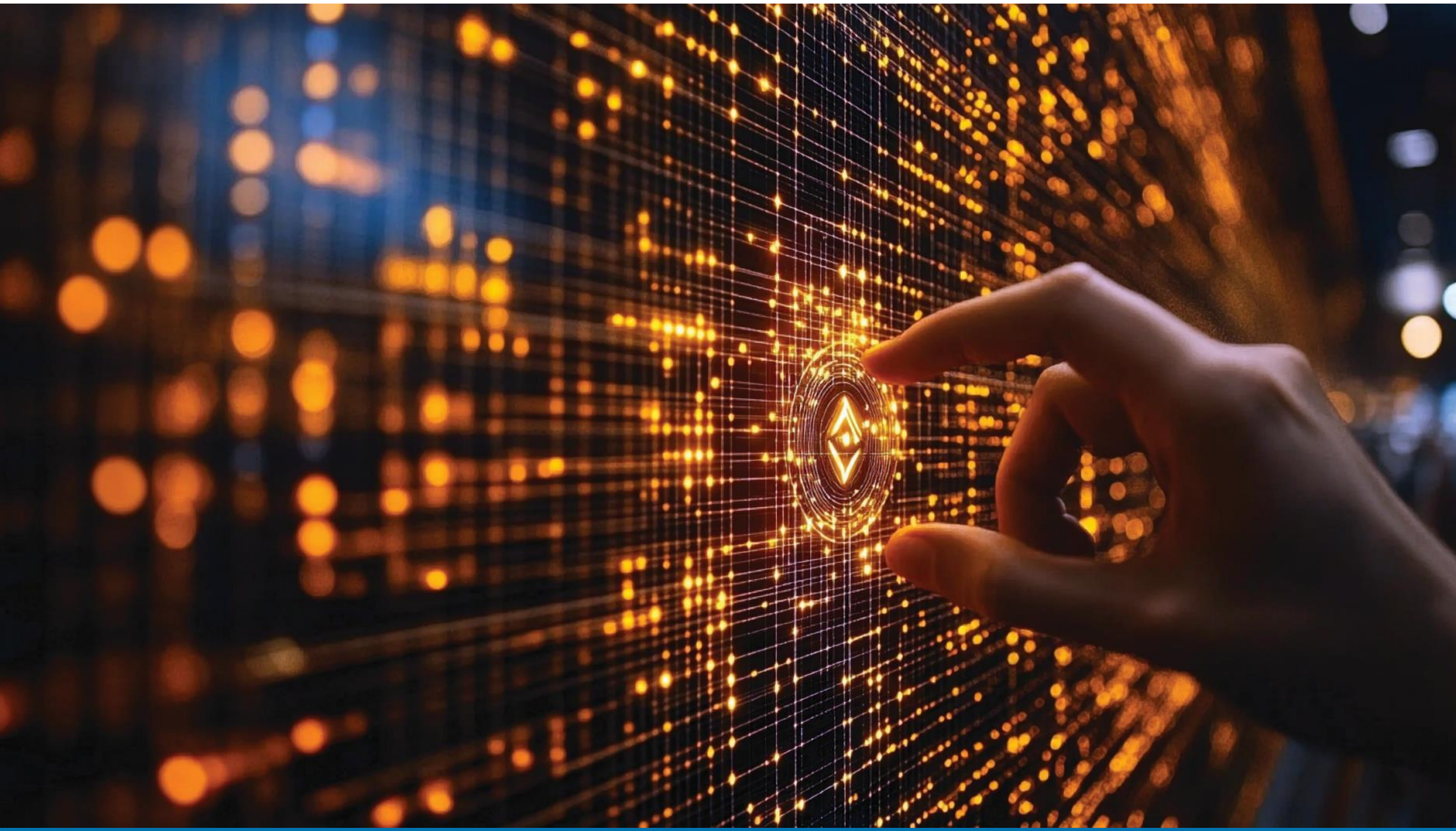

Stablecoins' impact on community bank deposits

Prepared for:

Coinbase, Inc.

1209 North Orange Street

Wilmington, DE 19801

Prepared by:

Charles River Associates

1201 F Street, Suite 800

Washington, DC 20004

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Contents

Executive summary

Policymakers see well-regulated US dollar-pegged stablecoins as a faster, cheaper payment infrastructure, yet community banks worry that it could reduce retail deposits. We test this hypothesis with monthly 2019-2025 data, relating changes in community-bank deposits to growth of the major US-centric stablecoin, USD Coin, while controlling for macro conditions and shocks such as the failure of Silicon Valley Bank. Across all econometrically sound models, including when scaling deposits by household assets, the USD Coin effect is insignificant.

The results from three types of empirical analyses are listed below.

- Baseline "static" models for the change in community bank deposits
  Result: No usable estimates

- Dynamics models for the change in community bank deposits
  Result: Positive ($0.444 increase in deposits per $1 of stablecoin adoption) but insignificant effect

- Dynamic models with deposits scaled by household and nonprofit organization total assets
  Result: Negative (-$0.265 drop in deposits per $1 of stablecoin adoption) but insignificant effect

Even under an unlikely, model-free assumption that every dollar invested in stablecoins reduces the total deposits one-for-one, the projected impact to community banks is modest. The impact is 6.8 percent in an extreme stablecoin adoption scenario and below one percent under our baseline adoption scenario, commensurate with historical impacts from money-market-fund inflows. Evidence to date, therefore, does not support a material funding risk, though continued monitoring is prudent as the market matures.

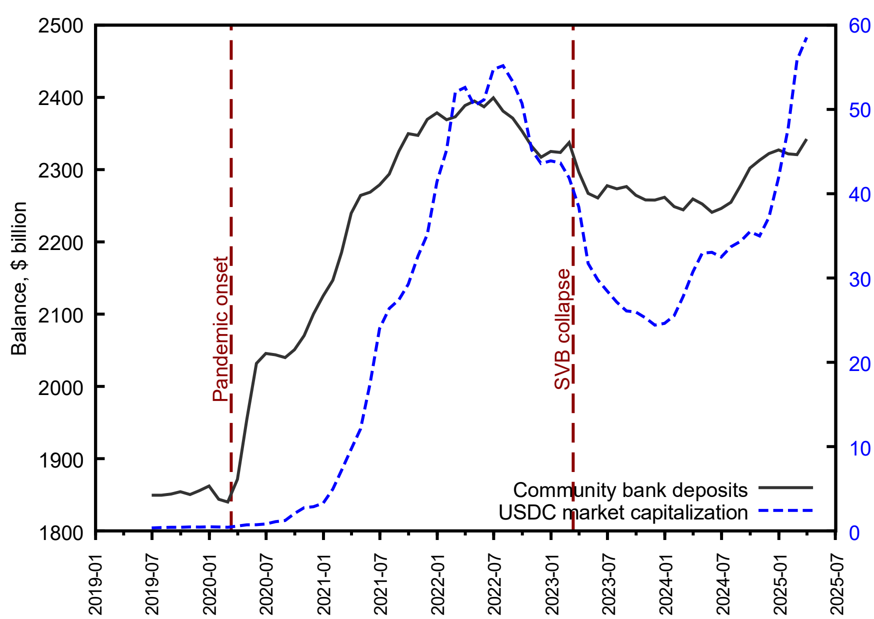
This study was commissioned by Coinbase, Inc.

1. Introduction

People and businesses are increasingly using stablecoins pegged to the US dollar (USD) for a variety of use cases, including cross-border payments. US policymakers acknowledge the potential benefits of stablecoins. The President's Working Group on Financial Markets (2021) argued that "[i]f well-designed and appropriately regulated, stablecoins could support faster, more efficient, and more inclusive payments." More recently, the GENIUS Act describes what well-designed and appropriately regulated payment stablecoins are, and the added legal clarity and safety is expected to foster broader adoption.[1] Small firms, particularly those with high volumes of low-value transactions, may benefit the most from lower transaction costs and higher speed.

At the same time, some argue that increased stablecoin adoption poses potential risks to traditional bank funding, particularly for community banks that rely heavily on stable, low-cost retail deposits. When customers purchase stablecoins, the corresponding funds are transferred into reserve accounts held by the stablecoin issuer, of which a portion is reintegrated as cash into the banking system. Even if reserves were entirely held in cash, the return deposits may concentrate disproportionately in a small number of large financial institutions. Community bankers are concerned about the potential for deposit outflows. The Independent Community Bankers of America (ICBA), in a 2025 letter to the US Senate, warned of "community bank disintermediation caused by deposit migration to payment stablecoins." Community banks rely on local deposits to fund household and small business lending more heavily than large banks. They argue a shift of these deposits to digital assets could constrain credit availability and impact economic prosperity in smaller communities.

