

THE ECONOMICS OF WAR SANCTIONS

The Macroeconomic Consequences of International Financial Sanctions[†]

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The landscape of the international order is undergoing fundamental changes. Geopolitical tensions have risen to unprecedented levels following Russia's invasion of Ukraine, triggering much uncertainty about how it will shape international relationships going forward.

Against this backdrop, financial sanctions are becoming a powerful weapon of economic policy. The use of sanctions as economic policy is raising many important questions. First, will the US dollar retain its reserve currency status, or has the landscape of financial sanctions weakened the attractiveness of the dollar as a reserve currency? Second, which policies will countries deploy in response to international sanctions? Will (sanctioned) sovereigns default more often as a result? And, in turn, how does the possibility of default by sanctioned countries change the design of the optimal sanctions by the sanctioning countries? Third, how are capital flows going to be affected by the new international order? In particular, will the world undergo a geo-economic fragmentation by which an aligned block of countries increasingly lends and borrows from one another in isolation from other blocks?

These unprecedented policy challenges call for a model of international capital flows that accounts for the interaction between sanctioning and sanctioned countries. The interaction can go both ways. First, the sanctions imposed are clearly geared toward hurting the sanctioned

country. For example, a freezing of reserves or an expropriation of foreign assets can reduce the resources of the sanctioned country to finance a war. Second, the response of the sanctioned country may, in turn, hurt the sanctioning country, especially if the latter is a large player in the world economy. As a result, understanding the macro implications of financial sanctions and their optimal design must take into account these explicit interactions.

In this paper, we summarize our recent work that attempts to shed light on these questions (Bianchi and Sosa-Padilla 2022, 2023a, b).¹ For pedagogical reasons, we use a simple graphical approach.

I. Reserve Currencies

In this section, we employ the framework in Bianchi and Sosa-Padilla (2023a) to articulate how the expectation of financial sanctions in the event of a conflict may weaken the reserve currency status of the US dollar. We sketch the main elements and refer the reader to the paper for more details.

The theoretical framework consists of a world with two countries. One country is the sanctioning country, which we take to be the United States. The other country, which we take to be China, faces potential sanctions in response to a departure from international law. The two countries trade a single good, a real asset, and a dollar bond (b) issued by the sanctioning country.

The framework features an upward-sloping demand for dollar reserves from China, as illustrated in Figure 1. The idea is that dollar

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[†] Go to <https://doi.org/10.1257/pandp.20231042> to visit the article page for additional materials and author disclosure statement(s).

¹ The literature on international sanctions is an active one and also includes papers in this session by Sturm (2022); Lorenzoni and Werning (2022); Albrizio et al. (2022); and Itkhoki and Mukhin (2022).

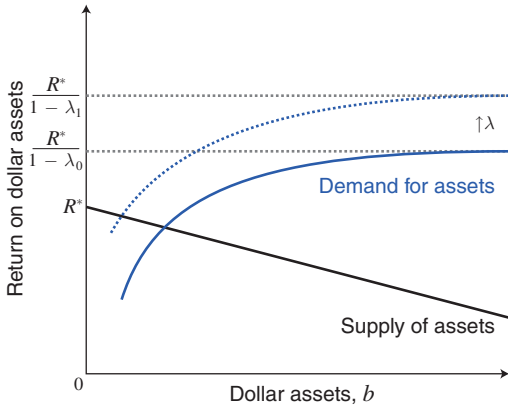


FIGURE 1. SANCTIONS AND RESERVE CURRENCY STATUS

assets deliver liquidity services to China, so China may be willing to hold these assets even if the real return on these assets is strictly lower than the one on real assets. The higher the return on dollar assets, the lower the opportunity cost and the higher the amount invested in dollar reserves. In normal times, dollar reserves deliver the nominal payoff in addition to liquidity services. However, in the event of a financial sanction, a fraction λ of the assets is expropriated.² If we assume that the sanction occurs deterministically, the return on both assets is equated when the nominal return on dollar assets satisfies $R = \frac{R^*}{1-\lambda}$, at which point the demand becomes perfectly elastic as China is satiated with dollar reserves.

