A Model of Geoeconomic Fragmentation*

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Abstract

This paper explores the impact of geopolitical frictions on global capital flows. We present a model of endogenous default in which a government can borrow from friend or rival countries, but is unable to default selectively. This inability to discriminate, coupled with a geopolitical externality, implies that it is more costly for the government to default when its main creditor is a friendly nation. We show that an increase geopolitical tensions lead countries to borrow more from friendly nations, giving rise to fragmented capital flows. We present empirical evidence consistent with the key mechanism.

Keywords: Geoeconomics, fragmentation of capital flows, sovereign default
JEL classification: E42, F31, F32, F34, F41, P48.

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1 Introduction

In recent years, notable events like the U.S.-China trade conflict and the recent Russian invasion of Ukraine have increased geopolitical tensions. These events have sparked concerns about the potential breakdown of the global order into a world with separate blocks. In particular, there is a prospect of a major redrawing of the map of capital flows based on geopolitical affiliations, where nations prioritize trade and investments with partners sharing close diplomatic and political ties.[1]

In this paper, we provide a simple theory of geoeconomic fragmentation of capital flows. We develop a model of borrowing with potential default extended to include geopolitical considerations and use it to identify the channels through which increased geopolitical tensions can create more fragmented capital flows. We show that even in the presence of non-discriminatory default (i.e., when defaulting countries must do so equally on all lenders regardless of their political alignment), the model can generate a redirection of capital flows towards politically aligned countries in the face of heightened geopolitical tensions.

In the model, the home country can borrow from either "friend" or "rival" countries and cannot commit to repaying its debt. We assume that the utility of the home country is decreasing in the utility of the rival country. We refer to this as a "geopolitical externality." The main mechanism is the following. Imagine that the home country is going through bad times (low income, high debt, etc.) and is therefore facing substantial default risk. If the home country were to keep receiving negative shocks, it would be more tempted to default if its debts were mostly in the hands of the geopolitical rivals, other things equal. From an ex ante perspective, this means that rival countries would only buy these sovereign bonds at a significantly discounted price. Therefore, the home country has the incentive to borrow more from "friendly" countries (i.e., those with whom it is more politically aligned) to stop itself from defaulting in the future, and in that way face better borrowing terms ex ante. These dynamics emerge in equilibrium even if we assume there is no discrimination when it comes to defaulting on foreign lenders (i.e., if default happens it affects all lenders; friends and rivals).

We find that an increase in the geopolitical externality shrinks the borrowing set for the home country and tilts the set of possible equilibrium portfolios toward friendly countries. In this way, heightened geopolitical tensions create more fragmented capital flows. Interestingly, while the return on bonds is the same for investors of any country (friends or rivals), the

[1] For example, China's external assets have been increasingly directed away from the United States (and other Western countries) towards countries like Russia and Turkey (and in general towards countries more aligned with Chinese foreign policy).

presence of geopolitical tensions makes the marginal cost of borrowing for the government different.

We are related to a fast-growing literature on geoeconomics, including Itskhoki and Mukhin (2022); Lorenzoni and Werning (2022); Broner, Martin, Meyer and Trebesch (2024); Federle, Müller, Meier and Sehn (2022), Sturm (2022, 2023), Kleinman, Liu and Redding (2020), Clayton, Maggiori and Schreger (2023), Bianchi and Sosa-Padilla (2023, 2024), and De Souza, Hu, Li and Mei (2024), among others. Our analysis builds on Catalán, Fendoglu and Tsuruga (2024) who show that investment funds systematically reduce allocations to countries deemed geopolitically distant. Empirically, we show that this relationship is stronger for more risky borrowers. Moreover, we provide a theory to understand how fragmentation of capital flows can emerge from geopolitical frictions.

Outline. Section 2 presents motivating evidence showing that recent increases in geopolitical tensions have been associated with a reallocation of capital flows towards countries more politically aligned. Section 3 presents our model of geoeconomic fragmentation and shows that its testable implications are in line with the data. Section 4 concludes.

