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Zhengyang Jiang

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ABSTRACT

Does financial opening necessarily lead to currency internationalization? To study the competition between incumbent and rising powers under financial interdependence, we develop a model of asset demand with microfounded network effects. Search frictions with currency-specialized intermediaries generate distinct notions of liquidity at asset-market and currency-area levels, which jointly shape the trajectory of currency competition. In the U.S.-China context, China at early stages of financial development benefits from pooling its assets with the dollar area, which reinforces the status quo. As China's financial markets deepen, RMB issuance allows China to internalize network effects and erode the dollar's dominance, triggering a discrete shift toward fragmentation. This transition is further shaped by sanctions, financial repression, and third-country responses, highlighting how financial interdependence transforms cooperation into rivalry in the evolution of the international financial order.

Zhengyang Jiang
Northwestern University
Kellogg School of Management
and NBER
zhengyang.jiang@kellogg.northwestern.edu

1 Introduction

China is becoming increasingly active in international financial markets, both as a major lender and as a growing asset issuer. At the same time, it has sought to promote the international use of its currency, making RMB internationalization a central component of its effort to expand influence in the global financial system.

This paper studies the optimal timing for RMB internationalization as China continues to develop its financial markets. We ask whether China's rise in international financial markets necessarily involves promoting RMB as a global currency, or China can instead expand its influence within the existing dollar-centric system. Our analysis emphasizes the interdependent nature of international financial markets. Because financial activities exhibit strong network effects, U.S. and Chinese policies influence each other through their effects on financial markets. Understanding the timing of China's currency internationalization therefore requires examining the strategic interaction between the U.S. and China, and how it evolves with China's financial development.

To model financial interdependence between the two powers, we develop a microfoundation for the network effects in global asset markets. Building on prior works based on search frictions, we introduce a richer search environment with two stages. In the first stage, asset sellers search for financial intermediaries who specialize in a particular currency denomination. In the second stage, condition on a successful match, the intermediary contacts a potential buyer.

Compared to standard search protocols, where matching occurs directly between buyers and sellers in a market, introducing a layer of currency-specialized intermediaries allows us to capture network effects at the level of *currency area* in addition to the level of *asset market*. A larger currency area makes it easier for sellers of any assets denominated in this currency to find intermediaries who can facilitate their trade, while a larger asset market makes it easier for intermediaries to locate buyers for that asset. Under this market structure, asset liquidity depends not only on the size of its own market but also on the size of the currency area to which it belongs.

As a result, when an issuer denominates its debt in a given currency, it enhances the liquidity of the entire currency area, which may benefit other assets in that currency area more than its own.

We study how this feature generates a dynamic tension between the incumbent hegemon and the rising power, shaping their incentives and behaviors in the international monetary system. Our main findings are threefold: (i) non-monotonic transition dynamics between currency regimes, (ii) spill-back effects from financial sanction and repression policies, and (iii) the emergence of multiple equilibria when additional foreign issuers are present.

Non-Monotonicity in Transition Dynamics. By distinguishing asset-level and currency-level liquidity, our model treats financial development and currency dominance as distinct concepts. In this paper, we examine when these two objectives coincide and when they diverge.

To study this question, we assume China's financial sophistication increases gradually, driven by an exogenous process that raises the intrinsic desirability of Chinese assets over time. The U.S. always issues its Treasury in dollar, while China chooses between dollar and yuan to maximize its market share. The sizes of assets and currency areas are endogenous, and, through network effects, influence asset desirability and hence investors' asset choices.

When China's financial sophistication is relatively low, it benefits from issuing dollar-denominated assets. By joining the dollar area, China pools its assets with a larger currency network and gains from its liquidity. At the same time, China's participation strengthens the liquidity of the dollar area, reinforcing the existing dollar-centric system.

As China's financial sophistication rises, incentives reverse. Once China's debt market becomes sufficiently large relative to that of the U.S., the U.S. benefits more from China's participation in the dollar system than China benefits from the U.S. participation. At this point, China has a strong incentive to denominate its assets in yuan, since doing so reduces the desirability of U.S. assets more than that of Chinese assets. Since investors choose assets based on their *relative* desirability, China increases its market share by exiting the dollar system, even though doing so *reduces* the liquidity of both assets. This transition occurs once China's financial development crosses a critical threshold, leading to a fragmentation of global asset markets.

Interestingly, this threshold lies *above* the point at which China's financial sophistication reaches parity with the U.S. When Chinese and U.S. markets are similar in size, pooling their assets within the dollar system expands the overall currency area, which increases the desirability of both assets relative to investors' other options. As a result, China remain willing to develop within the existing dollar system, even after its financial sector catches up with and begins to surpass that of the U.S. However, the advantage of remaining in the dollar system eventually diminishes. As China's financial market continues to grow, the key objective shifts from expanding the joint market share of Chinese and U.S. assets within the dollar bloc to competing directly against U.S. assets. At this stage, the incentive to transition to an RMB-centered system dominates, and China's exit generates a sharp, discontinuous adjustment in the dollar system.

This result offers a potential explanation for the observed gradual pace of RMB internationalization, which has lagged behind China's rapid expansion in international trade and financial activities. For example, China continues to hold large quantities of U.S. Treasury and other dollar-denominated assets, and a substantial share of its external lending and borrowing remains denominated in dollar. Our analysis suggests that, from China's perspective, there can be an extended period during which deepening financial integration within the dollar system remains optimal, even after China surpasses the U.S. in financial sophistication.

Spill-Back from Financial Sanction and Repression Policies. What happens when the U.S. possesses the power to sanction China? We model financial sanction as a reduction in the desirability that Chinese assets derive from the size of the dollar area, provided that China remains in the dollar area. If China issues its assets in yuan, the sanction has no effect.

When China's financial sophistication is low, it continues to issue dollar assets even under sanction, as the benefits of participating in the dollar system outweigh the costs imposed by the sanction. In this region, the sanction benefits the U.S. market share at the expense of China.

However, as China's financial sector grows, the sanction precipitates its exit from the dollar system. In an intermediate range of China's financial development, the sanction induces China to switch to yuan-denominated issuance sooner than it would in the absence of sanction. In this case, the sanction segments global asset markets and reduces U.S. market share as well as China's.

This discussion shows that financial sanctions can have opposite effects on the U.S. market share, depending on China's level of financial development. This result echoes the insight of Clayton et al. (2024b) that trade sanctions are effective only when the "incentive compatibility" condition of the targeted country is satisfied. In our setting, financial sanctions benefit the U.S. when China remains committed to the dollar system, but they also weaken China's incentive to stay within the dollar bloc. As a result, sanctions may accelerate China's exit and generate unintended spill-back effects that ultimately undermine U.S. interests.

In addition to sanctions, we also consider a form of financial repression that the U.S. can impose on a fraction of investors. We interpret these investors as U.S. financial institutions, who are required to hold U.S. assets. This policy increases the size and liquidity of the dollar system, which benefits the U.S. issuer. Surprisingly, when the mass of investors captive to the dollar system is sufficiently large, this policy can keep China *permanently* in the dollar system, even after it surpasses the U.S. in financial sophistication. In comparison, a higher level of U.S. financial sophistication only delays China's exit, but cannot prevent it from happening eventually.

Therefore, in the presence of liquidity externalities, financial repression may serve as a powerful tool for maintaining the dollar's dominance. Since the dollar system becomes more fragile when the U.S. puts foreign countries under financial sanction, this result provides a rationale for the combined usage of financial repression and sanction, even though the former policy is directed toward domestic investors while the latter is directed toward foreign countries.

Multiple Equilibria with Additional Issuers. Finally, we introduce additional foreign issuers. For expositional convenience, we consider three countries: the U.S., China, and Europe. Both China and Europe can choose their asset denomination in dollar, yuan, or euro, while the U.S. remains committed to the dollar.

We hold the levels of U.S. and European financial sophistication fixed and vary that of China. When China's financial sophistication is low, all countries choose to issue dollar-denominated assets. As China becomes sufficiently large, both China and Europe issue assets in yuan. In both cases, there is a unique equilibrium.

However, in the intermediate range of China's financial sophistication, multiple equilibria emerge. In one equilibrium, both China and Europe denominate their assets in dollar; in another, both choose yuan. In this region, China and Europe face strategically complementary currency choices, reflecting the strength of the currency-level network effects. As a result, the transition between currency regimes may involve substantial coordination dynamics and heightened volatility.

This excessive volatility point builds on Nurkse (1944); Farhi and Maggiori (2018). Nurkse (1944) highlights the run-like feature of the multi-polar monetary system, in which capital flows fluctuate between competing currency blocs. Farhi and Maggiori (2018) formalize this idea in a bank-run framework, emphasizing the time-consistency problem which gives rise to self-fulfilling runs. In comparison, our mechanism relies on network effects, which generate multiple equilibria without requiring a dynamic/intertemporal setup.

Moreover, sanctions on one foreign country can produce unintended spill-over effects on other foreign countries. Reducing the desirability of one country's dollar asset weakens the dollar system as a whole, and incentivizes other foreign countries to exit the dollar bloc. For example, when U.S. sanctions on China prompt an early exit by China, they also encourage Europe to leave. Conversely, sanctions on a third country can incentivize China to establish its own currency bloc and attract foreign participation, undermining dollar dominance at an earlier stage of its financial development. As a result, to the extent that the strength of the dollar system is derived from not only the U.S. but also foreign countries' participation, these spill-over effects make it difficult for the U.S. to unilaterally enforce sanctions without harming its own interests.

Summary. Intermediated asset search generates a two-tiered liquidity structure at the asset-market and currency-area levels. Table 1 compares our model with a standard one-tiered liquidity structure, and reveals several important differences.

First, with asset-market liquidity alone, the transition between currency regimes is smooth and continuous; once the currency-area liquidity is also present, sovereign issuers' strategic choices matter, generating a discrete jump when an issuer exits from the incumbent currency area.

Second, in the former case, financial sanctions targeting the dollar area have no effect on the foreign asset market, while financial repression only enhances the incumbent asset's desirability without altering the overall strategic dynamics. By contrast, with two-tiered liquidity effects, sanctions precipitate premature fragmentation of the dollar system, and financial repression on domestic investors may permanently lock foreign issuers into the incumbent's currency area.

Third, introducing a third issuer preserves a unique, smoothly evolving equilibrium under asset-market liquidity alone, but gives rise to multiple equilibria once currency-area liquidity is present. These differences underscore that the currency-area-level network effect, under the influence of sovereign issuers' strategic choices, is the key driver of the discontinuities, policy sensitivities, and strategic complementarities that characterize our results.

	Asset-Market Liquidity	**Two-Tiered Liquidity**
Transition Path	smooth, standard logit	discrete jump triggered by China's exit
Dollar-Area Sanction	no effect	premature fragmentation
Financial Repression	boost desirability	permanently trap China in dollar area
Third Issuer	unique equilibrium	multiple equilibria

Table 1: Comparison of Different Liquidity Structures.

These results have implications for the broader policy debate. Underscoring the interdependence between China and the current international order, Nye (2023) coined the concept of the *Kindleberger Trap*. As Nye observed, "thus far, however, Chinese behavior has sought not to overthrow the liberal world order from which it benefits, but to increase its influence within it." China not only gains from the existing system, but also has the potential to contribute to its stability. However, if U.S. policy isolates or pressures China, Nye warned, China may cease providing global public goods and become a free rider, risking a repeat of the 1930s, when, as Charles Kindleberger argued, the U.S. replaced the U.K. as the leading global power but failed to sustain international economic stability.

Nye's view contrasts with the *Thucydides Trap* popularized by Allison (2015), which emphasizes the tendency toward conflict when a rising power threatens to displace the established one. Our results offer a synthesis of these two perspectives. When a rising power shapes the desirability of the existing system, a situation that initially resembles the Kindleberger Trap may evolve into a Thucydides Trap at a later stage. Thus, *instead of treating these concepts as static descriptions of the U.S.-China relationship, it is more fruitful to view them as two possible regimes within a dynamic transition process.*

In doing so, our analysis offers a more nuanced take on the Kindleberger Trap. When China stays in the dollar area, its growth also improves the overall liquidity of the dollar system, making it even more attractive to other participants. Consistent with Nye's argument, not only does China benefit from the dollar area's liquidity, the dollar area also benefits from China's growth. However, this mutually beneficial relationship will not last forever. When China gains sufficient financial sophistication, it is incentivized to exit the dollar area and form its own currency bloc.

Furthermore, sanctions have unintended consequences. When China is committed to staying in the dollar system, the U.S. sanction unilaterally harms China and benefits the U.S. However, the sanction also reduces the attractiveness of staying in the dollar bloc, which precipitates China's exit and leads to a premature fragmentation of global asset markets. Consistent with Nye's concern, we find that sanction policies can undermine the very system they were meant to protect.

Finally, with multiple countries, multiple equilibria lead to even more instability. The Kindleberger Trap also manifests itself as China's pivotal role in equilibrium selection. China's participation stabilizes the dollar system by encouraging other countries to stay. Conversely, U.S. sanctions precipitate the emergence of multiple equilibria, in which case foreign countries may coordinate to exit the dollar system together.

