparison of coefficient magnitudes across the two groups of borrowers' countries, it is instructive to standardize coefficients. A one standard deviation increase in UN voting disagreement corresponds to an interaction effect of 39 pp for non-OECD countries, and an effect of 30 pp for OECD countries.[14] Similarly, a one standard deviation increase in sanctions corresponds to an interaction effect of 19 pp for non-OECD countries. Lastly, a one standard deviation increase in relative borrower GPR corresponds to an interaction effect of around 7 pp for non-OECD countries, and an effect of around 14 pp for OECD countries.

7 Conclusion

In this paper, we use a BIS dataset on bilateral cross-border bank claims by bank nationality to assess the effects of geopolitical tensions on cross-border bank flows denominated in reserve currencies, including the U.S. dollar. We show that a rise in geopolitical tensions — either materialized (captured by political disagreement across countries through UN voting or by

[14] For OECD and non-OECD countries, respectively, the UN voting disagreement standard deviations (s.d.) are 0.58 and 0.74; the sanctions s.d.'s are 0.57 and 1.59, and the relative borrower GPR s.d.'s are 0.45 and 0.48.

sanctions) or unrealized (captured by geopolitical risk indices)—dampen cross-border bank lending. We also show that geopolitical risk and tensions amplify the international transmission of the monetary policies of major central banks. Furthermore, we show that cross-border bank lending declines especially hard when geopolitical risk and tensions coincide with monetary policy tightening. We also find that the lending effects of geopolitical risk and tensions are comparable in magnitude to those of monetary policy.

Our results are policy relevant. For policy makers in reserve currency-issuing countries, understanding the effects of geopolitical risk and tensions on monetary policy transmission can help gauge changes in global liquidity conditions in their currency. For policy makers in the source countries of lending banks, understanding the effects of geopolitical risk and tensions can help gauge the cross-border bank lending activities of their banks and thus, domestic credit conditions. For policy makers in borrowers' countries, understanding the effects of geopolitical risk and tensions can help gauge changes in the supply of bank credit flows into their country.

We hope that our work also paves the way for future research to better understand the broader impact of geopolitical tensions on monetary policy, and eventually, the impact of geopolitical tensions on economic policy.

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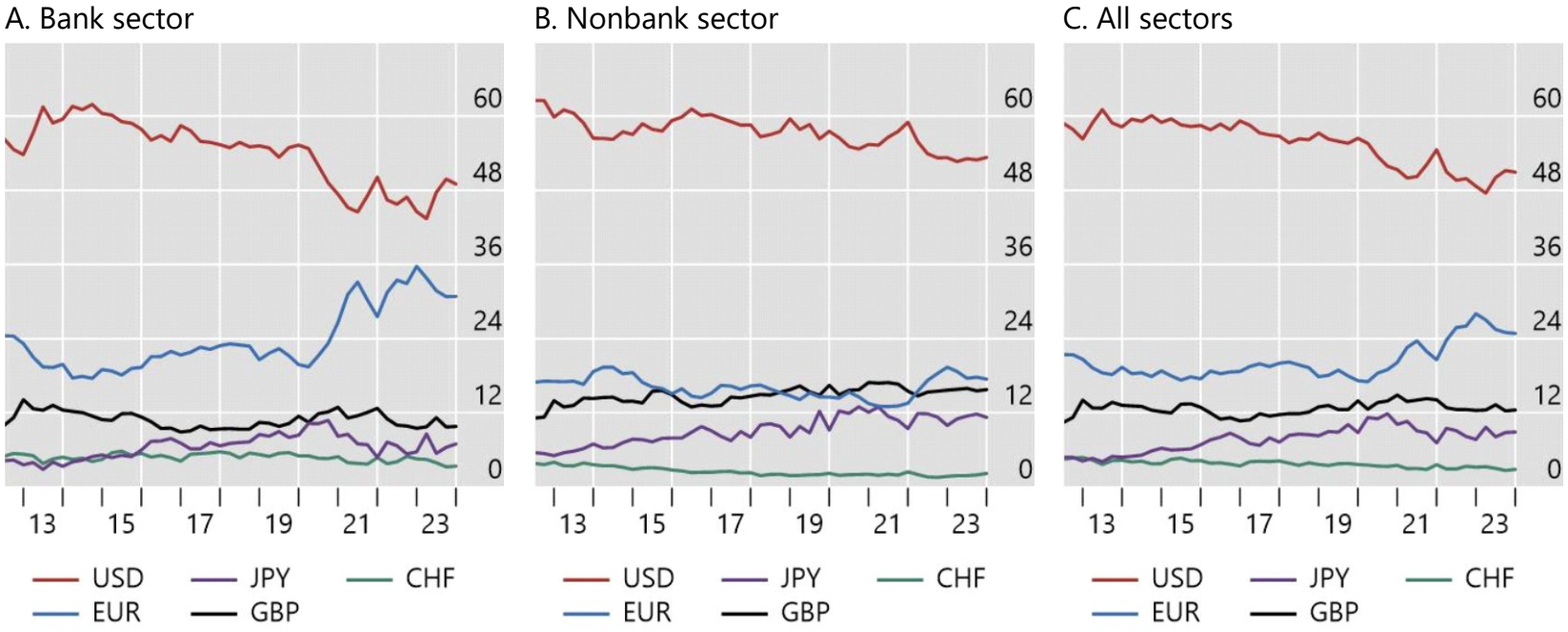
Currency share of cross-border claims[1]

