The International Monetary System: Are Stablecoins Game Changers?

Jean Barthélemy[1], Justine Pedrono[1,2] and Julia Schmidt[1,3]

[1]Banque de France, Paris, France
[2]CEPII, Paris, France
[3]Sciences Po, Paris, France

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WORK IN PROGRESS

Abstract

The US Treasury champions stablecoins as bolstering the dollar's international reach; yet, the debt expansion they may induce could ultimately undermine that very position. This paper examines how a monetary hegemon optimally adjusts its sovereign debt issuance in response to the rise of stablecoins, and examines the resulting implications for the stability of the International Monetary System (IMS). In a macro-financial framework featuring a Triffin-type trade-off, we model sovereign debt and stablecoins as competing instruments that provide global insurance and liquidity services. We show that different stablecoin policies play differently on the optimal interest rate and the level of debt. In particular, the entry of new investors exerts a demand effect on the hegemon's debt level and interest rate, whereas governmental preferences for stablecoin-sector profits generate a supply effect on these variables. We also show that the stablecoin ecosystem improves the stability of the IMS by introducing a disciplining effect on debt issuance, working alongside the classical channel of the Triffin dilemma.

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"Recent reporting projects that stablecoins could grow into a $3.7 trillion market by the end of the decade. That scenario becomes more likely with passage of the GENIUS Act.
A thriving stablecoin ecosystem will drive demand from the private sector for US Treasuries, which back stablecoins. This newfound demand could lower government borrowing costs and help rein in the national debt. It could also onramp millions of new users – across the globe – to the dollar-based digital asset economy."

US Treasury Secretary Scott Bessent on X, 17 June 2025

1 Introduction

The US Treasury has been explicit about its desire to spur global stablecoin adoption as a way to raise demand for U.S. debt and reduce borrowing costs.[1] In this respect, U.S. legislative initiatives such as the GENIUS Act seek to facilitate the issuance of USD-backed stablecoins. Yet it remains an open question whether this policy can durably alleviate U.S. fiscal constraints or instead amplifies a modern incarnation of the Triffin dilemma: while stablecoin-driven debt demand may temporarily lower borrowing costs by expanding external demand for Treasuries, it may simultaneously incentivize higher debt issuance, potentially undermining long-run fiscal sustainability and, ultimately, confidence in the dollar's international role.

In this paper, we revisit this dilemma through the lens of the rise of stablecoins. We study how an hegemon optimally adjusts its debt issuance in response to the presence of stablecoins and explore the resulting implications for the stability of the International Monetary System (IMS).

In its current configuration, the IMS is inherently asymmetric, as it relies on a single hegemon – the US – issuing safe assets to a multitude of global investors. This asymmetry confers an "exorbitant privilege" on the hegemon but simultaneously gives rise to the Triffin dilemma (Triffin, 1961; Farhi et al., 2011): the hegemon must continually expand its debt issuance to satisfy global demand for safe assets, undermining the viability of the hegemon's debt and, consequently, threatening the stability of the IMS. Both debt and stablecoins cater to the insurance needs of the rest of the world (RoW) by providing a reliable store of value. In this sense, stablecoins may grant the hegemon an additional source of exorbitant privilege, but may also introduce new risks of instability as the hegemon's debt grows.

In a standard macro-financial model of the IMS à la Farhi and Maggiori (2018), we introduce stablecoins that confer non-pecuniary benefits to their holders and provide access to the dominant currency for investors otherwise excluded from international financial markets. We study the impact of a wide range of stablecoin policies on the hegemon's fiscal constraint and on the stability of the IMS. In particular, we consider policy parameters such as backing requirements for the stablecoin issuer, stablecoin remuneration for holders, infrastructure and legislation that would raise the non-pecuniary benefits of holding stablecoins, attracting new investors ("new entrants") that are excluded from holding the hegemon's debt (for example through capital controls), and governmental preferences aimed at enhancing the profitability of stablecoin issuers.

[1] Stablecoin issuers collectively held between $150 billion and $200 billion in U.S. government securities, predominantly short-term Treasury bills (European Systemic Risk Board, 2025).

Stablecoin policies and debt. Our first set of results concerns the impact of the existence of stablecoins and different stablecoin policies on the level of debt and interest rate in equilibrium.

First, we establish an irrelevance result where a stablecoin ecosystem is neutral to the optimal interest rate and debt level. The hegemon's debt and stablecoins are perfect substitutes absent new entrants, pro-stablecoin policy or partial backing of stablecoins in hegemon's debt. Assuming that all investors have similar access to both assets, the opportunity cost associated with the zero return on stablecoins is fully offset by the liquidity services they provide. Despite policies affecting the pecuniary or non-pecuniary benefits of stablecoins, the aggregate level of debt remains unchanged and the stability properties of the IMS are unaffected by the rise of stablecoins.

Second, stablecoins generate a demand effect on the hegemon's sovereign debt when they provide investors with access to a global safe asset that was previously unavailable to them. By expanding the investor base, this mechanism increases the hegemon's optimal level of debt issuance and simultaneously lowers its optimal interest rate, thereby further reinforcing its exorbitant privilege. The additional demand arises from investors' risk aversion and their desire for insurance, even in the absence of any liquidity services supplied by stablecoins. Moreover, any policies that enhance either the pecuniary or non-pecuniary benefits of stablecoins further amplify this demand effect and, in turn, strengthen the hegemon's longstanding financial advantage.

Third, stablecoins generate a supply effect on the hegemon's sovereign debt when the hegemon accrues indirect benefits from stablecoin issuance. In this setting, the hegemon optimally selects its level of debt issuance and its associated funding cost in order to satisfy stablecoin demand and capture a share of the resulting rents. The optimal debt strategy thus depends on the relative marginal utility of revenues derived from stablecoin issuance compared with that arising from the additional demand for sovereign debt. When stablecoins provide substantial liquidity services—thereby sustaining strong demand—the hegemon is incentivized to expand its debt issuance and accept higher financing costs to maximize the profits linked to stablecoin adoption. As with the demand effect, any policies that increase the pecuniary or non-pecuniary benefits of holding these assets further amplify this supply-side channel.

Fourth, regulatory requirements that depart from full backing of stablecoins with government debt introduce an additional supply-side effect. By breaking the substitutability between stablecoins and sovereign debt, such regulations raise the equilibrium interest rate and —– when demand for stablecoins is relatively limited —– also lead to an increase in the level of public debt.

Stablecoin policies and IMS stability. Our second set of results concerns the impact of the existence of a stablecoin ecosystem on the stability of the IMS. As in Farhi and Maggiori (2018), the instability results from investors' expectation of a potential devaluation by the hegemon when the debt burden is too high.

We find that the traditional Triffin dilemma mechanism persists with the demand effects of stablecoin. This demand effect amplifies the issuer's exorbitant privilege, thereby supporting a higher sustainable level of sovereign debt and, consequently, delaying the collapse of the IMS. Along the transition path, however, demand for stablecoins proves fragile, giving rise to

an equilibrium in which the hegemon deliberately restricts its debt issuance. By imposing a self-inflicted debt ceiling, the hegemon temporarily preserves the stability of the IMS despite deviating from its otherwise optimal issuance strategy.

Under the supply-side effect shaped by governmental preferences, the stablecoin ecosystem strengthens the stability of the IMS by generating a disciplining force on debt issuance. This improvement is driven by the fragile nature of stablecoin demand and the government's loss of stablecoin-related profits in the event of devaluation, which raises the effective cost of devaluing. Moreover, stablecoin-related policies –such as the liquidity services accruing to stablecoin holders and governmental preferences for stablecoin profits– interact. In particular, a large preference for stablecoin profits (leading to larger debt issuance) results in IMS instability only when liquidity services are low.

Multipolar IMS and stablecoin competition. In a duopolistic IMS without preferences for stablecoin profits, each hegemon is sensitive to the other's debt issuance as aggregate debt affects the global interest rate and, consequently, each hegemon's individual debt burden. This sensitivity, however, is altered when governments exhibit preferences for stablecoin-related profits. When the incumbent hegemon internalizes such profits and demand for stablecoins is limited, it reduces its debt issuance in order to counteract the interest rate increase induced by competition. By contrast, when demand for stablecoins is sufficiently resilient to higher interest rates—that is, when stablecoins deliver substantial liquidity services—competition within the IMS leads the incumbent hegemon to increase its debt issuance.

Literature review. Our framework builds upon the canonical contribution of Farhi and Maggiori (2018) who provide a theoretical framework to study how the supply and demand for safe assets shapes the IMS. In a world where only one hegemon (the US) can provide safe assets, a rise in global demand for safe assets can lead to an erosion of the safe asset properties themselves. They also show that while a multipolar IMS can expand the supply of reserve assets, it may also introduce greater instability, though not necessarily so.

While we build upon the framework from Farhi and Maggiori (2018), our paper is closest in spirit to Azzimonti and Quadrini (2024, 2025). In the former, the authors study the impact of stablecoins on US debt and interest rates which increase and decrease respectively unless stablecoins are only partially backed by US sovereign debt. The latter paper examines the transition dynamics associated with the growth of the digital economy. In their model, the proliferation of USD-backed stablecoins creates more foreign demand for US Treasuries in the long-run, thus leading to lower US interest rates and greater global imbalances. In contrast, we specifically model the supply side of US government debt where the US maximizes the revenue gains from being the monopoly issuer of safe assets. Our paper is also closely related to Ferrari Minesso and Siena (2025) who find that massive stablecoin adoption depresses US interest rates. While they focus on the open-economy implications of stablecoin demand, notably cross-border spillovers, we are interested in the consequences of stablecoin adoption for the stability of the IMS.

This paper is also related to the literature on the dominant role of the US dollar in the global financial system and international trade (Gopinath et al., 2020; Gopinath and Stein,

2020) and in particular the role of US Treasury debt as the world's safe asset (Krishnamurthy and Vissing-Jorgensen, 2012). This literature also discusses the relation to competitors, in the form of sovereigns or private issuers (He et al., 2019; Kacperczyk et al., 2021), or their absence when investors coordinate on the same safe asset (He et al., 2016). Nonetheless, the capacity to provide the world with safe assets is bounded (Brunnermeier et al., 2024), eventually leading to a situation where fiscal sustainability concerns question the safety of sovereign debt – a situation famously described by the Triffin dilemma.

In our framework, stablecoins can constitute a competitor to the hegemon's sovereign debt if backing is only partial. The emergence of alternative safe asset issuers in the form of sovereigns can present fiscal sustainabilty risks, akin to an acceleration of the Triffin dilemma. Building on Farhi and Maggiori (2018), Farhi and Maggiori (2019) explore the emergence of China as a competitor to the US, thus eroding the latter's exorbitant privilege and requiring fiscal adjustments. Similarly, Choi et al. (2025) show that safe asset competition from sovereigns or the private sector can raise US interest rates.

The empirical evidence on stablecoins and digital assets is limited but gaining momentum, echoing their ascent as financial instruments and the evolving policy landscape. For our question of interest, the literature focusing on cross-asset demand elasticities is especially important. Ahmed and Aldasoro (2025) find that inflows into stablecoins lower yields on US Treasury bills: a 1 billion USD inflow into stablecoins is associated with a decline in 3M T-bill yields of 0.6–0.7bp. For the case of the commercial paper market, Barthelemy et al. (2021) show that an increase in stablecoin demand does not surpress yields, but leads to more issuance.

The rest of paper is structured as follows. Section 2 presents the baseline model with stablecoins and discusses different stablecoin policies. Section 3 describes the optimal debt issuance when their is no devaluation risk and qualifies the impact of each policy choice. In section 4, we discuss the implications for the stability of the IMS when there is devaluation risk. Section 5 introduces a multipolar IMS characterized by a duopoly in both sovereign debt and stablecoin issuance. Section 6 concludes.

2 Revisiting the IMS Framework with Stablecoins

In this section, we introduce stablecoins in an otherwise standard International Monetary System economy *à la* Farhi and Maggiori (2018). We first describe the baseline model. Second, we compute the demand for debt and stablecoin. Third, we detail the optimization problem of the hegemon. Finally, we discuss the set of policies available to the hegemon to promote stablecoin adoption within the model.

2.1 Baseline Model

Time is discrete and indexed by $t \in \{0, 1\}$. A hegemonic government issues a nominally risk-free debt b at date 0 in the hegemon's currency, which can be devaluated at date 1 at the hegemon's will. The Rest of the World (RoW) is divided into two groups, each consisting of a continuum of atomistic foreign investors. They share the same preferences, but differ in terms of their access to the hegemon's financial market. The first investor type has access to the hegemon's

financial market, it can thus buy its debt. We denote all variables specific to this part of the RoW with the superscript A (as in *access* to the hegemon's financial market). The second type of investor does not have access to the hegemon's debt markets, for example due to capital controls. Stablecoins enable agents excluded from the hegemon's financial markets to store their wealth in the form of a safe asset. We therefore refer to these agents with the superscript N (as in *new entrants*). The hegemon and the two investor types in the RoW are endowed by ω, ω^A and ω^N respectively units of goods at date 0.

Three assets compete in this economy: a real risky asset with return R^r, a nominally safe bond with return R, and a nominally safe stablecoin with return R^s.

At date 1, the state of the economy is revealed and either features a disaster (with prob. λ) and $R^r = R^r_L$ or no-disaster and $R^r = R^r_H$. We denote by $\sigma^2 = \mathbb{V}ar(R^r)$ and $\bar{R} = \mathbb{E}[R^r]$ its variance and its mean respectively. We also denote by e the date-1 exchange rate, which is decided at date 1 by the hegemon.

At date 0, the hegemon issues b unit of bonds and the stablecoin issuer s units of stablecoins. A share η of circulating stablecoins is backed by the hegemon's debt, the rest is invested in the risky asset. The debt held by the RoW is denoted by b^A so that market clearing imposes: $b = b^A + \eta(s^A + s^N)$. Finally, stablecoins provide a date-0 utility service modeled as Money-in-the-Utility function.

The timing goes as follows. First, the hegemon chooses b. Second, RoW investors choose their optimal portfolio (b^A, s^A, s^N) at date $t = 0^+$. Third, at date 1, the realization of the disaster is revealed and the hegemon selects whether to devalue via e.