Literature. This paper contributes to the emerging literature on how countries coordinate and compete in international financial markets. Clayton, Maggiori, and Schreger (2023) propose a framework for a hegemon to exert influence through trade network. Pflueger and Yared (2024) study the feedback between military spending, geopolitical risk, and government financing. Jiang and Richmond (2023) study the strategic coordination in reserve asset issuance. Broner, Martin, Meyer, and Trebesch (2024) propose a theory to describe the strategic interplay between a hegemon and a challenger in economic activities. Abadi, Fernández-Villaverde, and Sanches (2026) model currency demand and study the resulting currency competition. Our paper focuses specifically on the mechanism through which network effects influence the strategic choices of incumbent and rising powers, emphasizing the roles that government policies play in shaping the evolution of the international currency system.

In this literature, Coppola, Krishnamurthy, and Xu (2023, 2025) are the most closely related works. While our framework builds on their works, we shift the locus of the currency choice. In their model, two countries are committed to their respective currency areas, while atomistic market participants (global firms in their setting) choose the currency denomination of their assets. By contrast, our paper studies the strategic decision of a country to join or exit another country's currency area. In our setting, not only do small market participants (global investors in our setting) choose between assets based on their desirabilities, but big sovereign actors also strategically select their currency policies to influence these desirabilities. The novel assumption in our model is that liquidity operates at two distinct but interconnected levels, which allows us to capture the strategic interaction between asset markets and currency systems. More broadly, Portes and Rey (1998); Devereux and Shi (2013); He, Krishnamurthy, and Milbradt (2019); Gopinath and Stein (2021); Chahrour and Valchev (2022); Benguria, Rojas, and Saffie (2026) also study liquidity effects arising from trade and financial linkages.

Our paper is related to a growing literature on China's financial opening. Bahaj and Reis (2020) study China's liquidity provision through central bank swap lines. Horn, Reinhart, and Trebesch (2021) examine its overseas lending, and Jiang (2025) studies its spill-over effects on developing countries. Bahaj and Reis (2024) document the structure of China's parallel currency system. Clayton, Dos Santos, Maggiori, and Schreger (2025, 2024a) study China's currency internationalization strategy through reputation building.

Our paper also builds on recent works on international asset allocation. Koijen and Yogo

(2020); Jiang et al. (2024, 2025b); Fang et al. (2025); Chaudhary et al. (2024); Pellegrino et al. (2025) use bilateral holdings data to study the determinants of cross-border asset allocation. Our paper provides a complementary theoretical perspective by focusing on the strategic decisions of sovereign issuers on the supply side. This is particularly relevant in light of the increasing role of government policies in reserve asset markets (Ding and Jiang, 2024; Jiang et al., 2025a; Acharya and Laarits, 2026).

Finally, our paper's focus on financial development as a driver of currency internationalization is in line with U.S. historical interwar experience (Eichengreen and Flandreau, 2010; Eichengreen, 2011; Vicquéry, 2022; Coppola et al., 2023; Chen et al., 2025). For example, U.S. expanded the dollar's global presence after the creation of Fed and development of international bonds markets. We model countries' financial market development in a reduced-form way and study how it interacts with network effects to shape the timing of currency internationalization.

The rest of the paper is organized as follows. Section 2 presents the model and its equilibrium outcomes. Section 3 studies the effects of U.S. financial sanction and financial repression policies on the timing of RMB internationalization. Section 4 introduces additional foreign countries, and studies how multiple equilibria arise and respond to sanction. Section 5 concludes.

2 Model

We consider a setting in which an incumbent hegemon (U.S.) competes with a challenger (China) in the provision of reserve assets. There are three investment options: a U.S. asset, a Chinese asset, and an outside option such as gold or crypto assets, which are indexed by $i \in \{us, cn, outside\}$. For the U.S. and Chinese assets, we use $currency_i$ to denote the asset's currency denomination, which can be either $dollar$ or $yuan$. Each sovereign asset has a unique currency denomination, while a currency may denominate multiple assets. By contrast, the outside asset has no currency denomination and is not influenced by the network effects in currency systems.

There is a unit mass of atomistic global savers who choose among the assets. Each saver invests their wealth in exactly one of the three options, and the size of each asset is given by the total amount of wealth invested in it. We abstract away from exchange rate variations. Let $s(i)$ denote the size of asset i, and let $s(currency_i)$ denote the size of the currency area to which asset i belongs, defined as the total size of all assets issued in that currency.

Our setting is intentionally stylized to capture a broad range of scenarios. Because the proposed search framework is broadly applicable, the resulting theoretical insights extend beyond the specific context of reserve asset markets. They can inform related questions such as the choice of invoice currency in international trade, the choice of currency denomination in foreign investments, and the selection of clearing systems for cross-border payments.

The key ingredient of our model is the network effect: when more savers hold an asset, it becomes more liquid and therefore more attractive. We depart from the existing literature by distinguishing between two types of liquidity: the liquidity of a specific *asset* and the liquidity of the entire *currency system*. To microfound this distinction, we propose a new search process intermediated by financial intermediaries.

2.1 Two-Stage Search Process

There is an infinite horizon $t \in \{0, 1, 2, ...\}$. Each period is divided into two sub-periods, t and t^+. In sub-period t, savers choose among the available assets. At this stage, trading is frictionless. In the subsequent sub-period t^+, a fraction λ of randomly selected savers experience a liquidity shock, which forces them to liquidate their asset holdings. Trading at this stage is subject to search frictions.

Specifically, when a saver is forced to liquidate its asset, it searches for a buyer. The probability of finding a buyer depends on the liquidity of the asset market and the currency system. If the search is successful, the saver is matched with another saver who has not experienced the liquidity shock. In this case, the seller can sell its asset at par value. If the search fails, the saver is forced to sell its asset at a fire-sale price of $\delta < 1$ to a specialized distressed buyer. The asset is then held until the next period $t + 1$, when it can be traded at par again.

Our key departure from classic search models is to introduce a two-stage search process that emphasizes the role of the currency area. Both stages are intermediated by financial intermediaries. In the first stage, the seller searches for an intermediary who specializes in the asset's currency denomination. In the second stage, if the match between the seller and the intermediary is successful, the matched intermediary contacts a potential buyer. We next describe the two stages in more detail, and then discuss the motivation for this search protocol.

Stage 1: Seller to Intermediary. There is a unit mass of financial intermediaries, and each specializes in a particular currency denomination. We assume that the mass of intermediaries for a given currency is proportional to the size of that currency area. The number of meetings between sellers of asset i and intermediaries in the corresponding currency area $currency_i$ is increasing in their respective masses:

$$n(match) = \kappa[\underbrace{\lambda s(i)}_{\text{mass of sellers}}]^{\phi} \cdot [\underbrace{s(currency_i)}_{\text{mass of intermediaries}}]^{\phi}, \quad \text{with} \quad \phi > 0.$$

This setup follows closely the standard matching function in Duffie et al. (2005) (setting $\phi = 1$) and Coppola et al. (2023) (considering general ϕ values). Following these works, we assume $\phi > 1/2$. Under this condition, doubling the masses of sellers and intermediaries more than doubles the number of matches, which captures the strength of network effects.

Given this matching function, the probability of finding a counterparty from the perspective of a seller is equal to the number of meetings per seller:

$$p(match) = \frac{n(match)}{\lambda s(i)} = \kappa[\lambda s(i)]^{\phi-1} \cdot [s(currency_i)]^{\phi}.$$

In standard search settings, the currency area coincides with the specific asset market: $s(i) = s(currency_i)$, which implies $p(match) = \kappa\lambda^{\phi-1}s(i)^{2\phi-1}$. In this case, $\phi > 1/2$ is also the necessary condition for an increase in asset size to raise the probability of finding an intermediary. When $\phi < 1/2$, the presence of additional sellers instead crowds out each seller's matching probability.

Stage 2: Intermediary to Buyer. Once the seller is matched with an intermediary, the intermediary contacts a potential buyer. For a trade to occur, the buyer must satisfy two conditions. First, the buyer must not have been hit by the liquidity shock. We assume that any saver unaffected by the shock has sufficient balance sheet capacity to absorb additional assets. Second, the buyer must already hold the same asset. This latter assumption captures the idea that, given the urgency amidst a liquidity shock, acquiring an asset requires expertise and familiarity, which are more likely to be found among its existing holders.

We assume that, for the intermediary specializing in a given currency area, the probability of finding a buyer who holds the same asset is increasing in the asset's share within the currency area:

$$p(contact|match) = \left(\frac{s(i)}{s(currency_i)}\right)^{\psi}, \quad \text{with} \quad \psi > 0.$$

Intuitively, as more savers hold a given asset within a currency area, it becomes easier for intermediaries to locate a suitable buyer. Conversely, smaller assets generate less trading interest and less dealer activity, which reduce the effective share of participants in the currency area who are visibly holding—and willing to trade—the asset. As a special case, if $\psi = 1$, the intermediary finds a random buyer within the currency area with equal probability.

Let us first consider a baseline case with $\psi = \phi$, so that the strength of the network effect at the asset level is the same as the currency level. In this case, the probability of finding a buyer is

$$p_{baseline}(success) = p(match) \cdot p_{baseline}(contact|match) = \kappa\lambda^{\phi-1}s(i)^{2\phi-1},$$

which is identical to the result in Coppola et al. (2023). $p_{baseline}(success)$ only depends on the size of the asset market, independent of the size of the currency area $s(currency_i)$. Intuitively, if intermediaries locate buyers with the same intensity as sellers locate intermediaries, our setup collapses to the standard search process that occurs directly between sellers and buyers, rendering intermediaries a pure pass-through.

Returning to the general case, the overall probability of finding a buyer is given by

$$p(success) = p(match) \cdot p(contact|match) = \kappa\lambda^{\phi-1}s(i)^{\psi+\phi-1} \cdot s(currency_i)^{\phi-\psi}. \tag{1}$$

Recall that $\phi > 1/2$ by assumption. In order for the probability of finding a buyer to be increasing in both the size of the currency area and the size of the asset, the search parameters must satisfy

$$\psi + \phi > 1 \text{ and } \phi > \psi. \tag{2}$$

The first condition $\psi + \phi > 1$ ensures that the network effects at asset and currency levels are strong enough. We have already assumed that $\phi > 1/2$, so that doubling sellers and intermediaries more than doubles the number of matches in the first stage. Additionally, we also need ψ to be large enough for size to play a meaningful role in the second stage of the search process.

The second condition $\phi > \psi$ implies that size confers a greater advantage through network effects in the currency market than in the asset market. Holding asset size constant, a larger currency area has two opposing effects. On the one hand, sellers benefit from a thicker intermediary market in the first stage; on the other hand, intermediaries have to face a larger pool of potential counterparties in the second stage, within which buyers of the specific asset constitute a smaller share.

The condition $\phi > \psi$ ensures that the thickening of the intermediary market dominates the dilution effect, so that a larger currency area increases the probability of successful trade. This assumption is plausible since specialized intermediaries possess greater expertise and resources in locating counterparties than individual investors do in finding intermediaries, so that currency size plays a more significant role in the first stage than in the second stage.

Under these conditions, the matching probability function (1) successfully captures network externalities at both currency and asset levels: each additional holder of $currency_i$ facilitates the first-stage search process between sellers and intermediaries at the currency level, while each additional holder of asset i raises the visibility of this asset to intermediaries within that currency area.

Discussion of the Key Assumption. The currency-specialized intermediaries play a key role of connecting sellers and buyers in the search process. Their operation in currency areas, as opposed to individual asset markets, creates a liquidity effect at the currency level, which is crucial for generating the two-tiered network effects that drive our main results.

This assumption reflects a fundamental feature of global financial markets. Intermediating trades in a given currency requires *expertise* in the legal and regulatory environment governing that currency, *access* to the corresponding funding resources and central bank's liquidity facilities, and *relationships* with market participants. All of these competencies are costly to acquire and difficult to replicate across currencies.

As a result, liquidity provision in asset markets is organized around currency-specific dealer networks. Although large banks operate across multiple currencies, they typically maintain separate funding, inventory, collateral, risk management, and market-making facilities for each currency area. These currency-specific trading desks are the real-world counterparts of the intermediaries in our model. They intermediate trade among assets denominated in the same currency at relatively low cost because these assets share common funding markets, settlement systems, collateral pools, and client networks, whereas intermediating assets denominated in multiple currencies is generally more costly. The fixed costs of maintaining operations across multiple currency systems push intermediaries toward specialization.

We can obtain similar two-tiered network effects through an alternative microfoundation, which also emphasizes the role of currency-specialized intermediaries. Suppose the asset holders are located in a unit mass of foreign countries. They face the same liquidity shock, but the search process is directly between sellers and buyers. In this case, the probability of finding a buyer only depends on the size of the asset market.

However, upon selling the asset, the seller also needs to convert the proceeds from the currency in the asset's denomination to its domestic currency to satisfy its liquidity needs. The key assumption is that the currency exchange is facilitated by intermediaries who specialize in certain currencies. The transaction cost is decreasing in the size of the currency area, which is proportional to the combined size of all assets denominated in that currency. In this case, the network effect arises at the currency level from the currency conversion process, and leads to similar results as the two-stage search process described above.

