Should Commercial Banks Issue Stablecoins? Balance-Sheet and Regulatory Trade-Offs

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Abstract

This paper studies when issuing a dollar-backed stablecoin is privately viable for a regulated commercial bank. We develop a parsimonious partial-equilibrium model in which issuance expands the balance sheet, requires high-quality liquid asset backing, and interacts with liquidity and capital regulation. Profitability depends on funding substitution, consolidation intensity, and interest-rate conditions through deposit pass-through. We derive a simple viability condition: issuance occurs only when funding savings exceed net interest margin drag and regulatory costs. A calibration using U.S. banking data shows profitability arises only under a narrow range of monetary and balance-sheet conditions.

Keywords: *Stablecoins, Bank Balance Sheets, Liquidity Regulation, Funding Structure, Net Interest Margin.*

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1 Introduction

The rapid convergence of digital payments, banking regulation, and financial innovation has revived a fundamental question in modern finance: should commercial banks issue their own stablecoins? As tokenized deposits, programmable payment systems, and blockchain-based settlement networks proliferate, the boundary between traditional bank liabilities and privately issued digital money has become increasingly blurred. Regulated depository institutions now face strategic trade-offs that differ sharply from those of fintech issuers. A bank-sponsored stablecoin promises technological efficiency and customer retention in the digital economy, yet its issuance directly interacts with prudential regulation. Because a stablecoin issued by a bank must comply with capital and liquidity requirements, it alters both sides of the balance sheet and reshapes the bank's funding mix. Understanding the conditions under which such issuance is privately viable is therefore central to assessing the role of banks in the evolving landscape of digital payments.[1]

Recent work emphasizes that stablecoins and tokenized payment systems are part of a broader shift toward programmable financial infrastructure and digital settlement networks (Cong et al. (2023)). This literature highlights how programmable payment systems and blockchain-based settlement networks reshape not only payment efficiency but also competition between banks, fintech firms, and public monetary institutions. Our analysis complements this broader perspective by focusing on the role of regulated banks within this evolving payment ecosystem. In particular, the economics of bank-issued stablecoins depend not only on their technological functionality but also on how digital liabilities interact with

[1] See the emerging commercial-bank interest in issuing stablecoins at https://www.garp.org/risk-intelligence/technology/stablecoin-breakout-250530.

bank funding models, regulatory constraints, and competition in payment services.

Stablecoins are often described as digital representations of fiat money, but from a banking perspective they are liabilities that expand the balance sheet. Issuing one dollar of stablecoin requires the bank to hold one dollar of high-quality liquid assets (HQLA), typically reserves or short-term Treasuries, on the asset side. This one-to-one backing creates symmetry between assets and liabilities but compresses the bank's net interest margin, as the return on HQLA is significantly lower than the yield on loans. Whether stablecoin issuance is privately viable therefore depends on whether the stablecoin functions as a cost-effective funding instrument or instead cannibalizes existing low-cost liabilities. The central question is whether the funding benefits of issuing digital liabilities—as substitutes for deposits or wholesale funding—are sufficient to offset the net interest margin drag and regulatory costs associated with reserve backing.

The central mechanism in the paper is that bank-issued stablecoins convert household demand for transactional liquidity into direct bank funding, partially replacing interbank and money-market funding. Unlike wholesale liabilities, however, stablecoins issued by regulated banks must be backed by high-quality liquid assets and consolidated for regulatory purposes. As a result, issuance trades off cheaper funding against balance-sheet expansion, net-interest-margin compression, and regulatory shadow costs.

Importantly, stablecoins may create value through a second channel that is distinct from funding substitution. Beyond their balance-sheet effects, bank-issued stablecoins embed payment and settlement functionality—such as programmability, real-time transferability, and interoperability with digital platforms—that may generate service revenue and help preserve client relationships. In this paper, we separate these two margins explicitly: a

funding margin arising from liability substitution and regulatory costs, and a payments margin captured by the net service revenue from stablecoin usage. Issuance may therefore be privately viable through funding savings, payments monetization, or both.

This paper develops a tractable partial-equilibrium framework to formalize this trade-off. We model a representative bank that chooses the scale and pricing of a dollar-redeemable stablecoin, subject to balance-sheet accounting and reduced-form liquidity regulation. On the demand side, households allocate liquidity across money, deposits, and stablecoins based on relative opportunity costs. The issuance decision links three core economic frictions: (i) consolidation under liquidity and capital requirements, (ii) substitution between deposit, wholesale, and digital funding sources, and (iii) household preferences over different liquid assets. The model yields a simple profitability condition that characterizes when stablecoin issuance is privately viable. This condition depends on consolidation intensity, the extent of deposit cannibalization, and the interest-rate environment through deposit-rate pass-through—parameters that are observable and directly relevant for bank balance-sheet management.

At its core, the model highlights that issuing a stablecoin expands both assets and liabilities by an equal amount while obligating the bank to hold low-yield liquid assets. Fully consolidated issuance ($\alpha = 1$) imposes the entire liquidity and capital burden on the issuing bank, making profitability contingent on either significant substitution away from costly wholesale funding or the ability to sustain positive margins through pricing. By contrast, partnership or SPV-based structures ($\alpha < 1$) partially deconsolidate reserve backing and reduce the effective regulatory burden, improving issuance viability. The funding composition parameter θ captures whether stablecoins primarily replace deposits or wholesale funding:

high θ implies deposit cannibalization and lower funding benefits, whereas low θ reflects substitution from more expensive external funding and thus enhances profitability. The interest-rate environment enters the model through imperfect deposit-rate pass-through, as lower nominal rates compress deposit spreads and weaken the funding advantage of private liabilities.

The framework helps rationalize observed patterns in the banking sector. Despite technological feasibility, large deposit-funded banks have been cautious in launching fully consolidated stablecoins, as reserve backing and liquidity regulation substantially compress margins. At the same time, banks have increasingly explored partnership arrangements in which reserves are provided to fintech platforms that manage distribution and wallets, effectively limiting consolidation and preserving balance-sheet flexibility. By formalizing these trade-offs, the model clarifies how stablecoin issuance incentives depend on balance-sheet structure and funding composition rather than on technology alone.

A distinguishing feature of the paper is its focus on balance-sheet viability rather than on aggregate or welfare implications. By deriving a transparent profitability condition from first principles of bank intermediation and liquidity regulation, the analysis connects digital liability issuance to the core economics of banking: funding costs, asset allocation, and regulatory constraints. The comparative statics show how consolidation, deposit substitution, and nominal interest rates jointly determine issuance incentives, while a simple calibration illustrates that profitable issuance arises only over a narrow range of monetary and balance-sheet conditions.

The paper makes three contributions to the literature on banking and digital finance. First, it extends existing models of bank funding and liquidity regulation by embedding

digital liabilities into a standard balance-sheet framework with explicit high-quality liquid asset (HQLA) backing. The analysis emphasizes that stablecoin issuance by regulated banks necessarily expands the balance sheet and reallocates assets toward low-yield liquid holdings. This feature generates a transparent trade-off between funding savings and net interest margin compression, allowing the model to characterize precisely when issuing stablecoins is privately viable under liquidity and capital regulation.

Second, the paper provides a unified treatment of tokenized deposits and stablecoins from the perspective of regulated banks. Rather than drawing a sharp distinction between these instruments based on technology or legal form, the framework shows that their economic consequences hinge on consolidation structure and funding substitution. Fully consolidated issuance exposes the bank to the full liquidity and capital burden of reserve backing, while partnership or SPV-based arrangements partially deconsolidate these costs. By mapping alternative issuance structures into a small set of balance-sheet parameters, the model clarifies how different forms of digital liabilities translate into regulatory costs and funding benefits, offering a common analytical language for evaluating tokenized deposits and stablecoins within the same institutional setting.