In % of total in all currencies

Graph 1



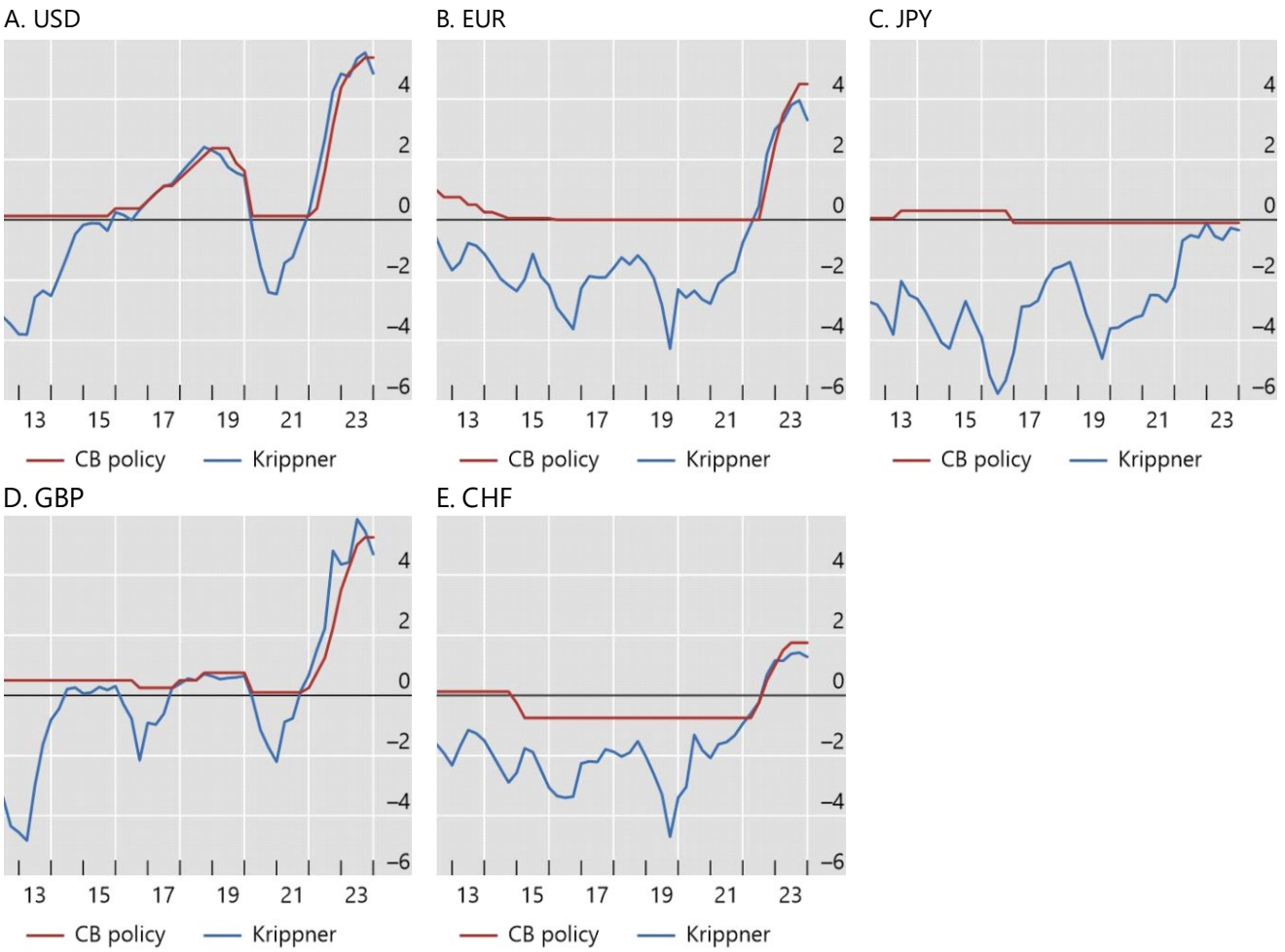
[1] Relates to total of 17 bank nationalities in the sample with currency positions denominated in USD, EUR, JPY, CHF and GBP. Excludes cross-border claims in home currency (ie EUR-denominated claims by euro area banks are excluded).