2 Motivating facts

Recent data is suggestive of the idea that international capital flows are fragmenting along geopolitical lines. Figure 1 illustrates this for two types of cross-border investments: portfolio and foreign direct investments. This figure shows that for the period between 2009 and 2021, investors typically allocated a larger portion of capital to recipient countries with similar foreign policy perspectives to those of their home countries.[2]

Moving past simple averages, we use the bilateral investment data from Kleinman et al. (2023),[3] together with the political alignment data used in Figure 1, and sovereign credit default swaps (CDS) data to estimate the following regression,

$$Y_{ijt} = \beta_0 + \beta_1 \text{Pol.Alignment}_{ijt} + \beta_2 \text{Pol.Alignment}_{ijt} \times \text{High.Risk}_{jt} + \gamma_i + \gamma_t + \varepsilon_{ijt}\,, \quad (1)$$

where Y_{ijt} represents the portfolio investments from country i into country j in year t, as

[2]The data for "foreign policy distance" is from Häge (2011) and it measures the divergence in countries' voting behavior in the UN General Assembly, such that countries with less similar voting patterns are considered more geopolitically distant. This policy distance measure is strongly correlated with other geopolitical measures (IMF, 2023).

[3]Kleinman et al. (2023) compile their portfolio holdings data using the Coordinated Portfolio Investment Survey (from the International Monetary Fund). They then adjust these holdings to account for the effect of tax havens, following Coppola et al. (2021).

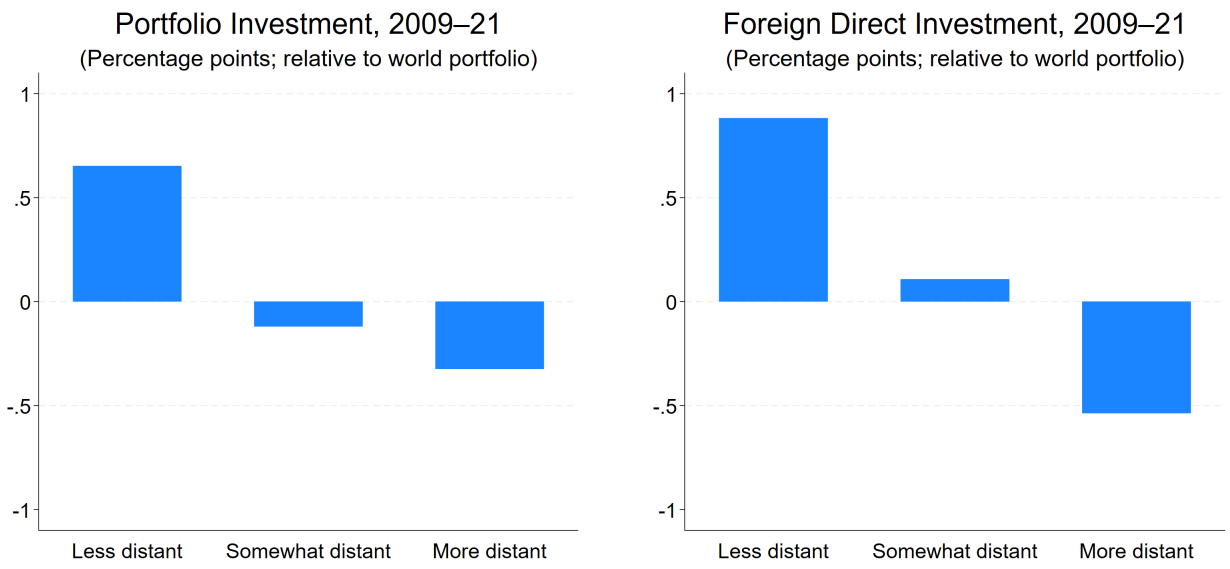


Figure 1: Geopolitical tensions and financial fragmentation. The figure shows the average share of bilateral cross-border investments (portfolio investment [left panel] and FDI [right panel]) allocated to a recipient country by a source country, relative to the world portfolio. The horizontal axis measures foreign policy distance with "Less distant", "Somewhat distant", and "More distant" representing country pairs that lie in the first, second, and third terciles of the political distance distribution, respectively. This figure is a replication of Figure 3 (panels a and b) in IMF (2023). Data source: Catalán et al. (2024) and IMF (2023).