Third, the model delivers clear, testable predictions about which banks are most likely to issue stablecoins. Issuance incentives are strongest for institutions that rely more heavily on wholesale funding, face lower effective consolidation of reserve backing, and operate in higher interest-rate environments where deposit spreads are wider. Conversely, deposit-heavy banks subject to tight liquidity regulation face limited incentives to issue stablecoins despite technological feasibility. These predictions align with observed patterns of experimentation and restraint among regulated banks and underscore that stablecoin adoption is driven primarily

by balance-sheet economics and funding conditions rather than by technology alone.

The remainder of the paper proceeds as follows. Section 2 reviews related work on liquidity creation, digital money, and banking regulation. Section 3 develops the model, detailing balance-sheet mechanics, household liquidity demand, and the profitability condition for issuance. Section 4 presents the key comparative statics and empirical implications. Section 5 provides a calibration using U.S. banking data. Section 6 concludes the paper.

2 Related Literature

Our paper integrates strands from monetary economics, payment-systems research, cryptocurrency taxation, positive accounting theory, and blockchain network economics. We begin with the search-theoretic foundations of money, which explain how frictions in bilateral trading give rise to a medium of exchange. Kiyotaki and Wright (1993) develop a tractable equilibrium framework in which money emerges endogenously to overcome the "double coincidence of wants." This insight underpins much of modern monetary theory, emphasizing the role of liquidity in smoothing transactions.

Building on search-theoretic models, Brunnermeier et al. (2012) survey how financial frictions—liquidity constraints, endogenous risk, and settlement delays—amplify macroeconomic shocks, generate persistence in output and inflation, and endow liquid assets with insurance properties. Their analysis highlights money's dual function as a store of value and medium of exchange in the presence of trading frictions. Bean et al. (2002) further document how payment and credit frictions shape the monetary transmission mechanism in the Euro area, showing that settlement delays and intermediation costs materially affect lending

spreads and aggregate demand.

In the payments-systems literature, Kahn and Roberds (2009) provide a comprehensive introduction to the economics of payment instruments, focusing on how network structure, platform design, and fee schedules influence the choice between cash, checks, cards, and digital wallets. They show that transaction costs and reliability concerns play a central role in instrument adoption. Kiyotaki and Wright (1989) analyze search-theoretic trading environments in which bilateral matching frictions make direct barter inefficient, demonstrating how certain commodities emerge endogenously as media of exchange—or how fiat currencies can circulate—to improve welfare, increase velocity, and enhance liquidity in otherwise Pareto-suboptimal equilibria.

The advent of central bank digital currencies (CBDCs) and mobile-payment platforms has spurred a new generation of research on digital money. Auer et al. (2020) survey global CBDC initiatives, cataloguing design choices—remuneration, access, and technical infrastructure—and their implications for transaction costs and financial stability. Infante et al. (2022) review CBDC literature, highlighting trade-offs between inclusion, disintermediation risk, and central-bank balance-sheet impacts. Lee et al. (2025) apply behavioral reasoning theory to China's e-CNY pilots, uncovering factors such as openness to change, compatibility, and perceived security that influence user stickiness. Keister and Sanches (2023) develop a general-equilibrium model of central bank digital currency (CBDC) that highlights a fundamental tradeoff between liquidity efficiency and bank disintermediation. They show that while a digital currency can enhance transactional efficiency, it may also crowd out deposits and investment, mirroring the balance-sheet and welfare tradeoffs we examine for bank-issued stablecoins.

A closely related strand of work studies the design and stability of private money and stablecoins from a macro-financial perspective. Gorton and Zhang (2023) analyze stablecoins as forms of private money, emphasizing the role of safe backing, information-insensitive claims, and runs in determining their stability. More recently, Gorton et al. (2022) examine the institutional design of stablecoins and their interaction with the financial system, focusing on how backing arrangements and regulatory treatment affect credibility and fragility. While these papers emphasize systemic stability and the macroeconomic properties of private money, other work highlights how stablecoins may affect payment competition and bank funding models. In particular, Cong (2025) studies the macroeconomic and institutional implications of stablecoins for payment infrastructure and banking competition, showing that competition from stablecoins can discipline deposit pricing and reshape bank funding dynamics. Our analysis is complementary: we focus on the microeconomic incentives of regulated banks to issue reserve-backed digital liabilities under liquidity regulation and balance-sheet constraints.

Turning to cryptocurrency taxation, Waerzeggers et al. (2023) analyze global approaches to taxing stablecoins, emphasizing the principle of tax neutrality and the challenges of mapping digital-asset transactions onto conventional tax categories. They document how property treatment creates realization-based frictions that distort payment behavior. In a complementary empirical study, de Carvalho et al. (2024) use Brazilian tax-audit data to show that transaction intensity, frequency, and environment (P2P vs. intra-VASP) significantly predict corporate tax-evasion risks, underscoring the real-world stakes of compliance burdens. Building on this, Meling et al. (2024) exploit de-anonymized Norwegian trading records linked to tax returns and enforcement interventions to quantify pervasive crypto non-

compliance—even among exchange users—and highlight the need for targeted, cost-effective enforcement strategies.

The economics of blockchain protocols emphasizes two transformative cost dimensions: verification and networking. Catalini and Gans (2020) identify the cost of verification—ensuring state integrity without central authorities—and the cost of networking—bootstrapping decentralized platforms—showing how blockchain reduces these frictions. Building on this, Bullmann et al. (2019) analyze how network effects and stabilization mechanisms in stablecoins influence adoption incentives and price stability. Ametrano (2016) propose an elastic-supply "Hayek Money" that dynamically rebases wallets to maintain price stability, illustrating how protocol design choices interact with tax-classification events.

Cong and Mayer (2025) develop a dynamic game in which countries strategically decide when to digitize their fiat currencies in order to compete both with each other and with private digital money, including stablecoins. They show that less-dominant currencies tend to digitize earlier—exploiting a first-mover advantage—while dominant currencies wait until their position is threatened before launching their own digital-currency initiatives, thereby securing a second-mover advantage. Their model highlights how learning-driven cost reductions and spillovers across digitization efforts can paradoxically incentivize strategic delays, and it captures the endogenous interaction between private digital money adoption and sovereign digitization timing. Whereas Cong and Mayer (2025) focus on the macro-level game between central issuers and private digital alternatives, our work drills down into the micro-foundations of tax-classification frictions and accounting-information-system costs that shape stablecoin usage and organizational payment choices.

These literatures highlight a range of frictions—such as transaction costs, settlement

delays, regulatory treatment, and organizational constraints—that shape the use of digital money as a medium of exchange. Our framework builds on these insights by focusing on a core friction specific to regulated banks: the balance-sheet and regulatory implications of issuing reserve-backed digital liabilities. Rather than modeling technological or platform-level heterogeneity, we embed stablecoin issuance into a standard bank balance-sheet environment with explicit liquidity and capital requirements. This approach yields a transparent profitability condition and sharp comparative statics that clarify how consolidation structure, funding substitution, and interest-rate conditions discipline stablecoin adoption by banks. By centering the analysis on balance-sheet economics, the model provides a tractable benchmark for evaluating when digital liabilities are viable for regulated intermediaries.