Figure 1: Evolution of community bank deposits and USDC market capitalization



This paper assesses the disintermediation hypothesis empirically by testing whether inflows into USD-pegged stablecoins are associated with outflows from community-bank deposits. Using monthly data from 2019–2025, we define a large set of potential econometric specifications that

[1] Guiding and Establishing National Innovation for US Stablecoins Act of 2025 or the GENIUS Act of 2025 was introduced in the US Senate on February 4, 2025. It is available at https://www.congress.gov/bill/119th-congress/senate-bill/394.

relate changes in community-bank deposits to contemporaneous and lagged changes in stablecoin market capitalization, proxied by USD Coin (USDC), macro-financial controls, and shocks such as the failure of Silicon Valley Bank (SVB). Because the sample period was short and dominated by some extraordinary events, we systematically evaluated all admissible model specifications, which must pass basic econometric validity. We required no evidence that models are mis-specified, as identified by serial autocorrelation in model residuals, and the effect of the stablecoin adoption is statistically significant contemporaneously or over the previous two months. The effect of stablecoin adoption can be interpreted only in specifications that pass these checks, and, as a robustness check, we also report results obtained under relaxed requirements. Our approach closely parallels ensemble modeling in machine learning, as explained in the methodology section.

The results reveal no statistically significant relationship between USDC adoption and community bank deposit outflows.

- **Baseline "static" models (include no lagged community bank deposits term)**
  When not including lagged community bank deposits, all variation in deposits must be explained by stablecoin adoption and macroeconomic factors, thus maximizing the potential of finding a large effect. For these models, the residuals exhibit serial correlation, indicating misspecification. The similar upward trends in USDC market capitalization and community-bank deposits shown in Figure 1 point to unmodelled common drivers rather than a causal link.

- **Dynamic models (include lagged community bank deposits terms)**
  When lagged community bank deposits are added, many specifications both pass the diagnostics and fit the data well. Across this admissible set, the cumulative effect of changes in USDC market capitalization—measured contemporaneously and over two previous months—is uniformly insignificant, suggesting no detectable disintermediation effect during the sample period.[2]

- **Dynamic models with deposits scaled by household and nonprofit organization assets**
  Finally, we modelled community-bank deposits as a share of total household and nonprofit organization (NPO) assets to control for wealth effects common to both deposits and stablecoin holdings. The resulting coefficient on USDC adoption is -0.265 and of insignificant effect, again falling short of robust evidence of a substitution effect. However, this estimate is closest to statistical significance, as approximately 65% of the potential estimates were negative.

Several factors likely explain the absence of a strong effect of stablecoin adoption on community bank deposits. First, both community bank deposits and stablecoin demand may be driven by unobservable common factors; a longer time series may allow disentangling of these dynamics. Second, the customer bases of community banks and stablecoin adopters may have limited overlap—consistent with Federal Deposit Insurance Corporation (2020) findings and our analysis in Section 5.2.4 showing that community banks serve a predominantly non-metropolitan population, which is older and less likely to hold digital assets. Third, the disintermediation hypothesis may be incomplete without considering the broader portfolio context, as shifts in returns on other asset classes could drive simultaneous outflows from both bank deposits and

[2] Across the many models we estimated, we treated the cumulative effect of stablecoin adoption as significant only when the 95% interval of the stablecoin effect estimates excludes zero.

stablecoins.[3] The stablecoin market grew in the United States when the return on deposits was relatively unattractive, similarly to savers reallocating funds to higher-yielding money market funds (“MMFs”) when deposit interest ceilings kept bank rates below market yields.

Even under an unlikely, model-free assumption that every dollar invested in stablecoins reduces deposits one-for-one, the projected hit to community banks is modest: 6.8 percent in an extreme stablecoin adoption scenario and below one percent under our baseline adoption scenario. For comparison, Morgan et al. (2022) estimated that MMFs would reduce bank deposits by three percent during the rate tightening cycle that started in 2022. Stablecoins as defined under the GENIUS Act, i.e., excluding those not fully backed by cash-like reserves, should exert an even weaker pressure on deposits.

The totality of evidence does not support the disintermediation hypothesis for the period studied. Nevertheless, we recommend continued monitoring as the stablecoin market matures and more “normal” and longer historical data become available.

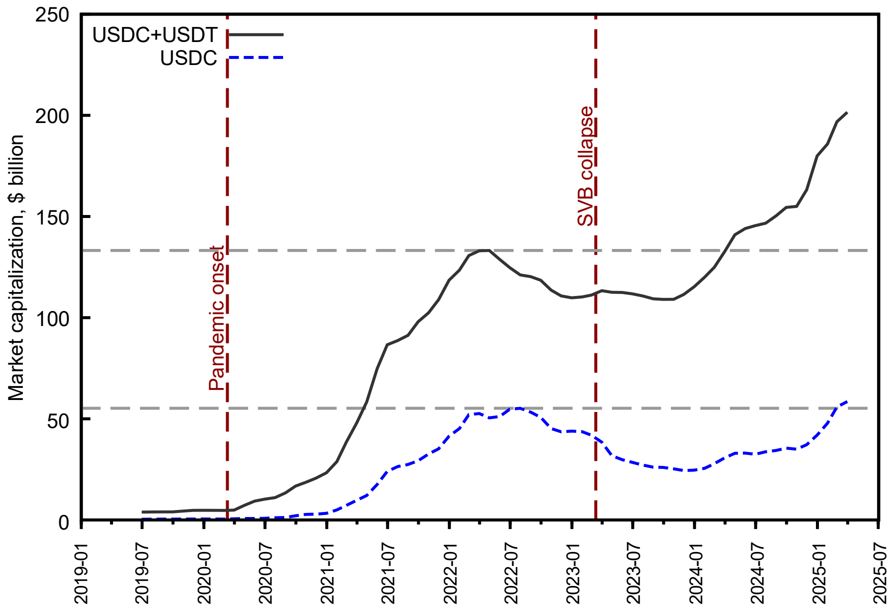
2. Background

The adoption of stablecoins surged in 2020 and 2021, catalyzed in part by increased regulatory clarity provided by US financial authorities. The market capitalization of USD-pegged stablecoins exceeded $232 billion in June 2025, reflecting increased interest from retail and institutional customers.[4] However, growth was not even (see Figure 2). The collapse of TerraUSD in 2022 reduced confidence in stablecoins, and growth did not restore until the first crypto (Bitcoin) exchange traded fund was approved and the Office of the Comptroller of the Currency (OCC) enabled banks to custody digital assets in 2024.

[3] For a comprehensive discussion of how deposit outflows can be redirected across different destinations—and the associated flow-of-funds mechanics—see Bindseil and Senner (2024).

[4] Based on the data from CoinMarketCap, the market capitalization of the top four USD-pegged stablecoins – USDT, USDC, USDE, and DAI – was $232 billion as of June 30, 2025.

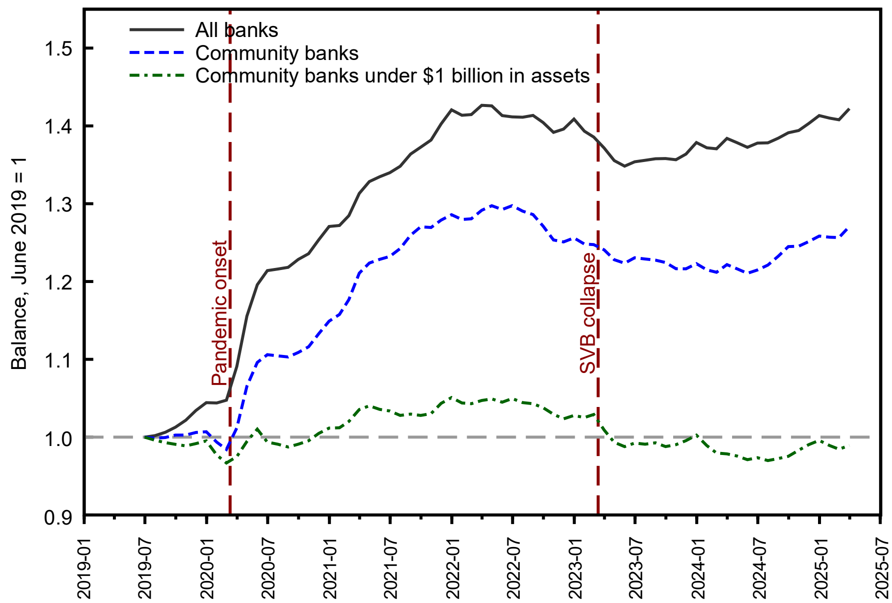
Figure 2: Market capitalization of USDT and USDC



Two stablecoins, USDC and USD Tether (USDT), jointly account for over 85% of market share. While both are widely used, our analysis centers on USDC, which differs with respect to its emphasis on regulatory compliance and operational transparency. It is US-centric, operating under the New York Department of Financial Services framework for stablecoins. Additionally, USDC's fiat reserves are fully held within the US banking system.[5]

[5] In contrast, the USDT Reserve Fund is allocated among an undisclosed mix of US and non-US banks.