2.2 RoW Demand for Debt and Stablecoins

Both A and N investors share the same preferences. At date $t = 0^+$, the RoW representative investors solve the following optimization problem, taking the coordination as given:

Access to hegemon's debt:

$$\begin{aligned} \max_{(b^A, \tilde{s}^A, C_1^A)} \quad & \mathbb{E}^+[C_1^A] - \gamma \mathbb{V}ar^+(C_1^A) + V(\tilde{s}^A), \\ \text{st} \quad & \omega^A = x^A + b^A + \tilde{s}^A, \\ & C_1^A = x^A R^r + e b^A R + e \tilde{s}^A R^s, \end{aligned}$$

No access to hegemon's debt:

$$\begin{aligned} \max_{(\tilde{s}^N, C_1^N)} \quad & \mathbb{E}^+[C_1^N] - \gamma \mathbb{V}ar^+(C_1^N) + V(\tilde{s}^N), \\ \text{st} \quad & \omega^N = x^N + \tilde{s}^N, \\ & C_1^N = x^N R^r + e \tilde{s}^N R^s, \end{aligned}$$

where γ measures RoW investor's risk aversion, $\tilde{s}$ stands for the individual stablecoin holding, and x denotes the holding of risky assets. $V(\tilde{s})$ captures the non-pecuniary benefits that accrue to stablecoin holders.

These non-pecuniary benefits stand for all liquidity services provided by stablecoins to their holders, as they may serve as a faster and cheaper means of payment, they may be more interoperable with tokenized assets and crypto-assets, and they may better safeguard privacy than other assets (including their use for illicit activities). Besides, we assume that such benefits increase with the overall use of stablecoins, i.e., exhibit network effects. For a given aggregate holding of stabelcoin s, an individual with an holding $\tilde{s}$ benefits from a liquidity service, $V(\tilde{s})$,

defined as:

$$V(\tilde{s}) = \left(v + v's\right)\tilde{s} - v\frac{\kappa}{2}\tilde{s}^2,$$

where v' captures the intensity of the network effect. While these liquidity services are non-pecuniary in nature, this does not exclude a setup where stablecoins offer a direct interest-bearing renumeration to their holders, R^s, *in addition to* non-pecuniary benefits. κ captures the decreasing marginal utility of holding stablecoins that can either be interpreted as a form of money satiation or as a proxy for risk aversion in the presence of a (unmodeled) stablecoin de-peg risk.[2]

Any interior solution should satisfy the following three first-order conditions:

$$\begin{aligned}
\frac{\bar{e}R - \bar{R}^r}{2\gamma} &= b^A\left(R^2\sigma_e^2 + \sigma^2 - 2\sigma\sigma_e R\right) + \tilde{s}^A\left(RR^s\sigma_e^2 + \sigma^2 - \sigma\sigma_e\left(R^s + R\right)\right) \\
&\quad + \omega^A\left(R\sigma\sigma_e - \sigma^2\right), \qquad (1) \\
\frac{\bar{e}R^s - \bar{R}^r}{2\gamma} &= \tilde{s}^A\left(\left(R^s\right)^2\sigma_e^2 + \sigma^2 - 2\sigma\sigma_e R^s\right) + b^A\left(RR^s\sigma_e^2 + \sigma^2 - \sigma\sigma_e\left(R^s + R\right)\right) \\
&\quad + \omega^A\left(\sigma\sigma_e R^s - \sigma^2\right) - \frac{V'(\tilde{s}^A)}{2\gamma}, \qquad (2) \\
\frac{\bar{e}R^s - \bar{R}^r}{2\gamma} &= \tilde{s}^N(\sigma^2 + \sigma_e^2(R^s)^2 - 2\sigma\sigma_e R^s) + \omega^N(\sigma\sigma_e R^s - \sigma^2) - \frac{V'(\tilde{s}^N)}{2\gamma}. \qquad (3)
\end{aligned}$$

Notice that the demand for stablecoins from ROW investors N in the absence of network externality, s^N, is fixed and, especially, does not depend on the interest rate, R. Also notice that the exact composition of stablecoin reserve assets (η) does not affect demand for stablecoins as we exclude any depeg risk in the baseline model. Finally, equations (1)-(3), the equilibrium conditions $\tilde{s}^A = s^A$ and $\tilde{s}^N = s^N$, and the market clearing condition on the debt market $b = b^A + \eta(s^A + s^N)$ lead to a demand system linking (b, s) and the interest rate R (with $s = s^A + s^N$).

2.3 Hegemon's Supply of Debt

The hegemon is risk neutral and consumes at $t = 0$ and $t = 1$. It maximizes its intertemporal stream of consumption by issuing debt b and investing the proceeds in the risky investment x at date 0. The hegemon may also value stablecoin profits in its utility. The parameter $\theta \in [0, 1]$ will capture the intensity of this preference. Stablecoin profits depend on the stablecoin issuer's assets that are held in the form of sovereign debt, η, as well as the remuneration on stablecoins, R^s. Finally, the date-0 hegemon's optimization program is as follows:

$$\begin{aligned}
\max_{x,b,C_0,C_1} \quad & C_0 + \delta\mathbb{E}\left[C_1 - \tau(1-e) + \theta\left(\eta(R - R^s)es + (1-\eta)(R^r - R^s)es\right)\right], \\
\text{s.t.} \quad & \omega = C_0 + x - b, \\
& xR^r - bRe = C_1,
\end{aligned}$$

[2] We formally model such a risk when we model the stablecoin issuer.

where $s = s^A + s^N$ denotes the total quantity of stablecoins, $\delta = 1/\bar{R}^r$ denotes the usual rate of time preference, τ is a fixed-cost of devaluation, and $\theta \in [0,1]$ is the date-1 hegemon's additional payoff induced by stablecoin's profits —due to higher date-1 consumption by stablecoin issuers or their political influence.[3]

The hegemon's optimization program can be simplified as follows:

$$\max_{b \geq 0} \underbrace{b\left(\bar{R}^r - \mathbb{E}(Re)\right)}_{\text{hegemon's monopoly gain}} - \underbrace{\mathbb{E}\left(\tau(1-e)\right)}_{\text{exp. devaluation cost}} + \underbrace{\theta\mathbb{E}\left(\eta(R-R^s)es + (1-\eta)(R^r-R^s)es\right)}_{\text{stablecoin profits}}, \quad (4)$$

subject to the demand system defined in the previous subsection. Overall, when choosing the supply of debt, the hegemon must internalize how the level of debt b affects: (i) the interest rate R—which in turn determines both the rents from being the sole supplier of safe assets and stablecoin profits; (ii) the probability of devaluation—which, as will become clear below, weakly increases with the level of debt; and (iii) the demand for stablecoins s, which directly affects stablecoin profits.

2.4 Stablecoin Policy

In this subsection, we discuss stablecoin-related policies. We collect the set of parameters that policymakers may more or less directly influence in the policy vector $\mathcal{P}$ defined as:

$$\mathcal{P} = \{v, v', \omega^N, R^s, \eta, \theta\},$$

and discuss each element below.

v, v' **- Infrastructure and regulation.** The parameter v and v' capture the non-pecuniary benefits that motivate agents to hold stablecoins while foregoing the interest return on sovereign debt. In practice, governments can actively increase the relative attractiveness of stablecoins through a range of policy instruments that affect the liquidity and convenience value of stablecoins v relative to sovereign debt. Regulatory frameworks that provide legal certainty for issuance and redemption (e.g., licensing regimes, reserve and disclosure requirements) can increase user confidence by reducing perceived default and liquidity risk. Infrastructure provision can raise the payments value of stablecoins by compressing settlement lags or lowering operational and coordination costs. Governments may also promote interoperability with the domestic payment infrastructure by allowing stablecoin issuers access to bank settlement systems and payments networks, thereby enhancing their transactional efficiency. In addition, public-sector adoption, such as allowing stablecoins for tax payments, government transfers or public procurement, can generate network effects v' that further raise their attractiveness.

ω^N **- Broadening the foreign investor base through new users.** The variable ω^N captures the size of the market without access to the hegemon's debt but with an access to stablecoins. It can be bacause capital controls are more effective to limit debt rather than stablecoin holding or because of prohibitively large transaction costs when it comes to debt. While a large

[3] We can also interpret this additional payoff as resulting from a tax on stablecoin profits. This would formally be written as an additional term in the date-1 budget constraint $\theta(R-1)es$.

extent of the policy space lies with the governments of the RoW, the hegemon can influence the access to stablecoins by lowering entry frictions through infrastructure provision aimed at foreign users, such as digital wallets and simplified on-boarding. Also, improving cross-border payment rails can ensure fast, low-cost transfers between stablecoins and multiple currencies, making them more practical for international users. Licensing stablecoin issuers or approving partnerships with regulated custodians in foreign jurisdictions can further expand access.

R^s - Remuneration of stablecoins. The interest rate paid on stablecoin holdings can be part of government policies. Both the US GENIUS Act as well as the EU's MiCA regulation currently prevent stablecoin issuers to remunerate the holders of stablecoins, implying that $R^s = 1$. However, if traditional banks were to issue their own stablecoins, these restrictions could be relaxed or bypassed, making remuneration for holders more feasible and thus affecting the opportunity cost of holding stablecoins. In such a case, stablecoin interest rates would be naturally tied to the risk-free rate. We abstract from this possibility in the remainder of the paper and treat R^s as an exogenous policy parameter, in line with the current US regulation.

η - Backing requirements. One of the key parameters that translates stablecoin demand into demand for the hegemon's debt is the requirement that debt must back stablecoins, η. These can be explicitly subject to government regulation as is case under the US GENIUS Act which requires stablecoins to be fully backed by short-term, safe instruments. Even setting aside concerns about the substantial share of stablecoin issuers' assets held in riskier instruments, there remains considerable discretion within the category of safe, short-term instruments regarding the share held in government debt.

θ − Governmental preferences for stablecoin profits. The parameter θ governs the hegemon's preference for the profits of the stablecoin sector. Governments may plausibly value the profits generated by the domestic stablecoin sector for several reasons. First, stablecoin issuance being a very profitable business, these seignorage-like revenues may generate tax revenues. Second, the development of the surrounding ecosystem (custodial services, blockchain infrastructure, or fintech innovation) may generate employment and domestic value added. In this respect, promoting a nationally anchored stablecoin industry can be part of a broader strategy of financial competitiveness, aimed at attracting capital, talent, and technological leadership in the global payments and digital asset landscape. Third, geopolitical considerations, such as reducing reliance on foreign payment networks or preserving currency influence, can induce governments to value stablecoin sector rents beyond their purely private returns. Fourth, the government may internalize political pressure from the domestic stablecoin industry, effectively treating sectoral revenues as a policy-relevant objective due to lobbying, revolving doors or regulatory capture.

Interpreting stablecoins as Central Bank Digital Currency Notice that when $\theta = 1$, the optimization problem of the hegemon is equivalent to the one that it would face issuing a Central Bank Digital Currency (CBDC). Assuming $R^s = 1$ and $\eta = 1$ for simplicity, the first

and the third elements of the hegemon's optimization problem can indeed be rewritten as:

$$b\left(\bar{R}^r - \mathbb{E}(Re)\right) + \mathbb{E}\left(Re - e\right)s = b^A\left(\bar{R}^r - \mathbb{E}(Re)\right) + s(\bar{R}^r - \bar{e}),$$

which corresponds to the real transfer from the RoW to the hegemon, assuming that the hegemon issues itself the stablecoin— akin to a CBDC. We therefore can interpret the case $\theta = 1$ as one of the hegemon issuing a CBDC and benefiting from seigniorage revenues on its issuance.

3 Debt and Stablecoins under Full Commitment

In this section, we analyze the hegemon's optimal debt issuance under full commitment —that is, assuming that the hegemon can credibly resist the *ex post* temptation to devalue its currency in order to reduce its debt burden. We first restate the demand system under this commitment regime and then present the hegemon's optimization problem. Finally, we characterize the equilibrium and identify the conditions under which the presence of stablecoins increases the equilibrium level of debt.

3.1 Demand for Debt and Stablecoins in the Absence of Devaluation Risk

Under commitment, the hegemon does not devalue its currency ($\bar{e} = 1$ and $\sigma_e = 1$) and equation (1) leads to a demand for debt and for stablecoins by type A investors as a function of R and s^A:

$$b^A = \frac{R - \bar{R}^r}{2\gamma\sigma^2} - s^A + \omega^A \tag{5}$$

Defining $\psi(v') = [\kappa v(2\gamma\sigma^2 + \kappa v) - v'(2\gamma\sigma^2 + 2\kappa v)]^{-1}$ that broadly captures the demand for stablecoin, Equations (1) (2) and (3) lead to the following stablecoin demand system:

$$s^A = \psi(v')[(2\gamma\sigma^2 + \kappa v - v')(R^s - R + v) + v'(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)], \tag{6}$$

$$s^N = \psi(v')[(\kappa v - v')(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v) + v'(R^s - R + v)]. \tag{7}$$

The first component of each stablecoin demand reflects the structural determinants of stablecoin demand for the corresponding type of investor. These include the respective opportunity costs –$(R^s - R)$ for investor A and $(R^s - \bar{R}^r)$ for investor N– as well as the fixed liquidity service provided by the stablecoin v. In addition, for investor N, it incorporates the demand for insurance captured by $2\gamma\sigma^2\omega^N$.[4] The second component of stablecoin demand reflects the strategic complementarity due to the network effects: the more the other investor holds stablecoins, the higher the demand. The intensity of this effect is captured by the parameter v'. When $v' = 0$, the type-N investor demand for stablecoins does not depend on R.

[4] Access to stablecoins gives agents that were previously cut off from holdings safe assets in the form of the hegemon's debt a possibility to store parts of their wealth in a safe asset, independently of the liquidity services provided by stablecoins. This can be seen by setting $v = v' = 0$. Stablecoin demand from type N investors then resembles equation (5) with $R = R^s$: $s^N = \frac{R^s - \bar{R}^r}{2\gamma\sigma^2} + \omega^N$.

The aggregate demand for stablecoin $s = s^A + s^N$ satisfies:

$$s = \underbrace{\frac{\psi(v')}{\psi(0)}}_{\text{Network effect multiplier} \geq 1} \left(\underbrace{\frac{R^s - R + v}{\kappa v}}_{s^A \text{ prevailing if } v'=0} + \underbrace{\frac{R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v}{2\gamma\sigma^2 + \kappa v}}_{s^N \text{ prevailing if } v'=0} \right) \equiv \rho_s(R_s^d - R), \quad (8)$$

where the negative interest-rate sensitivity $-\rho_s$ captures the higher opportunity cost of holding stablecoins when risk-free rates are higher. The demand shifter $R_s^d > 0$ reflects the highest interest rate consistent with a positive aggregate stablecoin demand.

The aggregate debt demand curve that the hegemon faces satisfies:

$$b = \underbrace{\frac{R - \bar{R}^r}{2\gamma\sigma^2} + \omega^A - s^A}_{b^A} + \eta \underbrace{(s^A + s^N)}_{s} \equiv \rho_b(R - R_b^d), \quad (9)$$

where the slope ρ_b is positive as long as the network effect is not too large, that we assume in the rest of the paper. The demand shifter R_b^d denotes the lowest interest rate with a positive demand for hegemon's debt.