2.2 Utility Function

Building on this search set-up, we adopt a simple specification for savers' utility function. Recall that a saver has a payoff of 1 if it is not hit by the liquidity shock or if it successfully finds a buyer condition on being hit by the shock. If the saver fails to find a buyer, it must liquidate the asset at the fire-sale price δ. Assume savers are risk-neutral. The expected payoff from holding asset i is given by

$$\begin{aligned}\pi(i) &= (1-\lambda)\cdot 1 + \lambda p(success)\cdot 1 + \lambda(1-p(success))\cdot\delta \\ &= 1-\lambda+\lambda\delta+(1-\delta)\kappa\lambda^{\phi}s(i)^{\psi+\phi-1}\cdot s(currency_i)^{\phi-\psi},\end{aligned}$$

which is increasing in the two determinants of liquidity: the size of the currency area $s(currency_i)$ and the size of the asset $s(i)$.

To obtain a tractable expression for analytical purposes, we consider a linear expansion of the payoff function with respect to log asset size $\log(s(i))$ and log currency size $\log(s(currency_i))$:

$$\begin{aligned}\pi(i) &\approx 1-\lambda+\lambda\delta+\bar{p}+(\psi+\phi-1)\bar{p}(\log s(i)-\bar{a})+(\phi-\psi)\bar{p}(\log s(\text{currency}_i)-\bar{b}) \\ &= c+\alpha\log s(i)+\beta\log s(currency_i),\end{aligned}$$

where $\bar{a}=\overline{\log(s(i))}$ and $\bar{b}=\overline{\log(s(currency_i))}$ denote the values around which the function is linearized, and $\bar{p}=(1-\delta)\kappa\lambda^{\phi}\exp\big((\psi+\phi-1)\bar{a}+(\phi-\psi)\bar{b}\big)$. This log-linear approximation is equivalent to assuming that doubling the asset size or currency size from 1% to 2% of the market has the same effect on the asset's desirability as doubling the size from 10% to 20%. This is a convenient and plausible feature when market thickness and search intensity are governed by the relative scale rather than absolute changes in market share.

Moreover, we assume that the desirability of asset i also depends on its intrinsic features such as the issuer's sophistication and credibility. We capture these issuer-level characteristics with a reduced-form term $\theta(i)$, which we refer to as the issuer's *financial sophistication*. For example, U.S. assets are historically perceived to have higher institutional quality than Chinese assets, implying $\theta(\text{us}) > \theta(\text{cn})$. More generally, $\theta(i)$ can be extended to incorporate the asset's yield, credit risk, and currency risk which influence its desirability, as in quantitative asset demand systems (Koijen and Yogo, 2019, 2020; Jiang et al., 2024). We abstract from these considerations to focus on endogenous supply policies by sovereign issuers.

The above assumptions imply that all savers have identical preferences over assets. To generate smooth market shares, we introduce heterogeneity in savers' preferences. Each saver k faces an idiosyncratic preference shock $\epsilon_k(i)$ for asset i. This shock creates dispersion in each saver's relative preference: holding market sizes and issuers' financial sophistication constant, savers facing more favorable idiosyncratic shocks toward a given asset are more likely to choose that asset. We assume that $\epsilon_k(i)$ is i.i.d. across savers and assets, and follows a Type I extreme value distribution. This assumption yields logit expressions for asset market shares commonly used in the demand system literature.[1]

In sum, saver k's utility from holding asset i is given by

$$u_k(i) = \alpha \underbrace{\log s(i)}_{\text{asset liquidity}} + \beta \underbrace{\log s(currency_i)}_{\text{currency liquidity}} + \underbrace{\theta(i)}_{\text{issuer quality}} + \underbrace{\epsilon_k(i)}_{\text{saver taste shock}}, \quad \text{for } i \in \{us, cn\}, \tag{3}$$

which captures network effects at both asset and currency levels. Since $\alpha > 0$ and $\beta > 0$, savers prefer assets with larger market size and those denominated in currencies with broader usage. This

[1]We can consider other distributional assumptions for the idiosyncratic shock. If $\epsilon_k(i)$ is normally distributed, we obtain a probit model. While we can derive qualitatively similar demand curves, the asset shares are no longer available in closed form. Therefore, we adopt the logit specification for analytical tractability for subsequent analysis.

result supports the notion that the Treasury premium (the asset-specific component) is conceptually distinct from the dollar premium (the currency-specific component), which has been noted in empirical studies (Jiang, Krishnamurthy, and Lustig, 2021; Du, Keerati, and Schreger, 2026). The two-tiered network effects in our model provide an interpretation of this decomposition.

For the outside asset $i \in \{outside\}$, we assume that it cannot be traded through the search process, and normalize its utility to zero: $u_k(outside) = 0$.

2.3 Macro Synthesis

The preference specified by (3) allows us to derive aggregate market shares in closed form. Assuming each saver chooses the asset that maximizes their utility, we obtain the following aggregate demand curves for U.S. and Chinese assets:

$$s(i) = \frac{\exp(\alpha \log s(i) + \beta \log s(currency_i) + \theta(i))}{1 + \sum_{j \in \{us,cn\}} \exp(\alpha \log s(j) + \beta \log s(currency_j) + \theta(j))}, \quad i \in \{us, cn\},$$

while $s(outside) = 1 - s(us) - s(cn)$ denotes the share of the outside option. U.S. and Chinese assets compete not only with each other, but also against alternative investment opportunities available in the rest of the world.

In this setting, asset sizes are endogenous to issuers' currency choices. We assume that the U.S. commits to issuing its securities in dollar: $currency_{us} = dollar$. China, on the other hand, can choose whether to issue its securities in dollar or yuan: $currency_{cn} \in \{dollar, yuan\}$. If China remains in the dollar system, the combined pool of U.S. and Chinese dollar assets makes the dollar system even more liquid. In this case, the demand for U.S. and Chinese assets follows

$$s(i) = \frac{\exp(\alpha \log s(i) + \beta \log s(dollar) + \theta(i))}{1 + \sum_{j \in \{us,cn\}} \exp(\alpha \log s(j) + \beta \log s(dollar) + \theta(j))}, \quad i \in \{us, cn\},$$

where $s(dollar) = s(us) + s(cn)$ denotes the size of the dollar system.

In comparison, if China exits the dollar system and issues its assets in yuan, the demand is given by

$$s(i) = \frac{\exp(\alpha \log s(i) + \beta \log s(i) + \theta(i))}{1 + \sum_{j \in \{us, cn\}} \exp(\alpha \log s(j) + \beta \log s(j) + \theta(j))}, \quad i \in \{us, cn\},$$

where the size of each currency area coincides with the size of its corresponding asset: $s(dollar) = s(us)$ and $s(yuan) = s(cn)$.

It is worth noting that the endogenous market size $s(i)$ appears on both sides of these equations. This is because demand for an asset depends on its liquidity, while liquidity improves with market size. This feedback mechanism captures the network effects at the core of our model, which shape the strategic interaction between U.S. and Chinese asset issuers.

2.4 Equilibrium Outcomes

The equilibrium consists of the asset shares $s(us)$ and $s(cn)$, together with China's currency denomination choice $currency_{cn} \in \{dollar, yuan\}$, such that savers choose assets to maximize their utilities, while China chooses currency denomination to maximize its market share. Appendix A.1 establishes the existence and uniqueness of equilibrium market shares for any level of China's financial sophistication and currency choice.

We set the level of U.S. financial sophistication to $\theta(us) = 1$, and vary China's financial sophistication $\theta(cn)$ from below to above that of the U.S., which reflects the gradual development of China's financial system over time. We obtain the following result characterizing China's optimal currency choice.

Proposition 1. *For* $0 < \alpha, \beta < 0.9$ *and* $0 < \alpha + \beta < 0.9$*,*

(a) there exists a unique cutoff level of China's financial sophistication θ^* *such that China chooses to issue its asset in dollar for* $\theta(cn) < \theta^*$*, and chooses to issue in yuan for* $\theta(cn) > \theta^*$*;*

(b) the cutoff threshold θ^* *is strictly above* $\theta(us) = 1$*. China issues in yuan only after its financial sophistication surpasses that of the U.S.*

Appendix A.2 presents the proof. While China has an incentive to remain in the dollar system when it is relatively small, it eventually exits the dollar area as its financial sophistication grows. What initially appears to be a cooperative relationship between the incumbent hegemon and the challenger eventually evolves into a competitive one: whether China chooses to preserve the status quo depends on its incentive, which varies with its relative level of financial sophistication.

To illustrate this result, we plot the Chinese and U.S. asset market shares with $\alpha = 0.4$ and $\beta = 0.3$. Figure 1 reports the sizes of Chinese and U.S. assets $s(cn)$ and $s(us)$ as functions of China's financial sophistication $\theta(cn)$. The blue line represents the case in which China issues in dollar, and the red line represents the case in which China issues in yuan. To visualize the dominant strategy, we use solid lines to represent equilibrium outcomes under the optimal currency choice, and use dotted lines to depict the counterfactual outcomes under the alternative strategy.

Panel (a) shows that under both currency regimes, an increase in China's financial sophistication $\theta(cn)$ increases its market share. The slope is steeper under the yuan regime, because when China issues in dollar, the growth of China's asset market also improves the dollar's liquidity and benefits the U.S. asset's market share, which dilutes the relative advantage of the Chinese asset.

Consistent with Proposition 1, the relative size under these two currency choices depends on the value of $\theta(cn)$. When $\theta(cn)$ is low, the blue curve lies above the red curve: for a less developed issuer, pooling its asset with the dollar system is more attractive because of the liquidity benefits associated with the dollar's larger network.

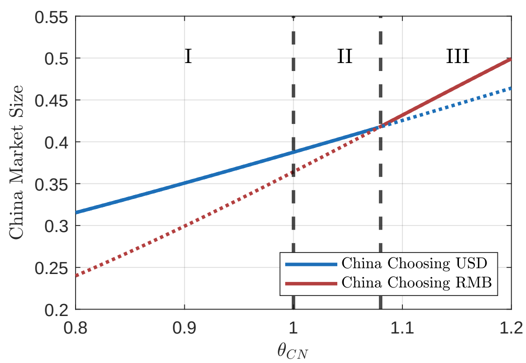
When $\theta(cn)$ is high, the ranking reverses: once China's financial sophistication becomes sufficiently high, the benefits of issuing in yuan dominate. Intuitively, if China issues in dollar terms, it enhances the liquidity of the entire dollar system. When China is sufficiently large, China's participation in the dollar system benefits the U.S. asset even more than the Chinese asset. Therefore, while issuing in yuan terms lowers the liquidity of the Chinese asset, it lowers the liquidity of the U.S. asset even more. Since the market share depends on the relative desirability of U.S. and Chinese assets, this shift creates an incentive for China to denominate its assets in yuan.

Interestingly, the two strategies cross at a threshold θ^* above $1 = \theta(\text{us})$. This means that China has an incentive to remain in the dollar system even when its financial sophistication is on par with the U.S. In this case, China and U.S. prioritize taking over the market share from the outside option rather than competing against each other. By pooling their assets together, both countries benefit from a larger and more liquid currency area, which enhances the desirability of their assets.

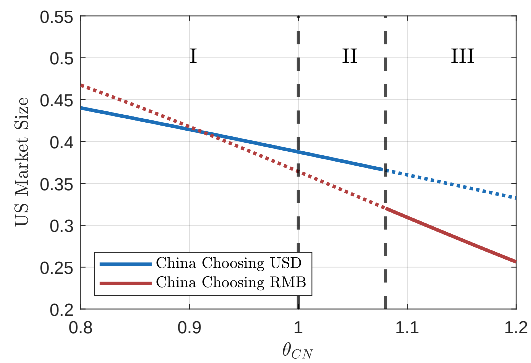
When China's financial sophistication $\theta(cn)$ becomes sufficiently higher than that of the U.S., China finds it optimal to issue in yuan. It is helpful to decompose China's objective function as

$$s(cn) = \frac{s(cn) + s(us)}{1} \cdot \frac{s(cn)}{s(cn) + s(us)},$$

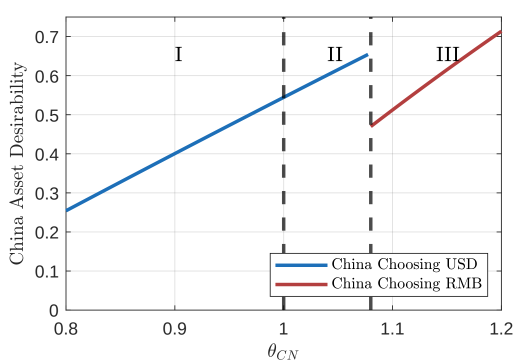
which is China and the U.S.' *joint market share* times China's *relative market share* vis-a-vis the



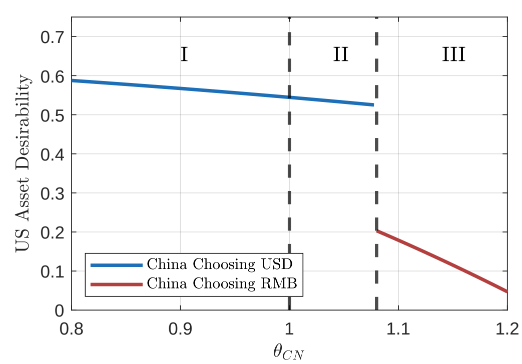
(a) Size of Chinese Assets



(b) Size of U.S. Assets



(c) Desirability of Chinese Assets



(d) Desirability of U.S. Assets

Figure 1: Equilibria in Different Stages of China's Financial Sophistication

U.S. When China is small, joining the dollar system maximizes the joint market share, which benefits China's market share. As China develops, the U.S.-China joint market share becomes large and further increases become difficult to achieve. At this point, priority shifts from competing against the outside option to competing directly with the U.S. While segmenting the currency bloc is liquidity-costly for both countries, strategic decoupling shifts the relative market share away from the U.S. towards China.