Figure 3: Deposits of community banks and all banks



Community bank deposits, as shown in Figure 3, evolved similarly to the USD stablecoin market. They grew significantly during 2020 and 2021 when the government provided support to COVID-19 affected households and firms. Growth stalled during 2022 when the Federal Reserve started increasing interest rates. Community bank deposits stagnated from 2022 to 2024 when the Federal Reserve paused interest rate increases and deposit rates caught up with market rates. In comparison, small banks, defined by the Federal Reserve as all but the top 25 banks by total assets, grew twice as much between 2019 and June 2025.[6] Deposits in community banks with less than $1 billion in total assets have not grown at all since at least 2019.[7] In section 5.2.4, we argue that customers of these banks could be less likely to purchase stablecoins.

This leaves us with an unusual historical period during which USDC market capitalization and community bank deposits followed a similar trend. Moreover, outside the SVB collapse that shook confidence in both the USDC and community banks, USDC stablecoin adoption was driven by the changing regulatory environment while deposits were impacted primarily by the changing interest rates.

3. Scenario analysis

We begin our analysis with a model-free assessment of the potential impact of stablecoin adoption on community bank deposits. It assumes that all stablecoin purchases will be financed one-for-one by bank deposits. It represents the estimated maximum impact on community bank deposits, assuming that community bank clients are just as likely to purchase stablecoins as

6 The series of small banks and community banks with less than $1 billion in assets were scaled to begin at the same level as community banks. Small bank and community bank deposits grew 54% and 27%, respectively, from June 2019 to March 2025.

7 Finally, deposits of small community banks, i.e., those with assets under $1 billion, stagnated over the same period, and their deposits fluctuated at around $900 billion. This is consistent with the FDIC finding that only community banks in large metropolitan areas grew; see FDIC's 2020 Community Banking Study.

clients of non-community banks. Our analysis requires two ingredients: stablecoin market projections and the composition of stablecoin reserves, which are described next.

3.1. Stablecoin market projections

The optimism for stablecoins is strong and prompted forecasts of trillions of dollars in market size. In April 2025, Citi Institute projected that the USD-pegged stablecoin market could reach $3.7 trillion in 2030 in a bull scenario.[8] In the baseline scenario, the market would reach $1.6 trillion with $693 billion in new adoption and $525 billion shifting out of other asset classes.

More recently, Reuters noted that a JP Morgan analysis projected the stablecoin market size at a more modest $500 billion in 2028, about double the current level.[9] The key drivers of this lower projection included the fact that payments accounted for only six percent of the stablecoin use, there existed inability to pay yield and friction switching between fiat and cryptocurrency.

The stablecoin market is likely to continue growing, particularly in low-interest-rate environments, when non-interest-bearing stablecoins are more competitive with bank deposits. However, given the low use of stablecoins in payments, we believe the market's growth is more constrained in the short to medium run. According to the Federal Reserve Payments Study (2022), the value of instantaneous transfers with alternative payment methods, which include peer-to-peer and mobile wallet payments, reached $0.82 trillion in 2022. Assuming the high growth of 38.2% observed between 2021 and 2022, the market for immediate payments could reach $5.72 trillion in 2028. If stablecoins conquered 10% of immediate payments, which is optimistic, and if one stablecoin was used for each dollar of trading volume, market's size would be $572 billion. Thus, we took the recent JP Morgan projection as a baseline in our scenario analysis.

To project deposits, we use the Congressional Budget Office (2025) nominal gross domestic product (GDP) growth for the years 2025-2028. Citi's projection is not adjusted to 2028; it remains as of 2030. If it were adjusted to 2028, e.g., by assuming linear growth, stablecoin market capitalization would be $2,494 billion in 2028 and the impacts reported in Table 3 be reduced by a third. However, we observed vastly different estimates of the current size of the market, adding uncertainty to this calculation.

Table 1: Stablecoin market capitalization and deposit projections, $ billion

Variable	**March 2025**	**December 2028**
Baseline USDC market capitalization	58.5	500.0·USDC share
Extreme USDC market capitalization	**58.5**	3,700.0·USDC share
Deposits, all banks	18,119.1	20,949.4
Deposits, non-community banks	15,777.1	18,241.6
Deposits, community banks	2,342.0	2,707.8

8 See https://www.citigroup.com/rcs/citigpa/storage/public/GPS_Report_Blockchain_Digital_Dollar.pdf.

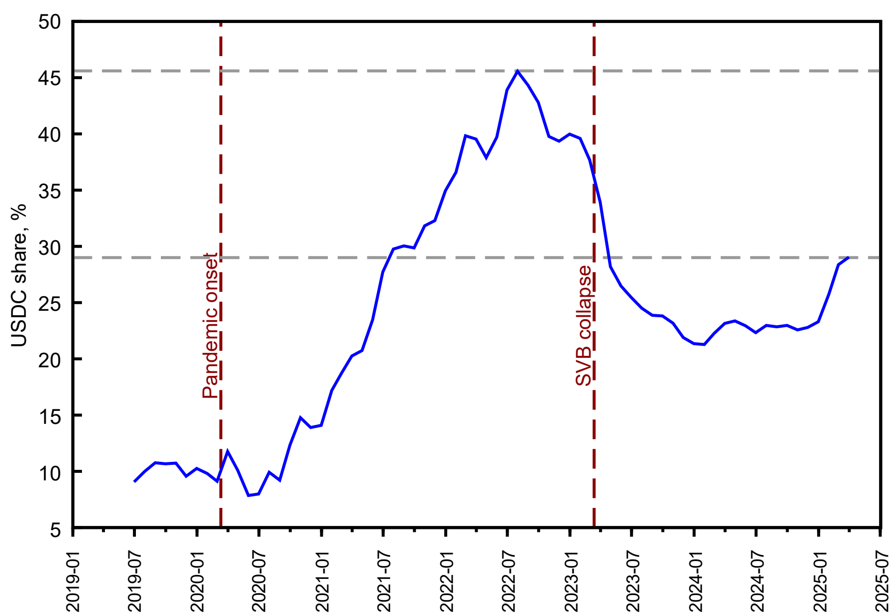
9 See Reuter's article from July 3, 2025 at https://www.reuters.com/business/finance/jpmorgan-wary-stablecoins-trillion-dollar-growth-bets-cuts-them-by-half-2025-07-03.

3.2. USDC share of USD-pegged stablecoin market

Figure 4 shows the share of USDC in the estimated combined market capitalization of USDC and USDT. The USDC share increased between 2019 and 2022 and peaked at 45.7% in July 2022. USDC market share has since fluctuated between 20% and 30%, and it averaged 27.7% in 2025. We adjusted this estimate to 25% to account for other USD-pegged stablecoins.

As the USDC share is likely to grow, we also considered a scenario with a USDC share of 40%. USDC market capitalization fell after the SVB failure because about eight percent of USDC's cash reserves, or $3.3 billion, were on deposit at SVB, according to the S&P Global 2023 USDC Stablecoin Stability Assessment. By contrast, USDT's market capitalization, shown in see Figure 2, remained broadly unchanged during the same period. Following the FDIC's systemic-risk decision to guarantee all SVB deposits, and USDC's subsequent consolidation of cash reserves at global systemically important banks, redemption pressure decreased substantially. USDC's market capitalization has since risen above its pre-SVB collapse level and its market share has increased to just under 30%.