3.2 Fully Committed Hegemon's Optimization Problem

Given the above demand system, the hegemon chooses the debt level b —or equivalently the level of interest rate R— to maximize its monopoly gain and the stablecoin profits, that can be rewritten as follows:[5]

$$\max_R \quad \underbrace{\rho_b \left(R - R_b^d\right) \left(\bar{R}^r - R\right)}_{\text{Monopoly gains on debt issuance}} + \theta \underbrace{\eta\rho_s \left(R_s^d - R\right) \left(R - R^s + \Phi^s\right)}_{\text{Stablecoin profits}} \quad (10)$$

where $\Phi^s = \frac{1-\eta}{\eta}(\bar{R}^r - R^s)$ denotes the extra return of the stablecoin issuer on non-debt reserves, if any. Parameters $(R_b^d, R_s^d, \rho_b, \rho_s)$ are independent of R.

The problem that faces the hegemon is thus simply to choose the optimal level of debt and hence of interest rate R to maximize both the revenue extracted from the debt holders due to its monopoly on the issuance of risk-free debt on the one hand and the stablecoin profits akin to a seignoriage revenue for the stablecoin issuers from the RoW on the other hand. The first term is maximized at $R^{debt} = \frac{\bar{R}^r + R_b^d}{2}$, while the second attains its maximum at $R^{sc} = \frac{R_s^d + R^s - \Phi^s}{2}$. The optimal interest rate therefore lies between these two values. When the relative weight of the two quadratic terms is large, the optimal interest rate is closer to the latter; otherwise, it is closer to the former.

These two maxima can be interpreted as the peaks of two distinct Laffer curves: one associated with the rent-seeking problem of the sovereign debt issuer, and the other with the stablecoin issuer. Monopoly rents from debt issuance increase with R up to the optimal interest rate R^{debt}, as higher interest rates raise demand for debt and thus profits. Beyond this point, however, monopoly rents decline with R, because the reduction in the safety premium —which

[5] For simplicity, we focus on interior solutions only.

corresponds to the marginal profit from issuing an additional unit of debt— dominates the positive effect of higher interest rates on debt demand. Stablecoin profits can also be characterized in a Laffer-curve fashion. Profits increase with R up to the stablecoin-profit–maximizing interest rate R^{sc}. Beyond this level, further increases in R reduce stablecoin profits, as the contraction in stablecoin demand more than offsets any remaining gains. See Figure 1 for a graphical representation.

By denoting by $\alpha = \frac{\rho_b}{\rho_b + \theta\eta\rho_s} \in [0,1]$, the optimal weight on the rate maximizing monopoly gains on debt issuance solely, we get the solution (R^*, b^*):

$$R^* = \alpha \frac{\bar{R}^r + R_b^d}{2} + (1-\alpha)\frac{R_s^d + R^s - \Phi^s}{2} \text{ and } b^\star = \rho_b(R^* - R_b^d). \tag{11}$$

3.3 Stablecoin (Non-)Neutrality Under a Fully Committed Hegemon

In this subsection, we determine the conditions under which stablecoins affect the equilibrium level of debt b^*. We first state an irrelevance result showing that stablecoins do not necessary impact this equilibrium level. We then determine the conditions that break this result up.

Neutrality of stablecoins In an economy without stablecoins ($\omega^N = 0$, $v = v' = 0$, and $\theta = 0$) the optimal level of debt issuance is $b = b^0 \equiv \frac{\omega^A}{2}$ and the associated interest rate is $R^0 \equiv \bar{R}^r - \gamma\sigma^2\omega^A$. Proposition 1 states under which conditions stablecoins do not affect neither the debt level b nor the interest rate R in equilibrium.

Proposition 1 (Irrelevance result)**.** *For any policy vector $\mathcal{P} = \{v, v', 0, R^s, 1, 0\}$, the optimal debt issuance is characterized by $b^* = b^0$ and $R^* = R^0$, both unaffected by the existence of stablecoins.*

Proof. See appendix A.3. □

When the hegemon does not internalize stablecoin profits ($\theta = 0$), stablecoins are not held by new entrants ($\omega^N = 0$), and stablecoins are fully backed by hegemon's debt ($\eta = 1$), the optimal issuance of debt is not affected by the existence and the strength of the demand for stablecoins —which are notably governed by v, v', and R^s. Stablecoin demand does not affect the aggregate demand for debt for two reasons: (i) the ROW perfectly substitute debt for stablecoins (ii) the backing one-for-one with debt of each circulating stablecoin leaves unchanged the aggregate demand for debt. This situation is depicted in figure 1: the slope of the stablecoin demand curve determines the split of overall sovereign debt between direct holdings b^A and indirect holdings via stablecoins s, but the overall level $b = b^A + s$ is not affected as it is uniquely determined by the supply of debt, independent of ROW's preferences for stablecoins.

Two remarks are in order. First, Proposition 1 describes only interior equilibrium outcomes. Given the linear demand system, this requires additional restrictions on the underlying parameters. In particular, the stablecoin remuneration R^s must lie in an intermediate range to ensure that both b^A and s are positive in equilibrium. Second, and more importantly, neutrality is defined here from the perspective of the hegemon rather than from that of ROW investors or stablecoin issuers, for whom the introduction of stablecoins is consequential.

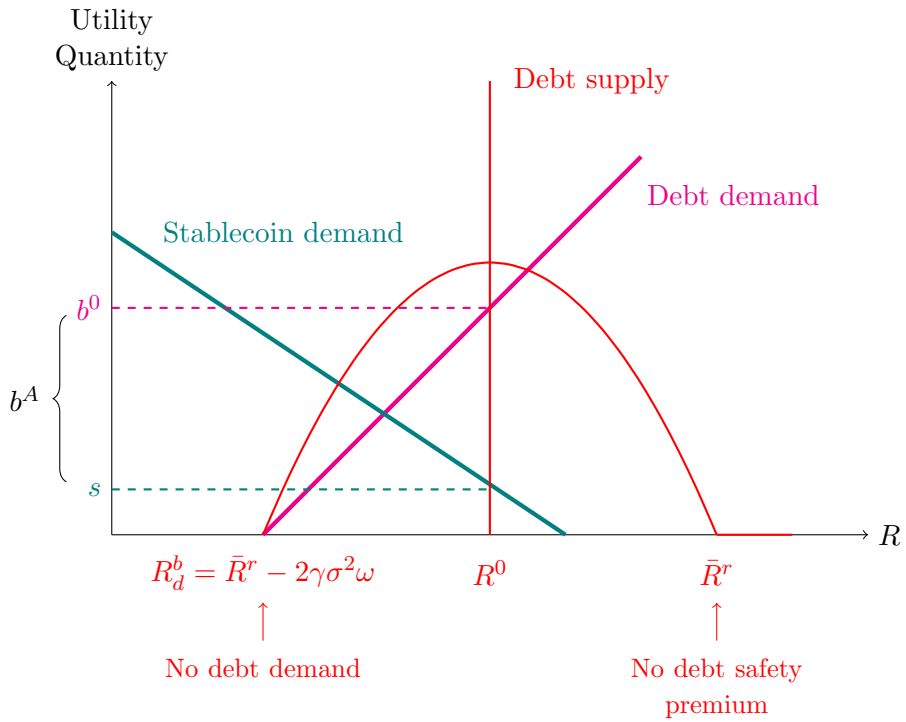


Figure 1: Supply and demand for debt (when $\theta = 0$, $s^N = 0$ and $\eta = 1$)

Notes: The red bell curve corresponds to the Laffer curve that represents the hegemon's monopoly gains associated with debt issuance. The pink line represents the demand for the hegemon's debt (increasing in R) while the turquoise line represents the demand for stablecoins as a function of its opportunity cost R (thus decreasing in R). R^0 denotes the optimal interest rate and pins down the supply of debt, which, in turn, determines the overall debt b^0, the part directly held by investors b^A and the one held by the stablecoin issuer s.

Non-neutrality of stablecoins As it is transparent by the inspection of equation(11), three broad factors can break the irrelevance of stablecoins for the equilibrium level of debt: (i) stablecoins give access to more insurance to agents who have not access to hegemon's debt otherwise; (ii) the hegemon values stablecoin profits; (iii) stablecoin reserves are diversified and not only invested in hegemon's debt. Proposition 2 showcases these three cases:

Proposition 2 (Non-neutrality)**.** *Stablecoins are non-neutral in the following cases:*

- ***New-entrants-driven issuance.*** *For any policy* $\mathcal{P} = \{v, v', \omega^N, R^s, 1, 0\}$ *with* $\omega^N > \frac{\bar{R}^r - R^s - v}{2\gamma\sigma^2}$ *and* $v' < \kappa v/2$*, the optimal debt issuance* b^* *is higher than* b^0 *and rates are lower* $R^* < R^0$*.*
- ***Stablecoin-profits-driven issuance.*** *For any policy* $\mathcal{P} = \{v, v', 0, R^s, 1, \theta\}$ *with* $\theta > 0$*, the optimal debt issuance* b^* *is higher than* b^0 *(and* $R^* > R^0$*) if and only if* $R^0 < R^s + \frac{v}{2}$*.*
- ***Backing composition.*** *For any policy* $\mathcal{P}\{v, v', 0, R^s, \eta, 0\}$ *with* $\eta < 1$*,* $R^* > R^0$*. In addition,* $b^* > b^0$ *if and only if* $\bar{R}^r > R^s + v$*.*

Proof. See appendix A.3. □

Below, we discuss each of the results in proposition 2.

New-Entrants-Driven Issuance. Our irrelevance result stems from a perfect substitution between debt and stablecoin holding by the RoW representative investor A. Such a substitution may be imperfect if stablecoins allow new investors to store their wealth in the hegemon's currency (e.g. drug dealers, users of e-wallets for remittances or payments in developing economies, agents in countries subject to capital controls or sanctions), thus leading to lower interest rates and higher debt issuance by the hegemon as in Azzimonti and Quadrini (2025). This is shown in figure 2. Allowing agents that are cut off from the hegemon's financial market to hold stablecoins generates additional demand for debt. Interestingly, additional stablecoin demand is equivalent to raising ω^A in the model. This higher demand from new entrants partially crowds out the demand from ROW investors A as the optimal interest rate is lower in equilibrium, depressing demand b^A. See Figure 2 for a graphical representation.

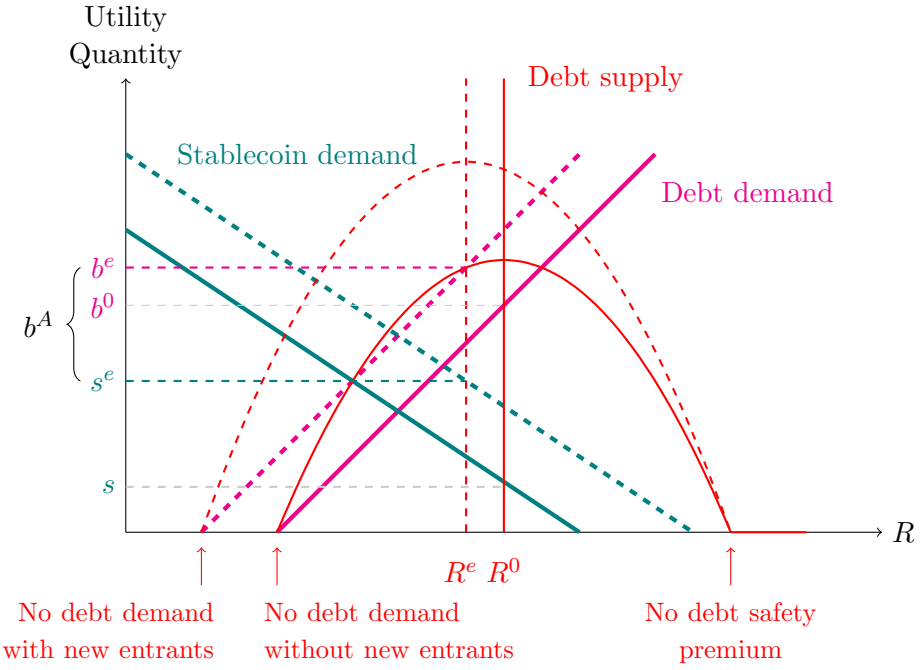


Figure 2: Supply and demand for debt with new entrants (when $s^N > 0$)

Notes: Solid curves and lines correpond to the case $s^N = 0$ whereas the dashed versions correspond to $s^N > 0$. The red bell curve corresponds to the Laffer curve that represents the hegemon's monopoly gains associated with debt issuance. The pink line represents the demand for the hegemon's debt (increasing in R) while the turquoise line represents the demand for stablecoins as a function of its opportunity cost R (thus decreasing in R). R^0 and R^e denote the optimal interest rate and pin down the supply of debt, which, in turn, determines the overall debt b and the part that is held by the stablecoin issuer s.

Stablecoin-Profits-Driven Issuance. There is stablecoin-driven issuance when the government explicitly considers stablecoin profits in its utility. The larger $\frac{\theta}{\kappa v}$, the higher the hegemon departs from its optimal issuance policy without stablecoins to raise stablecoin revenues. When this tends to ∞, then $R = 1 + \frac{v}{2}$ which maximizes the stablecoin revenues. When this is zero, then $R = R^0$ which yields more or less stablecoin profits depending on the distance between this rate and $1 + \frac{v}{2}$.

However, maybe counterintuitively, internalizing stablecoin profits does not necessarily lead

the hegemon to issue more, but sometimes to issue less. This depends whether the status quo ($\theta = 0$) is at the left or the right of the top of the Laffer curve of stablecoin revenues (see also Figure 3). When the rate without stablecoin is too low compared to this value, the hegemon chooses to issue more to increase the per-unit seigniorage revenues extracted by the stablecoin issuer from the RoW. Otherwise, it chooses to reduce its debt issuance to reduce the interest rate R and increase the demand for stablecoin.