Finally, the fact that the threshold θ^* for China's exit lies above the U.S. level of financial sophistication reflects a *first-mover advantage*. When China just surpasses the U.S. in financial sophistication, both countries are still incentivized to pool their assets within a common currency area. As long as the incumbent hegemon remains committed to its currency regime, the rising power would be willing to participate in the existing order. In this sense, the currency system exhibits a built-in inertia that reinforces the dominance of the incumbent regime.

Panel (b) of Figure 1 reports the U.S. asset size $s(us)$ as a function of China's financial sophistication $\theta(cn)$. As China switches to RMB at the threshold $\theta(\text{cn}) = \theta^*$, we observe a discrete jump in the U.S. market share, even when China's financial sophistication $\theta(cn)$ increases in a continuous manner. This discontinuity potentially represents a dollar liquidity crisis, in which a major foreign participant leaves the dollar system and triggers a sudden contraction in the size and attractiveness of the dollar area.

Panels (c) and (d) report the desirability of Chinese and U.S. assets, defined as $\alpha \log s(i) + \beta \log s(currency_i) + \theta(i)$. As China's financial sophistication rises, the desirability of the Chinese asset increases. China's growth reduces the U.S. asset's market share, which in turn lowers its desirability. At the threshold θ^* when China exits the dollar system, both assets experience a discrete drop in desirability, reflecting the fragmentation of the currency area. This pattern reinforces the notion that China's exit reduces liquidity for both assets, even though it allows Chinese assets to gain a *relative* advantage and thus a larger market share over U.S. assets.

In summary, the model delivers three regions that characterize China's optimal strategy as its financial sophistication $\theta(cn)$ increases over time. In Region I, as China is smaller than the U.S., the optimal strategy is to join the dollar system. In this region, not only does China benefit from a stronger dollar system, but its own growth also improves the dollar system's liquidity.

In Region II, even after China surpasses the U.S. in financial sophistication, it still finds it beneficial to remain in the dollar system. In this sense, absolute strength in China's financial system does not immediately translate into currency dominance, as the network benefits from the dollar system continue to outweigh the gains from fragmentation.

In Region III, when China surpasses the U.S. by a large margin, it finally decides to switch to an RMB system. This switch produces a discrete jump in the dollar system, generating a sharp contraction in the size and liquidity of the dollar system.

Finally, our baseline analysis assumes that China issues debt only in one currency. Would China be interested in issuing assets in both currencies? Our microfoundation for investor demand provides a natural framework for addressing this question. Appendix B extends the model to allow for multi-currency issuance. We show that once China's financial sophistication becomes sufficiently high, issuing Chinese assets in dollar strengthens dollar liquidity and expands the U.S. asset quality more than it benefits Chinese assets. Consequently, China optimally chooses to issue exclusively in yuan, even when presented with the seemingly attractive option to issue in both currencies. This result further reinforces our main intuition.

3 Financial Sanction and Financial Repression

Next, we introduce two types of U.S. policies that may influence China's incentive to remain in the dollar system: financial sanction and financial repression. Financial sanction refers to policies that directly target Chinese assets in the dollar system, such as freezing funds or restricting Chinese entities' access to U.S. financial markets. Such measures reduce the benefits that Chinese issuers derive from participating in the dollar system.

Financial repression, in contrast, refers to policies that require a share of (U.S. domestic) investors to hold U.S. assets, thereby increasing demand for U.S. assets and expanding the size of the dollar system. We analyze the effects of these policies on China's incentive to stay in or exit the dollar system.

3.1 Financial Sanction

We first consider the possibility that the U.S. imposes financial sanctions on China. Such sanctions reduce the benefits Chinese assets derive from being part of the dollar system. Formally, sanction scales down the coefficient β associated with currency liquidity by a factor $0 < \kappa < 1$:

$$u_k(cn) = \alpha \log s(cn) + \kappa\beta \log s(dollar) + \theta(cn) + \epsilon_k(cn), \quad \text{when China issues in dollar.}$$

The Chinese asset still derives value from its own size $s(cn)$ and its own financial sophistication $\theta(cn)$. While the asset size is endogenous, financial sophistication is unaffected by the sanction. Garofalo, Rosso, and Vicquéry (2025) provide evidence that U.S. and European financial sanctions on Russia after 2014 were currency-specific, and more precisely, dollar-specific. Similarly, in the model we allow the sanction to affect Chinese assets only when China chooses to issue in dollar, while leaving Chinese assets unaffected when China chooses to issue in yuan.

The following proposition characterizes the effects of financial sanction on China's optimal currency choice.

Proposition 2. *For $0 < \alpha, \beta < 1$ and $0 < \alpha + \beta < 1$, the cutoff threshold θ^* at which China switches from issuing in dollar to issuing in yuan is lower when sanction is imposed:*

$$\theta^*_{sanction} < \theta^*_{no-sanction}.$$

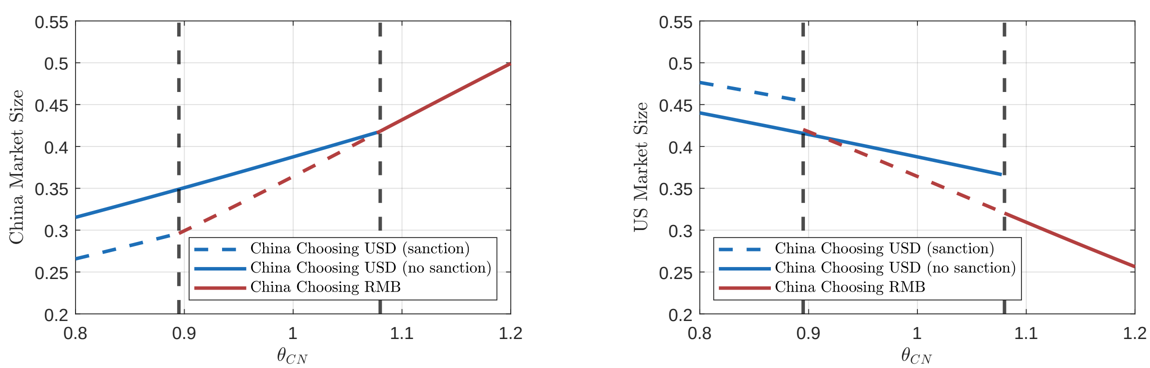
Appendix A.3 presents the proof. This proposition shows that financial sanction reduces the benefits of participating in the dollar system, and hence lowers the threshold at which China chooses to exit the dollar system. In other words, financial sanction encourages China to switch to issuing in yuan at an earlier stage of its financial development.

Figure 2 reports the equilibrium outcomes when the U.S. sanctions China under the same calibration. The dashed lines represent the equilibrium outcomes when China is under sanction. For comparison, the solid lines show the equilibrium outcomes when China is not under sanction, which correspond to the baseline case in Figure 1.

The sanction unambiguously reduces the size of Chinese assets when China issues its assets in dollar. As shown in Panel (a), the solid blue line is always above the dashed blue line. As a result, financial sanction discourages China from issuing assets in dollar, and hence lowers the threshold at which China switches to issuing in yuan. In this calibration with $\kappa = 3/4$, China transitions to the RMB system even before its financial sophistication surpasses that of the U.S.

Interestingly, the sanction has opposite effects on the size of the U.S. asset, depending on the level of China's financial sophistication $\theta(cn)$. When $\theta(cn)$ is low, China remains in the dollar system even under sanction. At this stage, the sanction benefits the U.S. market share at the expense of China's market share. As we see in Panel (b), which reports the U.S. market size, the solid blue line is below the dashed blue line in the left region.

When $\theta(cn)$ is in the intermediate range delimited by the two vertical dashed lines, China chooses to issue in yuan when it is under sanction, but would have chosen to issue in dollar if it were not under sanction. At this point, the sanction lowers the size and hence the desirability of



(a) Size of Chinese Assets

(b) Size of U.S. Assets

Figure 2: Equilibria under U.S. Sanction

the entire dollar system. The world financial market becomes segmented, resulting in lower market shares for both U.S. and Chinese assets. As we see in Panel (b), the dashed red line (the sanction case) lies below the solid blue line (the no-sanction case).

This is a relevant region to consider the Kindleberger Trap. When the U.S. policy discourages China's participation in the dollar system, it also weakens the entire dollar system. Even from a narrow perspective of maximizing the U.S. market share, the sanction can be counterproductive.

Finally, when $\theta(cn)$ is large, China issues in yuan regardless of the sanction. In this case, the sanction has no effect on the sizes of U.S. and Chinese assets.

This discussion reveals that financial sanction gives rise to two countervailing effects, which we can think of as the "intensive-margin" and the "extensive-margin" effect. The "intensive-margin" effect captures the effect of the sanction when China remains in the dollar system, whereas the "extensive-margin" effect captures the effect of the sanction on the threshold at which China exits the dollar system. The former always benefits the U.S. at the expense of China, whereas the latter can hurt the U.S. by triggering a "premature" segmentation of the world financial market.

This contrast also implies that the hegemon (the U.S. in this case) has a higher incentive to impose sanction when the challenger (China) is small, because smaller countries are more "captive" to the hegemon's currency system as they would not leave the system even when sanctioned. On the other hand, the hegemon would hesitate to impose sanction when the foreign country is sufficiently strong to make a credible threat to leave the dollar system.

Finally, it is worth noting that the currency area-specific nature of the financial sanction is crucial for the above results. If the sanction affects Chinese assets regardless of China's currency denomination choice, which would result in an unconditional reduction in $\theta(cn)$, the sanction would simply set back China's financial development and reduce the market share of the Chinese asset under both currency regimes. In this case, the sanction would unambiguously benefit the U.S., without any risk of backfiring by triggering a premature exit from the dollar system.

3.2 Financial Repression

Next, we consider a simple form of financial repression. Suppose a fraction μ of the world savers consists of U.S. institutional investors who are restricted to holding U.S. asset. The remaining fraction $1-\mu$ of savers are free to choose among available assets, who we refer to as *active investors*. This form of financial repression can be implemented through various channels, such as reserve requirements for banks, investment mandates for institutional investors, or regulatory constraints on pension funds.

Let $s^a(i)$ denote the share of asset i held by active investors, while $s(i)$ continues to denote asset i's aggregate market share, which is given by

$$s(us) = (1-\mu)s^a(us) + \mu,$$
$$s(cn) = (1-\mu)s^a(cn).$$

If China issues assets in dollar, the demand for U.S. and Chinese assets by active investors is given by

$$s^a(i) = \frac{\exp(\alpha \log s(i) + \beta \log s(dollar) + \theta(i))}{1 + \sum_{j\in\{us,cn\}} \exp(\alpha \log s(j) + \beta \log s(dollar) + \theta(j))}, \quad i \in \{us, cn\},$$

where $s(dollar) = s(us) + s(cn)$ captures the size of the dollar system.

In contrast, if China exits the dollar system and issues assets in yuan, the demand for U.S. and Chinese assets by active investors becomes

$$s^a(i) = \frac{\exp(\alpha \log s(i) + \beta \log s(i) + \theta(i))}{1 + \sum_{j\in\{us,cn\}} \exp(\alpha \log s(j) + \beta \log s(j) + \theta(j))}, \quad i \in \{us, cn\},$$

where the size of the currency area coincides with the size of the asset market: $s(dollar) = s(us)$ and $s(yuan) = s(cn)$.

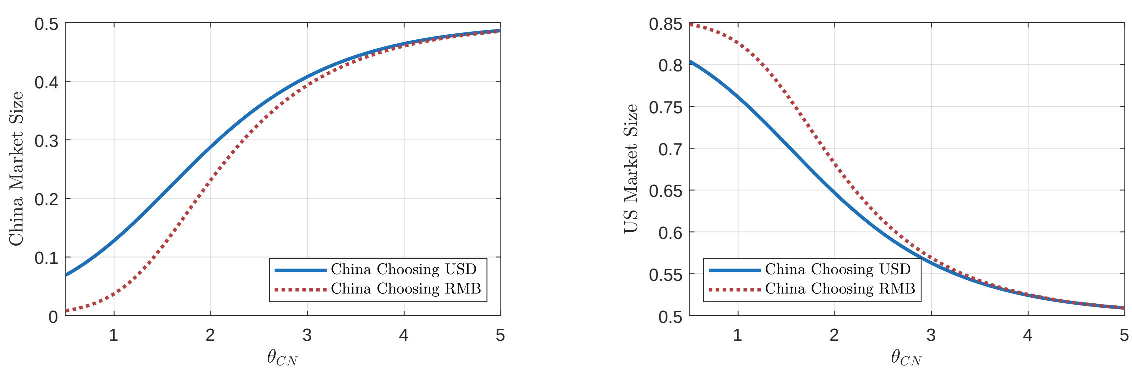
Figure 3 reports the equilibrium outcomes when the U.S. imposes financial repression on its domestic investors. We set $\mu = 1/2$, so that half of all savers are captive to the U.S. asset market.

