Financial Intermediation with Fragile Seigniorage: A Dynamic Model of Stablecoin Issuers

A Brief Summary

Link to the full paper: https://yeli-macrofinance.com/stablecoin.pdf

The volatility of cryptocurrencies limits their usage as means of payment. Stablecoins are blockchain-based assets pegged to fiat currencies, typically backed by the issuers' reserve assets. The rapid growth of stablecoins in market capitalization and the regulatory momentum in major economies have drawn enormous attention: governments view stablecoins as instruments to extend the international reach of their currencies, and the risk profile of reserve assets is central to ongoing policy debates, as exemplified by the GENIUS Act in the United States. In this paper, we develop a dynamic model of stablecoin issuers to address three questions: How does reserve-asset risk transmit to stablecoin users through depegging? What trade-offs shape an issuer's decision to depeg? How to evaluate various regulatory proposals? Unlike contemporaneous studies that focus on specific aspects of stablecoins, we jointly analyze the issuer's key decisions, including depegging, stablecoin issuance and buybacks, fees or interest payments for users, external financing, payout policies, and the valuation of the issuer's equity.

Our baseline model considers a laissez-faire environment in which the issuer is not bound to maintain the peg and has discretion over the value of its liabilities: a stablecoin is not a definitive claim on the issuer or its reserve assets, and major issuers can change redemption terms "without prior notice".[1] Therefore, stablecoin issuers differ from banks (or money market funds), whose commitment to redeem deposits at par (or NAV) underpins the classic run mechanism based on liquidity mismatch and coordination failures among depositors (Diamond and Dybvig, 1983). Our model features run-like dynamics, but they emerge instead from risk transformation and the central role of net worth in determining intermediation capacity (e.g., He and Krishnamurthy, 2013; Brunnermeier and Sannikov, 2014).

Because stablecoin users derive transactional utility from holding the stablecoin, they accept a lower return, which reduces the issuer's funding cost—seigniorage revenues akin to the deposit spread that banks earn. At the core of our model is the endogenous fragility and procyclicality of this seigniorage. When negative shocks to reserve assets deplete net worth, the issuer's effective risk aversion rises, and it preserves net worth either by deleveraging—selling reserve assets to buy back stablecoins (*quantity adjustment*)—or, once net worth falls below a threshold, by depegging (*quality adjustment*). Depegging lowers the stablecoin's transactional utility, and the resulting inward shift of stablecoin demand resembles a run. Seigniorage thus declines precisely when it is most needed to rebuild net worth and restore the peg. As a result, the stablecoin enters an instability trap: once the system falls into the low-net-worth region, depegging is severe, and the system stays trapped there for a long time.

Depegging is disciplined by the users. When the users' monetary utility is sufficiently sensitive to stablecoin price fluctuations, the issuer may refrain from depegging at all levels of net worth and manages risk solely through quantity adjustment. One contribution of our paper is to characterize the conditions under which, even in a laissez-faire environment with risky reserve assets, a stablecoin is perfectly stable in price (though its quantity varies wildly). Perhaps surprisingly, this no-depegging region expands as reserve assets become riskier—a risk paradox that stems from the issuer's precaution against the

[1] See, for example, Tether's Terms of Service at https://tether.to/en/legal.

instability trap: when reserve-asset risk is higher, offloading risk to users through depegging causes a more severe contraction of stablecoin demand, so the issuer optimally chooses a smaller scale of intermediation and prefers deleveraging for managing its risk exposure. Relatedly, in the parameter region where depegging does occur, the highest level of stablecoin volatility exhibits an inverse-U-shaped relationship with reserve-asset risk.

These results inform the evaluation of the two pillars of regulatory frameworks, restrictions on reserve-asset risk and capital requirements, both featured in the GENIUS Act. After calibrating our model to Tether, which is the largest stablecoin issuer, we find that requiring the issuer to operate as a narrow bank—holding only safe assets and maintaining positive net worth—lowers the stablecoin supply by 73–88% and users' welfare by 60–70% relative to the laissez-faire benchmark and cuts the issuer's equity valuation by 33%. Capital requirement alone already delivers a significant improvement in stability and user welfare, while the additional requirement of risk-free reserves brings only marginal improvement.

References

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