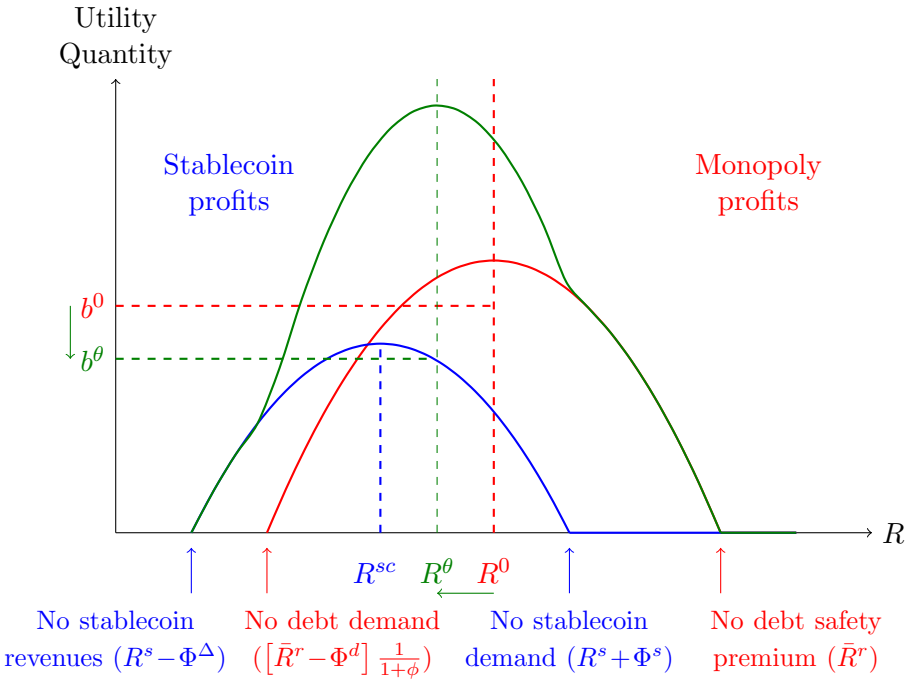


Figure 3: Supply and demand for debt with governmental preferences (when $\theta > 0$, under the assumption that the stablecoin Laffer curve is to the left of the monopoly gain Laffer curve)

Notes: The blue bell curve corresponds to stablecoin profits, the red curve stands for the hegemon's monopoly gains associated to debt issuance, and the green one is the weighted sum of these two curves standing for the overall hegemon's objective when internalizing stablecoin profits ($\theta > 0$). When $R^0 > 1 + \frac{v}{2}$, the hegemon optimally reduces its debt issuance when internalizing stablecoin profits to increase the demand for stablecoin even if it reduces the overall demand for debt and hence its monopoly gains on debt issuance.

Backing Composition. Departing from full backing alters the effective demand for the hegemon's debt and breaks the irrelevance result. For every unit of stablecoins held by the RoW, the RoW asks for $(1 - \eta)$ units less of b. As a consequence, if the hegemon wants to issue one more unit of b, it has to compensate the holder of sovereign debt by paying a larger interest rate R as it needs to crowd out stablecoin demand, thus tilting the RoW portfolio towards more holdings of b (in the form of b^A). The impact of mixed backing on the optimal interest rate is depicted in Figure 4. While mixed backing unambiguously increases the interest rate, the determination of the new level of debt, the impact on debt b^η is ambiguous. The demand curve is characterized by a steeper slope (more debt is raised when increasing R as this crowds out stablecoin demand), but also a higher minimum interest rate $\bar{R}^r - \Phi^d$ to generate positive demand for b. The above proposition is depicted in figure 4 for the case of $1 + v < \bar{R}^r$. The

new level of debt is higher than in the baseline case. The slope of the demand curve and its kink at $1 + v$ determine the level of debt under the higher interest rate under mixed backing. A higher preference for stablecoins, v, flattens the demand curve, since interest rate increases elicit only limited additional demand, as it is harder to crowd out stablecoin demand. If v is such that $1 + v > \bar{R}^r$, mixed backing leads to a decrease in sovereign debt. The government, which must trade off debt demand against monopoly gains, will erode too much of the latter in its attempt to generate the former. In equilibrium, mixed backing with $1 + v > \bar{R}^r$ thereby reduces the level of b.

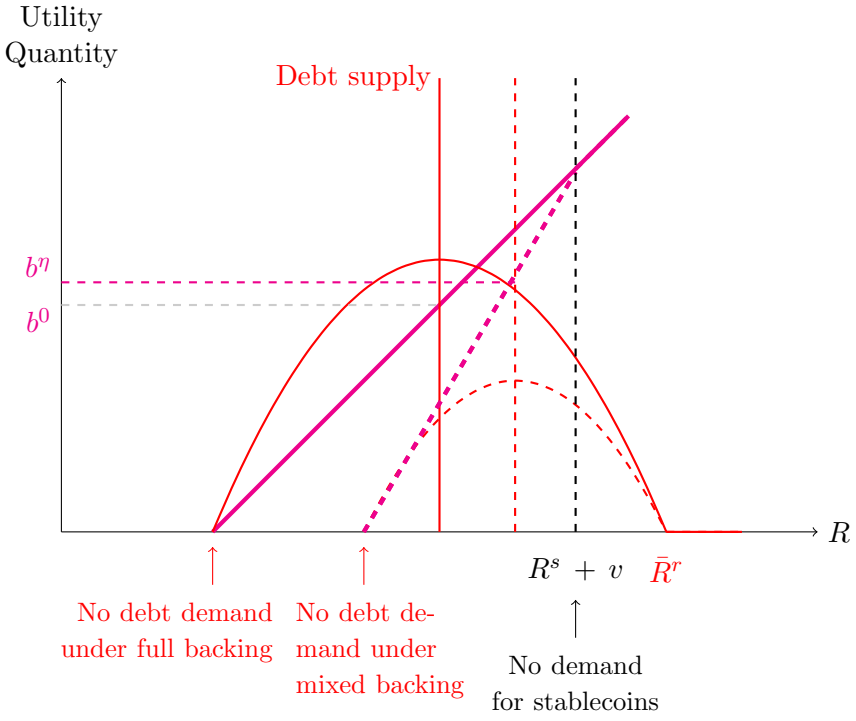


Figure 4: Supply and demand for debt under mixed backing (when $\eta < 1$)

Notes: The pink curve represents the demand for debt as a function of R. The red belle curve represents the hegemon's utility. Solid curves represent the baseline curve and dashed versions depict the shift under mixed backing.

Table 1 summarizes the impact of different stablecoin policies on the optimal interest rate and the equilibrium level of debt. The most striking result regards the fact that stablecoin-demand-enhancing policies, such as infrastructure and regulation that would affect the non-pecuniary or interest generating benefits of stablecoins (v and R^s), are ineffective due to the perfect substitution between sovereign debt and stablecoin holdings. These policies only work in combination with the existence of RoW investors for whom stablecoins provide a store of value previously inaccessible or in the case of explicit governmental preferences for stablecoin profits. This does not imply that v and R^s do not have any impact on stablecoins; on the contrary, they affect the slope of the stablecoin demand curve and thus the split between direct holdings of government debt and indirect holdings by the stablecoin issuer.

Policy	**Condition**	**Interest rate R**	**Debt b**
Neutral policy ($s^N = \theta = 0$ and $\eta = 1$)		–	–
Unconditional demand and supply effects			
New entrants $s^N > 0$		$\downarrow$	$\uparrow$
Mixed backing $\eta < 1$	$\bar{R}^r > 1 + v$	$\uparrow$	$\uparrow$
	$\bar{R}^r < 1 + v$		$\downarrow$
Governmental preferences $\theta > 0$	$R^0 < 1 + \frac{v}{2}$	$\uparrow$	$\uparrow$
	$R^0 > 1 + \frac{v}{2}$	$\downarrow$	$\downarrow$
Conditional amplification effects			
Non-pecuniary benefits $v \uparrow$, $v' \uparrow$	$\theta > 0$	$\uparrow$	$\uparrow$
	$s^N > 0$	$\downarrow$	
Stablecoin renumeration $R^s > 1$	$\theta > 0$	$\uparrow$	$\uparrow$
	$s^N > 0$	$\downarrow$	$\uparrow$

Table 1: Policy parameters' effect on optimal interest rate and debt

Notes: The table summarizes the effect of different stablecoin policies in the absence of devaluation risk (i.e., full commitment). All derivations can be found in Appendix A.3.

4 Stablecoins and the Stability of the IMS

In this section, we examine how the additional demand for sovereign debt generated by stablecoins —described in Proposition (1)— affects the stability of the International Monetary System. To assess the stability of the IMS, we focus on the limited-commitment case in which the hegemon faces a temptation to devalue its currency ex post in order to reduce its sovereign debt burden —and cannot fully commit to resisting this incentive.

This section first derives the optimal devaluation policy by the hegemon (subsection 4.1). We then focus on the two main channels through which stablecoins may increase the demand for hegemon's debt: the entry of new investors into stablecoin markets (Subsection 4.2) and the adoption of policies explicitly favorable to stablecoins (Subsection 4.3). In this section, we assume $R^s = 1$, $\eta = 1$ and $v' = 0$ for simplicity.

4.1 Devaluation Policy and Stablecoins

If a disaster occurs at date 1, the hegemon can decide to devalue its currency —which is in the model the only source of instability. For simplicity, we define the devalued exchange rate as $e_L = \frac{R^r_L}{R^r_H} < 1$. For a given triple $(s, b, x) \in (R^+)^3$, the hegemon solves:

$$\max_{C_1, e \in \{e_L, 1\}} C_1 - \tau(1-e) + \theta(\eta(R - R^s)es + (1-\eta)(R^r - r^s)es),$$
$$\text{s.t. } C_1 = xR^r - bRe.$$

The hegemon chooses to devalue in the disaster case ($R^r = R_L$) if and only if utility under devaluation exceeds the one without devaluation, that is:

$$\underbrace{bR}_{\text{Devaluation gains}} \geq \underbrace{\tau}_{\text{Fixed devaluation cost}} + \theta \underbrace{s[\eta(R - R^s) + (1-\eta)(R^L - R^s)]}_{\text{Stablecoin profit loss if devaluation}}. \tag{12}$$

When $\theta = 0$, the incentive to devalue is unaffected by the quantity of stablecoins but only depends on the interest rate R and the quantity of debt b. When $\theta > 0$, the second right-hand-side member of Equation (12) is the additional devaluation cost due to the loss of profits of stablecoin issuer, as real stablecoin profits decrease with e. This latter term is proportional to the quantity of stablecoins in the economy s and is higher when the stablecoin markups over underlying reserve asset returns ($R - R^s$ and $R^L - R^s$) are high. Therefore, the hegemon devalues when the resulting reduction in the real burden of debt repayment at least offsets the costs associated with devaluation, including both the direct penalty and the consequent loss in stablecoin-related profits.

4.2 The IMS with New-Entrants-Driven Stablecoin Demand

In this subsection, we study the impact of additional demand for debt due to new investors having access to stablecoins ($s^N > 0$) on the stability of the IMS. More precisely, we assume: $v = 0$, $R^s = 1 < R$, $\theta = 0$, and $\eta = 1$. In such a scenario, when the hegemon devalues in the disaster event, the optimal demand for debt and stablecoin resulting from agents A and N optimal portfolio choice —equations (1) and (3)— implies:[6]

$$R = R_H \text{ and } s = \underline{s}^N = \frac{R_H - 1}{R_H}[\omega^N - \frac{\bar{R}^r}{2\gamma\sigma^2}]. \tag{13}$$

Notice that the demand for stablecoins with risky exchange rate, $\underline{s}^N$, is lower than the one defined in equation (7) in the absence of such a risk. Devaluation diminishes the capacity of stablecoins to act as a store of value.

We define as $\underline{b}$ the minimum debt level at which the hegemon prefers to devalue when RoW investors expect devaluation. From equations (12) and (13), it follows that $\underline{b} = \frac{\tau}{R_H^r}$, a threshold that remains unaffected by the quantity of stablecoins or by the access of new entrants to store of wealth through stablecoin adoption.

In the absence of devaluation by the hegemon, the sovereign bond retains its safe-asset status, and the demand for debt and for stablecoin is given by:

$$R = \bar{R}^r - 2\gamma\sigma^2(\omega^\star - b), \text{ with } \omega^\star = \omega^A + s^N, \tag{14}$$

where s^N is the interest-rate inelastic demand from RoW investors without access to the hegemon's debt as defined in equation (7).

Therefore, the hegemon refrains from devaluation when facing a disaster for any level of

[6] We discard the "less intuitive" solution that leads to a negative link between interest rate R and debt demand b^A.

debt that satisfies:

$$b\left(\bar{R}^r - 2\gamma\sigma^2(\omega^\star - b)\right) \leq \tau \tag{15}$$

The (only) positive root of the polynomial —defined when the above inequality is an equality— gives us the maximum level of debt $\bar{b}$ at which the hegemon chooses not to devalue while preserving its safe-asset status. This level of debt $\bar{b}$ is such that:

$$\bar{b} = \frac{2\gamma\sigma^2\omega^\star - \bar{R}^r + \sqrt{(2\gamma\sigma^2\omega^\star - \bar{R}^r)^2 + 8\gamma\sigma^2\tau}}{4\gamma\sigma^2}. \tag{16}$$

For any level of debt above this threshold $b > \bar{b}$, the hegemon looses its safe-asset status and devaluation is unavoidable. Notice that, contrary to $\underline{b}$, this threshold is increasing in the level of global savings $\omega^\star$, which encompasses demand for stablecoin ω^N.

Equipped with these results, we can conclude following Farhi and Maggiori (2019) logic that there exist three different zones of the IMS depending on the level of debt issued at date 0:

Proposition 3 (The three zones of the IMS with stablecoins)**.** *For a given level of issuance b at data 0, the structure of the IMS is as follows:*

- ***Safety zone*** *If $b \in [0, \underline{b}]$, debt is safe and the hegemon does not devalue. The RoW hold both stablecoin and debt. The demand for stablecoins (s^N) does not affect $\underline{b}$ and the safety zone.*
- ***Instability zone*** *If $b \in (\underline{b}, \bar{b}]$, the are two equilibria. The safe equilibrium described above and a collapse equilibrium with devaluation in the disaster event. In the collapse equilibrium, there is no safety premium on hegemon's debt and stablecoin amount is lower ($\underline{s}^N < s^N$). The instability zone is increasing in the level of global savings $\omega^\star$, which encompasses demand for stablecoin s^N.*
- ***Collapse zone*** *If $b \in (\bar{b}, \omega^\star]$, there is a unique equilibrium, the collapse equilibrium described above. New entrants increase global savings $\omega^\star$ through their holdings of stablecoins s^N.*

Proof. See above. □

The proposition shows that the demand for debt – induced by the access of new investors through stablecoins – only modify the highest level of debt compatible with a stable equilibrium, $\bar{b}$. This threshold is higher because the presence of an additional source of demand reduces the debt burden (i.e. the interest rate is lower for a given level of debt). As a result, the hegemon's debt retains its safe-asset status at higher debt levels, and the risk of devaluation is correspondingly diminished.

In order to assess whether stablecoins exert a stabilizing or destabilizing effect on the IMS, it is necessary to define the hegemon's optimal debt issuance. Achieving this, however, requires calibrating the probability of each equilibrium within the instability zone.