Figure 4: USDC share of the USDC and USDT combined market



3.3. Composition of USDC reserves

The composition of the USDC Reserve Fund (see Table 2) is important in our analysis, as some portion may be deposited back into the US banking system.[10] It is reported in the monthly

[10] In the terminology of Liao and Carmichael (2022), our analysis focuses on the regime in which stablecoin reserve funds are held as cash-equivalent assets within the banking system. Under this framework, the authors suggest that the effect on bank deposits ranges from negative to neutral. By contrast, in an alternative regime where stablecoins are structured as "transactional deposits" and classified as retail deposits, no impact on bank deposits is expected.

attestation reports, as required by the NY DFS.[11] As of March 31, 2025, 89.2% of the Reserve Fund is used to fund the USDC Reserve Money Market Fund, with the securities held in the custody account at Bank of New York Mellon.[12] Most of the MMF is comprised of short-term reverse repurchase agreements and Treasury bills with short remaining maturity.[13] In reverse repurchase agreements, the USDC Reserve Fund purchases highly liquid assets from the US Treasury and agrees to sell them back for a premium over the purchase price.

The proceeds from stablecoin issuance are used to purchase the Treasury securities discussed earlier. If the Treasury recirculates those funds back into the banking system, they will re-emerge as bank deposits again. If the Federal Reserve begins treating digital cash as part of the money supply, it will need to offset the rise in digital cash through open-market operations. As a result, aggregate bank deposits would be unlikely to increase.

The remaining 10.2% of the Reserve Fund is cash deposited with large banks in the United States.[14] This cash transforms a retail or institutional deposit into a wholesale deposit. It is treated less favorably from a bank's liquidity point of view; it adds to the cost of deposits. In April 2025, it was $7.3 billion or 11.8% of the USDC Reserve Fund.

Table 2: Composition of USDC Reserve Fund, $ billions

Security	**January 2025**	**February 2025**	**March 2025**	**April 2025**
US Treasury securities	20.8	22.0	24.9	25.5
US Treasury repurchase agreements	27.6	27.5	30.8	31.4
Net cash in the reserve MMF	-0.1	0.8	-1.1	-1.7
Cash at regulated financial institutions	6.0	7.0	6.5	7.3
Total	**53.3**	**56.3**	**60.0**[15]	**61.5**
US Treasury securities	39.0%	39.1%	41.4%	41.4%
US Treasury repurchase agreements	51.8%	48.8%	51.3%	51.1%
Cash at regulated financial institutions	**11.3%**	**12.4%**	**10.8%**	**11.8%**

11 See monthly attestation reports at https://www.circle.com/transparency#stability. Last accessed on June 30, 2025.

12 The share of cash in the USDC Reserve Fund was 11.3 % in January 2025, 12.4 % in February, and 10.8 % in March.

13 It is a Securities and Exchange Commission-registered government MMF, see the fund's latest (May 2025) factsheet available at https://www.blackrock.com/cash/literature/fact-sheet/circle-reserve-fund-institutional-fact-sheet.pdf; last accessed on June 30, 2025.

14 See Circle Internet Group's S-1 filing at https://www.sec.gov/Archives/edgar/data/1876042/000119312525070481/d737521ds1.htm dated April 1, 2025 and last accessed on June 30, 2025. It reports that approximately 15% of the Reserve Fund was cash deposited at the US Globally Systemically Important Banks.

15 In Table 1, we used the USDC market capitalization of $58.5 billion for March 2025, representing monthly average, whereas $60.0 billion is the value observed on March 31, 2025.

3.4. Stablecoin adoption scenarios

Suppose stablecoin purchases impact deposits proportionally at each bank, i.e., each bank loses a pro rata share of its deposits.

As of March 31, 2025, total deposits at all commercial banks in the United States were $18.1 trillion. Non-community banks held $15.8 trillion, or 87.1% of the total deposits. The share of cash in the Reserve Fund, 10.8%, is deposited back into the banking system.

Importantly, the scenarios below assume that the USDC adoption is funded by US customers only. Based on anecdotal evidence and in our judgement, US customers account for significantly less than 50% of the USDC ownership.

3.4.1. Baseline adoption scenario

Table 3 reports the net impact on bank deposits under the $500 billion scenario. If the USDC market share is 25%, its market capitalization would reach $125 billion, an increase of $66.5 billion. US bank customers spend $66.5 billion of their deposits to purchase USDC stablecoins,[16] and the Reserve Fund receives $66.5 billion. Assuming banks are impacted proportionally to the size of their deposits, non-community banks lose $57.9 billion of deposits and small banks see an outflow of $8.6 billion. As a result, $7.2 billion end up as cash in the Reserve Fund, which is deposited back into non-community banks, reducing their outflow to $50.7 billion or 0.3 percent of the total deposits.

If the USDC share is 40%, US bank customers spend $141.5 billion to purchase additional stablecoins. The impact on non-community and community bank deposits is then just 0.6% and 0.7 percent, respectively.

Table 3: Deposit impact in $500 billion stablecoin adoption scenario with 25% and 40% USDC share, $ billions

Bank group	Deposits	Net outflow	Net outflow, %	Net outflow	Net outflow, %
USDC share		**40%**		**25%**	
All banks	**20,949.4**	**126.2**	**0.6%**	**59.3**	**0.3%**
Non-community banks	18,241.6	107.9	0.6%	50.7	0.3%
Outflow		123.2		57.9	
Inflow of reserve funds		-15.3		-7.2	
Community banks	2,707.8	18.3	0.7%	8.6	0.3%

16 In our experiment, purchases of USDT, which circulates primarily outside the United States, would be financed by foreigners. Purchases of the DAI stablecoin do not affect deposits, as it is backed primarily by Ether and Bitcoin according to the S&P Global report available at https://www.spglobal.com/_assets/documents/ratings/research/101610554.pdf and last accessed on June 30, 2025.

3.4.2. Extreme adoption scenario

Now assume that stablecoin adoption reaches $3.7 trillion, as in the Citi Institute's bull case scenario. If the share of USDC remains at its historical level of 25% or increases to 40%, all bank customers spend either $866.5 billion or $1,421.5 billion of deposits, respectively, to purchase USDC stablecoins. Community bank customers spend their pro-rata share, which is $112.0 billion or $183.7 billion, respectively. Non-community banks lose less than their pro-rata share of deposits because a portion of the Reserve Fund is returned to these banks.

Table 4 reports the net impact on bank deposits. The largest impact is in the case with a 40% USDC market share: 5.9 percent and 6.8 percent on non-community and community banks, respectively. We believe 6.8 percent is the upper bound on all potential community bank impact estimates due to an extreme stablecoin adoption scenario and assumed USDC market share.

Table 4: Deposit impact in $3.7 trillion stablecoin adoption scenario, $ billion

Bank group	Deposits	Net outflow	Net outflow, %	Net outflow	Net outflow, %
USDC market share		**40%**		**25%**	
All banks	**20,949.4**	**1,268.2**	**6.1%**	**773.0**	**3.7%**
Non-community banks	18,241.6	1,084.4	5.9%	661.0	3.6%
Outflow		1,237.8		754.5	
Inflow of reserve funds		-153.3		-93.5	
Community banks	2,707.8	183.7	6.8%	112.0	4.1%

4. Data

4.1. Community bank deposits

We used the publicly available FR-Y9C ("call report") data to construct a series for bank deposits. We complemented this data with the Federal Reserve's Table H.8 "Assets and Liabilities of Commercial Banks" reported weekly.

To validate the entire dataset, we constructed quarterly "total deposits" series of all commercial banks and compared that with the quarterly H.8 series available via Federal Reserve Economic Data (FRED) database. The discrepancy between the H.8 series and our aggregate was within one percent.