Sources: BIS locational banking statistics (by nationality); authors' calculations.

Central bank policy rate and Krippner shadow short rate by currency

In percentage

Graph 2



Sources: Leo Krippner (2020) ; IMF ; BIS

Table 1: Summary statistics

Variable	Description	N	Mean	p50	SD	Min	Max	Source
Bilateral cross-border lending flows (unweighted)	Defined as (ln(xbcunweighted) - ln(l.xbcunweighted))* 100, where xbcunweighted is the currency denominated amount of cross-border claims of a bank nationality on a given counterparty country in time t	289,689	0.00	-0.13	63.40	-837.09	797.09	BIS
Bilateral cross-border lending flows (winsorized, unweighted)	Winsorized value of Bilateral cross-border lending flows (unweighted)	289,689	0.07	-0.13	55.39	-229.87	241.33	BIS
Bilateral total claims share	Percentage share in bilateral outstanding claims of bank nationality all currencies and all sectors (used as weights)	313,357	0.01	0.00	0.05	0.00	2.24	BIS
Source government debt to GDP ratio	Geneneral government debt of banks' parent country, in % of GDP	313,357	88.21	96.90	35.84	19.60	210.30	Eurostat; FRED
Change in source government debt to GDP ratio	Dfference in source government debt to GDP ratio from t-1 to t	289,689	0.05	-0.40	2.73	-10.00	25.97	Eurostat; FRED
Change in source geopolitical risk index (GPR)	Quarterly change in GeoPolitical Risk Index of bank's parent country, current basis	257,965	0.01	0.00	0.46	-4.02	4.42	Caldara & Iacoviello (2021)
Change in borrower GPR	Quarterly change in GeoPolitical Risk Index of borrower country, current basis	155,996	0.01	0.00	0.40	-5.78	7.20	Caldara & Iacoviello (2021)
Change in relative borrower GPR	Quarterly change in GeoPolitical Risk Index of (borrower minus source) country, current basis	117,671	0.00	0.00	0.52	-5.95	7.17	Caldara & Iacoviello (2021)
Change in total sanctions	Quaterly change in aggregate sanction indicators (1 /0) comprising arms, military, trade, financial, travel, and other sanctions (annual figures are quarterized)	50,587	0.01	0.00	0.10	-0.75	0.50	Syropoulos, Felbermayr, Kirilakha, Yalcin, and Yotov (2024)
Change in financial sanctions	Quaterly change in financial sanction indicator (1 /0) (annual figures are quarterized)	50,587	0.00	0.00	0.04	-0.25	0.25	Syropoulos, Felbermayr, Kirilakha, Yalcin, and Yotov (2024)
Change in trade sanctions	Quaterly change in trade sanction indicator (1 /0) (annual figures are quarterized)	50,587	0.00	0.00	0.03	-0.25	0.25	Syropoulos, Felbermayr, Kirilakha, Yalcin, and Yotov (2024)
Change in ideal point distance	Quaterly change in Ideal Point Distance (annual figures are quarterized)	275,090	0.00	0.00	0.04	-0.42	0.29	Bailey, Strezhnev, and Voeten (2017)
Change in shadow interest rate	Difference in currency-specific short-term shadow interest rate from t-1 to 1	289,689	0.12	0.06	0.65	-1.76	2.58	Krippner (2024)
Change in source central bank policy rate	Difference in source central bank policy rate from t-1 to 1	313,357	0.58	0.05	1.24	-0.75	5.38	Krippner (2024)
Change in USD to EUR/JPY/GBP/CHF rate	Difference in USD to currency rate from t-1 to 1	313,357	-0.29	0.00	3.45	-14.44	9.25	BIS
Change in bilateral (Source, borrower) exchange rate	Difference in bilateral FX rate from t-1 to t	289,689	4.28	0.00	148.72	-1,374.83	13,924.38	BIS

Table 2: Effects of changes in Ideal Point Distance and in monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Dependent variable: Bilateral cross-border lending flows										
ΣΔ Shadow Interest Rate {t-1 to t-4}	-1.729***	-3.006***	-1.896***	-3.428***	-1.866***	-2.734***	-2.318***	-4.576***	np	np
	[0.280]	[0.320]	[0.278]	[0.321]	[0.324]	[0.360]	[0.338]	[0.391]	np	np
Σ[ΔShadow Interest Rate * Δ Ideal Point Distance] {t-1 to t-4}		-14.060**		-27.805***		-37.635***		-57.503***		-75.412***
		[6.615]		[6.713]		[8.501]		[14.944]		[9.469]
ΣΔ Ideal Point Distance {t-1 to t-4}	-8.655***	-6.096*	-2.392	5.872	-26.400***	-14.862***	np	np	-36.564***	-11.889**
	[2.886]	[3.614]	[3.040]	[3.770]	[3.656]	[4.528]	np	np	[3.742]	[4.771]
Observations	168,391	168,391	168,391	168,391	168,391	168,391	168,391	168,391	168,391	168,391
Adjusted R-squared	0.096	0.098	0.120	0.122	0.180	0.180	0.448	0.450	0.308	0.308
Time FE	Yes	Yes	Yes	Yes	--	--	--	--	--	--
Borrower FE	Yes	Yes	--	--	--	--	--	--	--	--
Borrower* Time FE	No	No	No	No	Yes	Yes	--	--	--	--
Source* Borrower FE	No	No	Yes	Yes	No	No	--	--	No	No
Source* Borrower* Time FE	No	No	No	No	No	No	Yes	Yes	No	No
Borrower* Currency* Time FE	No	No	No	No	No	No	No	No	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