Optimal Debt Issuance To determine the optimal debt issuance for the hegemon, we introduce a sunspot shock defining the equilibrium selection. Let $\alpha(b)$ denote the probability at $t = 0^-$ that the continuation equilibrium from $t = 0^+$ onward is the collapse equilibrium.

$$\alpha(b) = \begin{cases} 0, & \text{for } b \in [0, \underline{b}], \\ \alpha_b, & \text{for } b \in (\underline{b}, \bar{b}], \\ 1, & \text{for } b \in (\bar{b}, \omega^*]. \end{cases}$$

The date-0^- hegemon optimization problem becomes:

$$\max_{b \in [0, \omega^*]} V(b) = (1 - \alpha(b))V^{FC}(b) - \alpha(b)\lambda\tau(1 - e_L) \tag{17}$$

Where λ is the probability of the disaster event and $V^{FC}(b)$ is the hegemon's utility under full commitment (see section 2). Maximizing hegemon's utility is equivalent to maximizing the expected wealth transfer from the RoW due to debt issuance (under commitment), net of the expected cost of a possible devaluation with appropriate weights $\alpha(b)$.

Proposition 4. ***(The Triffin dilemma with new entrants).*** *Under limited commitment, the equilibrium is given by:*

(i) If $b^e = \frac{\omega^A + s^N}{2} \in (0, \underline{b}]$, *then the hegemon issues* $b = b^e$ *in the safety zone, stablecoin holding is* s^N, *increasing in* ω^N.

(ii) If $b^e \in (\underline{b}, \bar{b}]$, *then the hegemon issues* $\underline{b}$ *in the safety zone or* b^e *in the instability zone, whichever generates higher net monopoly rents.*[7]

(iii) If $b^e \in (\bar{b}, \omega^*]$, *then the hegemon either issues* $\underline{b}$ *in the safety zone or* $\bar{b}$ *in the instability zone, whichever generates higher net monopoly rents.*

Proof. Application of Proposition 3 and equation (17). □

This proposition characterizes the stability of the IMS as a function of b^e—the optimal level of debt issuance under commitment—which itself depends on the savings of new entrants, ω^N. Figure 5 illustrates the stability of the IMS as a function of both the level of debt and the presence of new entrants.

Suppose that when $\omega^N = 0$, the equilibrium level of debt lies within the safety zone at b^0 (i.e., $b^e < \underline{b}$). According to Proposition 4, a small increase in ω^N such that $b^e < \underline{b}$ leads to a new equilibrium that remains stable. This marginal increase in the savings of new entrants – —reflected in a higher ω^N—— raises equilibrium debt issuance (i.e., b^e increases) and strengthens the exorbitant privilege by lowering the equilibrium interest rate (R^e decreases). As a result, the hegemon's utility increases without triggering IMS instability.

Consider an increase in ω^N such that the equilibrium level of debt under commitment lies slightly above the lower threshold of the instability zone, $b^e > \underline{b}$. The resulting increase in

[7] That the optimal debt issuance in the instability zone is still b^e is due to the peculiar assumption that $\alpha(b)$ does not depend on b inside the instability zone. A more plausible increasing probability would lead to a lower optimal issuance to reduce the probability of the coordination to the collapse equilibrium.

the savings of new entrants, and the associated strengthening of the exorbitant privilege, are insufficient to offset the penalty cost of devaluation, thereby implying a self-imposed debt limit. Consequently, the hegemon caps debt issuance at $\underline{b} = \frac{\tau}{R_H^r}$, and the IMS remains stable.

The temptation to issue higher unstable level of debt increases with ω^N. When ω^N exceeds the positive root of:

$$(1-\alpha_b)\frac{(\omega^A + s^N)^2}{2} - \alpha_b \frac{\lambda\tau}{\gamma\sigma^2}(1-e_L) - 2(\omega^A + s^N - \tau/R^H)\frac{\tau}{R^H} = 0,$$ [8]

then the optimal debt issuance lies in the instability zone and any increase in ω^N leads to an additional level of debt. This outcome arises because the benefits of issuing a higher level of debt, in terms of increased monopoly rents from debt issuance, outweigh the fixed costs associated with devaluation.

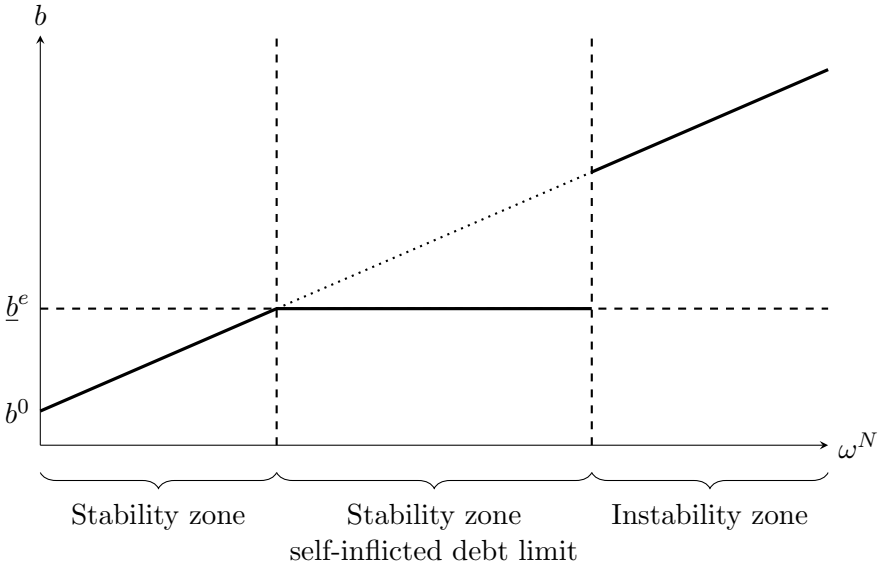


Figure 5: IMS Stability with New-Entrants-Driven Stablecoin Demand

4.3 The IMS with Pro-Stablecoin Governmental Preferences

In this subsection, we consider an alternative source of elevated debt issuance, namely a pro-stablecoin policy ($\theta > 0$). For expositional clarity, we assume $\omega^N = 0$ and normalize the stablecoin return to $R^s = 1$.

When RoW agents anticipate a devaluation, the optimal demand for debt—given by Equation (1)—implies that $R = R_H^r$, thereby causing hegemon debt to lose its safe-asset status. Therefore, the hegemon chooses to devalue for all $b > \underline{b}$, where $\underline{b}$ is such that:[9]

$$\underline{b}^\theta = \frac{\tau}{R_H^r} + \underline{s}\frac{\theta(R_H^r - 1)}{R_H^r} \geq \underline{b}, \tag{18}$$

where $\underline{s}$ satisfies Equation (2) when $R = R_H^r$ and is defined as $\max\{0; \frac{\bar{R}^r - 2\omega^\star\sigma^2\gamma - \frac{R_H^r}{R_H^r - 1}v}{2\gamma\sigma^2\frac{1-R_H^r}{R_H^r} - \frac{R_H^r}{R_H^r-1}\kappa v}\}$.

[9] We discard the other "less intuitive" root that links negatively interest rate R and debt b as above.

Notice that $\underline{s} = 0$ except if v is sufficiently large, that is, $v > \frac{R_H^r - 1}{R_H^r}[\bar{R}^r - 2\omega^\star \sigma^2 \gamma]$. Maintaining RoW holdings of non–interest-bearing stablecoins in the presence of anticipated devaluation requires a sufficiently high level of liquidity services.[10]

If $\theta = 0$, $\underline{b}^\theta = \underline{b}$, the safety zone is unchanged and the corresponding interest rate is $R = \bar{R} + 2\gamma\sigma^2(\frac{\tau}{R_H^r} - \omega^\star)$. If $\theta > 0$, $\underline{b}^\theta > \underline{b}$, the safety zone is increased as the stablecoin profits decrease with e which disincentivizes devaluation for higher level of debts.

As in subsection 4.2, we can derive the highest level of debt $\bar{b}^\theta$ at which the hegemon does not devalue in the disaster event, if RoW investors expect debt to be safe:

$$\bar{b}^\theta = \frac{-\bar{R}^r + 2\gamma\sigma^2(\omega^\star + \theta s) + \sqrt{\left(\bar{R}^r - 2\gamma\sigma^2(\omega^\star + \theta s)\right)^2 + 8\gamma\sigma^2\left(\tau + \theta s(\bar{R}^r - 2\gamma\sigma^2\omega^\star - 1)\right)}}{4\gamma\sigma^2}.$$

If $\theta = 0$, $\bar{b}^\theta = \bar{b}$, the collapse zone is unchanged. If $\theta > 0$, $\bar{b}^\theta > \bar{b}$, the collapse zone is lower: a confidence crisis emerges later as RoW agents internalize the hegemon's taxation revenues from stablecoin issuance. The expectations that the hegemon will not devalue in the event of a negative shock is credible in the eyes of the RoW for a larger level of debt, when the hegemon internalizes stablecoin profits ($\theta > 0$).

As in subsection 4.2, we can then determine the equilibrium stability of the IMS depending on the optimal level of debt issuance under commitment b^θ (defined in proposition 1) and the two thresholds $\underline{b}^\theta$ and $\bar{b}^\theta$ as follows:

Proposition 5. ***(The Triffin dilemma and pro-stablecoin policy).*** *Under limited commitment, equilibrium issuance by the hegemon satisfies:*

(i) If $b^\theta \in (0, \underline{b}^\theta]$, then the hegemon issues $b = b^\theta$ in the safety zone, stablecoin holding is given by equation (5). The pro-stablecoin policy ($\theta > 0$) increases $\underline{b}$ and the safety zone: stablecoin thus acts as a commitment device not to devalue.

(ii) If $b^\theta \in (\underline{b}^\theta, \bar{b}^\theta]$, then the hegemon issues $\underline{b}^\theta$ in the safety zone or b^θ in the instability zone, whichever generates higher net monopoly rents. The pro-stablecoin policy ($\theta > 0$) increases $\bar{b}$ and shifts the instability zone to higher debt thresholds.

(iii) If $b^\theta \in (\bar{b}, \omega^*]$, then the hegemon either issues $\underline{b}^\theta$ in the safety zone or $\bar{b}^\theta$ in the instability zone, whichever generates higher net monopoly rents. The pro-stablecoin policy ($\theta > 0$) does not affect $\omega^\star$ and reduces the collapse zone.

Proof. Similar to Proposition 4. □

This proposition shows that there are two main opposing forces that determine the stability properties of the IMS when introducing stablecoins. On the one hand, the traditional Triffin dilemma implies that a higher incentive to issue debt jeopardizes debt sustainability. On the other hand, the above proposition identifies a novel mechanism by which stablecoin profits exert a disciplining force on the government's devaluation decision. We illustrate these two

[10] Positive demand for stablecoin in this case is plausibly fragile as it is reasonable to think that the liquidity service is small in presence of substantial devaluation risks.

forces below and discuss how different policy parameters of the stablecoin eccosystem, notably θ and v, influences the stability of the IMS.

The introduction of stablecoin has three main impacts on the optimal issuance of debt by the hegemon. First, it increases the safety zone and the hegemon may issue more without incurring the risk of instability. Stablecoin thus acts as a commitment device not to devalue substitute for the reputation cost τ. Second, because devaluation reduces profits derived from stablecoin activities, the associated disutility of devaluation for the hegemon is more pronounced in the instability region when $\theta > 0$ than when $\theta = 0$. Consequently, relative to the case $\theta = 0$, the hegemon will in most instances prefer to limit debt issuance to $b = \underline{b}$ in order to avoid the instability zone and the risk of stablecoin disappearance. Third, as expected when $1 + v/2 > R_0$ (strong demand for stablecoin) and $\theta > 0$, the optimal debt issuance b^θ is higher compared to the no-stablecoin case which may, in some circumstances, lead the Hegemon to issue more debt even at the cost of instability.

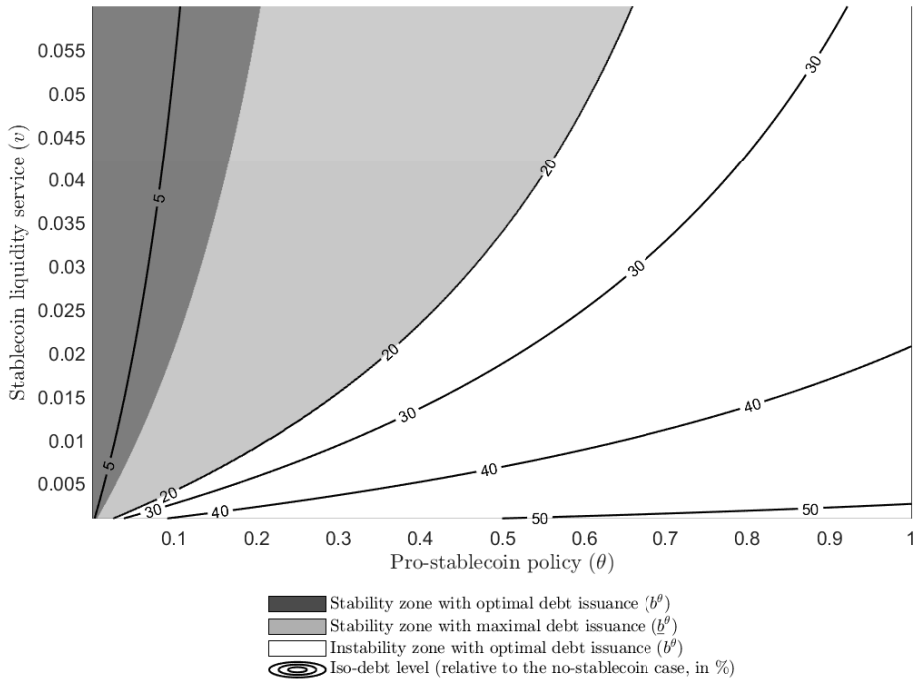


Figure 6: IMS Stability, Debt Issuance and Stablecoin Ecosystem

Notes: Parameters of the model are calibrated such that the optimal debt issuance b^θ in the absence of stablecoins is in the stability zone ($\omega = 1$,$\omega^\star = 5$,$R_H = 1.1$, $R_L = 0.9$, $\lambda = 0.3$, $\gamma = 2$, $\kappa = 1$,$\tau = 3$, $v' = 0$, and $\alpha_b = 0.5$).The figure depicts percentage changes in the hegemon's debt issuance b^θ as a function of v and θ. The dark gray region represents increases in debt issuance that result in an optimal debt level within the stability zone. The light gray region encompasses additional increases in debt issuance that remain consistent with the stability zone and extend up to the maximum admissible level $\underline{b}^\theta$. Finally, the white region corresponds to increases in debt issuance that yield an optimal debt level in the instability zone.

Let us first discuss the case where the hegemon's debt is in the stability zone in the absence of stablecoins. Figure 6 shows the debt issuance and the IMS stability in equilibrium as a

function of two key stablecoin parameters: the liquidity service v and the pro-stablecoin policy parameter θ.[11] Two remarks are in order. First, an increase in pro-stablecoin policy parameter θ tends to raise debt issuance but also may lead to instability. However, instability arises only if θ is large while the fundamental demand for stablecoin is weak (small v). We can conclude that the Triffin dilemma is reinforced by the introduction of stablecoins mostly when the hegemon cares too much about stablecoin profits in a situation of weak demand, otherwise, the demand for stablecoin leads to higher debt but no additional risk (dark gray area) or to self-discipline in the debt issuance (light gray area).