In addition, there is a supply of dollar assets by agents in the United States, which could represent a combination of households, financial intermediaries, and the government. A crucial feature in the framework is that the supply of assets is strictly decreasing in the interest rate, a feature that we microfound in Bianchi and Sosa-Padilla (2023a) with costly debt issuances.

The equilibrium is displayed in Figure 1. The intersection between the demand and supply of real assets determines the real return of dollar assets. When there is an increase in sanctions λ , the demand for assets moves to the left. For the

same rate of return, China demands fewer US dollar assets. Given that the supply of assets remains the same, at the original real return, there is an excess supply of assets. In equilibrium, the real return goes up, and the quantity of dollar assets traded is reduced.

What is the effect on the value of the dollar? The mechanism just described pins down the effect on the real return on dollar assets. However, the effect on the exchange rate depends on how the central bank in the United States responds—in particular, whether it raises or lowers the nominal interest rate. We argue that to the extent that the reduction in the convenience yield for the United States (i.e., the “exorbitant privilege”) reduces wealth in the United States and leads to a real exchange rate depreciation and to deflationary pressures, the plausible monetary policy response is to not raise the nominal rate and thus weaken the dollar.

How much the quantity of dollar reserves falls and how much the dollar depreciates depends on the elasticities of the demand and supply of assets. If the supply of dollar assets is very elastic, then we would expect large effects on quantities of dollar reserves but modest effects on the exchange rate. Conversely, if the supply of dollar assets is inelastic, then we would expect large effects on the exchange rate but modest effects on quantities.

II. Reserve Freezes and Sovereign Default

In the previous section, we took sanctions, represented by λ , as given. In Bianchi and Sosa-Padilla (2022), we explore the optimal design of sanctions in a setup in which there is a value for the sanctioned country in reducing the utility for the sanctioning country—we refer to this as geopolitical externality—and the possibility of a default by the sanctioned country may backfire for the sanctioning country.

The framework features two countries: a debtor country, Russia (the sanctioned country), and a creditor country, the United States (the sanctioning country). The sanctioned country chooses its portfolio of external debt and reserves and can potentially default on its debt (which is partially held by the sanctioning country).

Reserves are helpful for the debtor country to the extent that they provide available resources to finance war expenditures. To limit the use of these resources, the sanctioning country may

²An alternative set up, studied in Bianchi and Sosa-Padilla (2022), is that assets cannot be repatriated throughout the conflict period. We discuss these measures in the next section.

impose the restriction that only \underline{a} can be repatriated. The harshest sanction is one where all reserves are frozen.³

To the extent that the sanctioning country is a creditor of the sanctioned country, these restrictions may backfire if the imposition of sanctions triggers a default by the sanctioned country. However, starting from no sanctions, imposing sanctions offers a free lunch for the sanctioning country, as it remains optimal for the sanctioned country to continue to pay the debt. Moreover, imposing a complete freezing of reserves is also optimal, conditional on the sanctioned country defaulting.

The key question is then whether it may be optimal to impose a restriction harsh enough to trigger a default (as we see in the case of Russia). We illustrate this possibility in Figure 2. In the horizontal axis, we have the restriction \underline{a} applied on the sanctioned country when this is in good credit status. In the vertical axes, we plot the corresponding value functions. The value of repayment for the sanctioned country V^R , illustrated with the solid blue line, is decreasing in \underline{a} , while the value of default V^D is given by the horizontal red line. When the sanction exceeds the crossing point of the two curves, the sanctioned country chooses to default.

The dashed black line illustrates the value for the sanctioning country W . At the point where the sanction triggers a default, there is a discontinuity in W . Without any geopolitical externalities, there would be a discrete drop in the value for the sanctioning country as it experiences losses on its portfolio. However, the presence of the geopolitical externality—and the fact that the United States cares more about reducing Russia's utility during the conflict than it does in the future—implies that the value for the United States could actually increase when triggering a default, as reflected in the figure.

The model helps us rationalize some of the events following the Russian invasion of Ukraine. Initially, the United States and the West imposed soft sanctions on Russia, which later became harsher, leading to a Russian default.