"np" indicates that the variable is subsumed by the included set of fixed effects.

Table 3: Effects of changes in total sanctions and in monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Dependent variable: Bilateral cross-border lending flows										
ΣΔ Shadow Interest Rate {t-1 to t-4}	-6.861***	-10.152***	-7.115***	-11.018***	-7.998***	-11.798***	-8.259***	-13.388***	np	np
	[0.747]	[0.950]	[0.745]	[0.953]	[0.843]	[1.010]	[0.942]	[1.159]	np	np
Σ[ΔShadow Interest Rate * Δ Total Sanctions] {t-1 to t-4}		-15.608***		-28.717***		-7.511		-99.510***		-6.776
		[4.893]		[5.193]		[8.492]		[22.800]		[8.530]
ΣΔ Total Sanctions {t-1 to t-4}	5.123**	10.002***	6.005**	16.361***	0.685	2.085	np	np	0.576	0.779
	[2.497]	[2.994]	[2.582]	[3.254]	[3.512]	[4.066]	np	np	[3.403]	[4.007]
Observations	38,807	38,807	38,807	38,807	38,807	38,807	38,807	38,807	38,807	38,807
Adjusted R-squared	0.084	0.086	0.107	0.109	0.255	0.258	0.420	0.425	0.467	0.468
Time FE	Yes	Yes	Yes	Yes	--	--	--	--	--	--
Borrower FE	Yes	Yes	--	--	--	--	--	--	--	--
Borrower* Time FE	No	No	No	No	Yes	Yes	--	--	--	--
Source* Borrower FE	No	No	Yes	Yes	No	No	--	--	No	No
Source* Borrower* Time FE	No	No	No	No	No	No	Yes	Yes	No	No
Borrower* Currency* Time FE	No	No	No	No	No	No	No	No	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

"np" indicates that the variable is subsumed by the included set of fixed effects.

Table 4: Effects of changes in relative borrower geopolitical risk and in monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Dependent variable: Bilateral cross-border lending flows										
ΣΔ Shadow Interest Rate {t-1 to t-4}	-1.964***	-3.326***	-2.176***	-3.838***	-2.345***	-3.265***	-2.411***	-4.835***	np	np
	[0.399]	[0.461]	[0.396]	[0.460]	[0.460]	[0.515]	[0.445]	[0.514]	np	np
Σ[ΔShadow Interest Rate * Δ Relative borrower GPR] {t-1 to t-4}		-5.911***		-5.950***		-8.620***		-10.366***		-3.781***
		[0.748]		[0.747]		[0.954]		[1.151]		[1.175]
ΣΔ Relative borrower GPR{t-1 to t-4}	-1.500***	2.757***	-1.548***	2.754***	1.966**	7.831***	np	np	-0.585	1.277
	[0.567]	[0.783]	[0.564]	[0.778]	[0.917]	[1.128]	np	np	[0.907]	[1.217]
Observations	79,585	79,585	79,585	79,585	79,585	79,585	79,585	79,585	79,585	79,585
Adjusted R-squared	0.102	0.105	0.125	0.129	0.180	0.183	0.448	0.450	0.314	0.315
Time FE	Yes	Yes	Yes	Yes	--	--	--	--	--	--
Borrower FE	Yes	Yes	--	--	--	--	--	--	--	--
Borrower* Time FE	No	No	No	No	Yes	Yes	--	--	--	--
Source* Borrower FE	No	No	Yes	Yes	No	No	--	--	No	No
Source* Borrower* Time FE	No	No	No	No	No	No	Yes	Yes	No	No
Borrower* Currency* Time FE	No	No	No	No	No	No	No	No	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

"np" indicates that the variable is subsumed by the included set of fixed effects.