To construct the monthly series, we assumed that monthly growth of community bank deposits was proportional to small bank deposits, as reported in the Federal Reserve's table H.8.[17]

As an alternative, we used the total assets of FDIC-insured institutions and the share of community banks from the FDIC quarterly banking profile dataset. Using the ratio of deposits to

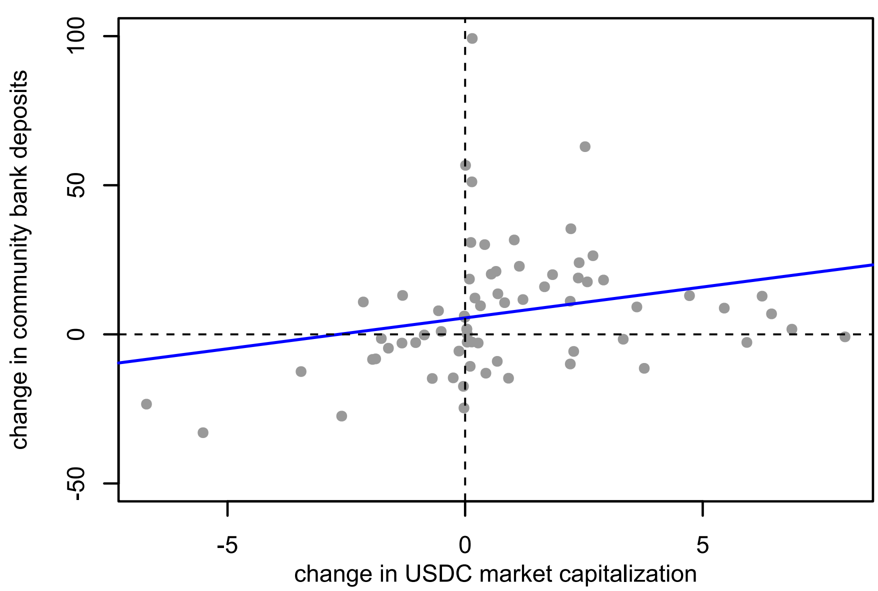
[17] Denote community bank and proxy group deposits by Dcb and Dproxy, respectively. Community bank deposit growth between month t and t+1 of quarter q is: $D_{cb,t+1}=D_{cb,t}\cdot(D_{proxy,t+1}/D_{proxy,t})\cdot(D_{cb,q+1}/D_{cb,q}\cdot D_{proxy,q}/D_{proxy,q+1})^{1/3}$.

assets for community banks, we computed quarterly series for community bank deposits. The difference in the monthly community bank deposits estimates based on the baseline and alternative methodologies is less than one percent for all months except February 2023, for which it was 1.2 percent.

4.2. Stablecoin market size versus community bank deposits

One of the concerns of this analysis is that adoption of stablecoin is still small relative to deposits. As of March 31, 2025, community bank deposits were approximately 40 times larger than the USDC market capitalization. At the same time, deposits are more stable. In fact, dollar changes in stablecoin market capitalization are comparable to dollar changes in community bank deposits. Figure 5 shows that there is a positive association between the two variables. Deposits are expected to change by $2.1 billion for each $1 billion change in USDC market capitalization, which is very different from the 40:1 ratio of community bank deposits to USDC market capitalization. We conclude that measuring the impact of stablecoin adoption on community bank deposits is viable despite the vastly different levels.

Figure 5: Monthly changes in community bank deposits versus stablecoin market capitalization, $ billions



4.3. Macroeconomic data

We considered several macroeconomic variables meant to represent all aspects of the economy: income, employment, interest rates, and financial markets. Below, we describe the potential economic mechanisms that drive the relationship between deposits and key macroeconomic variables. Including only variables with a clear rationale that helps avoid spurious models. The expected relationships could be used to select between models with similar performance.

Economic activity. Deposits are positively correlated with various measures of economic activity, since bank deposits are used to intermediate and fund a large share of economic transactions. However, when interest rates are high this relationship may be reversed as deposits are invested. We include the industrial production index and the economic activity index produced by the Federal Reserve Board and the Federal Reserve Bank of Dallas, respectively, which are contemporaneous measures of US economic activity. We also included the Brave-Butters-Kelley Leading Index for the United States. It is constructed from a panel of 490 monthly measures of real economic activity and quarterly real GDP growth.

Economic uncertainty. During periods of increased economic uncertainty, households and firms increase their savings for precautionary reasons, which means increasing bank deposits. We use the Economic Policy Uncertainty index, a backward-looking news-based indicator of policy uncertainty, and the VIX index, a widely used measure of volatility in US equity markets.

(Un)employment. During the COVID-19 pandemic, massive fiscal stimulus and reduced consumption driven by lockdowns resulted in increased savings and, hence, a positive correlation between unemployment and bank deposits. In normal times, deposits are negatively correlated with unemployment. We analyze initial unemployment claims (weekly), which is a high frequency leading indicator of job loss, and monthly unemployment.

Interest rates. When short-term rates increase in response to a monetary tightening, bank deposits tend to go down, which is the deposit channel of monetary policy. Banks typically do not pass changes in the policy rate through to deposit rates, widening the spread between the market interest rates and deposit rates. As a result, they lose some portion of their deposits to other investments, such as MMFs. That is, we expect a negative relationship between interest rates and deposits.

Similarly, increases (or decreases) in long-term interest rates should negatively (or positively) affect deposits, except they affect mostly time and savings deposits.

We use the Effective Federal Funds Rate, and constant maturity three-month and 10-year Treasury rates.

Financial markets. As financial market performance improves, deposits decline in search of better yields. We use the S&P 500 stock market index to measure the performance of the US equity markets.

Public debt. Federal borrowing proxies the pandemic-era spending and relief programs. Stimulus funds ultimately flew into private balance-sheets, appearing in bank deposits and potentially in stablecoin holdings.

Table A.1 in the Appendix lists all data sources.

5. Model of stablecoin adoption impact on US bank deposits

We built a model for deposits with stablecoin adoption as a driving force. Stablecoin adoption is measured by USDC market capitalization. The analysis is performed with a monthly series of community bank deposits. The set of explanatory variables includes indicators of economic activity available at monthly frequency and described in the previous section.

Trending series, such as the industrial production and stock market indexes, were transformed logarithmically. Next, all data was differenced. Finally, we included one-, two-, and three-month lags of each variable, including deposits.

Importantly, USDC had meaningful market capitalization only from mid-2019. Since 2019, the US economy has experienced two key stress periods: the Covid-19 pandemic (the “Pandemic”) and the Silicon Valley Bank (“SVB”) collapse.[18] During the Pandemic, government support contributed to the growth of deposits and the low-interest rate policy prompted investment in stablecoins as a vehicle for investing in other crypto assets. Both deposits and stablecoin adoption grew

[18] Arguably, the unprecedented inflation that started in 2022 is another stress event. “Liberation” trade tariffs were introduced in April 2025, i.e., outside our sample period.

significantly. During the SVB collapse, confidence in midsize banks was shaken, prompting deposit withdrawals. At the same time, confidence in USDC stability was threatened because a significant portion of the Reserve Fund was held in the now failed SVB. Both deposits and stablecoin adoption declined. The co-movement of deposits and stablecoin adoption was driven by external (to our modeling exercise) factors during both stress episodes.

We dealt with the SVB collapse by including an indicator for March 2023 when the collapse triggered a brief de-pegging of USDC, as SVB held a significant portion of USDC reserves, and there was a significant reduction in USDC market capitalization.

To address the unique dynamics of the pandemic period, we examine the allocation of US household and NPO assets between community bank deposits and stablecoins. The substantial wealth accumulation observed during the early stages of the Covid-19 pandemic may have supported both deposit growth and stablecoin adoption. As of March 31, 2025, community bank deposits accounted for approximately 1.38 percent of total household and NPO assets, whereas allocations to USDC stablecoins remained below 0.03 percent.[19] Stablecoins have thus established a niche within the US wealth portfolio, potentially displacing other asset classes such as payment firm balances (e.g., PayPal), traditional bank deposits, and arguably stablecoin's closest substitute, money market funds. In this context, we investigated whether growth in USDC market capitalization is associated with a decline in the share of community bank deposits in the US wealth portfolio.