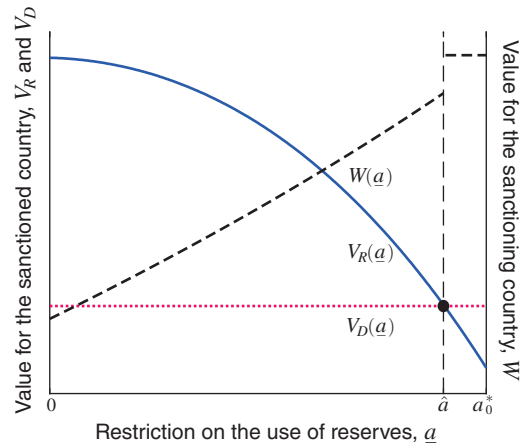


FIGURE 2. VALUES OF THE SANCTIONED (LEFT AXIS) AND SANCTIONING (RIGHT AXIS) COUNTRIES

III. Fragmentation of Capital Flows

In the previous section, we considered a framework in which a sanctioning country internalizes how the financial restriction it imposes may hurt its own welfare by suffering losses in its portfolio if the sanctions trigger a default by the sanctioned country.

In Bianchi and Sosa-Padilla (2023b), we consider instead a framework where a defaulting country internalizes the benefits of defaulting when doing so will trigger losses on the sanctioning country. The model provides a theory of geo-economic fragmentation. By geo-economic fragmentation, we refer to a situation in which a country borrows less from its geopolitical rivals because these rival countries internalize that the debtor country would be more likely to default if they were to own a larger share of its external debt. Importantly, the theory does not hinge on discrimination, in the sense that if the home (borrowing) country defaults, it does so equally on all bonds regardless of who holds them.⁴

The results of the framework are illustrated in Figure 3. The figure displays combinations of debt owed to a rival country (b^* , on the x -axis) and to a friendly country (\hat{b} , on the y -axis). The downward-sloping solid black line indicates the

³In the case of the Russia-Ukraine war, the United States initially imposed a softer punishment, but eventually it froze all reserves.

⁴This constitutes an important feature because in the presence of a secondary market, this discrimination is infeasible (see Broner, Martin, and Ventura 2010).

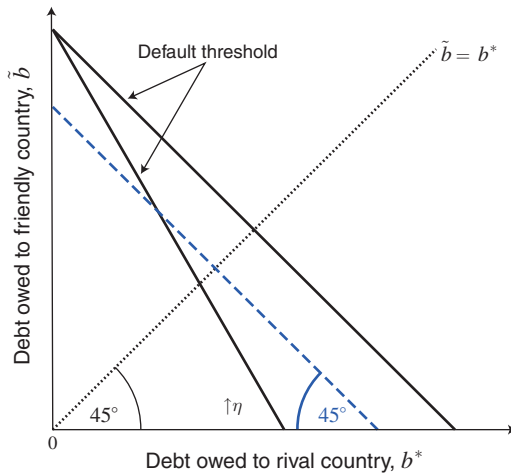


FIGURE 3. GEO-ECONOMIC FRAGMENTATION

debt portfolios at which the country is indifferent between repaying and defaulting. That is to say, this line is the default threshold: above the line, the government chooses to default, and below the line, the government chooses to repay. In the absence of geopolitical externalities, the slope of the default threshold would be -1 : the country would not care which countries are the creditors. However, as we introduce a geopolitical externality, the default threshold steepens. 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 puts the home country away from the default region.

As Figure 3 shows, an increase in the geopolitical externality η shrinks the borrowing set (i.e., the area under the default threshold) for the home country and tilts the set of possible equilibrium portfolios (the segment of the dashed blue line that lies inside the borrowing set) toward friendly countries. Heightened geopolitical tensions create more fragmented capital flows.

IV. Concluding Remarks

Financial sanctions have become a powerful weapon in the wake of rising geopolitical tensions. In this article, we build on our ongoing work (Bianchi and Sosa-Padilla 2022, 2023a, b) to provide a conceptual framework to understand the potential impact of such sanctions on capital flows and the international monetary system.

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