Table 5: Effects of changes in geopolitical measures and in monetary policy on cross-border lending flows: Marginal effects from Tables 2, 3, and 4

Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Dependent variable: Bilateral cross-border lending flows									
Geopolitical measure:	*Ideal point distance*			*Total sanctions*			*Relative borrower GPR*		
MP effect at 10th ptile of geopolitical measure change	-2.27	-3.87	np	-11.70	-12.16	--	-1.62	-2.85	np
MP effect at median geopolitical measure change	-2.77	-4.63	np	-11.79	-13.38	np	-3.30	-4.88	np
MP effect at 90th ptile of geopolitical measure change	-3.25	-5.36	np	-12.06	-16.98	np	-4.91	-6.81	np
geopolitical measure change effect at median MP change	-17.86	np	-17.94	1.47	np	0.23	7.13	np	0.97
geopolitical measure change effect at 75th ptile of MP change	-29.37	np	-41.02	-0.83	np	-1.84	4.49	np	-0.19
geopolitical measure change effect at 90th ptile of MP change	-46.88	np	-76.13	-4.32	np	-5.00	-14.23	np	-1.95
Borrower* Time FE	Yes	--	--	Yes	--	--	Yes	--	--
Source* Borrower FE	No	--	No	No	--	No	No	--	No
Source* Borrower* Time FE	No	Yes	No	No	Yes	No	No	Yes	No
Borrower* Currency* Time FE	No	No	Yes	No	No	Yes	No	No	Yes

Standard errors in parentheses

"np" indicates that the variable is subsumed by the included set of fixed effects.

Table 6: Breakdown by target sector: Lending to Non-banks; Effects of changes in geopolitical measures and in monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]
Dependent variable: Bilateral cross-border lending flows to non-banks						
Geopolitical measure:	*Ideal point distance*		*Total sanctions*		*Relative borrower GPR*	
Sector of Borrowers	*Non-financials*	*NBFIs*	*Non-financials*	*NBFIs*	*Non-financials*	*NBFIs*
ΣΔ Shadow Interest Rate {t-1 to t-4}	-1.340***	-6.594***	-12.071***	-11.772***	-0.588	-6.521***
	[0.492]	[0.982]	[1.316]	[3.300]	[0.717]	[1.239]
Σ[ΔShadow Interest Rate * Δ Geopolitical measure] {t-1 to t-4}	-13.556**	75.291***	-12.071***	38.497***	-1.466	-6.225***
	[5.526]	[15.922]	[1.316]	[13.908]	[1.116]	[1.612]
ΣΔ Geopolitical measure {t-1 to t-4}	14.902***	-25.528**	-0.175	26.562***	-0.501	-8.659***
	[4.016]	[10.663]	[3.385]	[9.354]	[1.103]	[1.774]
Observations	82,033	28,689	19,434	4,812	35,649	17,337
Adjusted R-squared	0.076	0.161	0.102	0.173	0.081	0.168
Source* Borrower FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower* Currency* Time FE	No	No	No	No	No	No

Standard errors in parentheses

"np" indicates that the variable is subsumed by the included set of fixed effects.

The non-bank sector comprises of non-bank financial institutions and the non-financial sector.

Table 7: Breakdown by target sector: Lending to Banks; Effects of changes in geopolitical measures and in monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]
Dependent variable: Bilateral cross-border lending flows to non-banks						
Geopolitical measure:	*Ideal point distance*		*Total sanctions*		*Relative borrower GPR*	
Sector of Borrowers	*Total banks*	*Of which: Inter-office*	*Total banks*	*Of which: Inter-office*	*Total banks*	*Of which: Inter-office*
ΣΔ Shadow Interest Rate {t-1 to t-4}	-2.881***	-7.006***	-12.341***	-25.337***	-3.304***	-7.018***
	[0.570]	[1.088]	[1.767]	[3.983]	[0.759]	[1.316]
Σ[ΔShadow Interest Rate * Δ Geopolitical measure] {t-1 to t-4}	-58.483***	-67.729***	-76.415***	-62.506	-5.760***	-5.375**
	[8.686]	[17.179]	[15.219]	[41.503]	[1.271]	[2.223]
ΣΔ Geopolitical measure {t-1 to t-4}	6.223	33.575***	36.095***	33.727	3.118**	4.969**
	[5.595]	[10.927]	[8.658]	[24.812]	[1.320]	[2.352]
Observations	63,306	23,659	13,948	4,331	35,095	16,207
Adjusted R-squared	0.170	0.157	0.169	0.200	0.169	0.158
Source* Borrower FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower* Currency* Time FE	No	No	No	No	No	No

Standard errors in parentheses

"np" indicates that the variable is subsumed by the included set of fixed effects.

The bank sector comprises of affiliates [inter-office] and non-affiliated banks.