3 Stablecoin Issuance and Bank Balance-Sheet Trade-Offs

This section develops a parsimonious partial-equilibrium model of bank-issued, dollar-redeemable stablecoins. A representative commercial bank chooses the scale of issuance and the net user price of stablecoin balances, taking as given the policy rate and the bank's regulatory environment. The model combines (i) balance-sheet accounting, (ii) a reduced-form representation of liquidity and capital regulation, and (iii) a simple liquidity-demand system that links stablecoin take-up to the user price and the nominal interest-rate environment. The key economic force is that reserve-backed digital liabilities expand the balance sheet while reallocating assets toward high-quality liquid assets, thereby compressing net interest

margins.

3.1 Primitives, Timing, and Balance Sheet

We study a static equilibrium that captures long-run balance-sheet incentives; time subscripts are suppressed for notational simplicity. A representative commercial bank chooses the scale of stablecoin issuance $X \geq 0$ and the net user price of stablecoin balances, defined as the difference between wallet fees and on-balance remuneration,

$$\tau \equiv f - y_{sc}. \tag{1}$$

Here f denotes wallet fees and service charges associated with stablecoin usage, while y_{sc} denotes any on-balance remuneration paid to stablecoin holders. More broadly, the net price τ captures the bank's ability to monetize the payments and settlement functionality embedded in stablecoin usage. This includes programmability, real-time transferability, interoperability with digital platforms, and the preservation of client payment relationships. In this sense, τ represents the payments and client-retention margin of stablecoin issuance, distinct from its funding effects.

A higher τ corresponds to a higher user cost of holding stablecoins. For the purposes of liquidity demand, only the net user price τ matters, so separating fees and remuneration adds no additional economic content beyond clarifying the economic interpretation of the payments margin.

The financial environment is characterized by the nominal short-term policy rate i, which governs both the cost of funds and the return on liquid assets. To capture interest-rate pass-

through in a transparent way, we assume linear mappings between i and the main asset and liability rates on the bank's balance sheet:

$$r_{\text{dep}} = \eta_d i, \qquad r_{\text{wh}} = i + s_{\text{wh}}, \qquad r_H = i + s_H, \qquad r_L = i + s_L, \tag{2}$$

where $(s_{\text{wh}}, s_H, s_L)$ are constant spreads and $\eta_d \in (0, 1)$ is the deposit-rate pass-through elasticity. This structure implies that tighter monetary policy raises both funding and asset yields, while deposit rates adjust less than one-for-one, so the deposit spread $s_d \equiv i - r_{\text{dep}} = (1 - \eta_d)i$ widens with i. Operating costs associated with digital payment infrastructure, compliance, and customer servicing scale linearly with issuance. Let c_0 denote fixed platform expenses and c_1 denote variable per-unit costs, so that total operating expenses are

$$C = c_0 + c_1 X, \qquad c_0 \geq 0, \quad c_1 \geq 0. \tag{3}$$

The regulatory environment is summarized by a per-unit shadow cost $\kappa \geq 0$ that captures the marginal liquidity and capital burden associated with consolidated issuance. The extent to which stablecoin issuance is consolidated on the bank's balance sheet is governed by $\alpha \in [0, 1]$, where $\alpha = 1$ corresponds to full consolidation and $\alpha < 1$ captures partial deconsolidation through an SPV or partnership structure. Only the fraction αX enters binding liquidity and capital constraints; deconsolidation provides regulatory relief but may entail legal and supervisory complexity.

Let (A, L, E) denote assets, liabilities, and equity before issuance. Issuing X dollars of

stablecoins expands the balance sheet symmetrically:

$$\underbrace{A + X}_{\text{Assets}} = \underbrace{L + X}_{\text{Liabilities}} + \underbrace{E}_{\text{Equity}}. \tag{4}$$

The key economic consequence is that the consolidated portion αX must be backed by high-quality liquid assets (HQLA) earning r_H, displacing higher-yield lending opportunities earning r_L. The resulting per-unit reduction in net interest margin is

$$\text{NIM drag per dollar issued} = \alpha(r_L - r_H) \geq 0. \tag{5}$$

To avoid introducing additional parameters that do not affect the core comparative statics, we treat r_H as the relevant marginal HQLA return; equivalently, any non-interest-bearing component of backing can be absorbed into s_H or into the regulatory shadow cost below.

Liquidity regulation links stablecoin liabilities to required holdings of liquid assets. Let $\omega \in (0, 1)$ denote the 30-day cash-outflow rate applied to consolidated stablecoin liabilities under the Liquidity Coverage Ratio (LCR). A binding LCR implies that incremental consolidated issuance requires incremental HQLA:

$$\Delta\text{HQLA} \geq \omega(\alpha X). \tag{6}$$

Rather than modeling the full set of regulatory constraints, we summarize the marginal capital and liquidity burden by the shadow cost $\kappa\alpha$ per dollar of consolidated issuance. Adding the per-unit operating cost c_1, the total support cost per dollar of issued stablecoin

is

$$\text{Support cost per dollar issued} = \alpha(r_L - r_H) + \kappa\alpha + c_1. \tag{7}$$

In the next subsection, we combine the balance-sheet support costs in (7) with funding substitution and stablecoin demand to derive the per-unit profitability margin and the viability condition for issuance.

3.2 Households' Liquidity Demand with Stablecoin

Households (or non-financial savers) allocate a fixed amount of liquid wealth w across three instruments that provide transaction services: central-bank money m (cash and reserves), bank deposits d, and the bank's stablecoin X. Each instrument combines a pecuniary return with a non-pecuniary liquidity benefit arising from acceptability in payments, settlement speed, and perceived safety. We summarize these liquidity services using a constant-elasticity-of-substitution (CES) aggregator,

$$x(m, d, X) = \left[\alpha_M\, m^{\frac{\sigma-1}{\sigma}} + \alpha_D\, d^{\frac{\sigma-1}{\sigma}} + \alpha_X\, X^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}}, \tag{8}$$

where $\sigma \geq 1$ denotes the elasticity of substitution among liquidity instruments and the share parameters satisfy $\alpha_M + \alpha_D + \alpha_X = 1$. This formulation captures the idea that money, deposits, and stablecoins provide similar transaction services but differ in convenience, yield, and institutional backing. A higher σ implies that households are more willing to substitute across instruments in response to relative price changes, whereas lower σ reflects stickier liquidity portfolios.

Households choose (m, d, X) to maximize liquidity utility subject to opportunity costs. Let r denote the nominal return on a risk-free bond that serves as the outside asset. For tractability, we normalize the return on the outside risk-free asset to the policy rate, $r = i$, so that all opportunity costs are expressed relative to the policy rate. The user cost of holding each liquidity instrument is defined as the foregone return relative to r:

$$p_M = i, \qquad p_D = r - r_{\text{dep}}, \qquad p_X = \tau, \tag{9}$$

where i is the policy rate, r_{dep} is the deposit rate, and τ is the net user price of stablecoin balances (wallet fees minus remuneration). Interpreting p_j as the pecuniary price of liquidity, a higher p_j makes the corresponding instrument less attractive in the household's liquidity portfolio. In particular, a higher τ raises the effective cost of holding stablecoins, while changes in i and r_{dep} govern the relative attractiveness of money and deposits.

Given the CES structure, standard first-order conditions imply simple demand ratios. Relative to deposits, the demands for money and stablecoins satisfy

$$\frac{m}{d} = \left(\frac{\alpha_M}{\alpha_D}\right)^{\sigma} \left(\frac{p_D}{i}\right)^{\sigma}, \qquad \frac{X}{d} = \left(\frac{\alpha_X}{\alpha_D}\right)^{\sigma} \left(\frac{p_D}{\tau}\right)^{\sigma}. \tag{10}$$

These expressions highlight that liquidity demand is homogeneous of degree -1 in opportunity costs: when the relative price of an instrument falls, its share in the liquidity composite rises with elasticity σ. In environments with high substitutability, even small differences in yields or fees induce large reallocations across money, deposits, and stablecoins.