Figure 6: Assets of US households and non-profit organizations

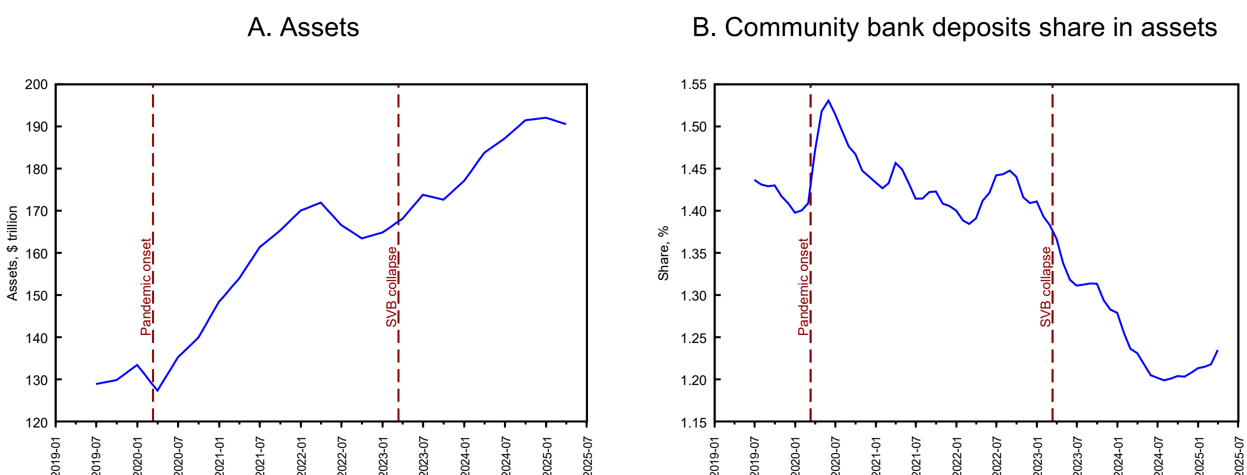


Figure 6 plots the total assets of US households and NPOs and the ratio of deposits to assets. Importantly, assets increased faster than deposits in community banks, and the ratio of deposits to assets trended down. For this reason, we analyzed changes in the ratio rather than the ratio level. To ensure robustness of our analysis, we also analyzed the ratio level by including a linear time trend.

The hypothesis is that stablecoin adoption has a negative impact on community bank deposits, implying that the stablecoin coefficient is negative. The coefficient could be zero, or statistically indistinguishable from zero. In this case, we would say that the impact of stablecoins on deposits cannot be identified statistically. The coefficient could also be positive. In this case, stablecoin adoption is associated with an increase in deposits. This is possible for the following reasons. First, there could be another unmeasurable and exogenous force that drives both deposits and

[19] The USDC share of 0.03 percent is an upper bound, as the US households do not hold the whole balance.

stablecoin adoption up. For example, a shift out of US equity or US Treasury securities could benefit both community bank deposits and stablecoin adoption. Second, there may be economic benefits from adopting stablecoins in the form of faster and cheaper transactions, as discussed in the President's Working Group (2021) report. As the economy becomes more efficient and grows, increased income channeled into deposits may offset outflows into stablecoins.

5.1. Methodology

Our choice of methodology is restricted by the short analysis window, as USDC was introduced only recently: from June 2019 until March 2025.[20] Additionally, the period is rather unusual, encompassing the onset of the COVID-19 pandemic and unprecedented governmental support, the SVB collapse and brief loss of confidence in mid-size banks, and a full cycle of optimism-pessimism toward stablecoins.

Our baseline is an autoregressive distributed lag model:

Change in deposits in month t = β_0

+ β_a · *Change in deposits in month t-1*

+ β_1 · *Change in USDC market cap. in month t*

+ β_2 · *Change in USDC market cap in month t-1*

+ β_3 · *Change in USDC market cap in month t-2*

+ β_m · *Growth of/Change in macroeconomic variables in month t, t-1, t-2, t-3*

+ β_i · *SVB collapse and seasonality indicators + error.*

Under this specification, a $1 increase in stablecoin market capitalization leads to a $\beta 1$ increase (decrease if negative) in deposits in the same month. The **cumulative effect of stablecoin adoption**, $\beta_1+\beta_2+\beta_3$, takes three months to materialize fully.

The model includes a dummy for the SVB collapse (i.e., March 2023 indicator) and monthly indicators to remove any potential seasonality.[21]

We assume that stablecoin adoption is exogenous in this analysis, i.e., deposits and stablecoin market capitalization are not driven by unobserved common forces. Only in this case, the effect of stablecoins $\beta_1+\beta_2+\beta_3$ measures a causal effect rather than correlation between deposits and stablecoin market capitalization. Intuitively, this assumption means that an increase in deposits would not prompt adoption of stablecoins, but adoption of stablecoins could impact deposits.

We developed models with and without the autoregressive term multiplying βa. Including an autoregressive term in macroeconomic specification, such as we consider here, typically dampens the effects of other variables (see Kapinos and Mitnick (2015) and Kupiec (2018)). Performing the analysis without the autoregressive term ensures we do not underestimate the effect of USDC market capitalization.

Next, the governmental support following the Covid-19 pandemic lockdowns led to an unprecedented accumulation of deposits. Some of the governmental support found its way into the stablecoin market, creating a positive co-movement with deposits. For this reason, we normalize deposits by the total US household and NPO total assets, which grew significantly during the pandemic. Thus, the adjusted hypothesis questions whether stablecoin adoption

20 The latest call reports that we use to compute community bank deposits are for Q1 2025. The beginning of the period is when USDC market capitalization exceeded $1 billion.

21 In most specifications, only quarter-end months – March, June, September, December – had a statistically significant effect. However, all monthly indicators were included for comparability across alternative model specifications.

affects the share of wealth allocated toward community bank deposits. This approach deals with unobserved forces that increase US wealth and potentially lead to an increase in both deposits and stablecoin adoption. The empirical model specification is:

Change in deposits/total assets ratio in month t = β_0

+ β_a *· Change in deposits in month t-1*

+ β_1 *· Change in USDC market cap. in month t*

+ β_2 *· Change in USDC market cap in month t-1*

+ β_3 *· Change in USDC market cap in month t-2*

+ β_m *· Growth of/Change in macroeconomic variables in month t, t-1, t-2, t-3*

+ β_i *· SVB collapse and seasonality indicators + error.*

Under this specification, a $1 billion increase in stablecoin adoption leads to a $\beta_1+\beta_2+\beta_3$ change in deposits-to-assets ratio. As before, we include one and two-month lags to capture any potential delayed effects. The dollar cumulative effect on community bank deposits is:

Change in community bank deposits per $1 of stablecoin adoption = $(\beta_1+\beta_2+\beta_3)$·Assets(T).

To find the set of macroeconomic variables that best predict community bank deposits, we computed all possible specifications satisfying all the following rules:

- Each model includes up to three macroeconomic factors,
- Macroeconomic factors could have an effect delayed up to three months, and
- Macroeconomic variables must have a non-zero effect with 90% statistical confidence in a model for deposits controlling for changes in stablecoin market capitalization, the SVB collapse, and seasonality.[22] This condition ensures all included macroeconomic variables have at least statistically marginal predictive power of their own, not only in combination with other macroeconomic variables.

The limits on the number of macroeconomic factors and response delay are judgmental and driven by data size. Under the selection criteria described above, the analyses presented in the following sections use between 27 and 31 macroeconomic variables. As residual autocorrelation is the main concern in a time series analysis, the Breusch-Godfrey test with up to three monthly lags was performed for each model candidate. In what follows, we use a statistical confidence level of 95%, a commonly used level in the industry. Our choice of model fitness is the adjusted R-squared. In the banking industry, an adjusted R-squared above 0.50 is generally regarded as strong, especially when the dependent variable is a monthly change.

The set of **admissible model specifications** must satisfy three conditions:

1. Macroeconomic controls are selected as described above.
2. The Breusch-Godfrey test fails to reject the hypothesis of no residual autocorrelation.
3. At least one USDC coefficient is statistically different from zero.

In principle, one could also constrain the stablecoin coefficient to lie between -1 and 0, because purchasing one dollar-pegged stablecoin can reduce community bank deposits by, at most, one dollar. However, we treated USDC as a proxy for the entire USD-denominated stablecoin market, thereby absorbing the impact of other stablecoins into the USDC term. Therefore, we did not impose a bound on the estimated stablecoin effect.

[22] Variable X lags 0 through 3 are considered separate variables.

Our approach – constructing all admissible regression models of a given complexity and averaging their outcomes – closely parallels ensemble methods in machine learning and model averaging in econometrics. The core principle is that averaging predictions from multiple models ("weak learners") reduces variance relative to relying on any single model (Breiman, 1996). Each admissible regression specification, incorporating lagged community bank deposits and various macroeconomic variables, can be viewed as a weak learner. By averaging across this exhaustive set, we lower estimation error without introducing bias; that is, without affecting the mean estimate.

Rather than selecting a single "best" model, model averaging addresses model uncertainty by combining many plausible specifications. This mitigates the risk of overly optimistic or erroneous conclusions that can arise from choosing an incorrect model in isolation. It also produces wider credible intervals (the analogue of confidence intervals), which explicitly account for model uncertainty. It is desirable because it reduces the probability of finding spurious statistical significance (Eicher et al., 2011).