Table 8: Breakdown by monetary policy-geopolitical tensions "states": Effects of changes in geopolitical measures and in monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]
Dependent variable: Bilateral cross-border lending flows						
Geopolitical measure:	*Ideal point distance*		*Total sanctions*		*Relative borrower GPR*	
Regime	*Tightening MP and worsening GP tensions*	*Tightening MP and easing GP tensions*	*Tightening MP and worsening GP tensions*	*Tightening MP and easing GP tensions*	*Tightening MP and worsening GP tensions*	*Tightening MP and easing GP tensions*
ΣΔ Shadow Interest Rate {t-1 to t-4}	-2.698***	-3.954***	-11.030***	5.685	-5.958***	0.552
	[0.595]	[0.626]	[0.959]	[16.079]	[0.778]	[0.716]
Σ[ΔShadow Interest Rate * Δ Geopolitical measure] {t-1 to t-4}	-149.721***	158.053	-46.926***	22.551	-4.271***	-22.104***
	[13.066]	[180.030]	[8.386]	[74.261]	[1.633]	[2.249]
ΣΔ Geopolitical measure {t-1 to t-4}	83.662***	-160.319***	23.237***	-1.593	-1.90	29.194***
	[9.155]	[12.777]	[4.581]	[19.311]	[1.953]	[2.548]
Observations	168,849	168,849	38,807	38,807	79,585	79,585
Time FE	--	--	--	--	--	--
Borrower FE	--	--	--	--	--	--
Borrower* Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Table A1: Accounting for common global trends: Effects of changes in de-meaned geopolitical measures and in monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Dependent variable: Bilateral cross-border lending flows									
Geopolitical measure:	*Ideal point distance*			*Total sanctions*			*Relative borrower GPR*		
ΣΔ Shadow Interest Rate {t-1 to t-4}	-2.904***	-4.677***	np	-11.820***	-13.933***	np	-3.218***	-4.766***	np
	[0.361]	[0.393]	np	[1.009]	[1.162]	np	[0.515]	[0.514]	np
Σ[ΔShadow Interest Rate * Δ De-meaned Geopolitical measure] {t-1 to t-4}	-16.636***	-55.041***	-48.245***	-9.518	-110.218***	-6.776	-8.891***	-10.746***	-3.781***
	[5.973]	[11.364]	[6.624]	[8.490]	[22.747]	[8.530]	[0.970]	[1.191]	[1.175]
ΣΔ De-meaned Geopolitical measure {t-1 to t-4}	-4.35	np	-10.915**	2.69	np	0.779	7.973***	np	1.277
	[4.126]	np	[4.308]	[4.067]	np	[4.007]	[1.130]	np	[1.217]
Observations	168,849	168,849	168,849	38,807	38,807	38,807	79,585	79,585	79,585
Adjusted R-squared	0.180	0.450	0.308	0.258	0.425	0.468	0.183	0.450	0.315
Borrower* Time FE	Yes	--	--	Yes	--	--	Yes	--	--
Source* Borrower FE	No	--	No	No	--	No	No	--	No
Source* Borrower* Time FE	No	Yes	No	No	Yes	No	No	Yes	No
Borrower* Currency* Time FE	No	No	Yes	No	No	Yes	No	No	Yes

Standard errors in parentheses

"np" indicates that the variable is subsumed by the included set of fixed effects.

De-meaned geopolitical measure is the contemporaneous value of each geopolitical measure [as indicated in column headings] minus the cross-sectional weighted average of the measure in that given quarter.

Table A2: Accounting for cross-currency effects of monetary policy: Effects of changes in geopolitical measures and in relative monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Dependent variable: Bilateral cross-border lending flows									
Geopolitical measure:	*Ideal point distance*			*Total sanctions*			*Relative borrower GPR*		
ΣΔ Relative Shadow Interest Rate {t-1 to t-4}	-1.645***	-2.933***	np	-7.583***	-8.752***	np	-1.982***	-3.125***	np
	[0.256]	[0.279]	np	[0.691]	[0.799]	np	[0.365]	[0.368]	np
Σ[ΔRelative Shadow Interest Rate * Δ Geopolitical measure] {t-1 to t-4}	-1.645***	-42.108***	-2.255	-33.231***	-64.707***	-14.377	-9.744***	-8.327***	-5.785***
	[0.256]	[8.274]	[10.005]	[9.438]	[15.384]	[11.129]	[0.837]	[0.865]	[1.180]
ΣΔ Geopolitical measure {t-1 to t-4}	-12.192***	np	-29.907***	1.586	79.764	0.854	3.183***	np	-0.609
	[3.399]	np	[3.501]	[3.527]	[318.815]	[3.451]	[0.927]	np	[0.933]
Observations	168,849	168,849	168,849	38,807	38,807	38,807	79,585	79,585	79,585
Adjusted R-squared	0.180	0.450	0.309	0.258	0.425	0.468	0.183	0.450	0.315
Borrower* Time FE	Yes	--	--	Yes	--	--	Yes	--	--
Source* Borrower FE	No	--	No	No	--	No	No	--	No
Source* Borrower* Time FE	No	Yes	No	No	Yes	No	No	Yes	No
Borrower* Currency* Time FE	No	No	Yes	No	No	Yes	No	No	Yes

Standard errors in parentheses

"np" indicates that the variable is subsumed by the included set of fixed effects.