Monetary policy influences liquidity allocation primarily through deposit pricing. Be-

cause deposit rates adjust imperfectly to the policy rate, $r_{\text{dep}} = \eta_d i$ with $\eta_d \in (0, 1)$, the deposit opportunity cost satisfies

$$p_D = r - r_{\text{dep}} = (1 - \eta_d)i. \tag{11}$$

Lower nominal rates therefore compress deposit spreads, making deposits closer substitutes for money. This channel captures a familiar notion of "private seigniorage" in banking: when nominal rates are low, the margin between deposits and public money shrinks, reducing the private value of deposit-based liquidity creation.

Stablecoin adoption introduces an additional competitive force. Because stablecoins compete directly with deposits for transactional demand, wider circulation of stablecoins weakens banks' ability to sustain deposit spreads. We capture this effect in reduced form by allowing the deposit spread to decline with stablecoin usage,

$$p_D = s_d(i) - \psi X, \qquad \psi > 0, \tag{12}$$

where ψ measures the intensity of deposit disintermediation induced by stablecoin adoption. As X increases, deposit funding becomes less profitable even if the policy rate is unchanged, tightening banks' balance-sheet constraints. This reduced-form specification captures the idea that stablecoins can act as payment innovations that discipline banks' deposit pricing and reshape bank funding models (Cong (2025)). In this interpretation, stablecoins provide an outside option for transactional liquidity that weakens banks' ability to sustain large deposit spreads, generating a feedback loop between household portfolio choice and bank

funding conditions.

The CES structure yields a transparent economic interpretation. Stablecoin demand depends on its net user price τ and on the relative cost of deposits, with sensitivity governed by σ. When σ is large, stablecoin demand is highly elastic: small changes in pricing or monetary conditions trigger large reallocations away from deposits. When σ is low, liquidity instruments are imperfect substitutes and deposit funding remains relatively resilient despite the presence of digital alternatives.

Combining equations (10)–(12), aggregate stablecoin demand can be written in reduced form as

$$X = \mathcal{X}(\tau, i), \qquad \mathcal{X}_\tau < 0, \tag{13}$$

where the dependence on i reflects both the direct effect of monetary policy on money demand and the indirect effect through deposit spreads. This reduced-form demand relation summarizes how household liquidity preferences map pricing and monetary conditions into stablecoin adoption. Higher nominal interest rates typically increase stablecoin demand by widening deposit spreads under imperfect pass-through, although the precise magnitude depends on overall liquidity demand. In the next subsection, we combine this demand system with the bank's balance-sheet costs to derive the per-unit profitability margin and characterize the conditions under which stablecoin issuance is privately viable.

3.3 Stablecoin Take-Up and Funding Substitution

We next map household demand for stablecoins into the bank's liability structure. Let X denote the aggregate quantity of stablecoins held by users. Each dollar of issuance expands

the bank's liabilities by one dollar and must be financed by replacing an existing source of funding or by attracting new liquidity from outside the banking system. The composition of this funding substitution is central for profitability, as it determines whether stablecoin issuance lowers or raises the bank's effective cost of funds.

To capture this composition effect in a parsimonious way, let $\theta \in [0, 1]$ denote the effective deposit-displacement share, defined as the fraction of stablecoin issuance that replaces relatively stable, relationship-based deposit funding rather than more fragile or market-based liabilities. A share θX of issuance displaces core retail deposits, while the remaining $(1-\theta)X$ substitutes for wholesale borrowing, uninsured runnable deposits, or other non-deposit liabilities. Interpreted more broadly, θ indexes the extent to which stablecoin issuance erodes stable funding versus replacing funding that is already sensitive to market conditions. When θ is high, stablecoins primarily displace low-cost, relationship-based deposits and therefore offer limited direct funding benefits while potentially increasing the sensitivity of the remaining liability structure to stress. When θ is low, issuance replaces more expensive or fragile funding sources, lowering average funding costs and potentially improving the resilience of the bank's funding mix. The parameter θ therefore captures both funding substitution and the relative stability of the liabilities affected by digital issuance.[2]

For each marginal unit of issuance, the bank avoids paying the cost associated with the

[2]This paper's analysis deliberately abstracts from dynamic run equilibria, endogenous default risk, and general-equilibrium feedback to money markets. These forces are important for assessing systemic risk but are orthogonal to the paper's focus on private issuance incentives under regulation. Incorporating run dynamics or heterogeneous depositors would likely amplify the forces identified here, as stablecoin-induced deposit substitution would interact with funding fragility and stress amplification.

funding source it replaces. The resulting funding saving per dollar of stablecoin issued is

$$\text{Funding saving per dollar issued} = \theta\, r_{\text{dep}} + (1-\theta)\, r_{\text{wh}}, \tag{14}$$

where r_{dep} and r_{wh} denote the interest rates on deposit and market-based funding, respectively. Because stable retail deposits typically carry lower rates than wholesale liabilities, the direct funding benefit is decreasing in θ: stablecoin issuance is most attractive when it substitutes for wholesale or otherwise fragile funding rather than displacing stable deposit funding.

From the household side, stablecoin demand is determined by liquidity preferences and relative opportunity costs, as characterized in Section 3.2. In reduced form, aggregate demand can be written as

$$X = \mathcal{X}(\tau, i), \tag{15}$$

where τ is the net user price of stablecoin balances and i is the policy rate. Demand is decreasing in τ and increasing in i, reflecting both the direct price sensitivity of stablecoin holdings and the indirect effect of monetary policy through deposit spreads. The elasticity of $\mathcal{X}(\cdot)$ with respect to τ is governed by the substitution parameter σ, so that higher substitutability across liquidity instruments makes stablecoin demand more responsive to pricing.

Stablecoin adoption also feeds back into the bank's funding conditions. As stablecoins compete with deposits for transactional demand, wider circulation of stablecoins compresses deposit spreads and weakens deposit funding advantages. We capture this competitive effect

by allowing the deposit spread to depend negatively on stablecoin usage,

$$s_d = s_d(i) - \psi X, \qquad \psi > 0, \tag{16}$$

where $s_d(i)$ denotes the deposit spread implied by the policy rate in the absence of stablecoins and ψ measures the strength of deposit disintermediation. As X increases, deposit margins narrow even if monetary policy is unchanged, reducing the funding benefit associated with deposit replacement.

The interaction between funding substitution and household demand is therefore key. On the one hand, issuing stablecoins can lower funding costs when it replaces wholesale liabilities. On the other hand, greater issuance tightens deposit spreads and shifts the composition of funding toward deposits being cannibalized, reducing marginal benefits as X grows. When θ is large, this erosion occurs quickly, making large-scale issuance unprofitable. When θ is small, issuance draws primarily on wholesale substitution, and funding savings remain substantial over a wider range of X.

Equations (14)-(16) link household liquidity choice and bank funding structure into a single mechanism. Stablecoin demand determines issuance scale, while issuance in turn reshapes funding costs and deposit margins. This feedback loop disciplines the profitability of stablecoin issuance and plays a central role in determining the optimal issuance scale and the viability condition derived in the next subsection.

3.4 Bank Objective and Per-Unit Margin

We now combine stablecoin demand and funding substitution to characterize the bank's issuance decision. Taking household liquidity demand as given from Section 3.3, the bank chooses the scale of stablecoin issuance X and the net user price τ to maximize profits from the stablecoin business line. We abstract from fixed setup costs and focus on the steady-state margin trade-off between funding savings and balance-sheet support costs. This formulation captures the core decision faced by a regulated bank: whether issuing stablecoins improves overall profitability once liquidity regulation, funding composition, and operating costs are internalized.