a fraction of the total overseas investments from country i, Pol.Alignment$_{ijt}$ measures how closely aligned countries i and j are on their geopolitical views (in year t), and High.Risk$_{jt}$ is an indicator variable taking a value of one if the 5-year CDS spread for government debt of country j is above the within-country mean in year t and zero otherwise. We also include country-i (i.e., investor country) and time fixed effects.

Table 1 shows that a higher degree of political alignment is associated with increased bilateral investments between any pair of countries (i, j) and that this association is stronger when the recipient (borrowing) country is undergoing a period of high risk (as measured by elevated CDS spreads). On average, a one standard deviation increase in the political alignment between countries i and j is associated with a 0.40% increase in the share of investments from i allocated to j in periods of low country risk and 0.50% in periods of elevated risk.

Table 1: Bilateral investment and geopolitical alignment

Dep. variable:	Investments from i into j	
Pol.Alignment	1.388***	1.292***
	(0.379)	(0.368)
Pol.Alignment × High.Risk		0.349***
		(0.107)
Num.Observations	20,201	20,201
Num.Countries	45	45
Num.Years	12	12
R2 Adj.	0.062	0.063

Note: both columns include investor country and time fixed effects. Standard errors are clustered at the investor country level and are reported in parentheses. Time coverage: 2008–2019. *p<0.1; **p<0.05; ***p<0.01.

3 Model

We consider the problem of a home country that borrows from two sources: friendly and rival countries. There are two periods: borrowing and lending take place in the first period ($t = 1$), and the second period ($t = 2$) is when debt settlement happens, either through repayment or default. We first describe the payoffs to the home and the rival countries and then characterize the equilibrium.

3.1 The Home Country

The home country consumes in both periods and its discount factor is $\beta \in (0, 1)$. We assume this country has no income (nor initial debt) in the first period, so it relies on borrowing to finance $t = 1$ consumption.[4] This borrowing is done by selling defaultable bonds to two types of lenders, friendly countries ($\tilde{b}$) and rival countries (b^*). The home country preferences are given by

$$u\left(\frac{b^* + \tilde{b}}{R}\right) + \beta V_2(b^*, \tilde{b}) - \eta V_2^*(b^*, k^*; d)\,, \tag{2}$$

where consumption in the first period is given by the revenue obtained from borrowing, $\frac{b^*+\tilde{b}}{R}$, with R denoting the (endogenous) gross rate of return on the home country bond. V_2 is the home country's value in period 2, and $\eta \geq 0$ measures the degree to which the utility in

[4]Assuming zero income in $t = 1$ is without loss of generality. An alternative interpretation is that the home country needs to finance a trade deficit in the first period and it borrows to do so.

the home country is decreasing in the utility of the rival country, V_2^*.[5] Following Bianchi and Sosa-Padilla (2024), we refer to this as a "geopolitical externality." The home country's welfare in period 2 is determined by its default decision

$$V_2(b^*, \tilde{b}) = \max_{d \in \{0,1\}} (1-d)\, V_2^R(b^*, \tilde{b}) + d\, V_2^D(b^*)\,. \tag{3}$$

The values from repayment and default are respectively

$$V_2^R(b^*, \tilde{b}) = u\left(y - (b^* + b)\right) - \eta V_2^*(b^*, k^*; 0) \tag{4}$$

and

$$V_2^D(b^*) = u\left((1-\phi)y\right) - \eta V_2^*(b^*, k^*; 1)\,, \tag{5}$$

where $\phi \in [0, 1)$ represents a proportional income cost of default.