As before, the blue curves represent the equilibrium outcomes when China issues its assets in dollar, and the red curves represent the equilibrium outcomes when China issues its assets in yuan.

The presence of captive investors implies that the U.S. Treasury market accounts for at least $\mu = 1/2$ of total asset holdings. This captive demand enhances the liquidity of the dollar system, which in turn attracts active investors to hold dollar-denominated assets. Consequently, for any given level of China's financial sophistication $\theta(cn)$, the overall size of the U.S. asset market is larger under financial repression.

More strikingly, China strictly prefers to issue its assets in dollar, regardless of its level of financial sophistication $\theta(cn)$. To understand this result, recall the intuition for why China switches to yuan when its financial sophistication is sufficiently high in the baseline case: in the absence of financial repression, exiting the dollar system reduces the liquidity of the Chinese asset, but it reduces the liquidity of the U.S. asset even more, which makes the Chinese asset more desirable relative to the U.S. asset.

However, when a "critical mass" of captive investors are committed to dollar assets, not only is their demand for dollar assets unaffected by China's decision to exit the dollar system, but their holdings also sustain the liquidity of the dollar system and make it attractive for active investors. In other words, financial repression creates a funding advantage for the U.S. that cannot be under-



(a) Size of Chinese Assets (b) Size of U.S. Assets

Figure 3: Equilibria under Financial Repression

mined by the competitor's high financial sophistication. As a result, China does not gain enough relative advantage by leaving the dollar system to compensate for the loss in liquidity of its own assets, even when its financial sophistication is very high.

We can summarize this result in the following proposition.

Proposition 3. *If $0 < \alpha, \beta < 1$ and $0 < \alpha + \beta < 1$, for all $\mu > 1/2$, China strictly prefers to issue its assets in dollar, even when its level of financial sophistication $\theta(cn)$ approaches infinity.*

Appendix A.4 presents the proof. Given this general insight, the U.S. may have an incentive to impose financial repression on its domestic investors in conjunction with its financial sanction policies. By increasing the size and liquidity of the dollar system, financial repression raises the cost for China to exit that system. Under such a policy mix, financial sanctions can reduce the market share of Chinese assets within the dollar system, without inducing China to withdraw from it. As such, financial repression may be able to amplify the effectiveness of financial sanctions.

4 International Spill-Over

In this final section, we introduce a third strategic issuer, which we refer to as Europe. We assume that the U.S. remains committed to issuing its assets in dollar, while both China and Europe can choose the currency denomination of their assets. In particular, China and Europe may issue in dollar, coordinate on a joint non-dollar bloc, or operate in separate currency areas.

Equilibrium is defined similarly as before, except that now we need to solve for the sizes of U.S., Chinese, and European assets $s(us)$, $s(cn)$, and $s(eu)$, as well as China's and Europe's currency denomination choices $currency_{cn}$ and $currency_{eu}$ from $\{dollar, yuan, euro\}$.

4.1 The Rise of Multiple Equilibria

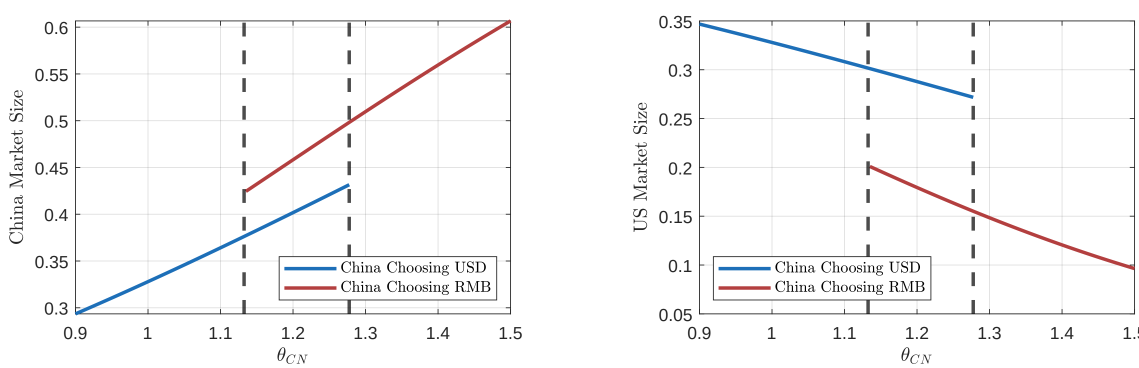
We fix the U.S. level of financial sophistication at $\theta(us) = 1$ and Europe's at $\theta(eu) = 0.5$, while varying China's $\theta(cn)$. Figure 4 plots the equilibrium market shares of Chinese and U.S. assets as functions of $\theta(cn)$.

We observe two possible equilibria in this setting. In the *dollar-dominant* equilibrium, both China and Europe choose to issue their assets in dollar, joining the dollar system. In the *yuan-dominant* equilibrium, both countries instead issue their assets in a non-dollar bloc, exiting the dollar system. For concreteness, we assume that China and Europe join the yuan bloc in the latter case.

When China has a low level of financial sophistication $\theta(cn)$, it chooses to issue its assets in dollar. In this case, Europe also finds it optimal to issue its assets in dollar, as it benefits from the liquidity of a larger dollar system.

When $\theta(\text{cn})$ is high, China switches to issuing in yuan. Europe also joins the yuan area, which dominates issuing in an isolated euro area. As a result, China's exit from the dollar system is amplified by Europe's simultaneous departure, leading to a larger contraction in the dollar system.

More interestingly, there exists an intermediate range of $\theta(cn)$ in which these two equilibria co-exist. In this region, the strength of the dollar system is self-reinforcing: if either China or Europe remains in the dollar system, its contribution to the liquidity of the dollar system is sufficiently large to induce the other country to stay as well. Conversely, if one country exits, the resulting decline in dollar liquidity prompts the other to leave, leading to a coordinated shift away from the dollar system.



(a) Size of Chinese Assets

(b) Size of U.S. Assets

Figure 4: Multiple Equilibria with Three Countries

The mechanism underlying this multiplicity differs from that in Farhi and Maggiori (2018), although coordination plays a central role in both settings. Farhi and Maggiori (2018) emphasize the dominant issuer's incentive to devalue ex post after placing assets with foreign investors, making time inconsistency the key friction. In contrast, our model highlights network effects in currency areas, which make each country's participation decision interdependent.

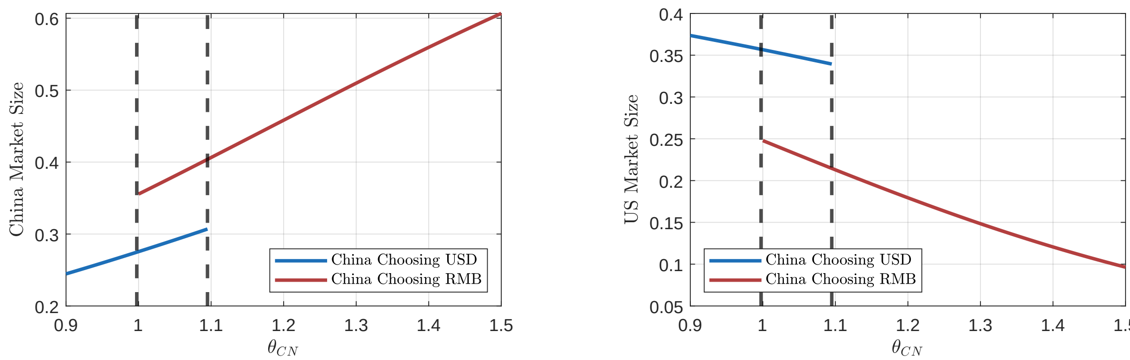
As a result, when one foreign country (e.g., China) threatens to exit the dollar system, potentially in response to pressure from the hegemon, it can trigger a bandwagon effect that induces other countries (e.g., Europe) to follow. Conversely, a commitment by China to remain in the dollar system encourages others to stay. This positive externality represents another manifestation of the Kindleberger Trap in our framework.

4.2 Spill-Over Effects of Sanction on China

The bandwagon effect described above gives rise to further unintended consequences when the U.S. imposes financial sanction on a foreign country. First, consider the case in which the U.S. sanctions China, reducing the desirability that Chinese assets derive from participation in the dollar system by a factor $\kappa < 1$. Such a sanction not only affects China directly but also weakens the dollar system as a whole, thereby increasing Europe's incentive to leave the dollar system.

Figure 5 reports the equilibrium outcomes when the U.S. sanctions China. The calibration is identical to that in Figure 4, except that China loses a fraction $1 - \kappa = 1/4$ of the benefits associated with the size of the dollar area. As a result, both the dollar-dominance threshold and the yuan-dominance threshold, represented by the two dashed lines in the figure, shift to the left.

On the one hand, the sanction make dollar issuance less attractive for China, inducing it to switch to yuan at a lower level of financial sophistication $\theta(\mathrm{cn})$. On the other hand, by weakening the dollar system as a whole, the sanction makes the dollar-dominant equilibrium more fragile, causing it to break down at a lower level of $\theta(\mathrm{cn})$. Consequently, while multiple equilibria still arise over an intermediate range of $\theta(\mathrm{cn})$, the yuan-dominant equilibrium emerges earlier, and the dollar-dominant equilibrium disappears sooner.



(a) Size of Chinese Assets (b) Size of U.S. Assets

Figure 5: Multiple Equilibria with Three Countries, with Sanction on China

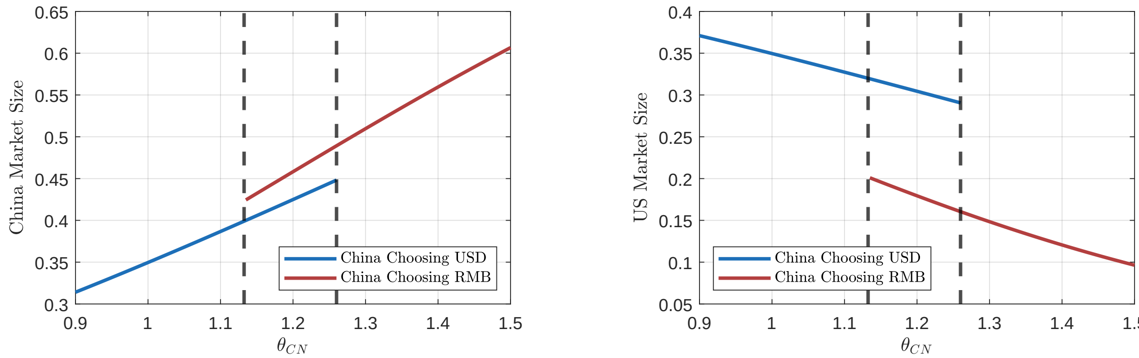
Therefore, when the strength of the dollar system is derived from not only U.S. but also other countries' participation, these international spill-over effects become important. They limit the effectiveness of unilateral sanctions, as such policies can weaken the dollar system itself and impose costs on the U.S.

4.3 Spill-Over Effects of Sanction on the Third Country

The U.S. sanction on the third country (Europe) also generates important spill-over effects. Under this sanction, if Europe issues its asset in dollar, its asset loses $1-\kappa$ of the desirability it normally derives from participation in the dollar system:

$$u_k(eu) = \alpha \log s(eu) + \kappa\beta \log s(dollar) + \theta(eu) + \epsilon_k(eu), \quad \text{when Europe issues in dollar.}$$

Figure 6 presents the equilibrium outcomes. Compared to the baseline case without sanction in Figure 4, the threshold above which the dollar-dominant equilibrium ceases to exist shifts leftward, whereas the threshold above which the yuan-dominant equilibrium emerges remains unchanged. The difference lies in China's incentive. First, consider the threshold on the right, above which the dollar-dominant equilibrium ceases to exist: this is when China has a sufficiently high level



(a) Size of Chinese Assets (b) Size of U.S. Assets

Figure 6: Multiple Equilibria with Three Countries, with Sanction on Europe

of financial sophistication $\theta(cn)$ to sustain the yuan-dominant equilibrium condition on Europe's participation. When Europe is under sanction and thus derives less value from remaining in the dollar system, it has a stronger incentive to exit the dollar bloc. This, in turn, encourages China to leave the dollar bloc earlier, causing the dollar-dominant equilibrium to break down.

Next, consider the threshold on the left, above which the yuan-dominant equilibrium emerges. It remains unchanged because, at this stage, China is relatively small and Europe is even smaller. Even if Europe is willing to coordinate on a yuan bloc, the combined size of China and Europe is still insufficient to make the yuan bloc more attractive to China than the dollar bloc that contains both the U.S. and China. As a result, China prefers remaining in the dollar system, regardless of Europe's action.

This mechanism also helps interpret the impact of U.S. sanctions on other third countries like Russia. Following the removal of Russian banks from SWIFT, which restricted their ability to conduct cross-border payments, Russia increasingly relied on China's financial infrastructure, including the Cross-Border Interbank Payment System (CIPS), to facilitate international transactions. Russia also shifted toward invoicing key exports such as oil in yuan rather than dollar. Our theoretical exercise suggests that such sanctions on Russia can make the broader dollar system more fragile, highlighting the spillover effects of sanctions on the international currency system.

5 Conclusion

Through the lens of an asset demand model with microfounded network effects, we study the competition between an incumbent hegemon (the U.S.) and a challenger (China) in international financial markets. Their strategic interaction gives rise to non-monotonicity in the transition path, spill-back effects of financial sanction, and the possibility of multiple equilibria.