Each dollar of stablecoin issuance replaces an existing liability. With probability θ, issuance displaces deposits; with probability $1-\theta$, it replaces wholesale or market-based funding. The resulting funding saving per dollar issued is therefore

$$\text{Funding saving per dollar issued} = \theta\, r_{\text{dep}} + (1-\theta)\, r_{\text{wh}}, \tag{17}$$

which is decreasing in θ because deposits typically pay lower rates than wholesale funding. When θ is small, stablecoins act as a relatively cheap source of funds by substituting for expensive wholesale liabilities. When θ is large, issuance primarily cannibalizes deposits and offers little funding advantage.

Issuing a fully backed, redeemable stablecoin also entails support costs. As described in Section 3, consolidated issuance at intensity α requires reallocating assets toward HQLA, generating a net-interest-margin drag $\alpha(r_L - r_H)$. In addition, consolidated issuance triggers binding liquidity and capital requirements, summarized by the per-unit shadow cost $\kappa\alpha$, and

incurs per-unit operating costs c_1. Finally, the net user price τ affects profits through pricing of the stablecoin service. Collecting these components, the per-unit support cost of issuance is

$$\text{Support cost per dollar issued} = \alpha(r_L - r_H) + \kappa\alpha + c_1 + \tau. \tag{18}$$

The bank's per-unit profitability margin from stablecoin issuance can be decomposed into a funding component and a payments component:

$$\mu(\alpha, \theta; i) = \underbrace{\theta r_{\text{dep}} + (1-\theta) r_{\text{wh}} - \alpha(r_L - r_H) - \kappa\alpha - c_1}_{\text{Funding and balance-sheet margin}} + \underbrace{\tau}_{\text{Payments margin}}. \tag{19}$$

The first bracket captures the net funding and balance-sheet effect of issuance: stablecoins may substitute for deposits or wholesale liabilities while simultaneously requiring low-yield liquid backing and incurring regulatory and operating costs. The second term, τ, represents the payments and service margin arising from stablecoin usage, reflecting the bank's ability to monetize settlement functionality and client relationships.

This decomposition makes clear that stablecoin issuance may be privately valuable either because it improves funding conditions or because it generates payments-related service revenue.

Issuance cannot expand without bound. Let $\frac{\gamma}{2}X^2$ capture convex costs associated with marketing, adoption frictions, and internal balance-sheet adjustment. The bank's optimization problem is

$$\max_{X \geq 0,\, \tau} \; \mu(\alpha, \theta; i)\, X - \frac{\gamma}{2} X^2, \tag{20}$$

subject to the demand relation $X = \mathcal{X}(\tau, i)$ from Section 3.2. Holding τ fixed, the optimal

issuance scale satisfies

$$X^* = \frac{\mu(\alpha, \theta; i)}{\gamma}, \qquad \Pi^* = \frac{\mu(\alpha, \theta; i)^2}{2\gamma}. \tag{21}$$

Proposition 1 (Stablecoin Viability and Optimal Issuance)**.** *Given* (α, θ, i)*, stablecoin issuance by a regulated bank is privately viable if and only if*

$$\mu(\alpha, \theta; i) > 0. \tag{22}$$

When viable, the optimal issuance scale is $X^* = \mu(\alpha, \theta; i)/\gamma$*. The profitability margin increases when issuance substitutes for wholesale funding* ($\theta \downarrow$)*, when nominal interest rates rise, or when the bank can extract greater payments-related service revenue* ($\tau \uparrow$)*. It decreases with tighter consolidation* ($\alpha \uparrow$)*, higher regulatory shadow costs* ($\kappa \uparrow$)*, or higher operating costs* ($c_1 \uparrow$)*.*

Proof. The result follows directly from maximizing (20). Positivity of issuance requires a positive per-unit margin, and the comparative statics follow from inspection of (19). □

Proposition 1 defines an issuance frontier $\mu(\alpha, \theta; i) = 0$ that partitions the parameter space into profitable and unprofitable regimes. When nominal rates are sufficiently high and issuance primarily replaces wholesale funding, stablecoins provide a low-cost source of funding and issuance expands. Importantly, even when funding substitution is limited (high θ), issuance may remain viable if the bank can generate sufficient payments and service revenue through the margin τ.

By contrast, when issuance is fully consolidated ($\alpha \approx 1$) or heavily cannibalizes deposits ($\theta \approx 1$), the combined effect of net-interest-margin compression and regulatory costs can

eliminate profitability. The slope of the issuance frontier therefore reflects both balance-sheet structure and the bank's ability to monetize digital settlement services. Moving northwest in the (α, θ) space expands the viable region for issuance, and higher payments margins shift the frontier outward.

These comparative-static patterns mirror observed industry behavior: market-funded institutions and partnership-based structures exhibit stronger incentives to issue stablecoins, whereas large deposit-heavy banks face tighter profitability constraints. Together, the results link bank balance-sheet structure, funding composition, payments monetization, and the interest-rate environment into a unified framework for understanding the limits of bank-issued digital money.

3.5 Pass-Through, Pricing, and Low-Rate Discipline

The profitability condition derived above, $\mu(\alpha, \theta; i) > 0$, depends on how monetary conditions and household liquidity preferences transmit to bank funding costs and stablecoin demand. Two forces are central. First, nominal interest rates shape the funding advantage associated with issuing stablecoins by determining deposit spreads. Second, the elasticity of household liquidity demand governs the bank's ability to adjust pricing in response to margin compression. Together, these forces discipline the private supply of bank-issued stablecoins across interest-rate environments.

Monetary policy affects the funding component of the margin through imperfect deposit-rate pass-through. As specified earlier, deposit rates satisfy $r_{\text{dep}} = \eta_d i$ with $\eta_d \in (0, 1)$,

implying a deposit spread

$$s_d \equiv i - r_{\text{dep}} = (1 - \eta_d)i. \tag{23}$$

When the policy rate declines, deposit spreads compress, reducing the cost advantage of deposit funding relative to public liquidity. In this sense, deposits become closer substitutes for central-bank money: they remain liquid but generate little private funding benefit. Because stablecoin issuance partially replaces deposits, narrower spreads directly weaken the funding-saving component of $\mu(\alpha, \theta; i)$, making issuance less attractive in low-rate environments.

Household liquidity demand further constrains banks' ability to offset this margin compression through pricing. As shown in Section 3.2, stablecoin demand depends on the net user price τ with elasticity governed by the substitution parameter σ. When σ is large, stablecoins, deposits, and money are close substitutes, so even small increases in τ lead to large reallocations away from stablecoins. In such environments, banks have limited pricing power: attempts to raise fees or reduce remuneration sharply reduce issuance volumes, preventing banks from fully passing higher regulatory or balance-sheet costs on to users.

The interaction of these channels implies that low nominal rates discipline stablecoin issuance through two reinforcing mechanisms. Lower policy rates compress deposit spreads, shrinking the funding benefit of issuance, while high substitutability across liquidity instruments limits the scope for pricing adjustments. As a result, the per-unit margin $\mu(\alpha, \theta; i)$ declines as rates fall, particularly when issuance heavily cannibalizes deposits (θ high). In this regime, stablecoin issuance becomes unprofitable even if technological or operational considerations are favorable.

By contrast, when nominal rates are higher, deposit spreads widen and issuance substitutes more effectively for costly wholesale funding. In this case, the funding-saving component of the margin dominates regulatory and operating costs, especially when consolidation is limited (α low). If demand elasticity is moderate, banks retain some pricing power and can sustain positive margins without sharply reducing issuance. The resulting equilibrium features stablecoin supply that expands with favorable monetary conditions and balance-sheet structure.