The approach relies on two conditions: (i) each included model must be a weak learner meaning it outperforms a constant prediction based on the unconditional mean, and (ii) residuals across models must not be perfectly correlated. We ensure condition (i) by requiring that macroeconomic variables included in a model exhibit at least marginal correlation with changes in community bank deposits. Condition (ii) holds because each model features a distinct set of explanatory variables and collinearity tests reveal no problematic overlap. Under these conditions, Breiman's (1996) result applies: averaging K forecasts reduces variance approximately by a factor of 1/K

Applying higher weights to better-performing models can further reduce estimation error (Hansen, 2007). Our requirement is to avoid spurious models and to exclude models in which all three stablecoin variables are insignificant. This ensures that there is no evidence that included models are potentially biased, an implicit assumption in ensemble modeling, and the estimated effect is not biased by including potentially large but insignificant estimates.

Empirically, both simple and optimally weighted model averages often outperform the single best individual model in macroeconomic forecasting (Stock and Watson, 2004; Timmermann, 2006).

5.2. Results

5.2.1. Static modeling of changes in community bank deposits

We estimated 4,960 candidate models with the adjusted R-squared spanning 0.261–0.673. Within the set, 2,269 models have at least one statistically significant coefficient on contemporaneous or lagged changes in USDC market capitalization. Yet every specification exhibits pronounced residual autocorrelation, indicating that important explanatory factors remain omitted and that the USDC coefficients are likely biased.

We nevertheless attempted this parsimonious static model first because adding lagged dependent terms, as done in the following subsection, attenuates the coefficients on contemporaneous regressors, including the stablecoin variable. This results from high persistence of monthly and lower frequency macroeconomic data. The lagged dependent variable often has strong prediction power, leaving a minimal role for other variables. These results confirm that the initial positive relationship is likely spurious unless the lagged change in community bank deposits is also included.

5.2.2. Dynamic modeling of changes in community bank deposits

Including a one-month lag of the dependent variable, the change in community bank deposits markedly attenuates the apparent influence of stablecoin growth. In most specifications, the coefficients on contemporaneous and lagged changes in USDC market capitalization lose statistical significance. At the same time, the lag term also mitigates residual autocorrelation: 225 specifications both pass the Breusch–Godfrey test and retain at least one significant USDC coefficient. Their adjusted R-squared values range from 0.608 to 0.806: unsurprisingly high, given that including the lagged dependent variable alone (and no macro factors) already sets a baseline of 0.589. Adding macroeconomic controls lifts predictive power by as much as 0.217. Because we consider only macroeconomic variables that are at least marginally associated with changes in the community bank deposits, the minimum adjusted R-squared increases. As a result, each candidate model qualifies as a weak learner, as discussed in the methodology section.

For these 225 "admissible" models, the cumulative stablecoin effect $\beta_1+\beta_2+\beta_3$ of the changes in USDC market capitalization ranges from -2.20 to 1.53, with a mean of 0.444. The 95% interval [-0.863, 1.338] contains zero; so, the cumulative stablecoin effect is not statistically significant (see Table 5). The 5%-trimmed mean is 0.469, which is close to the standard mean and shows the results are not driven by few extreme estimates.

If we ignore the significance of individual USDC coefficients while still excluding likely spurious models by keeping only specifications that pass the autocorrelation test, the mean cumulative effect $\beta_1+\beta_2+\beta_3$ falls to -0.125 and the 95% interval [-1.327, 1.029] which again includes zero and is statistically insignificant.

Note that our significance criterion for USDC variables is deliberately modest. We required at least one of the contemporaneous, one-month-lagged, or two-month-lagged changes to be significant, and we discarded specifications with no significant USDC term. This strikes a balance between statistical power and the number of admissible models. Demanding significance of the cumulative effect itself would be overly restrictive.

Relaxing the selection criteria further and retaining all specifications has limited impact on the outcome: the mean cumulative effect becomes -0.159, with a 95% interval of [-1.351, 0.940].

Although the shift in the mean from 0.444 to -0.125 is economically meaningful, modest data updates could easily reverse its sign. This sensitivity motivated us to explore alternative empirical specifications.

Table 5: Summary of the stablecoin effect in models with community bank deposits as dependent variable

Stablecoin cumulative effect, $\beta_1+\beta_2+\beta_3$	**95% interval**	**Mean**
Admissible models	[-0.863, 1.338]	0.444
Models passing autocorrelation test	[-1.327, 1.029]	-0.125
All models	[-1.351, 0.940]	-0.159

5.2.3. Dynamic modeling of changes in community bank deposits to household assets ratio

We re-specified the dependent variable as the ratio of community-bank deposits to the aggregate financial assets of US households and NPOs obtained from the Federal Reserve's Flow-of-Funds table Z.1 (see Figure 6). The data frequency is quarterly, and we interpolated monthly values linearly. Applying the same model-selection protocol, we identified 27 macro-financial variables that satisfy our admissibility criteria, generating 3,276 candidate models with adjusted R-squared values ranging between 0.543 and 0.789. The number of candidate specifications changed because the set of macroeconomic variables that show at least a marginal association with the deposits-to-assets ratio was reduced from 31 to 27. Adding macroeconomic controls lifts predictive power by as much as 0.236. In this analysis, only the non-adjusted R-squared increases, which is sufficient for each candidate model to qualify as a weak learner.

Of these, 766 specifications (i) pass the Breusch–Godfrey residual-autocorrelation test with up to three monthly lags and (ii) feature at least one statistically significant coefficient on contemporaneous or lagged changes in USDC capitalization. Despite using fewer macroeconomic controls, this revised framework yields far more admissible specifications than the earlier analysis, suggesting greater robustness.

The macroeconomic variables that most often enter these admissible models are changes in the BBK leading indicator (lagged one month, in 40.5% of admissible models, negative effect); return on S&P 500 (lagged one month, 23.5%, negative effect); growth in the industrial production index (contemporaneous negative effect, 16.4%); changes in VIX (lagged two months, positive effect, 16.4%); and growth of public debt (contemporaneous negative effect, 13.7%). All have the expected sign, and the 95% intervals of the BBK leading index, industrial production, and public debt do not include zero meaning that their effects are statistically significant.

Table 6 summarizes the results. As we modeled the deposits-to-assets ratio, the cumulative effect needs to be multiplied by the level of assets:

Change in community bank deposits per \$1 of stablecoin adoption = $(\beta_1+\beta_2+\beta_3) \cdot$ \$190,557 billion.

Table 6: Summary of the stablecoin effect in models with community bank deposits per total US household and NPO assets as dependent variable

Stablecoin cumulative effect	**95% interval**	**Mean**
$\beta_1+\beta_2+\beta_3$	$[-6.54, 3.81] \cdot 10^{-4}$	$-1.39 \cdot 10^{-4}$
Change in community bank deposits per \$1 of stablecoin adoption		
Admissible models	[-1.25, 0.73]	**-0.265**
Models passing autocorrelation test	[-1.08, 1.45]	0.060
All models	[-1.09, 1.37]	0.017

Although the average cumulative stablecoin coefficient is negative, its 95% interval and the (unreported) inter-quartile range include zero, and the effect is statistically insignificant. Among all analyses, it is the most significant effect, as approximately 65% of admissible models imply a negative cumulative effect. In economic terms, the point estimate implies that community banks would forgo \$265 million of deposits for each \$1 billion increase in stablecoin capitalization. The 5% trimmed mean is identical to the standard mean, further indicating that the results are not driven by a few extreme estimates. Requiring each candidate model to have an adjusted R-squared higher than that of a model without macroeconomic regressors leaves the estimated cumulative effect unchanged at –0.264. If we disregarded statistical significance and kept every specification that passed the autocorrelation test, the average cumulative effect of USDC adoption would be 0.017. Adding these insignificant estimates changes the average effect unpredictably.

5.2.4. Community bank customers

To characterize the retail customer base of community banks, we analyzed Home Mortgage Disclosure Act data on mortgage-loan applications. Metropolitan statistical areas ("MSAs") are ranked by applicant count. For each MSA, we compute the share of total applicants served by community and non-community banks. Approximately 26% of community-bank applicants originate in non-metropolitan counties, compared with fewer than 12% for non-community banks, as shown in the right panel of Figure 7. Thus, non-community banks draw more heavily from large urban areas, where younger populations are concentrated.