Relative shadow interest rate is the shadow interest rate of the lending currency - the weighted average shadow interest rate across other currencies.

Table A3: Accounting for cross-currency effects of monetary policy and common global trends: Effects of changes in de-meaned geopolitical measures and in relative monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Geopolitical measure:	*Ideal point distance*			*Total sanctions*			*Relative borrower GPR*		
Dependent variable: Bilateral cross-border lending flows									
ΣΔ Relative Shadow Interest Rate {t-1 to t-4}	-1.710***	-3.034***	np	-8.265***	-9.663***	np	-1.982***	-3.125***	np
	[0.258]	[0.281]	np	[0.763]	[0.880]	np	[0.365]	[0.368]	np
Σ[ΔRelative Shadow Interest Rate * Δ Geopolitical measure] {t-1 to t-4}	-24.916***	-41.902***	-2.255	--	--	--	-9.744***	-8.327***	-5.785***
	[7.268]	[8.227]	[10.005]	--	--	--	[0.837]	[0.865]	[1.180]
ΣΔ Geopolitical measure {t-1 to t-4}	-12.334***	np	-29.907***	0.229	np	-0.22	3.183***	np	-0.609
	[3.398]	np	[3.501]	[3.509]	np	[3.408]	[0.927]	np	[0.933]
Observations	168,849	168,849	168,849	38,807	38,807	38,807	79,589	79,589	79,589
Adjusted R-squared	0.180	0.450	0.309	0.258	0.425	0.468	0.182	0.449	0.314
Borrower* Time FE	Yes	--	--	Yes	--	--	Yes	--	--
Source* Borrower FE	No	--	No	No	--	No	No	--	No
Source* Borrower* Time FE	No	Yes	No	No	Yes	No	No	Yes	No
Borrower* Currency* Time FE	No	No	Yes	No	No	Yes	No	No	Yes

Standard errors in parentheses

"np" indicates that the variable is subsumed by the included set of fixed effects.

Relative shadow interest rate is the shadow interest rate of the lending currency - the weighted average shadow interest rate across the other four currencies.

Table A4: Effects of changes in financial sanctions and in monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Dependent variable: Bilateral cross-border lending flows										
ΣΔ Shadow Interest Rate {t-1 to t-4}	-6.861***	-10.340***	-7.115***	-11.237***	-7.999***	-11.942***	-8.260***	-13.697***	np	np
	[0.747]	[0.952]	[0.745]	[0.955]	[0.843]	[1.009]	[0.942]	[1.159]	np	np
Σ[ΔShadow Interest Rate * Δ Financial Sanctions] {t-1 to t-4}		-10.340***		-42.240***		-11.942***		-309.633***		-99.888***
		[0.952]		[8.655]		[1.009]		[45.041]		[28.979]
ΣΔ Financial Sanctions {t-1 to t-4}	11.581**	23.660***	11.312**	26.634***	6.203	57.795***	np	np	0.512	44.972***
	[5.205]	[6.175]	[5.255]	[6.225]	[8.743]	[14.245]	np	np	[8.524]	[16.080]
Observations	38,807	38,807	38,807	38,807	38,807	38,807	38,807	38,807	38,807	38,807
Adjusted R-squared	0.085	0.086	0.107	0.109	0.256	0.259	0.422	0.426	0.468	0.469
Time FE	Yes	Yes	Yes	Yes	--	--	--	--	--	--
Borrower FE	Yes	Yes	--	--	--	--	--	--	--	--
Borrower* Time FE	No	No	No	No	Yes	Yes	--	--	--	--
Source* Borrower FE	No	No	Yes	Yes	No	No	--	--	No	No
Source* Borrower* Time FE	No	No	No	No	No	No	Yes	Yes	No	No
Borrower* Currency* Time FE	No	No	No	No	No	No	No	No	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

"np" indicates that the variable is subsumed by the included set of fixed effects.