3.2 The Rival Country

All the variables pertaining to the rival country are denoted with an asterisk, $*$. For simplicity, we assume that the rival country only consumes in $t = 2$. The problem in the first period is to decide how to invest its resources, y^*. This country has access to two investment options, lending to the home country, b^*, or a risk-free investment, k^*. Therefore, the $t = 1$ budget constraint is

$$y^* = \frac{b^*}{R} + \frac{k^*}{R_f}\,, \tag{6}$$

where R_f is the gross risk-free rate. In period 2, the rival country's welfare depends on its portfolio and on the home country's default decision, d, in the following way

$$V_2^*(b^*, k^*; d) = u\left(k^* + (1-d)\, b^*\right) \tag{7}$$

where we already make explicit the assumption that default is total, and so the rival gets no return from its holdings of b^* if that occurs.

3.3 Characterization

Borrowing constraint. Notice that since there is no uncertainty, investors will impose a borrowing constraint on the home country in period 1. We now characterize that borrowing

[5] The rival country's utility, $V_2^*(b^*, k^*; d)$, is derived in section 3.2. As explained there, it depends on its investment in home country bonds (b^*), its risk-free investments (k^*), and the home country's default decision (d).

constraint. To do so, we need to understand how the level of debt in the home country and its composition affect the incentives to repay and default in period 2. For the home country to repay, it must be that

$$V_2^R(b^*, \tilde{b}) \geq V_2^D(b^*)\,.$$

Using (4), (5), and, (7), we can rewrite the expression above as:

$$u\left(y - (b^* + \tilde{b})\right) - \eta u\left(k^* + b^*\right) \geq u\left((1-\phi)y\right) - \eta u(k^*)\,.$$

Assuming utilities are linear in the second period (in both countries), we arrive to

$$\tilde{b} + b^*(1+\eta) \leq \phi y\,. \tag{8}$$

If $\eta = 0$, the borrowing constraint would limit the total debt to the amount of income losses in the event of a default. However, with the geopolitical externality, the government is more reluctant to repay the debt when it is owed to the rival country, reflected in the term $1+\eta$. A one-unit increase in debt owed to a friendly country (e.g., Europe) tightens the constraint less than when it is owed to a rival country (e.g., China).

Equilibrium. Since there is no uncertainty, there is no default in equilibrium. Therefore, the rate of return on the debt of the home country will be equal to the risk-free return, $R = R_f$. For simplicity, from this point onward we assume quasi-linear utility in the home country (logarithmic in period 1, linear in period 2) and linear utility in the foreign country.

The problem of the Home country in period 1 can be rewritten as

$$\max_{\{b^*, \tilde{b}\}} \log\left(\frac{b^* + \tilde{b}}{R_f}\right) + \beta\left(y - (b^* + \tilde{b})\right) - \eta\left(k^* + b^*\right)$$

subject to

$$\tilde{b} + b^*(1+\eta) \leq \phi y\,.$$

Using the rival country's resource constraint in the first period (equation 6) we obtain[6]

[6]Notice that, in equilibrium, the rival country is getting the risk-free return on all its investments and it is therefore indifferent regarding its holdings of debt issued by the home country.

$$\max_{\{b^*,\tilde{b}\}} \log\left(\frac{b^*+\tilde{b}}{R_f}\right) + \beta\left(y-(b^*+\tilde{b})\right) - \eta y^* R_f \tag{9}$$
$$\text{subject to}$$
$$\tilde{b} + b^*(1+\eta) \leq \phi y\,.$$

The first-order condition reads as

$$\frac{1}{b^*+\tilde{b}} \geq \beta\,,$$

with equality if $\tilde{b}+b^*(1+\eta) < \phi y$. This implies that the unconstrained solution is characterized by an undefined portfolio that respects $b^* + \tilde{b} = 1/\beta$.