This pass-through logic clarifies how interest-rate environments and household liquidity preferences jointly shape the viability of bank-issued stablecoins. Monetary conditions determine the scope for funding savings through deposit spreads, while demand elasticity governs the bank's ability to adjust pricing in response to balance-sheet constraints. Together, these forces pin down the issuance frontier characterized in the previous section and explain why stablecoin issuance is most constrained in low-rate, highly competitive liquidity environments.

4 Comparative Statics and Empirical Implications

The profitability margin $\mu(\alpha, \theta; i)$ derived in the previous section summarizes the trade-offs governing bank-issued stablecoin viability. This section studies how changes in balance-sheet structure, funding composition, and the interest-rate environment affect issuance incentives. The comparative statics are transparent and generate empirically testable predictions about when and how banks choose to issue stablecoins.

4.1 Comparative Statics of the Per-Unit Margin

Recall that the per-unit profitability margin is given by

$$\mu(\alpha, \theta; i) = \theta r_{\text{dep}} + (1 - \theta) r_{\text{wh}} - \big[\alpha(r_L - r_H) + \kappa\alpha + c_1 + \tau\big]. \tag{24}$$

The expression above makes clear that profitability reflects the difference between funding savings from liability substitution and balance-sheet support costs associated with reserve backing and regulation.

The margin decreases monotonically with consolidation intensity,

$$\frac{\partial \mu}{\partial \alpha} = -\big[(r_L - r_H) + \kappa\big] < 0, \tag{25}$$

because greater consolidation requires backing a larger fraction of issuance with low-yield liquid assets and raises regulatory burdens. As a result, fully consolidated issuance ($\alpha = 1$) is the most costly structure, while partial deconsolidation relaxes liquidity and capital constraints and expands the feasible range of issuance.

Profitability also decreases with the deposit-cannibalization share,

$$\frac{\partial \mu}{\partial \theta} = r_{\text{dep}} - r_{\text{wh}} \leq 0, \tag{26}$$

reflecting the fact that deposits are typically cheaper than wholesale funding. When stablecoins primarily displace deposits (θ high), issuance erodes the bank's cheapest source of funding and delivers little cost advantage. When issuance substitutes for wholesale liabilities

(θ low), funding savings are larger and profitability improves.

Finally, the margin increases with the policy rate,

$$\frac{\partial \mu}{\partial i} = \theta\, \eta_d + (1-\theta) = 1 - \theta(1-\eta_d) > 0, \tag{27}$$

because higher nominal rates increase both deposit and wholesale funding costs, but imperfect deposit-rate pass-through preserves a funding advantage for private liabilities. As a result, stablecoin issuance is procyclical in the policy rate and most constrained in low-rate environments.

4.2 Optimal Issuance and the Viability Region

Given the convex issuance cost $\frac{\gamma}{2}X^2$, the bank's optimal issuance scale satisfies

$$X^* = \frac{\mu(\alpha, \theta; i)}{\gamma}, \tag{28}$$

with issuance viable if and only if $\mu(\alpha, \theta; i) > 0$. This condition defines an issuance frontier that partitions the parameter space into profitable and unprofitable regions.

[Insert Figure 1 Here]

Figure 1 illustrates how optimal issuance varies with the deposit-cannibalization share for different consolidation intensities. As θ increases, issuance declines monotonically and eventually collapses when funding savings no longer offset balance-sheet costs. Partial deconsolidation shifts the issuance curve upward, preserving positive issuance over a wider range of θ.

[Insert Figure 2 Here]

[Insert Figure 3 Here]

Figures 2 and 3 depict the viability region in the (α, θ) plane for low and high policy rates, respectively. At low nominal rates, the viable region is sharply restricted: even modest consolidation or deposit substitution renders issuance unprofitable. At higher rates, wider deposit spreads expand the viable region, particularly for partially deconsolidated structures and issuance that substitutes for wholesale funding. These figures highlight the strong interaction between balance-sheet structure and monetary conditions in shaping issuance incentives.

4.3 Empirical Implications

The comparative statics yield several testable implications. First, banks that rely more heavily on wholesale funding should be more likely to issue stablecoins, as issuance delivers larger funding savings when θ is low. Second, institutions subject to tighter liquidity and capital constraints should prefer partnership or off-balance-sheet structures that reduce effective consolidation. Third, stablecoin issuance should be procyclical in the policy rate, expanding when nominal rates are higher and contracting sharply in low-rate environments.

The model also naturally accommodates heterogeneity across banks through differences in funding composition, deposit sensitivity, and exposure to payment competition. Institutions with higher deposit betas, a larger share of uninsured or runnable deposits, or greater exposure to fintech payment alternatives are characterized by higher effective θ and therefore weaker funding benefits from stablecoin issuance. Conversely, banks with greater reliance on

wholesale funding, lower deposit stickiness, or stronger payment-based client relationships are more likely to find issuance privately profitable, either through funding substitution or through the payments margin captured by τ.

These predictions suggest several measurable cross-sectional proxies. Funding structure can be proxied by the wholesale funding ratio, the share of uninsured deposits, or historical deposit betas. Exposure to digital payment competition may be proxied by fee-based revenue share, regional fintech penetration, or customer adoption of digital payment platforms. Together, these measures allow the model's parameters (θ, α, τ) to be mapped into observable bank characteristics.

The framework implies that stablecoin adoption is driven less by technological feasibility than by heterogeneity in balance-sheet structure, funding stability, and digital payment exposure. Issuance emerges when regulatory structure and funding composition allow digital liabilities to substitute for costly or fragile funding sources without triggering binding liquidity constraints. This perspective aligns with observed patterns of experimentation among market-funded institutions and the more cautious approach taken by large deposit-heavy banks.

5 Model Calibration

This section provides a simple calibration to illustrate the quantitative magnitudes implied by the model and to assess when the profitability condition $\mu(\alpha, \theta; i) > 0$ is likely to hold in practice. The exercise is not intended as a structural estimation. Rather, it disciplines the parameter values using standard U.S. banking data and demonstrates how sensitive

stablecoin viability is to balance-sheet structure, funding composition, and the interest-rate environment.

The baseline calibration draws on summary statistics from the Federal Reserve's H.8 releases, bank Call Reports, and data on reserve and Treasury bill yields. For large U.S. commercial banks over the period 2015–2024, average loan yields ranged between 4 and 6 percent, while returns on high-quality liquid assets—proxied by reserve balances and Treasury bills—were typically between 2 and 3 percent. We therefore set the loan–HQLA spread $(r_L - r_H)$ to 200 basis points, consistent with observed net-interest-margin differentials between core lending and safe liquid assets. Per-unit operating costs associated with digital wallet infrastructure, compliance, and customer servicing are set to $c_1 = 40$ basis points per year, in line with disclosures by large custodial and payment-oriented institutions. The regulatory shadow cost κ is calibrated at 20 basis points per dollar of consolidated issuance, capturing the marginal liquidity and capital burden beyond formal LCR and CET1 minima.

On the liability side, the deposit-rate pass-through elasticity is set to $\eta_d = 0.6$, implying that a 100-basis-point change in the policy rate translates into a 60-basis-point change in deposit rates and a 40-basis-point change in deposit spreads, consistent with the evidence in Drechsler et al. (2017). Wholesale funding rates are assumed to move one-for-one with the policy rate plus a constant 50-basis-point premium. The deposit-cannibalization parameter is set to $\theta = 0.7$, reflecting the view that a substantial share of stablecoin adoption draws from retail deposits rather than purely replacing wholesale funding. Consolidation intensity is set to $\alpha = 1$ for fully on-balance issuance and $\alpha = 0.5$ for partnership or SPV-based structures that partially deconsolidate reserve backing. Finally, the elasticity of substitution across liquidity instruments is set to $\sigma = 2$, implying meaningful but not frictionless substitution

between money, deposits, and stablecoins.