Our analysis reveals that the challenger is neither inherently opposed to nor fully aligned with the incumbent, but rather navigates a complex landscape of strategic trade-offs. Rather than viewing the relationship between the two powers as being permanently trapped in a zero-sum game, it may be more fruitful to consider how their incentives evolve across different development stages.

From a policy perspective, our results suggest that the Treasury premium is conceptually distinct from the dollar premium, but they interact in important ways. Measures to enhance liquidity (such as central bank swap lines) or develop financial intermediaries (with better regulation and incentives) *at the currency level* may improve the liquidity of the *asset market* as well.

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Appendix

A Proof

A.1 Existence and Uniqueness of Equilibrium

Proof. Fix China's financial sophistication $\theta(cn)$ and fix China's currency choice $currency_{cn} \in \{dollar, yuan\}$. Recall that $s(outside) = 1 - s(us) - s(cn)$, for any asset $i \in \{us, cn\}$, the logit demand equation implies

$$\frac{s(i)}{s(outside)} = \exp(\theta(i))s(i)^{\alpha}s(currency_i)^{\beta}.$$

Case 1: China issues in yuan. Given $s(currency_i) = s(i)$,

$$s(i)^{1-\alpha-\beta} = \exp(\theta(i))s(outside).$$

Since $0 < \alpha + \beta < 1$, we have $1 - \alpha - \beta > 0$, and hence

$$s(i) = \exp\left(\frac{\theta(i)}{1-\alpha-\beta}\right) s(outside)^{\frac{1}{1-\alpha-\beta}}.$$

Summing over $i \in \{us, cn\}$ gives

$$1 - s(outside) = \left[\exp\left(\frac{\theta(us)}{1-\alpha-\beta}\right) + \exp\left(\frac{\theta(cn)}{1-\alpha-\beta}\right)\right] s(outside)^{\frac{1}{1-\alpha-\beta}}.$$

Define

$$F(s(outside)) = s(outside) + \left[\exp\left(\frac{\theta(us)}{1-\alpha-\beta}\right) + \exp\left(\frac{\theta(cn)}{1-\alpha-\beta}\right)\right] s(outside)^{\frac{1}{1-\alpha-\beta}}.$$

Then F is continuous and strictly increasing on $[0, 1]$, with

$$F(0) = 0, \qquad F(1) > 1.$$

By the intermediate value theorem, there exists a unique $s(outside) \in (0, 1)$ such that

$$F(s(outside)) = 1.$$

Given this unique value of $s(outside)$, the equations above uniquely determine $s(us)$ and $s(cn)$.

Case 2: China issues in dollar. Then both assets belong to the dollar system, so $s(dollar) = s(us) + s(cn)$. Let

$$S \equiv s(us) + s(cn) = 1 - s(outside).$$

The demand equations imply

$$s(i)^{1-\alpha} = \exp(\theta(i)) S^{\beta} s(outside).$$

Since $0 < \alpha < 1$, we obtain

$$s(i) = \exp\left(\frac{\theta(i)}{1-\alpha}\right) S^{\frac{\beta}{1-\alpha}} s(outside)^{\frac{1}{1-\alpha}}.$$

Summing over $i \in \{us, cn\}$ gives

$$S = \left[\exp\left(\frac{\theta(us)}{1-\alpha}\right) + \exp\left(\frac{\theta(cn)}{1-\alpha}\right)\right] S^{\frac{\beta}{1-\alpha}} s(outside)^{\frac{1}{1-\alpha}}.$$

Using $s(outside) = 1 - S$, this becomes

$$S = \left[\exp\left(\frac{\theta(us)}{1-\alpha}\right) + \exp\left(\frac{\theta(cn)}{1-\alpha}\right)\right] S^{\frac{\beta}{1-\alpha}} (1-S)^{\frac{1}{1-\alpha}}.$$

Equivalently,

$$\begin{aligned} S^{1-\frac{\beta}{1-\alpha}} &= \left[\exp\left(\frac{\theta(us)}{1-\alpha}\right) + \exp\left(\frac{\theta(cn)}{1-\alpha}\right)\right] (1-S)^{\frac{1}{1-\alpha}} \\ S^{1-\alpha-\beta} &= \left[\exp\left(\frac{\theta(us)}{1-\alpha}\right) + \exp\left(\frac{\theta(cn)}{1-\alpha}\right)\right]^{1-\alpha} (1-S). \end{aligned}$$

The left-hand side is continuous and strictly increasing in $S \in [0,1]$, while the right-hand side is continuous and strictly decreasing in $S \in [0,1]$. At the endpoints,

$$S = 0: \quad \text{LHS} = 0, \quad \text{RHS} > 0,$$
$$S = 1: \quad \text{LHS} = 1, \quad \text{RHS} = 0.$$

Therefore, there exists a unique $S \in (0,1)$ satisfying this equation.

Given this unique S, the relative shares satisfy

$$\frac{s(us)}{s(cn)} = \exp\left(\frac{\theta(us) - \theta(cn)}{1-\alpha}\right),$$

which, together with $s(us) + s(cn) = S$ uniquely determines $s(us)$ and $s(cn)$.

Therefore, for any fixed $\theta(cn)$ and any fixed currency choice $currency_{cn} \in \{dollar, yuan\}$, there exists a unique equilibrium allocation $(s(us), s(cn))$. □

A.2 Proof of Proposition 1

Proof. **Equilibrium shares under dollar issuance.**

Suppose China issues assets in dollars. Let $s_{us,dollar}$ and $s_{cn,dollar}$ denote the equilibrium market shares of U.S. and Chinese assets. The fixed-point system is, for $i \in \{us, cn\}$,

$$s_{i,dollar} = \frac{\exp\Big(\alpha \log s_{i,dollar} + \beta \log(s_{us,dollar} + s_{cn,dollar}) + \theta_i\Big)}{1 + \sum_{j \in \{us,cn\}} \exp\Big(\alpha \log s_{j,dollar} + \beta \log(s_{us,dollar} + s_{cn,dollar}) + \theta_j\Big)}.$$

Dividing the equation for $s_{cn,dollar}$ by that for $s_{us,dollar}$ gives

$$\frac{s_{cn,dollar}}{s_{us,dollar}} = e^{\frac{\theta-1}{1-\alpha}}.$$

Let $S_{dollar} = s_{us,dollar} + s_{cn,dollar} < 1$. Then, we have

$$S_{dollar} = s_{cn,dollar}(1 + e^{\frac{1-\theta}{1-\alpha}}).$$

Substituting into the equation system yields

$$\begin{aligned} s_{cn,dollar} &= \frac{s_{cn,dollar}^{\alpha} S_{dollar}^{\beta} \exp(\theta)}{1 + s_{us,dollar}^{\alpha} S_{dollar}^{\beta} \exp(1) + s_{cn,dollar}^{\alpha} S_{dollar}^{\beta} \exp(\theta)} \\ &= s_{cn,dollar}^{\alpha} S_{dollar}^{\beta} \exp(\theta)(1 - S_{dollar}). \end{aligned}$$

We obtain an implicit equation determining $s_{cn,dollar}$:

$$1 = s_{cn,dollar}^{\alpha+\beta-1} \left(1 + e^{\frac{1-\theta}{1-\alpha}}\right)^{\beta} e^{\theta} \Big(1 - (1 + e^{\frac{1-\theta}{1-\alpha}}) s_{cn,dollar}\Big). \tag{D}$$

From Appendix A.1, equation (D) admits a unique solution, which we denote by $s_{cn,dollar}(\theta)$.

Equilibrium shares under yuan issuance.

If China issues assets in yuan, let $s_{us,yuan}$ and $s_{cn,yuan}$ denote the equilibrium shares of U.S. and Chinese assets. The equilibrium shares are characterized by:

$$s_{i,yuan} = \frac{\exp\big(\alpha \log s_{i,yuan} + \beta \log s_{i,yuan} + \theta_i\big)}{1 + \sum_{j \in \{us,cn\}} \exp\big(\alpha \log s_{j,yuan} + \beta \log s_{j,yuan} + \theta_j\big)}, \qquad i \in \{us, cn\}.$$

The equilibrium ratio becomes

$$\frac{s_{cn,yuan}}{s_{us,yuan}} = e^{\frac{\theta-1}{1-\alpha-\beta}}.$$

Let $S_{yuan} = s_{us,yuan} + s_{cn,yuan} < 1$. A similar derivation yields

$$1 = s_{cn,yuan}^{\alpha+\beta-1} e^{\theta} \Big(1 - (1 + e^{\frac{1-\theta}{1-\alpha-\beta}}) s_{cn,yuan}\Big). \tag{Y}$$

For each θ, this equation has a unique solution, denoted as $s_{cn,yuan}(\theta)$.

Step 1: Yuan is dominated when $\theta \leq 1$.

For convenience, define the right-hand sides of equations (D) and (Y):

$$F_{dollar}(s,\theta) = s^{\alpha+\beta-1}A(\theta)^{\beta}e^{\theta}\Big(1 - A(\theta)s\Big),$$
$$F_{yuan}(s,\theta) = s^{\alpha+\beta-1}e^{\theta}\Big(1 - B(\theta)s\Big),$$

where $A(\theta) \equiv 1 + e^{\frac{1-\theta}{1-\alpha}}$ and $B(\theta) \equiv 1 + e^{\frac{1-\theta}{1-\alpha-\beta}}$. Both F_{dollar} and F_{yuan} are decreasing in s:

$$\frac{\partial F_{dollar}}{\partial s}(s,\theta) = A(\theta)^{\beta}e^{\theta}s^{\alpha+\beta-2}\left[(\alpha+\beta-1) - (\alpha+\beta)A(\theta)s\right] < 0$$
$$\frac{\partial F_{yuan}}{\partial s}(s,\theta) = e^{\theta}s^{\alpha+\beta-2}\left[(\alpha+\beta-1) - (\alpha+\beta)B(\theta)s\right] < 0$$

Moreover, $S_{dollar} < 1$ and $S_{yuan} < 1$ imply that $1 - A(\theta)s_{cn,dollar}(\theta) > 0$ and $1 - B(\theta)s_{cn,yuan}(\theta) > 0$.

When $\theta \leq 1$, $B(\theta) \geq A(\theta)$ and $A(\theta)^{\beta} > 1$. Moreover, for $\theta \leq 1$ and $s > 0$, $1 - B(\theta)s > 0$ implies $1 - A(\theta)s > 0$. Hence, for every $s > 0$ satisfying $1 - B(\theta)s > 0$, we have

$$\frac{F_{dollar}(s,\theta)}{F_{yuan}(s,\theta)} = A(\theta)^{\beta}\frac{1 - A(\theta)s}{1 - B(\theta)s} > 1 \quad \Rightarrow \quad F_{dollar}(s,\theta) > F_{yuan}(s,\theta).$$

Evaluating this inequality at $s = s_{cn,yuan}(\theta)$ yields

$$F_{dollar}(s_{cn,yuan}(\theta),\theta) > F_{yuan}(s_{cn,yuan}(\theta),\theta) = 1.$$

In comparison, $F_{dollar}(s_{cn,dollar}(\theta),\theta) = 1$, so $F_{dollar}(s_{cn,dollar}(\theta),\theta) < F_{dollar}(s_{cn,yuan}(\theta),\theta)$. Since F_{dollar} is decreasing in s, it follows that

$$s_{cn,yuan}(\theta) < s_{cn,dollar}(\theta) \qquad \text{for all } \theta \leq 1.$$

Step 2: Yuan dominates dollar for all θ above a certain threshold.

Define $x = e^{(1-\theta)/(1-\alpha)}$, so that

$$A = 1 + x, \qquad B = 1 + x^q, \qquad q = \frac{1-\alpha}{1-\alpha-\beta} > 1.$$

For any s,

$$F_{yuan}(s, \theta) - F_{dollar}(s, \theta) = s^{\alpha+\beta-1} e^{\theta} G(s, x),$$

where

$$G(s, x) = 1 - (1 + x)^{\beta} + s\Big((1 + x)^{\beta+1} - (1 + x^q)\Big).$$

Thus, to show that for $0 < \alpha, \beta, \alpha + \beta < 0.9$ there exists a finite threshold $\bar{x}$ such that for all $x < \bar{x}$, and hence for all $\theta > \bar{\theta}$ for a certain $\bar{\theta}$, yuan issuance strictly dominates dollar issuance, it is enough to show that $G(s_{cn,dollar}(\theta), x) > 0$ for all $x < \bar{x}$.