Proposition 1. *The equilibrium is such that:*

i) If $\frac{1}{\beta} > \phi y$, the equilibrium features $b^* = 0$ and $\tilde{b} = \phi y$ (constrained case),

ii) If $\frac{1}{\beta} \leq \phi y$, then any pair $(b^*, \tilde{b})$ is part of an equilibrium if $\tilde{b} + b^*(1+\eta) \leq \phi y$ and $\tilde{b} + b^* = 1/\beta$.

In this second case, we can manipulate the borrowing constraint (equation 8) to derive the maximum fraction of debt borrowed from the rival country as

$$\frac{b^*}{b^*+\tilde{b}} \leq \frac{1}{\eta}\left[\frac{\phi y}{b^*+\tilde{b}} - 1\right], \tag{10}$$

which decreases if the degree of geopolitical externality η increases. This occurs as long as the Home country is unconstrained.

Proof. Part (i). If the unconstrained portfolio is not feasible (which is the case if $1/\beta > \phi y$), then the optimal policy is to choose the best 'constrained' portfolio. Absent the geopolitical externality (i.e., if $\eta = 0$), this portfolio would be indeterminate. However, in the presence of $\eta > 0$ a one unit increase in b^* tightens the borrowing constraint more than a one unit increase in $\tilde{b}$. Therefore, the optimal thing to do is to set $b^* = 0$ and borrow using $\tilde{b}$ up to the constraint, $\tilde{b} = \phi y$.

Part (ii). If the unconstrained portfolio is feasible (which is true if $1/\beta \leq \phi y$), then the optimal policy is (by definition) to choose the unconstrained portfolio. That is to say, any portfolio satisfying $b^* + \tilde{b} = 1/\beta$ and $\tilde{b} + b^*(1+\eta) \leq \phi y$ is consistent with equilibrium.

The expression for the maximum fraction of debt borrowed from the rival country follows immediately from (8). □

The results of Proposition 1 are illustrated in Figure 2. This figure shows combinations of debt owed to a friendly country ($\tilde{b}$) and a rival country (b^*). The downward-sloping solid black line depicts the default threshold: the debt portfolios at which the country is indifferent between repaying and defaulting. Above this line, the government chooses to default, and below this line, the government chooses to repay. In the absence of geopolitical externalities, the slope of that line is -1: the home country cares about total debt, but not about its composition. However, as we introduce a geopolitical externality, the default threshold steepens (that is to say, the borrowing set for the home country shrinks). If we start from a point of indifference, reducing one unit of debt from a rival country and increasing one unit of debt from a friendly country moves the home country away from the default region.