Second, suppose that the hegemon's debt level in the absence of stablecoins is in the instability zone. The introduction of stablecoins under governmental preferences for the profits of the stablecoin issuer may raise $\underline{b}^{\theta}$ such that the equilibrium level of debt under full commitment b^e lies in the stability zone. In such a case, the introduction of stablecoins improves the stability of the IMS.

5 A Multipolar IMS: Two Hegemons, Two Stablecoins Case

In this section, we introduce a second hegemon and a second stablecoin to study the impact of stablecoins competition on the stability of the IMS and the demand for debt of the two hegemons. We first start by characterizing the equilibrium in the absence of devaluation risk (i.e., under full commitment), we then discuss the stability of the IMS when such a risk exists.

5.1 Multipolar Equilibrium without Devaluation Risk

We consider a multipolar IMS characterized by a duopoly in both sovereign debt and stablecoin issuance, exemplified by regions such as the euro area or China alongside the US. In this setting, the new stablecoin s_{-i} is backed by the sovereign debt of the second hegemon b_{-i}. RoW agents have access to both bonds and stablecoins. For clarity, we only assume a stablecoin-profits-driven policy such that $\mathcal{P} = \{v, 0, 0, 1, 1, \theta\}$ and that $\mathcal{P}_{-i} = \{v_{-i}, 0, 0, 1, 1, \theta_{-i}\}$.

The RoW agents solve the following program:

$$\begin{aligned} \max_{(b^\star, s, C_1^\star)} \quad & \mathbb{E}^+[C_1^\star] - \gamma \mathbb{V}ar^+(C_1^\star) + V(s, s_{-i}), \\ \text{st} \quad & \omega^\star = x^\star + b^A + b^A_{-i} + s + s_{-i}, \\ & C_1^\star = x^\star R^r + (b^A + b^A_{-i}) Re + e(s + s_{-i}), \end{aligned}$$

We assume that both stablecoin generates independent liquidity service:[12]

$$V(s, s_{-i}) = v(s) + v_{-i}(s_{-i}) = v(s - \frac{\kappa}{2}s^2) + v_{-i}(s_{-i} - \frac{\kappa_{-i}}{2}s_{-i}^2)$$

The slope of the marginal utility associated with holding the two stablecoins may encapsulate different un-modelled stablecoin risks. This formulation allows very tractable expression similar

[11] Parameters of the model are calibrated such that the optimal debt issuance b^θ in the absence of stablecoin is in the stability zone. This calibration does not aim at reproducing stylized facts of the SMI but rather to show how the Triffin dilemma kicks in depending on the demand for stablecoins, qualitatively.

[12] For tractability reasons mainly

to the case with only one stablecoin (the demand for one stablecoin is not affected by the other):

$$\frac{R-\bar{R}}{2\sigma^2\gamma} = b + b_{-i} - \omega^\star,$$
$$R - 1 = v(1-\kappa s) = v_{-i}(1-\kappa_{-i}s_{-i}),$$

Note that the equilibrium demands for both stablecoin are proportional given the particular liquidity-in-the-utility formula that we have chosen: $s_{-i} = \frac{1}{\kappa_{-i}}\left(1 - \frac{v}{v_{-i}}(1-\kappa s)\right)$.

In a multipolar IMS, the optimal issuance of debt by the incumbent hegemon is the best response to the second hegemon's debt issuance such that:

$$b = b^m \equiv b^\theta - \frac{1+\mu}{2} b^m_{-i}, \tag{19}$$

And the symmetric optimal debt issuance for the other hegemon:

$$b_{-i} = b^m_{-i} \equiv b^{\theta_{-i}}_{-i} - \frac{1+\mu_{-i}}{2} b^m, \tag{20}$$

In section 3.3, we showed that the optimal debt issuance of the hegemon in the case of governmental preferences for stablecoin profits depends on the distance between R^0 and $1+\frac{v}{2}$. We now consider the special case where $R^0 = 1+\frac{v}{2}$. Contrary to the monopoly case where the hegemon does not adjust its optimal level of debt, the introduction of a second hegemon reduces the incumbent hegemon's debt issuance. The slope of the best response $|\frac{\partial b^m(b^m_{-i})}{\partial b^m_{-i}}|$ is always higher compared to the $\theta = 0$ case and increases with θ_i.

The following proposition describes the equilibrium levels of debt.

Proposition 6. *The optimal debt issuance follows:*

$$b^m = \chi\left(b^\theta - \frac{1+\mu}{2} b^{\theta_{-i}}_{-i}\right) \text{ and } b^m_{-i} = \chi\left(b^{\theta_{-i}}_{-i} - \frac{1+\mu_{-i}}{2} b^\theta\right), \text{ with } \chi = \frac{1}{1-(\frac{1+\mu_i}{2})(\frac{1+\mu_{-i}}{2})} \geq 4/3$$

yielding the following properties:

- ***No governmental preferences for stablecoin profits.*** *When $\theta = \theta_{-i} = 0$, $b^m = b^m_{-i} = \frac{2}{3}b^0 = \frac{\omega^\star}{3}$ and $b^m + b^m_{-i} = \frac{2}{3}\omega^\star$. The exorbitant privilege is evenly distributed among competing hegemons: the introduction of competition reduces the individually optimal level of issuance, while increasing aggregate issuance.*
- ***Asymmetric governmental preferences for stablecoin profits.*** *When $R = R^0 = 1+\frac{v}{2} = 1+\frac{v_{-i}}{2}$ and $\theta_{-i} = 0$ while $\theta > 0$, $b^m < \frac{\omega^\star}{3} < b^m_{-i}$. The total wealth that is insured by the hegemons is smaller than in the above case: $b^m + b^m_{-i} < \frac{2}{3}\omega^\star$.*
- ***Asymmetric governmental preferences for stablecoin profits with strong demand for stablecoins*** *When $\theta_{-i} = 0$ and $\theta > 0$, the optimal debt issuance is higher such that $b^m > \frac{\omega^\star}{3}$ if and only if there is a strong demand for stablecoins, that is $(R^0 - (1+\frac{v}{2})) < -\frac{2}{3}\sigma\gamma^2\omega^\star$.*

Proof. See above. Results from equation (19) for the incumbent hegemon are symmetric for the new hegemon. □

Intuitively, the hegemon who gives a higher value to stablecoin profits is more sensitive to the issuance of debt by the other hegemon, thus resulting in a lower overall issuance of debt in equilibrium. The mechanism operates as follows. Competition in debt issuance increases the global interest rate (see Farhi and Maggiori, 2018 for a discussion of this baseline case), thereby reducing demand for stablecoins. Depending on the hegemon's governmental preferences for stablecoin profits, the hegemon adjusts its debt issuance to offset the interest rate increase induced by competition. This adjustment is particularly pronounced when stablecoin demand is limited (for example, a low v implies a high sensistivity to the opportunity cost R of holding stablecoins), as the hegemon faces a heightened risk of losing the profits generated by the stablecoin sector (Figure 7).

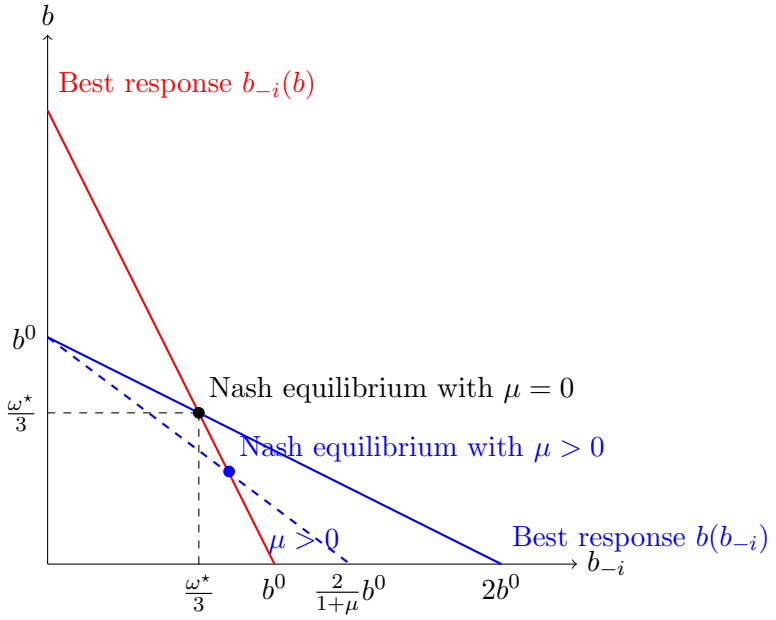


Figure 7: Duopoly Equilibrium with Limited Demand for Stablecoins

Notes: The solid lines depicts the equilibrium debt levels of each hegemon as a function of the other hegemon's debt under a multipolar IMS in which neither hegemon has governmental preferences for stablecoin profits, i.e. $\theta_i = \theta_{-i} = 0$. The dashed blue line shows the incumbent hegemon's debt issuance as a function of the new hegemon's debt when $\theta_i > 0$ and $\theta_{-i} = 0$, under limited stablecoin demand. Note that the figure considers the case where $R = R^0 = 1 + \frac{v}{2}$.

Competition in the IMS reduces the level of debt issued by the incumbent hegemon, except when demand for stablecoins —backed by the historical hegemon's debt— is sufficiently robust to interest rate increases, that is, when stablecoins provide substantial liquidity services.

5.2 Limited Commitment

The hegemon chooses to devalue in the disaster case ($R^r = R_L$) if and only if utility under devaluation exceeds the one without devaluation, that is:

$$bR > \tau + \theta(R-1)(1-e)s$$

This is verified for all $b > \underline{b}^{\theta,m}$, where:

$$\underline{b}^{\theta,m} = \frac{\tau}{R_H^r} + s\frac{\theta(R_H^r - 1)}{R_H^r} \tag{21}$$

If $\theta = 0$, $\underline{b}^{\theta,m} = \underline{b}^m = \underline{b}^\theta = \underline{b}$, the safety zone is unchanged. If $\theta > 0$, $\underline{b}^{\theta,m} = \underline{b}^\theta > \underline{b}^m$, the safety zone expands as stablecoin issuance increases because the hegemon's incentive to capture a portion of stablecoin profits acts as a self-disciplining force similarly as in section 4.3.

If $bR < \tau - \theta(R-1)s$, then the hegemon does not devalue in a disaster at t=1 and its debt remains safe. This condition is satisfied for all $b < \bar{b}^{\theta,m}$, where $\bar{b}^{\theta,m}$ is given by:

$$\bar{b}^{m,\theta} = \frac{-\bar{R}^r + 2\gamma\sigma^2((\omega^\star - b_{-i}) + \theta s) + \sqrt{\left(\bar{R}^r - 2\gamma\sigma^2((\omega^\star - b_{-i}) + \theta s)\right)^2 + 8\gamma\sigma^2\left(\tau + \theta s(\bar{R}^r - 2\gamma\sigma^2(\omega^\star - b_{-i}) - 1)\right)}}{4\gamma\sigma^2} \tag{22}$$

While $\bar{b}^m$ was given by:

$$\bar{b}^m = \frac{-\bar{R}^r + 2\gamma\sigma^2(\omega^\star - b_{-i}) + \sqrt{\left(\bar{R}^r - 2\gamma\sigma^2(\omega^\star - b_{-i})\right)^2 + 8\gamma\sigma^2\tau}}{4\gamma\sigma^2} \tag{23}$$

If $\theta = 0$, $\bar{b}^{m,\theta} = \bar{b}^m < \bar{b}$, implying that the collapse region expands with the introduction of competition. This expansion is driven by an increase in R, which raises the debt burden until $R = R_H^r$ as in Farhi and Maggiori, 2018. Under these conditions, a level of debt b that is optimal in a monopolistic setting may give rise to a crisis of confidence in a multipolar international monetary system whenever $\bar{b} > b > \bar{b}^m$.

When $\theta > 0$, we have $\bar{b}^{m,\theta} > \bar{b}^m$, implying that the collapse zone is reduced due to the hegemon's preference for stablecoin-related profits. As a result, a confidence crisis arises only at higher levels of debt, once RoW agents internalize the hegemon's benefits from stablecoin profits. The belief that the hegemon will refrain from devaluation following an adverse shock remains credible to RoW agents over a wider range of debt when the hegemon internalizes stablecoin profits ($\theta > 0$). The mechanism introduced in Section 4.3 therefore offsets the rent-eroding effects of increased competition faced by the incumbent hegemon.

Proposition 7 (The three zones of a multipolar IMS)**.** *For a given level of issuance b at t=0, the evolution of the IMS is as follows:*

- *If $b^{\theta,m} \in [0, \underline{b}^{\theta,m}]$, the issuance of debt corresponds to a safe equilibrium, known as the safety zone. The hegemon's preferences for stablecoin profits that increases the safety zone through $\underline{b}^{\theta,m} > \underline{b}^m$.*
- *If $b^{\theta,m} \in (\underline{b}^{\theta,m}, \bar{b}^{\theta,m}]$: the are two equilibria. The safe equilibria describe above and the collapse equilibrium under which the hegemon devalues in the disaster at t=1, the interest rate is $R = R_h^r$ and there is no safety premium. Two opposite forces are at stake: competition raises global interest rates and the associated debt burden for hegemons ($\underline{b}^m < \underline{b}$) and (ii) government preferences for stablecoin profits delay a confidence crisis ($\underline{b}^{m,\theta} > \underline{b}^m$).*
- *If $b^{\theta,m} \in (\bar{b}^{\theta,m}, \omega^\star]$: there is a unique equilibrium, the collapse equilibrium described above. Neither competition nor government preferences for stablecoin profits affect $\omega^\star$.*

Proof. See above. Results from equations (21), (22) and (23) for the incumbent hegemon are symmetric for the new hegemon. □

6 Conclusion

The role of stablecoins within the IMS occupies a central position in contemporary policy debates regarding the future of U.S. dollar hegemony. Nevertheless, these discussions often lack the theoretical foundations necessary to fully capture the implications of stablecoin adoption. This paper seeks to address this gap by introducing the first theoretical model that conceptualizes the hegemon's optimal debt issuance strategy in response to the presence of stablecoins in terms of its implications for the stability of the International Monetary System (IMS), in particular the Triffin dilemma. Our findings reveal that the impact of stablecoins on the supply and demand for safe assets challenges conventional assumptions regarding monetary hegemony in an increasingly digitized financial environment.