Under these baseline values, the per-unit profitability margin for a fully consolidated issuer ($\alpha = 1$) at a policy rate of $i = 4\%$ is modestly positive, on the order of 25 basis points. A one-percentage-point decline in the policy rate reduces the margin by roughly 30 percent, pushing profitability close to zero when i approaches 2 percent. By contrast, partial deconsolidation ($\alpha = 0.5$) or a lower deposit-cannibalization share ($\theta = 0.5$) restores a positive margin even at lower rates. These magnitudes are consistent with the analytical comparative statics: issuance is viable only within a narrow range of monetary and balance-sheet conditions, and small changes in regulatory or funding parameters can shift stablecoin issuance from profitable to unprofitable.

To assess robustness, we examine how the profitability margin $\mu(\alpha, \theta; i)$ and the optimal issuance scale X^* respond to $\pm 20\%$ changes in four key parameters: the deposit-rate pass-through elasticity η_d, the regulatory shadow cost κ, the consolidation intensity α, and the deposit-cannibalization share θ. Table 1 summarizes the results.

[Insert Table 1 Here]

The sensitivity analysis confirms that stablecoin viability is most sensitive to parameters governing funding substitution and deposit competition. Increasing either η_d or θ by 20 percent—corresponding to stronger deposit pass-through or greater deposit displacement—reduces the profitability margin by roughly 40 basis points and lowers the optimal issuance scale by about one-third. In contrast, comparable changes in the regulatory shadow cost κ or consolidation intensity α have more moderate effects, shifting the margin by less than 20 basis points and issuance by less than 25 percent.

The calibration highlights that bank-issued stablecoins are viable only under a narrow set of conditions. Issuance is most likely when stablecoins substitute for wholesale funding, when consolidation is limited, and when nominal interest rates are sufficiently high to sustain deposit spreads. Conversely, in low-rate environments or when issuance heavily cannibalizes deposits, the combined effect of net-interest-margin compression and regulatory costs eliminates profitability. These quantitative patterns reinforce the central message of the model: the economics of bank-issued stablecoins are driven primarily by balance-sheet structure and funding conditions rather than by technological considerations alone.

6 Conclusion

This paper develops a tractable framework to study the private viability of bank-sponsored stablecoin issuance in the presence of balance-sheet constraints and liquidity regulation. The model embeds reserve-backed digital liabilities into a standard banking environment with explicit high-quality liquid asset (HQLA) requirements and imperfect deposit-rate pass-through. The central profitability condition, $\mu(\alpha, \theta; i) > 0$, captures the core trade-off faced by regulated banks: whether the funding savings generated by issuing a digital liability are sufficient to offset the net interest margin drag and regulatory costs associated with reserve backing. By parameterizing consolidation intensity (α), funding substitution (θ), and regulatory shadow costs (κ), the framework provides a transparent lens for analyzing when stablecoin issuance is privately viable.

The analysis shows that stablecoin issuance is sustainable only when balance-sheet structure and funding composition are favorable. Fully consolidated issuance ($\alpha = 1$) or issuance

that primarily cannibalizes deposits (θ high) substantially compresses margins and limits profitability, even when technological considerations are favorable. By contrast, partial deconsolidation or greater substitution away from wholesale funding relaxes regulatory burdens and improves issuance incentives. The interest-rate environment matters through deposit-rate pass-through: higher nominal rates widen deposit spreads and restore the funding advantage of private liabilities, while low-rate environments sharply constrain issuance viability.

A simple calibration based on U.S. banking data illustrates the quantitative relevance of these mechanisms. Under plausible parameter values, the profitability margin for a fully consolidated issuer is modest and sensitive to changes in interest rates, regulatory costs, and funding composition. Small shifts in consolidation intensity or deposit substitution can move issuance from profitable to unprofitable, highlighting that stablecoin viability is confined to a narrow range of balance-sheet and funding conditions. These results underscore that the economics of bank-issued stablecoins are driven primarily by funding costs and regulatory structure rather than by technological efficiency alone.

Our framework helps rationalize why regulated banks have approached stablecoin issuance cautiously despite rapid innovation in digital payments. Stablecoin adoption emerges when issuance allows banks to reshape their liability mix without triggering binding liquidity constraints, and it recedes when reserve backing erodes net interest margins or cannibalizes low-cost deposits. By focusing on balance-sheet viability, the paper provides a benchmark for evaluating alternative stablecoin and tokenized-deposit structures within regulated banking systems. Future work could extend the analysis by incorporating bank heterogeneity or empirical tests of the model's predictions using bank-level data on funding structure and digital-asset activity.

Future research could incorporate dynamic liquidity risk and run dynamics to examine how stablecoin issuance interacts with stress episodes and monetary policy. It could also study strategic competition between banks and fintech issuers in digital payment markets and use cross-bank heterogeneity in funding structure and deposit sensitivity to test the model's predictions on funding versus payments motives.

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Figure 1. Optimal Issuance and Deposit Cannibalization

Figure 1: Optimal issuance $X^* = \max\{\mu/\gamma, 0\}$ as a function of the deposit-cannibalization share θ at a policy rate of $i = 4\%$, comparing full consolidation ($\alpha = 1$) and partial deconsolidation ($\alpha = 0.6$). As θ increases, stablecoins increasingly displace retail deposits rather than wholesale funding, reducing funding savings and compressing profitability. Partial deconsolidation lowers balance-sheet and regulatory costs, shifting the issuance schedule upward and sustaining positive issuance over a wider range of θ.

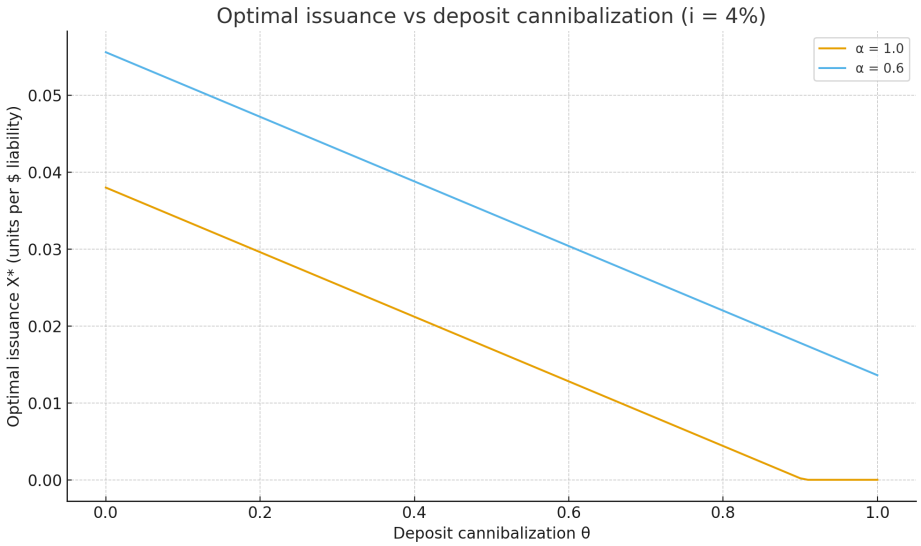


Figure 2. Viability Region at Low Policy Rates

Figure 2: Viability region $\mathbf{1}\{\mu > 0\}$ in the (α, θ) plane at a policy rate of $i = 2\%$. Dark areas denote parameter combinations for which stablecoin issuance is unprofitable. At low nominal rates, the viable region is sharply restricted: even moderate consolidation or deposit substitution eliminates profitability.