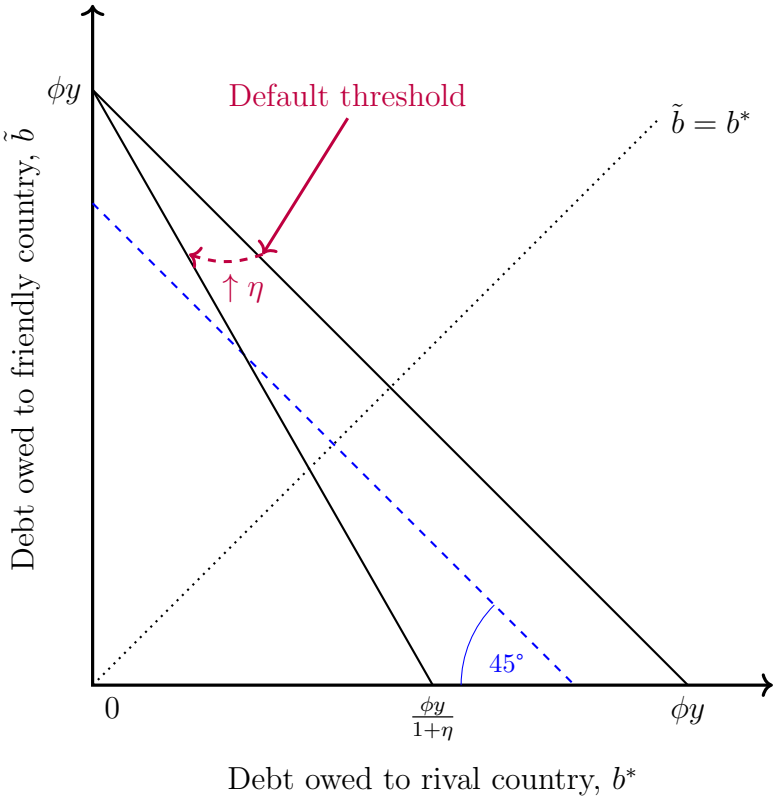


Figure 2: Heightened geopolitical tensions increase capital flows fragmentation

3.4 Connection to the data

Consistent with the empirical findings in Section 2, Figure 2 illustrates that as the geopolitical distance between the home and rival countries increases (reflected in a higher value of the

geopolitical externality parameter η), the set of possible equilibrium portfolios shifts toward friendly countries. This is shown by the segment of the dashed blue line that lies within the borrowing set. While the return on bonds is the same for investors of any country (friends or rivals), increasing geopolitical tensions make the marginal cost of borrowing for the government different. In this way, heightened geopolitical tensions create more fragmented capital flows.

Another implication of our theory, as indicated by equation (10), is that the impact of higher geopolitical distance on fragmenting capital flows becomes more pronounced when the borrower's debt capacity (i.e., that of the home country) is higher, further shifting the set of feasible portfolios toward friendly nations.[7] We test this implication using a regression framework similar to the one used in (1), including measures of debt capacity typically used by the IMF.[8]

Table 2: Bilateral investment, geopolitical alignment, and debt capacity

Dep. variable:	Investments from i into j		
	(1)	(2)	(3)
Pol.Alignment	1.388***	0.693	0.755
	(0.379)	(0.467)	(0.472)
Pol.Alignment × Debt.Capacity		0.520***	0.468***
		(0.160)	(0.153)
Num.Obs.	20,201	20,201	20,201
Num.Countries	45	45	45
Num.Years	12	12	12
R2 Adj.	0.062	0.068	0.068

Note: all columns include investor country and time fixed effects. Standard errors are clustered at the investor country level and are reported in parentheses. Column (1) is a replication from the first column of Table 1. Column (2) defines Debt.Capacity as the average of the government effectiveness and regulatory quality components of the World Governance Indicators. Column (3) expands this measure to include the component measuring rule of law. Time coverage: 2008–2019. *p<0.1; **p<0.05; ***p<0.01.

Table 2 shows empirical support for this testable implication of the model. A higher degree of political alignment is associated with increased bilateral investments between any pair of countries (i, j) and this association is stronger when the recipient (borrowing) country has a higher debt-carrying capacity.

[7] Defining $\alpha \equiv b^*/(b^* + \tilde{b})$ and using (10), it is straightforward to show that: $\frac{\partial |\frac{\partial \alpha}{\partial \eta}|}{\partial \phi y} > 0$. That is to say, the fragmentation toward friendly countries is stronger the larger the home country's debt capacity (as measured by ϕy).

[8] We follow IMF (2022) in using a subset of the Worldwide Governance Indicators as a proxy for a country's debt-carrying capacity (see Kraay and Kaufmann, 2024).

4 Conclusions

In this paper, we provide a simple model to articulate how heightened geopolitical considerations can reshape borrowing behavior, leading to more fragmented capital flows with countries prioritizing relationships with politically aligned partners. By incorporating a geopolitical externality into a standard sovereign default framework, we show how countries facing increased geopolitical risks may strategically choose their borrowing partners to mitigate default risk and secure more favorable borrowing terms.

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