Using

$$(1 + x)^{\beta} \leq 1 + \beta x, \qquad (1 + x)^{\beta+1} \geq 1 + (\beta + 1)x,$$

we obtain

$$G(s, x) \geq x\Big(s(\beta + 1) - \beta - sx^{q-1}\Big).$$

Since $q - 1 = \frac{\beta}{1-\alpha-\beta} > \beta$ and $0 < x < 1$, we have $x^{q-1} < x^{\beta}$. Therefore,

$$G(s, x) > x\Big(s(\beta + 1) - \beta - sx^{\beta}\Big) = x\big(s(\beta + 1 - x^{\beta}) - \beta\big).$$

Define $H(\beta; x) \equiv s(\beta + 1 - x^{\beta}) - \beta$, so that $G(s, x) > x\, H(\beta; x)$. For fixed x, $H(\beta; x)$ is concave in β on $[0, 0.9-\alpha]$, because

$$\frac{\partial^2 H}{\partial \beta^2} = -s(\log x)^2 x^\beta < 0.$$

Its endpoint values are

$$H(0; x) = 0, \qquad H(0.9-\alpha; x) = s\big(1.9 - \alpha - x^{0.9-\alpha}\big) - (0.9-\alpha).$$

Since H is concave with $H(0; x) = 0$, it lies above the chord on $[0, 0.9-\alpha]$, i.e. for every $\beta \in (0, 0.9-\alpha)$,

$$H(\beta; x) \;\geq\; \frac{\beta}{0.9-\alpha}\, H(0.9-\alpha; x).$$

Hence $H(0.9-\alpha; x) > 0$ implies $H(\beta; x) > 0$, and therefore $G(s, x) > x\, H(\beta; x) > 0$. It thus suffices to show $H(0.9-\alpha; x) > 0$, i.e. $s\big(1.9 - \alpha - x^{0.9-\alpha}\big) > 0.9 - \alpha$.

Let $\bar{x}(\alpha) \in (0, 1)$ be the unique solution to

$$\frac{1 - e^{-1}\bar{x}^{1-\alpha}}{1 + \bar{x}} \left(1.9 - \alpha - \bar{x}^{0.9-\alpha}\right) = 0.9 - \alpha.$$

For simplicity, we omit the dependence of $\bar{x}$ on α in the notation.

Consider any $x < \bar{x}$. Define

$$L(x) \equiv \frac{1 - e^{-1}x^{1-\alpha}}{1 + x}.$$

The dollar equilibrium equation implies

$$1 - (1 + x)s_{cn,dollar} = e^{-1}x^{1-\alpha}(1 + x)^{-\beta} s_{cn,dollar}^{1-\alpha-\beta}.$$

Since $(1+x)^{-\beta} \leq 1$, $s_{cn,dollar}^{1-\alpha-\beta} \leq 1$, and $0 < x < 1$, we obtain

$$1 - (1+x)s_{cn,dollar} \leq e^{-1}x^{1-\alpha},$$

and rearranging yields $s_{cn,dollar} \geq \frac{1-e^{-1}x^{1-\alpha}}{1+x} \equiv L(x)$.

Note that $L(x) \cdot (1.9 - \alpha - x^{0.9-\alpha})$ is strictly decreasing on $(0,1)$, since both factors are strictly positive and strictly decreasing. First, $1.9 - \alpha - x^{0.9-\alpha} > 0$ and its derivative $-(0.9-\alpha)x^{-0.1-\alpha} < 0$, so it is strictly decreasing, and its value at $x = 1$ is $0.9 - \alpha > 0$. Next, $L(x) > 0$ and $L'(x) < 0$. For $x \in (0,1)$: since $x^{1-\alpha} < 1 < e$, we have $e^{-1}x^{1-\alpha} < e^{-1} < 1$, so $L(x) > 1 - e^{-1} > 0$. To show L is strictly decreasing, compute its logarithmic derivative:

$$\frac{d}{dx} \log L(x) = \frac{-e^{-1}(1-\alpha)x^{-\alpha}}{1 - e^{-1}x^{1-\alpha}} - \frac{1}{1+x}.$$

Both terms are strictly negative for $x \in (0,1)$, so $(\log L)'(x) < 0$, which implies $L'(x) < 0$. Because both factors are strictly positive and strictly decreasing, their product is strictly decreasing on $(0,1)$.

Therefore, since $x < \bar{x}$,

$$L(x)\left(1.9 - \alpha - x^{0.9-\alpha}\right) > L(\bar{x})\left(1.9 - \alpha - \bar{x}^{0.9-\alpha}\right) = 0.9 - \alpha.$$

Therefore, using $s_{cn,dollar} \geq L(x)$ and that the coefficient $1.9 - \alpha - x^{0.9-\alpha} > 0$,

$$H(0.9-\alpha; x) = s_{cn,dollar}\big(1.9 - \alpha - x^{0.9-\alpha}\big) - (0.9-\alpha) \;\geq\; L(x)\big(1.9 - \alpha - x^{0.9-\alpha}\big) - (0.9-\alpha) \;>\; 0.$$

By the chord bound above, $H(\beta; x) > 0$, and hence $G(s_{cn,dollar}(\theta), x) > 0$. Consequently,

$$F_{yuan}(s_{cn,dollar}(\theta), \theta) > F_{dollar}(s_{cn,dollar}(\theta), \theta) = 1.$$

Since $F_{yuan}(s, \theta)$ is strictly decreasing in s, it follows that $s_{cn,yuan}(\theta) > s_{cn,dollar}(\theta)$. Thus yuan issuance strictly dominates dollar issuance whenever $x < \bar{x}$. Equivalently, it is sufficient that $\theta > \bar{\theta} \equiv 1 - (1-\alpha)\log \bar{x}$.

The value of $\bar{x}$ as a function of $\alpha \in (0, 0.9)$ is given by

α	$\bar{x}(\alpha)$
0.00	0.3940996
0.10	0.3936530
0.20	0.3925712
0.30	0.3907816
0.40	0.3881905
0.50	0.3846743
0.60	0.3800661
0.70	0.3741337
0.80	0.3665409
0.89	0.3578694

Step 3: Uniqueness of the cutoff.

We now prove that there is a unique cutoff $\theta^* > 1$ such that China chooses dollar issuance for $\theta < \theta^*$ and yuan issuance for $\theta > \theta^*$.

Define

$$\Delta(\theta) \equiv s_{cn,yuan}(\theta) - s_{cn,dollar}(\theta).$$

Steps 1 and 2 show that

$$\Delta(\theta) < 0 \quad \text{for } \theta \leq 1, \quad \text{and} \quad \Delta(\theta) > 0 \quad \text{for } \theta > \bar{\theta}.$$

Hence, by continuity, at least one cutoff exists. It remains to prove uniqueness.

Recall our change of variable in Step 2:

$$x = e^{\frac{1-\theta}{1-\alpha}}, \qquad q = \frac{1-\alpha}{1-\alpha-\beta} > 1, \qquad \theta = 1-(1-\alpha)\log x.$$

Then,

$$\begin{aligned}
F_{dollar}(s,x) &= s^{\alpha+\beta-1}(1+x)^{\beta}e^{1-(1-\alpha)\log x}\big(1-(1+x)s\big),\\
F_{yuan}(s,x) &= s^{\alpha+\beta-1}e^{1-(1-\alpha)\log x}\big(1-(1+x^q)s\big).
\end{aligned}$$

By the implicit function theorem,

$$F_s\frac{ds}{dx} + F_x = 0 \quad \Rightarrow \quad \frac{ds}{dx} = -\frac{F_x}{F_s}.$$

Dollar Case. Differentiate with respect to s and x:

$$\begin{aligned}
\frac{F_s}{F} &= \frac{\alpha+\beta-1}{s} - \frac{1+x}{1-(1+x)s},\\
\frac{F_x}{F} &= \frac{\beta}{1+x} + \frac{\alpha-1}{x} - \frac{s}{1-(1+x)s}.
\end{aligned}$$

Therefore,

$$\frac{ds}{dx} = -\frac{F_x}{F_s} = -\frac{\frac{\beta}{1+x}+\frac{\alpha-1}{x}-\frac{s}{1-(1+x)s}}{\frac{\alpha+\beta-1}{s}-\frac{1+x}{1-(1+x)s}}.$$

Multiplying numerator and denominator by $s\big(1-(1+x)s\big)$, we get

$$\boxed{\frac{ds}{dx} = \frac{s\big(1-(1+x)s\big)\left(\frac{\beta}{1+x}+\frac{\alpha-1}{x}\right)-s^2}{(1-\alpha-\beta)\big(1-(1+x)s\big)+(1+x)s} = -\frac{s\big(1-(1+x)s\big)\left(-\frac{\beta}{1+x}+\frac{1-\alpha}{x}\right)+s^2}{(1+x)s(\alpha+\beta)+(1-\alpha-\beta)}}$$

Yuan Case. Differentiate with respect to s and x:

$$\frac{F_s}{F} = \frac{\alpha+\beta-1}{s} - \frac{1+x^q}{1-(1+x^q)s},$$
$$\frac{F_x}{F} = \frac{\alpha-1}{x} - \frac{qx^{q-1}s}{1-(1+x^q)s}.$$

Thus,

$$\frac{ds}{dx} = -\frac{\frac{\alpha-1}{x} - \frac{qx^{q-1}s}{1-(1+x^q)s}}{\frac{\alpha+\beta-1}{s} - \frac{1+x^q}{1-(1+x^q)s}}.$$

Multiplying numerator and denominator by $s\big(1-(1+x^q)s\big)$,

$$\boxed{\frac{ds}{dx} = \frac{s\big(1-(1+x^q)s\big)\frac{\alpha-1}{x} - qx^{q-1}s^2}{(1-\alpha-\beta)\big(1-(1+x^q)s\big) + (1+x^q)s} = -\frac{s\big(1-(1+x^q)s\big)\frac{1-\alpha}{x} + qx^{q-1}s^2}{(1+x^q)s(\alpha+\beta) + (1-\alpha-\beta)}}$$

Slope Difference. The slope difference between the two cases is

$$\delta = -\frac{N_q}{D_q} + \frac{N_1}{D_1},$$

where

$$N_q = s\big(1-(1+x^q)s\big)\frac{1-\alpha}{x} + qx^{q-1}s^2,$$
$$D_q = (1+x^q)s(\alpha+\beta) + (1-\alpha-\beta),$$
$$N_1 = s\big(1-(1+x)s\big)\left(-\frac{\beta}{1+x} + \frac{1-\alpha}{x}\right) + s^2,$$
$$D_1 = (1+x)s(\alpha+\beta) + (1-\alpha-\beta).$$

At any crossing point, since $S_{dollar} = (1+x)s_{cn,dollar} < 1$, we have $1-(1+x)s > 0$ and $s < \frac{1}{1+x}$. Similarly, we have $1-(1+x^q)s > 0$. So all four terms N_q, D_q, N_1, D_1 are positive, and both slopes are negative.

We want the slope difference to be negative, so that the slope for the yuan case is even more negative than that for the dollar case when they cross at any intersection point:

$$\delta < 0 \text{ for all } s_{cn,yuan}(\theta) = s_{cn,dollar}(\theta).$$

This would complete our proof of uniqueness, because, if there are multiple crossing points, the derivative must be positive at some of the crossing points, which contradicts with the above claim that the difference in slopes δ is negative for all crossing points.

From Step 2, we have shown that yuan dominates dollar for all $x < \bar{x}$, where $\bar{x} = \bar{x}(\alpha)$ is defined in Step 2 and satisfies $\bar{x}(\alpha) \geq 0.35$ for all $\alpha \in (0, 0.9)$. So any crossing point must occur at some $x > \bar{x}$.

Lipschitz Bound Argument. It remains to check the sign of δ for $x \in (\bar{x}, 1)$. For the convenience of the argument, let us fix the values of α and β, and check the sign of δ for all x in this range. We rely on the following two-step argument:

First, we divide the range of x into a finite number of sub-intervals, and check the sign of δ at the endpoints of each sub-interval.

Second, we compute the maximum magnitude of $d\delta/dx$ for all sub-intervals and make sure that the maximum change in δ within each sub-interval is smaller than the minimum absolute value of δ at the endpoints.

Specifically, for each interval $[x_j, x_{j+1}]$, we verify that $\delta(x_j) < 0$, and that $\delta'(x) \leq M_j$ for all $x \in [x_j, x_{j+1}]$. Then, for any $x \in [x_j, x_{j+1}]$,

$$\delta(x) = \delta(x_j) + \int_{x_j}^{x} \delta'(u)\, du \leq \delta(x_j) + M_j(x - x_j) \leq \delta(x_j) + M_j(x_{j+1} - x_j).$$

Therefore, we can verify that $\delta(x) < 0$ throughout the interval by confirming

$$M_j(x_{j+1} - x_j) < -\delta(x_j)$$

for all j. This guarantees that δ remains negative within each sub-interval, and hence for all $x \in (\bar{x}, 1)$.

For general values of α and β, we need to compute the vector $(d\delta/dx, d\delta/d\alpha, d\delta/d\beta)$ and compute the Lipschitz bound for the entire grid points in this three-dimensional space with $x \in (\bar{x}, 1)$, $\alpha \in (0, 0.9)$, and $\beta \in (0, 0.9)$. While this is computationally more intensive, the derivation is similar to the above argument. We confirm that δ remains negative for the general case. We leave the full details in the Internet Appendix.

$\square$

A.3 Proof of Proposition 2

Proof. Since the U.S. sanction does not affect U.S. and Chinese assets' desirabilities if China issues in yuan, the equilibrium shares under yuan issuance remain unchanged. If China issues in dollar, the sanction strictly lowers the desirability of the Chinese asset. So, for a given level of $\theta(cn)$, the equilibrium share of Chinese assets under dollar issuance strictly decreases, while the share of U.S. assets under dollar issuance strictly increases. Therefore, at the cutoff θ^* where the two shares are equal in the baseline case without sanction, the share of Chinese assets under dollar issuance and sanction is now lower than the share of Chinese assets under yuan issuance. China would strictly prefer to issue in yuan at this point, and the same argument applies for all $\theta(cn) \geq \theta^*$.