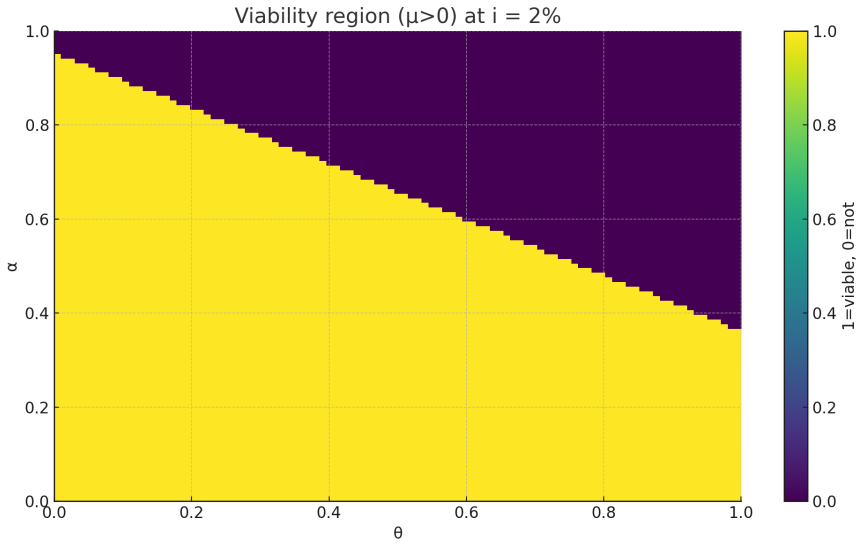


Figure 3. Viability Region at Higher Policy Rates

Figure 3: Viability region $\mathbf{1}\{\mu > 0\}$ in the (α, θ) plane at a policy rate of $i = 4\%$. Higher nominal rates expand the viable region by widening deposit spreads and increasing funding savings. Compared to Figure 2, profitability is sustained for a broader set of consolidation structures and funding compositions.

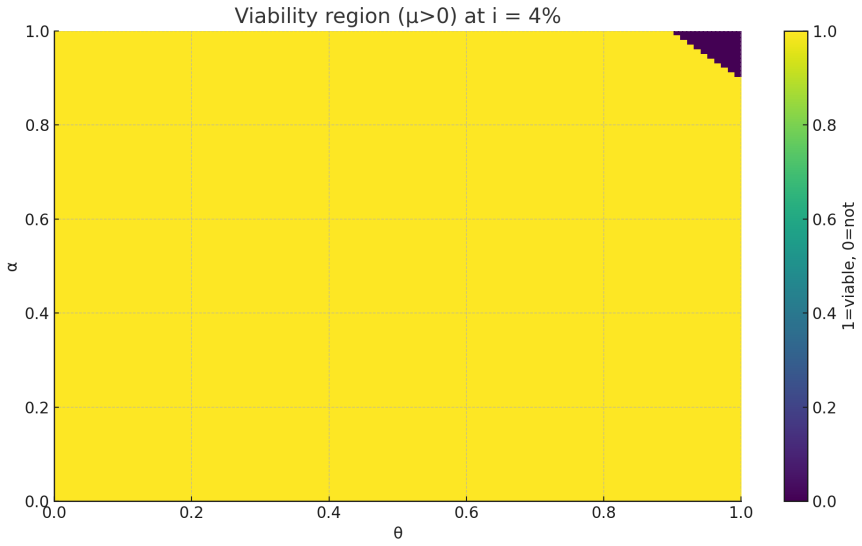


Table 1. Sensitivity of Profitability Margin and Issuance Scale

Table 1: Sensitivity of the per-unit profitability margin μ and the optimal issuance scale X^* to $\pm 20\%$ changes in key structural parameters. The table reports the resulting changes in profitability (basis points) and issuance (percent). Stablecoin viability is most sensitive to deposit competition and funding substitution, while regulatory costs and consolidation intensity play a secondary but still meaningful role.

Parameter	Baseline	+20%	–20%	$\Delta\mu_t$ (bps)	ΔX_t^* (%)
Deposit pass-through η_d	0.60	0.72	0.48	-18 / $+22$	-20 / $+25$
Regulatory shadow cost κ_t	20 bps	24 bps	16 bps	-15 / $+18$	-17 / $+20$
Consolidation intensity α	1.00	1.20	0.80	-25 / $+28$	-30 / $+35$
Cannibalization share θ	0.70	0.84	0.56	-40 / $+45$	-50 / $+55$

Appendix: Proofs

Proof of Proposition 1

Recall that the bank's objective is

$$\max_{X \geq 0} \; \Pi(X) = \mu(\alpha, \theta; i)\, X - \frac{\gamma}{2} X^2, \tag{29}$$

where the per-unit profitability margin is

$$\mu(\alpha, \theta; i) = \theta r_{\text{dep}} + (1-\theta) r_{\text{wh}} - \big[\alpha(r_L - r_H) + \kappa\alpha + c_1 + \tau\big]. \tag{30}$$

The objective function (29) is strictly concave in X because $\gamma > 0$. The first-order condition for an interior optimum is

$$\frac{\partial \Pi(X)}{\partial X} = \mu(\alpha, \theta; i) - \gamma X = 0, \tag{31}$$

which yields

$$X^* = \frac{\mu(\alpha, \theta; i)}{\gamma}. \tag{32}$$

If $\mu(\alpha, \theta; i) \leq 0$, the objective is decreasing in X over $X \geq 0$, and the optimal choice is $X^* = 0$. Hence, stablecoin issuance is privately viable if and only if $\mu(\alpha, \theta; i) > 0$, and when viable the optimal issuance scale is given by (32). □

Proof of Comparative Statics in Proposition 1

We compute partial derivatives of the per-unit margin $\mu(\alpha, \theta; i)$ defined in (30).

Consolidation intensity.

$$\frac{\partial \mu}{\partial \alpha} = -\big[(r_L - r_H) + \kappa\big] < 0, \tag{33}$$

since $r_L > r_H$ and $\kappa > 0$. Thus, greater consolidation reduces profitability.

Deposit cannibalization.

$$\frac{\partial \mu}{\partial \theta} = r_{\text{dep}} - r_{\text{wh}} \leq 0, \tag{34}$$

because wholesale funding is weakly more expensive than deposits. Hence, greater deposit cannibalization reduces profitability.

Policy rate. Using $r_{\text{dep}} = \eta_d i$ and $r_{\text{wh}} = i + s_{\text{wh}}$, and noting that $(r_L - r_H)$ is independent of i, we obtain

$$\frac{\partial \mu}{\partial i} = \theta\, \eta_d + (1 - \theta) = 1 - \theta(1 - \eta_d) > 0, \tag{35}$$

since $\eta_d \in (0, 1)$ and $\theta \in [0, 1]$. Thus, higher nominal interest rates increase profitability. □

Proof of Optimal Issuance Scale

From (32), the optimal issuance scale satisfies

$$\frac{\partial X^*}{\partial \alpha} = \frac{1}{\gamma}\frac{\partial \mu}{\partial \alpha} < 0, \qquad \frac{\partial X^*}{\partial \theta} = \frac{1}{\gamma}\frac{\partial \mu}{\partial \theta} < 0, \qquad \frac{\partial X^*}{\partial i} = \frac{1}{\gamma}\frac{\partial \mu}{\partial i} > 0. \tag{36}$$

Hence, optimal issuance decreases with consolidation and deposit cannibalization and increases with the policy rate. □