Notably, our paper shows that the widespread adoption of stablecoins has the potential to generate both a demand and supply effect on U.S. sovereign debt, but depends on various policy choices: (i) the composition of assets that back stablecoins; (ii) whether their extensive use generates an increase in global savings through the entry of new market participants; (iii) whether the hegemon has a preference for or derives a rent from stablecoin profits; and (iv) the structure of the IMS that may include competition. The integration of stablecoins as credible assets within the IMS could – under specific configurations – enhance systemic stability by exerting a disciplinary effect on the hegemon's debt issuance.

Finally, in a duopolistic IMS without governmental preferences for stablecoin-related profits, each hegemon internalizes the effect of the other's debt issuance, since the aggregate supply of sovereign debt determines the individual debt burden. These strategic interactions change once governments derive utility from stablecoin-sector profits, which alters their incentives regarding debt issuance. In an extension (Appendix B.1), we consider an environment with stablecoin network effects that accrue to the incumbent hegemon. Although these network effects grant the incumbent a monopoly position in stablecoin issuance, the competing hegemon continues to benefit from the globally determined interest rate and to supply sovereign debt to satisfy the RoW demand.

APPENDIX

A General Framework

A.1 Demand for Debt and Stablecoin

We generalize the utility function to account for potential network effects of stablecoin usage. Denoting by $\tilde{s}^A$ and s^A the individual and aggregate stablecoin holdings of investor A, respectively, $\tilde{s}^N$ and s^N the individual and aggregate stablecoin holdings of investor N, respectively, and s the sum of aggregate holding ($s = s^A + s^N$), we assume the following functional form of the liquidity service $V(\tilde{s}^A|s)$ and $V(\tilde{s}^N|s)$:

$$V(\tilde{s}^A|s) = V(\tilde{s}^A|s^A, s^N) = \left(v + v'(s^A + s^N)\right)\tilde{s}^A - v\frac{\kappa}{2}(\tilde{s}^A)^2 \tag{24}$$

$$V(\tilde{s}^N|s) = V(\tilde{s}^N|s^A, s^N) = \left(v + v'(s^A + s^N)\right)\tilde{s}^N - v\frac{\kappa}{2}(\tilde{s}^N)^2 \tag{25}$$

The investors A solve the following program:

$$\begin{aligned} \max_{(b^A, \tilde{s}^A, C_1^A)} \quad & \mathbb{E}^+[C_1^A] - \gamma \mathbb{V}ar^+(C_1^A) + V(\tilde{s}^A), \\ \text{st} \quad & \omega^A = x^A + b^A + \tilde{s}^A, \\ & C_1^A = x^\star R^A + b^A Re + eR^s \tilde{s}^A, \end{aligned}$$

While the new entrants solve the following program:

$$\begin{aligned} \max_{(\tilde{s}^N, C_1^N)} \quad & \mathbb{E}^+[C_1^N] - \gamma \mathbb{V}ar^+(C_1^N) + V(\tilde{s}^N), \\ \text{st} \quad & \omega^N = x^N + \tilde{s}^N, \\ & C_1^N = x^N R^r + eR^s \tilde{s}^N, \end{aligned}$$

The investor problem for investor A is:

$$\begin{aligned} \max_{(b^A, \tilde{s}^A)} \bar{R}^r \left(\omega^A - b^A - \tilde{s}^A\right) + \bar{e}\left(b^A R + \tilde{s}^A R^s\right) - \gamma \Big[& \sigma^2 \left(\omega^A - b^A - \tilde{s}^A\right)^2 + \sigma_e^2 \left(b^A R + \tilde{s}^A R^s\right)^2 \\ & + 2\sigma\sigma_e \left(\omega^A - b^A - \tilde{s}^A\right)\left(b^A R + \tilde{s}^A R^s\right) \Big] + (v + v'(s^A + s^N))\tilde{s}^A - v\frac{\kappa}{2}(\tilde{s}^A)^2 \end{aligned}$$

The first order conditions are:

$$\begin{aligned} \frac{R\bar{e} - \bar{R}^r}{2\gamma} =& b^A(R^2\sigma_e^2 + \sigma^2 - 2\sigma\sigma_e R) + \tilde{s}^A\left(RR^s\sigma_e^2 + \sigma^2 - \sigma\sigma_e(R + R^s)\right) \\ & + \omega^A(\sigma\sigma_e R - \sigma^2) \\ \frac{\bar{e} - \bar{R}^r}{2\gamma} =& b^A\left(RR^s\sigma_e^2 + \sigma^2 - \sigma\sigma_e(R^s + R)\right) + \tilde{s}^A\left((R^s)^2\sigma_e^2 + \sigma^2 - 2\sigma\sigma_e R^s\right) \\ & + \omega^A(\sigma\sigma_e R^s - \sigma^2) - \frac{v + v'(s^A + s^N) - \kappa v\tilde{s}^A}{2\gamma} \end{aligned}$$

The investor program for N investor is:

$$\max_{\tilde{s}^N} \bar{R}^r \left(\omega^N - \tilde{s}^N\right) + \bar{e}\tilde{s}^N R^s - \gamma\left[\sigma^2\left(\omega^N - \tilde{s}^N\right)^2 + \sigma_e^2\left(R^s\tilde{s}^N\right)^2 + 2\sigma\sigma_e\left(\omega^N - \tilde{s}^N\right)\tilde{s}^N R^s\right] + \left(v + v'(s^A + s^N)\right)\tilde{s}^N - v\frac{\kappa}{2}(\tilde{s}^N)^2$$

The first order condition is:

$$\frac{\bar{e} - \bar{R}^r}{2\gamma} = \tilde{s}^N\left(\sigma_e^2(R^s)^2 + \sigma^2 - 2\sigma\sigma_e R^s\right) + \omega^N(\sigma\sigma_e R^s - \sigma^2) - \frac{v + v'(s^A + s^N) - \kappa v\tilde{s}^N}{2\gamma}$$

In the case of full commitment, these first-order conditions simplify to:

$$\frac{R - \bar{R}^r}{2\gamma} = \sigma^2(b^A + \tilde{s}^A - \omega^A) \tag{26}$$

$$\frac{R^s - \bar{R}^r}{2\gamma} = \sigma^2(b^A + \tilde{s}^A - \omega^A) - \frac{v + v'(s^A + s^N) - \kappa v\tilde{s}^A}{2\gamma} \tag{27}$$

$$\frac{R^s - \bar{R}^r}{2\gamma} = \sigma^2(\tilde{s}^N - \omega^N) - \frac{v + v'(s^A + s^N) - \kappa v\tilde{s}^N}{2\gamma} \tag{28}$$

It follows that:

$$b^A = \frac{R - \bar{R}^r}{2\gamma\sigma^2} - \tilde{s}^A + \omega^A \tag{29}$$

$$\tilde{s}^A = \frac{R^s - R + v + v'(s^A + s^N)}{\kappa v} \tag{30}$$

$$\tilde{s}^N = \frac{R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v + v'(s^A + s^N)}{2\gamma\sigma^2 + \kappa v} \tag{31}$$

Individual holdings of stablecoin positively depend on aggregate holding through network effect v'. At the equilibrium, $\tilde{s}^A = s^A$ and $\tilde{s}^N = s^N$ and the optimal holdings of stablecoin are:

$$\begin{aligned} s^A &= \frac{(R^s - R + v)(2\gamma\sigma^2 + \kappa v - v') + v'\left(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v\right)}{\kappa v(2\gamma\sigma^2 + \kappa v) - v'(2\gamma\sigma^2 + 2\kappa v)} \\ &= \psi(v')\left[\left(2\gamma\sigma^2 + \kappa v - v'\right)(R^s - R + v) + v'\left(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v\right)\right] \end{aligned} \tag{32}$$

$$\begin{aligned} s^N &= \frac{(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)(\kappa v - v') + v'\left(R^s - R + v\right)}{\kappa v(2\gamma\sigma^2 + \kappa v) - v'(2\gamma\sigma^2 + 2\kappa v)} \\ &= \psi(v')\left[(\kappa v - v')\left(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v\right) + v'(R^s - R + v)\right] \end{aligned} \tag{33}$$

where: $\psi(v') = \dfrac{1}{\kappa v(2\gamma\sigma^2 + \kappa v) - v'(2\gamma\sigma^2 + 2\kappa v)}$

The first component of each stablecoin demand reflects the structural determinants of stablecoin demand for the corresponding type of investor. These include the respective opportunity costs –$(R^s - R)$ for investor A and $(R^s - \bar{R}^r)$ for investor N– as well as the fixed liquidity service provided by the stablecoin v. In addition, for investor N, this term incorporates the demand for

insurance captured by $2\gamma\sigma^2\omega^N$. The second component of the numerator reflects the network externality resulting from the stablecoin demand of other investors, which is determined by the network effect v'.

Notice that the stablecoin demand of investor N becomes dependent on R due to the presence of network effects. An increase in R raises the opportunity cost of holding stablecoins for investor A, thereby reducing their demand. This decline lowers the aggregate holdings of stablecoins, diminishing the overall benefit of stablecoin usage for investor N. The negative impact of R on stablecoin demand by investor N is partially offset by the baseline liquidity service v, which remains available in the absence of network effects.

The combined demand for stablecoin is:

$$\begin{aligned} s &= \frac{(R^s - R + v)(2\gamma\sigma^2 + \kappa v) + (R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)\kappa v}{\kappa v(2\gamma\sigma^2 + \kappa v) - v'(2\gamma\sigma^2 + 2\kappa v)} \\ &= \frac{\kappa v(2\gamma\sigma^2 + \kappa v)}{\kappa v(2\gamma\sigma^2 + \kappa v) - v'(2\gamma\sigma^2 + 2\kappa v)} \left(s^A_{v'=0} + s^N_{v'=0}\right) \\ &= \underbrace{\frac{\psi(v')}{\psi(0)}}_{\text{Network effect multiplier} \geq 1} \left(\underbrace{\frac{R^s - R + v}{\kappa v}}_{s^A \text{ prevailing if } v'=0} + \underbrace{\frac{R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v}{2\gamma\sigma^2 + \kappa v}}_{s^N \text{ prevailing if } v'=0} \right) \equiv \rho_s(R^d_s - R), \end{aligned} \tag{34}$$

$$\begin{aligned} \text{where : } \psi(0) &= \frac{1}{\kappa v(2\gamma\sigma^2 + \kappa v)} \\ \rho_s &= \frac{2\gamma\sigma^2 + \kappa v}{\kappa v(2\gamma\sigma^2 + \kappa v) - v'(2\gamma\sigma^2 + 2\kappa v)} \\ \lambda_s &= \frac{\kappa v(2\gamma\sigma^2 + \kappa v)}{\kappa v(2\gamma\sigma^2 + \kappa v) - v'(2\gamma\sigma^2 + 2\kappa v)} \left(\frac{R^s + v}{\kappa v} + \frac{(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)\kappa v}{2\gamma\sigma^2 + \kappa v} \right) \\ R^d_s &= \lambda_s/\rho_s \\ &= \kappa v \left(\frac{R^s + v}{\kappa v} + \frac{R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v}{2\gamma\sigma^2 + \kappa v} \right) \end{aligned}$$

Where, R^d_s is the demand shifter of s and ρ_s is the interest rate sensitivity of s (i.e. the slope of the demand curve). Network effect increases demand for stablecoin as long as $v' > 0$.

The combined debt demand curve that the hegemon faces is:

$$\begin{aligned} b =& \underbrace{\frac{R - \bar{R}^r}{2\gamma\sigma^2} + \omega^A - s^A}_{b^A} + \eta \underbrace{\left(s^A + s^N\right)}_{s} \\ =& \frac{R - \bar{R}^r}{2\gamma\sigma^2} + \omega^A + \eta\psi(v') \left[(\kappa v - v') \left(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v \right) + v'(R^s - R + v) \right] \\ & - (1 - \eta)\psi(v') \left[(2\gamma\sigma^2 + \kappa v - v') (R^s - R + v) + v' \left(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v \right) \right] \\ \equiv& \rho_b(R - R^d_b) \end{aligned} \tag{35}$$

where:

$$\begin{aligned}
\rho_b =& \frac{1}{2\gamma\sigma^2}\left(1+2\gamma\sigma^2\psi(v')\left((1-\eta)(2\gamma\sigma^2+\kappa v-v')-\eta v'\right)\right)\\
=& \frac{1}{2\gamma\sigma^2}(1+\phi-\Psi)\\
\lambda_b =& \frac{1}{2\gamma\sigma^2}\left[-\bar{R}^r+2\gamma\sigma^2\omega^A+(\Psi-\phi)(R^s+v)\right.\\
&\left.+2\gamma\sigma^2\left((\eta(\kappa v-v')-(1-\eta)v')\psi(v')(R^s-\bar{R}^r+2\gamma\sigma^2\omega^N+v)\right)\right]\\
R_b^d =& -\lambda_b/\rho_b\\
=& -\frac{1}{1+\phi-\Psi}\left[-\bar{R}^r+2\gamma\sigma^2\omega^A+(\Psi-\phi)(R^s+v)\right.\\
&\left.+2\gamma\sigma^2\left(\left(\eta(\kappa v-v')-(1-\eta)v'\right)\psi(v')\left(R^s-\bar{R}^r+2\gamma\sigma^2\omega^N+v\right)\right)\right]
\end{aligned}$$

where $\Psi = 2\gamma\sigma^2\eta\psi(v')v'$ and $\phi = 2\gamma\sigma^2(1-\eta)\psi(v')(2\gamma\sigma^2+\kappa v-v')$.

Where, R_b^d is the demand shifter of b and ρ_b is the interest rate sensitivity of b (i.e. the slope of the demand curve). In the absence of network effects ($v'=0$), the demand curve for stablecoins is given by equation 9. Introducing network effects changes the slope of the debt demand curve. On the one hand, an increase in R expands the demand for b from investor A. On the other hand, a higher value of R raises the opportunity cost for investor A of holding stablecoins, thereby reducing their demand s^A and limiting the stablecoin demand of investor N resulting from network effect.

A.2 Hegemon's Optimization Problem

$$\max_R \underbrace{\rho_b\left(R-R_b^d\right)\left(\bar{R}^r-R\right)}_{\text{Monopoly gains on debt issuance}} + \underbrace{\theta\eta\rho_s\left(R_s^d-R\right)\left(R-R^s+\Phi^s\right)}_{\text{Stablecoin profits}} \tag{36}$$

where $\Phi^s = \frac{1-\eta}{\eta}(\bar{R}^r-R^s)$. Importantly, other parameters $(R_b^d, R_s^d, \rho_b, \rho_s)$ are independent of R.