Following the same strategy as in the proof of Proposition 1, we can show that, for sufficiently small $\theta(cn)$, the share of Chinese assets under dollar issuance and sanction is still higher than the share of Chinese assets under yuan issuance, so China would still prefer to issue in dollar for sufficiently small $\theta(cn)$. We can also show that there is a unique cutoff $\theta^*_{sanction}$ such that China is indifferent between issuing in dollar and issuing in yuan under sanction, and $\theta^*_{sanction} < \theta^*$.

$\square$

A.4 Proof of Proposition 3

Proof. For any $\mu > 1/2$, we can define $\delta = \mu - 1/2 > 0$. Recall that if China issues assets in dollar, the demand for U.S. and Chinese assets by active investors is given by

$$s^a_{i,dollar} = \frac{\exp(\alpha \log s_{i,dollar} + \beta \log(s_{us,dollar} + s_{cn,dollar}) + \theta_i)}{1 + \sum_{j\in\{us,cn\}} \exp(\alpha \log s_{j,dollar} + \beta \log(s_{us,dollar} + s_{cn,dollar}) + \theta_j)}, \quad i \in \{us, cn\};$$

if China issues assets in yuan, the demand for U.S. and Chinese assets by active investors is given by

$$s^a_{i,yuan} = \frac{\exp(\alpha \log s_{i,yuan} + \beta \log s_{i,yuan} + \theta_i)}{1 + \sum_{j\in\{us,cn\}} \exp(\alpha \log s_{j,yuan} + \beta \log s_{j,yuan} + \theta_j)}, \quad i \in \{us, cn\}.$$

Step 1. Compare the Chinese Asset against the U.S. Asset. If China issues assets in dollar, the relative desirability is

$$\frac{s^a_{cn,dollar}}{s^a_{us,dollar}} = \exp(-\alpha(\log s_{us,dollar} - \log s_{cn,dollar}) + \theta - 1).$$

If China issues assets in yuan, the relative desirability is

$$\frac{s^a_{cn,yuan}}{s^a_{us,yuan}} = \exp(-(\alpha + \beta)(\log s_{us,yuan} - \log s_{cn,yuan}) + \theta - 1).$$

For large enough θ, we have

$$\begin{aligned} 1/2 - \delta - \epsilon < s_{cn,yuan} < 1/2 - \delta, &\quad 1/2 + \delta < s_{us,yuan} < 1/2 + \delta + \epsilon, \\ 1/2 - \delta - \epsilon < s_{cn,dollar} < 1/2 - \delta, &\quad 1/2 + \delta < s_{us,dollar} < 1/2 + \delta + \epsilon \end{aligned}$$

for arbitrarily small $\epsilon > 0$.

Then,

$$\log s_{us,yuan} - \log s_{cn,yuan} > \log(1/2+\delta) - \log(1/2-\delta),$$
$$\log s_{us,dollar} - \log s_{cn,dollar} < \log(1/2+\delta+\epsilon) - \log(1/2-\delta-\epsilon).$$

Given $\alpha, \beta > 0$, for small enough $\epsilon > 0$, we have

$$(\alpha+\beta)(\log s_{us,yuan} - \log s_{cn,yuan}) > \alpha(\log s_{us,dollar} - \log s_{cn,dollar}).$$

This step shows that China always has a greater market share between Chinese and U.S. assets when it issues in dollar than when it issues in yuan:

$$\frac{s^a_{cn,dollar}}{s^a_{us,dollar}} > \frac{s^a_{cn,yuan}}{s^a_{us,yuan}}.$$

Step 2. Compare U.S. and Chinese Assets against the Outside Option. If China issues assets in dollar, the relative desirability is

$$\frac{s^a_{cn,dollar} + s^a_{us,dollar}}{s^a_{outside,dollar}} = \exp(\alpha \log s_{cn,dollar} + \beta \log(s_{us,dollar} + s_{cn,dollar}) + \theta) + \exp(\alpha \log s_{us,dollar} + \beta \log(s_{us,dollar} + s_{cn,dollar}) + 1)$$

If China issues assets in yuan, the relative desirability is

$$\frac{s^a_{cn,yuan} + s^a_{us,yuan}}{s^a_{outside,yuan}} = \exp(\alpha \log s_{cn,yuan} + \beta \log s_{cn,yuan} + \theta) + \exp(\alpha \log s_{us,yuan} + \beta \log s_{us,yuan} + 1)$$

Again, for large enough θ,

$$\frac{s^a_{cn,dollar} + s^a_{us,dollar}}{s^a_{outside,dollar}} > \exp(\alpha \log(1/2-\delta-\epsilon) + \beta \log(1-\epsilon) + \theta) + \exp(\alpha \log(1/2+\delta) + \beta \log(1-\epsilon) + 1)$$

and

$$\frac{s^a_{cn,yuan} + s^a_{us,yuan}}{s^a_{outside,yuan}} < \exp(\alpha \log(1/2 - \delta) + \beta \log(1/2 - \delta) + \theta)$$
$$+ \exp(\alpha \log(1/2 + \delta + \epsilon) + \beta \log(1/2 + \delta + \epsilon) + 1)$$

Given $0 < \delta < 1/2$ and $\alpha, \beta > 0$, for small enough $\epsilon > 0$, we have $(1 - \epsilon) - (1/2 - \delta) > 1/2$ and $(1 - \epsilon) - (1/2 + \delta + \epsilon) > (1/2 - \delta)/2$, and we can ensure that these terms dominate the difference made by ϵ, so that

$$\exp(\alpha \log(1/2 - \delta - \epsilon) + \beta \log(1 - \epsilon) + \theta) > \exp(\alpha \log(1/2 - \delta) + \beta \log(1/2 - \delta) + \theta),$$
$$\exp(\alpha \log(1/2 + \delta) + \beta \log(1 - \epsilon) + 1) > \exp(\alpha \log(1/2 + \delta + \epsilon) + \beta \log(1/2 + \delta + \epsilon) + 1),$$

which implies that

$$\frac{s^a_{cn,dollar} + s^a_{us,dollar}}{s^a_{outside,dollar}} > \frac{s^a_{cn,yuan} + s^a_{us,yuan}}{s^a_{outside,yuan}}.$$

Thus, even in the limit $\theta \to \infty$, China gains a strictly higher market share by issuing in dollar than by issuing in yuan.

□

B Would China Be Interested in Issuing in Both Currencies?

In this appendix, we consider an extension in which China has the option to issue debt in both dollar and yuan. Recall that the utility of saver k from holding asset i is given by Eq. (3). Using $(cn, dollar)$ and $(cn, yuan)$ to denote the Chinese assets denominated in dollar and yuan, respectively, we can generalize this utility function as

$$u_k(cn, c) = \alpha \log s(cn, c) + \beta \log s(c) + \theta(cn, c) + \epsilon_k(cn, c), \quad \text{for } c \in \{dollar, yuan\}.$$

We assume that China's level of financial development affects the desirability of both Chinese assets equally, i.e., $\theta(cn, yuan) = \theta(cn, dollar)$.

As for the investor-specific preference shock $\epsilon_k(cn, c)$, we consider two distinct cases.

Case 1: Perfectly Correlated Investor Preference: Each investor has identical preferences for Chinese assets regardless of currency denomination, i.e., $\epsilon_k(cn, dollar) = \epsilon_k(cn, yuan)$. As the remaining terms $\alpha \log s(cn, c) + \beta \log s(c) + \theta(cn, c)$ are invariant across investors, the Chinese asset in one currency will dominate the Chinese asset in the other currency for all investors.

As a result, it suffices for China to issue in one currency denomination that is preferred unanimously by all investors. In this case, even when China is presented with the option to issue assets in both currencies, it would not be interested.

Case 2: Independent Investor Preference: Investors treat the yuan- and dollar-denominated Chinese assets as entirely distinct, with independent preference shocks $\epsilon_k(cn, dollar)$ and $\epsilon_k(cn, yuan)$. In this case, China is effectively acting as two sovereign issuers issuing in different currencies — a generous assumption that grants China substantial market power. We assume that China chooses the issuance strategy that maximizes the combined market share of its assets.

The key results are as follows: when China is relatively small, issuing in both currencies strictly dominates the previous optimal strategy of issuing only in dollar, as the additional variety is valued by investors. However, when China is sufficiently large, it will choose to issue only in yuan, even when dual issuance is feasible. Consequently, the overall equilibrium outcome is similar to the baseline case, except that the dollar-issuance region during the early stages of China's financial development is replaced by a dual-issuance region.

This finding reinforces our main intuition: at sufficiently high levels of China's financial sophistication, issuing Chinese assets in dollar boosts U.S. market share by enhancing dollar liquidity more than it benefits China's own market share. Conversely, by withholding this additional asset variety, which is typically an attractive option for any issuer, China reduces U.S. asset liquidity more than it reduces the liquidity of its own assets.

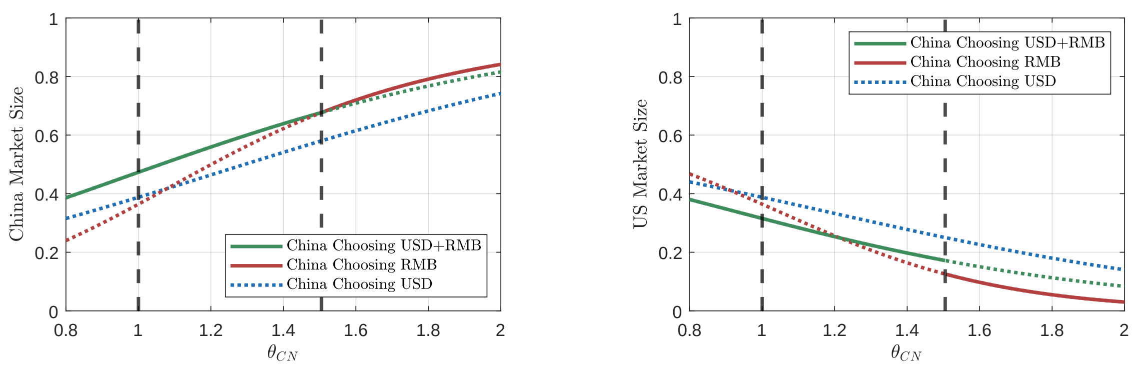
Here are the details. Assume that the preference shocks $\epsilon_k(cn, dollar)$ and $\epsilon_k(cn, yuan)$ to China's dollar and yuan assets are mutually independent. If China chooses to issue in one of the currencies, we obtain identical equilibrium market shares in the baseline case. When China chooses to issue in both currencies, the equilibrium market shares become

$$s(us, dollar) = \frac{\exp(\alpha \log s(us, dollar) + \beta \log s(dollar) + \theta(us, dollar))}{1 + \sum_{j\in\{(us,dollar),(cn,dollar),(cn,yuan)\}} \exp(\alpha \log s(j) + \beta \log s(currency_j) + \theta(j))},$$
$$s(cn, dollar) = \frac{\exp(\alpha \log s(cn, dollar) + \beta \log s(dollar) + \theta(cn, dollar))}{1 + \sum_{j\in\{(us,dollar),(cn,dollar),(cn,yuan)\}} \exp(\alpha \log s(j) + \beta \log s(currency_j) + \theta(j))},$$
$$s(cn, yuan) = \frac{\exp(\alpha \log s(cn, yuan) + \beta \log s(yuan) + \theta(cn, yuan))}{1 + \sum_{j\in\{(us,dollar),(cn,dollar),(cn,yuan)\}} \exp(\alpha \log s(j) + \beta \log s(currency_j) + \theta(j))},$$

where $s(dollar) = s(us, dollar) + s(cn, dollar)$, $s(yuan) = s(cn, yuan)$, and $\theta(cn, dollar) = \theta(cn, yuan)$.

China chooses the issuance strategy $\in (yuan, dollar, \{yuan, dollar\})$ to maximize the combined market share of its assets. Figure A.1 plots the equilibrium market shares for U.S. and China, using identical calibration in the baseline case. Similar to the baseline case, we see three different regions.

First, when China's financial sophistication is lower than that of the U.S., i.e., $\theta(cn, dollar) =$



(a) Size of Chinese Assets (b) Size of U.S. Assets

Figure A.1: Equilibrium Results When China Can Issue Both Dollar and Yuan Assets

$\theta(cn, yuan) < \theta(us, yuan) = 1$, issuing in both currencies (the green curve) is optimal. Not only does China benefits from pooling some of its assets with the liquid dollar bloc, China also gains from offering a yuan asset that appeals to investors with a strong preference for the yuan.

Second, even when China's financial sophistication surpasses that of the U.S., i.e., $\theta(cn, dollar) = \theta(cn, yuan) > \theta(us, yuan) = 1$, dual issuance is still optimal. The intuition is also similar to the baseline case, as both countries benefit from pooling their assets together to capture market share from the outside asset.

Third, when China's financial sophistication becomes sufficiently high, China prefers to issue only in yuan. In this case, even though issuing in dollar creates an additional market for Chinese assets, doing so will enhance the dollar system and benefit the U.S. market share at the expense of China's own market share. As a result, China will eventually choose to exit the dollar market even when dual issuance is feasible, which also triggers a distinct jump in the U.S. market share as the dollar bloc loses a major issuer.