Table A5: Effects of changes in trade sanctions and in monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Dependent variable: Bilateral cross-border lending flows										
ΣΔ Shadow Interest Rate {t-1 to t-4}	-6.826***	-9.952***	-7.091***	-10.731***	-8.055***	-11.789***	-8.262***	-13.205***	np	np
	[0.747]	[0.949]	[0.745]	[0.952]	[0.843]	[1.010]	[0.942]	[1.160]	np	np
Σ[ΔShadow Interest Rate * Δ Trade Sanctions] {t-1 to t-4}		-67.309***		-99.097***		-40.469*		-406.747***		-21.29
		[13.543]		[14.615]		[22.026]		[93.236]		[21.388]
ΣΔ Trade Sanctions {t-1 to t-4}	10.053*	32.648***	18.385***	58.435***	11.198	18.863**	np	np	18.017**	21.586**
	[6.000]	[8.124]	[6.383]	[9.311]	[8.434]	[9.376]	np	np	[8.162]	[9.096]
Observations	38,807	38,807	38,807	38,807	38,807	38,807	38,807	38,807	38,807	38,807
Adjusted R-squared	0.084	0.087	0.107	0.110	0.256	0.258	0.422	0.425	0.467	0.468
Time FE	Yes	Yes	Yes	Yes	--	--	--	--	--	--
Borrower FE	Yes	Yes	--	--	--	--	--	--	--	--
Borrower* Time FE	No	No	No	No	Yes	Yes	--	--	--	--
Source* Borrower FE	No	No	Yes	Yes	No	No	--	--	No	No
Source* Borrower* Time FE	No	No	No	No	No	No	Yes	Yes	No	No
Borrower* Currency* Time FE	No	No	No	No	No	No	No	No	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

"np" indicates that the variable is subsumed by the included set of fixed effects.

Table A6: Effects of changes in borrower and source geopolitical risk and in monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Geopolitical measure:	*Borrower GPR*	*Source GPR*	*Borrower GPR*	*Source GPR*	*Borrower GPR*	*Source GPR*	*Borrower GPR*	*Source GPR*	*Borrower GPR*	*Source GPR*
Dependent variable: Bilateral cross-border lending flows										
ΣΔ Shadow Interest Rate {t-1 to t-4}	-3.083***	-3.639***	-3.595***	-4.150***	-2.642***	-4.351***	-4.136***	-5.692***	np	np
	[0.417]	[0.340]	[0.417]	[0.340]	[0.466]	[0.384]	[0.476]	[0.409]	np	np
Σ[ΔShadow Interest Rate * Δ GPR] {t-1 to t-4}	-3.083***	-5.053***	-21.270***	-5.429***	-27.260***	-1.559**	-23.361***	-1.648*	np	1.604*
	[0.417]	[0.609]	[1.055]	[0.614]	[1.494]	[0.689]	[1.467]	[0.865]	np	[0.882]
ΣΔ GPR{t-1 to t-4}	13.368***	2.085***	13.803***	2.198***	np	-1.119	np	np	np	-0.155
	[1.113]	[0.764]	[1.104]	[0.761]	np	[0.847]	np	np	np	[0.914]
Observations	95,833	158,799	95,833	158,799	95,833	158,799	95,833	158,799	95,833	158,799
Adjusted R-squared	0.105	0.092	0.130	0.114	0.179	0.179	0.452	0.439	0.304	0.316
Time FE	Yes	Yes	Yes	Yes	--	--	--	--	--	--
Borrower FE	Yes	Yes	--	--	--	--	--	--	--	--
Borrower* Time FE	No	No	o	No	Yes	Yes	--	--	--	--
Source* Borrower FE	No	No	Yes	Yes	No	No	--	--	No	No
Source* Borrower* Time FE	No	No	No	No	No	No	Yes	Yes	No	No
Borrower* Currency* Time FE	No	No	No	No	No	No	No	No	Yes	Yes

Standard errors in parenthese *** p<0.01, ** p<0.05, * p<0.1

"np" indicates that the variable is subsumed by the included set of fixed effects.

Table A7: Breakdown by borrowers' country: OECD vs non-OECD countries; Effects of changes in geopolitical measures and in monetary policy on cross-border lending flows

Model	[1]	[2]	[3]	[4]	[5]	[6]
Dependent variable: Bilateral cross-border lending flows to non-banks						
Geopolitical measure:	*Ideal point distance*		*Total sanctions*		*Relative borrower GPR*	
Country of Borrowers	*Non-OECD*	*OECD*	*Non-OECD*	*OECD*	*Non-OECD*	*OECD*
ΣΔ Shadow Interest Rate {t-1 to t-4}	-7.151***	-2.973***	-15.595***	-6.284***	-12.894***	-3.325***
	[0.616]	[0.471]	[1.196]	[2.079]	[1.179]	[0.560]
Σ[ΔShadow Interest Rate * Δ Geopolitical measure] {t-1 to t-4}	-29.379***	-16.537*	-29.614***	80.983	-3.428*	-6.440***
	[6.544]	[11.843]	[4.862]	[97.893]	[2.018]	[0.916]
ΣΔ Geopolitical measure {t-1 to t-4}	9.258**	10.650*	17.296***	-70.003	0.855	2.766***
	[3.768]	[6.468]	[3.021]	[83.622]	[1.985]	[0.958]
Observations	96,910	71,481	33,843	4,964	30,013	49,572
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower FE	--	--	--	--	--	--
Source* Borrower FE	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

"np" indicates that the variable is subsumed by the included set of fixed effects.

The non-bank sector comprises of non-bank financial institutions and the non-financial sector.