A.3 Optimal Interest Rate and Debt

We can express the optimal interest rate as a function of parameters:

$$\begin{aligned}
&\max_R \rho_b\left(R-R_b^d\right)\left(\bar{R}^r-R\right)+\theta\eta\rho_s\left(R_s^d-R\right)\left(R-R^s+\Phi^s\right)\\
&0 = \rho_b(\bar{R}^r-R-R+R_b^d)+\theta\eta\rho_s(-R+R^s-\Phi^s+R_s^d-R)\\
&R^\star = \frac{\rho_b}{\rho_b+\theta\eta\rho_s}\frac{\bar{R}^r+R_b^d}{2}+\frac{\theta\eta\rho_s}{\rho_b+\theta\eta\rho_s}\frac{R^s+R_s^d-\Phi^s}{2}\\
&\quad = \alpha\frac{\bar{R}^r+R_b^d}{2}+(1-\alpha)\frac{R_s^d+R^s-\Phi^s}{2};\\
&\text{where:}\quad \alpha = \frac{\rho_b}{\rho_b+\theta\eta\rho_s}
\end{aligned} \tag{37}$$

In details, optimal interest rate is of the form:

$$\begin{aligned}
R^\star =&\alpha\frac{1}{2}\Bigg[\bar{R}^r - \frac{1}{1+\phi-\Psi}\Bigg(-\bar{R}^r + 2\gamma\sigma^2\omega^A + \Big(\Psi-\phi\Big)(R^s+v) \\
&+ 2\gamma\sigma^2\Bigg(\Big(\eta(\kappa v - v') - (1-\eta)v'\Big)\psi(v')(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)\Big)\Bigg)\Bigg] \\
&+ (1-\alpha)\frac{1}{2}\left[R^s + \kappa v\left(\frac{R^s+v}{\kappa v} + \frac{R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v}{2\gamma\sigma^2+\kappa v}\right) - \frac{1-\eta}{\eta}(\bar{R}^r - R^s)\right]
\end{aligned} \tag{38}$$

The demand for debt from equation 35 can be rewritten as:

$$b = \rho_b(R - R_b^d)$$

Introducing optimal interest rate, the optimal debt is:

$$\begin{aligned}
b^\star =&\rho_b\left(\frac{\rho_b}{\rho_b+\theta\eta\rho_s}\frac{\bar{R}^r + R_b^d}{2} + \frac{\theta\eta\rho_s}{\rho_b+\theta\eta\rho_s}\frac{R^s + R_s^d - \Phi^s}{2} - R_b^d\right) \\
=&\rho_b\left(\frac{\rho_b}{\rho_b+\theta\eta\rho_s}\frac{\bar{R}^r - R_b^d}{2} + \frac{\theta\eta\rho_s}{\rho_b+\theta\eta\rho_s}\frac{R^s + R_s^d - \Phi^s - 2R_b^d}{2}\right) \\
=&\rho_b\left(\alpha\frac{\bar{R}^r - R_b^d}{2} + (1-\alpha)\frac{R^s + R_s^d - \Phi^s - 2R_b^d}{2}\right)
\end{aligned} \tag{39}$$

Irrelevance result: For any policy $\mathcal{P} = \{v, v', \omega^N, R^s, \eta, \theta\} = \{v, v', 0, R^s, 1, 0\}$, the optimal interest rate and debt are given by:

$$R^0 = \bar{R} - \gamma\sigma^2\omega^a \tag{40}$$

$$b^0 = \frac{\omega^A}{2} \tag{41}$$

No effect of stablecoin: b is composed of b^A and s^A where the liquidity service compensates for the lack of remuneration. The presence of a stablecoin and its network effects do not alter the optimal interest rate or debt.

New entrants with network effect: For any policy $\mathcal{P} = \{v, v', \omega^N, R^s, \eta, \theta\} = \{v, v', \omega^N, R^s, 1, 0\}$, the optimal interest rate is defined as:

$$
\begin{aligned}
R^{v'} =& \frac{1}{2}(\bar{R}^r + R_b^d) \\
=& \frac{1}{2}\Bigg[\bar{R}^r - \frac{1}{1-\Psi}\Bigg(- \bar{R}^r + 2\gamma\sigma^2\omega^A + \Psi(R^s + v) \\
& + 2\gamma\sigma^2\Big(\kappa v\psi(v')(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)\Big) - \Psi(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)\Bigg)\Bigg] \\
=& \frac{1}{2}\frac{(2-\Psi)\bar{R}^r - 2\gamma\sigma^2\omega^A}{1-\Psi} - \frac{1}{2}\frac{\Psi}{1-\Psi}\big(\Psi(R^s + v) + 2\gamma\sigma^2\kappa v\psi(v')(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v) \\
& - \Psi(R^s - \bar{R} + 2\gamma\sigma^2\omega^N + v)\big) \\
=& \frac{1}{1-\Psi}R^0 - \frac{\Psi}{1-\Psi}\frac{\bar{R}^r + R^s + v - (R^s - \bar{R} + 2\gamma\sigma^2\omega^N + v) + 2\gamma\sigma^2\kappa v\psi(v')(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)}{2} \\
=& \frac{1}{1-\Psi}\left(R^0 - \gamma\sigma^2\kappa v\psi(v')(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)\right) - \frac{\Psi}{1-\Psi}(\bar{R}^r - \gamma\sigma^2\omega^N) \\
=& \delta\left(R^0 - \gamma\sigma^2 \underbrace{\frac{\psi(v')}{\psi(0)}}_{\text{Net. effect multiplier}} \underbrace{\frac{R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v}{2\gamma\sigma^2 + \kappa v}}_{s^N \text{ prevailing if } v'=0}\right) + \underbrace{(1-\delta)}_{<0}(\bar{R}^r - \gamma\sigma^2\omega^N) \qquad (42) \\
=& \bar{R}^r - \gamma\sigma^2\left(\delta\omega^A + \delta\frac{\psi(v')}{\psi(0)}s^N_{v'=0} + \omega^N(1-\delta)\right) \qquad (43) \\
=& \bar{R}^r - \gamma\sigma^2\left(\omega^N + \delta(\omega^A - \omega^N) + \delta\frac{\psi(v')}{\psi(0)}s^N_{v'=0}\right) \qquad (44)
\end{aligned}
$$

where $\Psi = 2\gamma\sigma^2\psi(v')v'$ and $\delta = \frac{1}{1-\Psi}$.

It is straightforward that $R^{v'} < R^0$ if:

$$
\begin{aligned}
\omega^N + \delta(\omega^A - \omega^N) + \delta\frac{\psi(v')}{\psi(0)}s^N_{v'=0} &> \omega^A \\
(1-\delta)\omega^N + \delta\frac{\psi(v')}{\psi(0)}s^N_{v'=0} &> (1-\delta)\omega^A \\
\omega^N + \frac{\delta}{1-\delta}\frac{\psi(v')}{\psi(0)}s^N_{v'=0} &< \omega^A \\
\frac{\delta}{1-\delta}\frac{\psi(v')}{\psi(0)}s^N_{v'=0} &< \omega^A - \omega^N \\
-\frac{\kappa v}{2\gamma\sigma^2 v'}(R^s - \bar{R}^r + v) &< \omega^A - \omega^N
\end{aligned}
$$

The wealth of A investors that is stored in the form of s^A and b^A is not the reference anymore for the optimal interest rate as ω^N soaks up these terms. In addition, there is amplification of stablecoin demand from N investors through the feedback loop δ and teh network multiplier effect. Differences in wealth, $\omega^A - \omega^N$ only put an upward pressure on the optimal interest rate if teh latter exceeds the former as it crowds out demand for b^A.

The demand for stablecoin from new investors N reduces the interest rate on government bonds. Network externalities — through the network effect multiplier — increase the demand

for stablecoins from both investors, lowering further interest rate R. However, the feedback loop arising from network externalities introduces an excessive stablecoin demand from investors N that increases the opportunity cost of holding debt for investor A.

In the absence of network externalities, $\Psi = 0$ and:

$$\begin{aligned} R^e &= \bar{R}^r - \gamma\sigma^2 \left(\omega^A + \frac{R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v}{2\gamma\sigma^2 + \kappa v} \right) \\ &= R^0 - \gamma\sigma^2 \underbrace{\frac{R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v}{2\gamma\sigma^2 + \kappa v}}_{s^N \text{ prevailing if } v' = 0} \end{aligned} \tag{45}$$

The optimal debt considering new entrants and network externalities is defined as:

$$\begin{aligned} b^{v'} =& \rho_b \frac{\bar{R}^r - R_b^d}{2} \\ =& \frac{1}{2\gamma\sigma^2}(1-\Psi)\left[\frac{1}{2}\left(\bar{R}^r + \frac{1}{1-\Psi}\left[-\bar{R}^r + 2\gamma\sigma^2\omega^A + \Psi(R^s + v)\right.\right.\right. \\ & \left.\left.\left. + 2\gamma\sigma^2\kappa v\psi(v')(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v) - \Psi(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)\right]\right)\right] \\ =& \frac{1}{2}\left(\omega^A + \kappa v\psi(v')(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)\right) - \frac{1}{2}\frac{1}{2\gamma\sigma^2}\Psi\bar{R}^r + \frac{1}{2}\frac{1}{2\gamma\sigma^2}\Psi(\bar{R}^r - 2\gamma\sigma^2\omega^N) \\ =& \frac{1}{2}\left(\omega^A + \kappa v\psi(v')(R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v)\right) - \frac{1}{2}\Psi\omega^N \\ =& b^0 + \underbrace{\frac{\psi(v')}{\psi(0)}}_{\text{Net. effect multiplier}} \underbrace{\frac{R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v}{2\gamma\sigma^2 + \kappa v}}_{s^N \text{ prevailing if } v' = 0} - \Psi\frac{\omega^N}{2} \end{aligned} \tag{46}$$

Without network externalities, $\Psi = 0$ and the optimal debt is:

$$\begin{aligned} b^e &= \frac{1}{2}\left(\omega^A + \frac{R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v}{2\gamma\sigma^2 + \kappa v} \right) \\ &= b^0 + \frac{1}{2}\underbrace{\frac{R^s - \bar{R}^r + 2\gamma\sigma^2\omega^N + v}{2\gamma\sigma^2 + \kappa v}}_{s^N \text{ prevailing if } v' = 0} \end{aligned} \tag{47}$$

The optimal level of public debt is determined by structural parameters that govern, on the one hand, investors' demand for insurance and, on the other hand, the opportunity costs associated with holding government debt and stablecoins, which together generate network effects. The stablecoin demand of investor N increases as long as these network effects persist, thereby exerting downward pressure on the interest rate paid on government bonds.

A decline in the government bond yield reduces the opportunity cost of holding stablecoins for investor A which in turn incentivizes an expansion of s^A and s^N, and consequently of total debt demand b, reducing further R. However, a lower interest rate simultaneously raises the opportunity cost for investor A of holding safe government assets, leading to a reduction in b^A. The aggregate demand b will suffer from excessive decline in R due to the combination of new entrants and network externalities.

For the hegemon, it is therefore optimal to prevent an excessive decline in R so as to preserve a strictly positive demand b^A and thereby attain the optimal debt level $b^\star$.

Pro-stablecoin policy For any policy $\mathcal{P} = \{v, v', \omega^N, R^s, \eta, \theta\} = \{v, v', 0, R^s, 1, \theta\}$, the optimal interest rate and debt are given by:

$$\begin{aligned}
R^\theta &= \alpha(\bar{R}^r - \gamma\sigma^2\omega^A) + (1-\alpha)(R^s + \frac{v}{2}) \\
&= \frac{\frac{1}{2\gamma\sigma^2}}{\frac{1}{2\gamma\sigma^2} + \frac{\theta}{\kappa v - v'}}(\bar{R}^r - \gamma\sigma^2\omega^A) + \frac{\frac{\theta}{\kappa v - v'}}{\frac{1}{2\gamma\sigma^2} + \frac{\theta}{\kappa v - v'}}(R^s + \frac{v}{2}) \\
&= (1-\mu)R^0 + \mu(R^s + \frac{v}{2}) \qquad (48) \\
b^\theta &= \rho_b\left(\frac{\rho_b}{\rho_b + \theta\rho_s}\frac{1}{2}(\bar{R}^r - R_b^d) + \frac{\theta\rho_s}{\rho_b + \theta\rho_s}\frac{1}{2}(R^s + R_s^d - 2R_b^d)\right) \\
&= \frac{1}{2\gamma\sigma^2}\left((1-\mu)\gamma\sigma^2\omega^A + \mu(R^s + \frac{v}{2} - \bar{R}^r + \gamma\sigma^2)\right) \\
&= b^0 - \frac{\mu}{2\gamma\sigma^2}\left(R^0 - (R^s + \frac{v}{2})\right) \qquad (49)
\end{aligned}$$

where: $\mu = \dfrac{\frac{\theta}{\kappa v - v'}}{\frac{1}{2\gamma\sigma^2} + \frac{\theta}{\kappa v - v'}}$

$$R_b^d = -(-\bar{R}^r + 2\gamma\sigma^2\omega^A) \quad ; \quad \rho_b = \frac{1}{2\gamma\sigma^2} \quad ; \quad R_s^d = (R^s + v) \quad ; \quad \rho_s = \frac{1}{\kappa v - v'}$$

Mixed backing For any policy $\mathcal{P} = \{v, v', \omega^N, R^s, \eta, \theta\} = \{v, v', 0, R^s, \eta, 0\}$ with $\eta < 1$, the optimal interest rate and debt are given by:

$$\begin{aligned}
R^\eta &= \frac{1}{2}(\bar{R}^r + R_b^d) \\
&= \frac{1}{2}\left(\bar{R}^r - \frac{1}{1 + 2\gamma\sigma^2\frac{1-\eta}{\kappa v - v'}}\left[-\bar{R}^r + 2\gamma\sigma^2\left(\omega^A - \frac{1-\eta}{\kappa v - v'}(R^s + v)\right)\right]\right) \\
&= \beta R^0 + (1-\beta)\frac{\bar{R}^r + (R^s + v)}{2} \qquad (50) \\
b^\eta &= \rho_b\left(\frac{1}{2}(\bar{R}^r - R_b^d)\right) \\
&= b^0 + \frac{1-\eta}{\kappa v - v'}\frac{\bar{R}^r - (R^s + v)}{2} \qquad (51)
\end{aligned}$$

where: $\beta = \dfrac{\kappa v - v'}{(\kappa v - v') + 2\gamma\sigma^2(1-\eta)}$

$$\begin{aligned}
R_b^d &= -\frac{1}{1 + 2\gamma\sigma^2\frac{1-\eta}{\kappa v - v'}}\left[-\bar{R}^r + 2\gamma\sigma^2\left(\omega^A - \frac{1-\eta}{\kappa v - v'}(R^s + v)\right)\right] \\
\rho_b &= \frac{1}{2\gamma\sigma^2}\left(1 + 2\gamma\sigma^2\frac{1-\eta}{\kappa v - v'}\right)
\end{aligned}$$

B Extensions

B.1 A Multipolar IMS with Stablecoins and Network Effects (TBC)

B.2 Optimal η and R^s with Stablecoin Issuers (TBC)

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