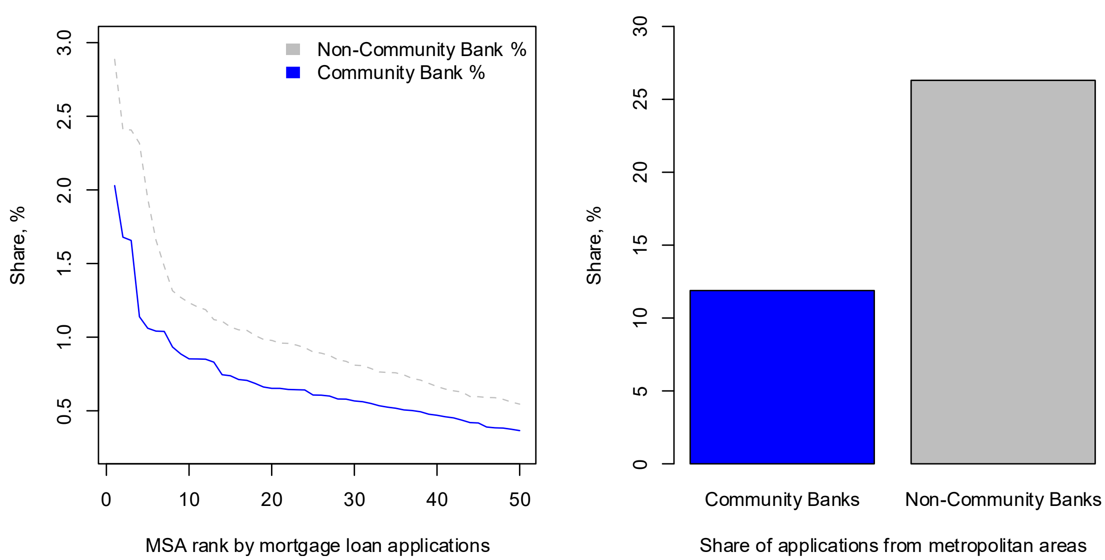
Demographic evidence supports this pattern. The US Department of Agriculture (USDA 2025) reports that non-metropolitan counties have an older age profile and have lost a substantial share of residents aged 25–34 over recent decades.

At the same time, a recent survey by Gemini (2024) found that 51% of US Generation Z (born 1995 or later) and 49% of millennials (born 1981–1994) own digital assets (Gemini 2024).

Taking a different perspective, note that deposits at community banks with less than $1 billion in total assets have stagnated during the study period, yet still represented 39.8% of all community bank deposits as of March 2025, see Figure 3. According to the FDIC's 2020 Community Bank Study, these banks are often located in counties with declining, and therefore aging, populations, which are less likely to adopt stablecoins.

These facts help offer one explanation for the weak empirical relationship between stablecoin adoption and community-bank deposit growth. The cohorts most inclined to adopt stablecoins are disproportionately located in large metropolitan areas that are primarily served by non-community banks.

Figure 7: Distribution of bank customers by metropolitan area size, %



6. Concluding remarks

This study assesses how stablecoin adoption affects community-bank deposits. We began with model-free scenarios in which every dollar spent on stablecoins reduces deposits dollar-for-dollar. Even under this extreme assumption, the impact to community banks is modest. We observe an impact of approximately **seven percent** under extreme projections for stablecoin adoption and **less than one percent** under our base case for stablecoin adoption.

We then estimated a fully specified econometric model that links monthly changes in community-bank deposits to contemporaneous and lagged changes in USDC market capitalization (our proxy for adoption), up to three macro-financial controls, and seasonal dummies. Because the sample period was short and dominated by extraordinary events, we exhaustively tested all admissible specifications.

We performed three types of analyses and found the cumulative effect of stablecoin adoption either positive and insignificant or negative and insignificant. That is, we did not find robust evidence of a substitution effect between stablecoin adoption and community bank deposits.

- **Baseline "static" models (no lagged community bank deposits term)**
  Result: No usable estimates. We found evidence of serial correlation in model residuals in all candidate models, indicating misspecification.

- **Dynamics models (include lagged community bank deposits terms)**
  Result: Positive and insignificant effect.

- **Scaling deposits by household and nonprofit organization assets**
  Result: Negative and insignificant effect.

A longer, more "normal" time series, or customer-level panel data that trace stablecoin purchases back to originating banks, should improve identification. Future work could exploit differences in state posture regarding digital assets (e.g., crypto-friendly Wyoming versus more restrictive Massachusetts) to isolate the stablecoin-deposit link. Finally, because both stablecoins and bank deposits are small components of a broader, dynamically rebalanced portfolio, shifts in returns on other asset classes could drive simultaneous outflows from both. Extending the analysis to capture these portfolio dynamics is an essential next step.

7. Bibliography

Agapova, Anna, and Denis Davydov, 2025, "Substitutability of Bank Deposits and Money Market Mutual Funds: Implications for Bank Lending," FEB-RN Research Paper Series.

Bindseil, Ulrich, and Richard Senner, 2024, "Destabilisation of bank deposits across destinations: assessment and policy implications," European Central Bank Working Papers 2887. Available at https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2887~845e136b3b.en.pdf, last accessed on June 30, 2025.

Brave, Scott A., R. Andrew Butters, and David Kelley, 2019, "A new 'big data' index of US economic activity." Economic Perspectives, Federal Reserve Bank of Chicago, Vol. 43, No. 1. DOI: https://doi.org/10.21033/ep-2019-1.

Breiman, Leo. 1996. "Bagging Predictors." *Machine Learning*, 24 (2), pages 123–140.

Breusch, T. S., 1978, "Testing for Autocorrelation in Dynamic Linear Models." *American Economic Review,* 68(3).

Citi Institute, 2025, "Digital Dollars: Banks and Public Sector Drive Blockchain Adoption." Available at https://www.citigroup.com/rcs/citigpa/storage/public/GPS_Report_Blockchain_Digital_Dollar.pdf, last accessed on June 30, 2025.

Eicher, Theo S., Chris Papageorgiou, and Adrian E. Raftery. 2011. "Default Priors and Predictive Performance in Bayesian Model Averaging, with Application to Growth Determinants." *Journal of Applied Econometrics*, 26(1), pages 30–55.

Federal Deposit Insurance Company, 2020, "Community banking Study." Available at https://www.fdic.gov/resources/community-banking/report/2020/2020-cbi-study-full.pdf, last accessed on June 30, 2025.

Federal Reserve, 2024, "Federal Reserve Payments Study: National Payment Volumes, Detailed Data," NPIPS (CY 2021 and 2022). Available at https://www.federalreserve.gov/paymentsystems/2024-November-The-Federal-Reserve-Payments-Study.htm, last accessed on June 30, 2025.

Gemini, 2024, "State of Crypto Report." Available at https://www.gemini.com/state-of-crypto-2024, last accessed on June 30, 2025.

Godfrey, L. G., 1978, "Testing for Higher Order Serial Correlation in Regression Equations when the Regressors Include Lagged Dependent Variables." *Econometrica,* 46(6).

Hansen, Bruce E., 2007, "Least Squares Model Averaging." *Econometrica,* 75 (4), pages 1175–1189.

Hiltgen, Daniel, 2024, "Charting the Course: A Systematic Exploration of Influences Shaping Money Market Fund Growth," DERA Working Paper.

Hubbard, Carl, 1983, "Money Market Funds, Money Supply, and Monetary Control: A Note," *The Journal of Finance*, Vol. 38(4), pages 1305-1310, DOI: https://doi.org/10.2307/2328029.

Independent Community Bankers of America, 2025, "ICBA Letter to Senate Ahead of GENIUS Act Stablecoin Vote." Available at https://www.icba.org/advocacy/letter-details/icba-letter-to-senate-ahead-of-genius-act-stablecoin-vote, last accessed on June 30, 2025.

Kapinos, Pavel S. and Oscar A. Mitnik, 2015, "A Top-Down Approach to Stress-Testing Banks." FDIC Center for Financial Research Paper No. 2015-02, Available at https://www.fdic.gov/analysis/cfr/working-papers/2015/2015-02.pdf.

Kupiec, Paul H., 2018, "On the accuracy of alternative approaches for calibrating bank stress test models," Journal of Financial Stability, Volume 38, pages 132-146, DOI: https://doi.org/10.1016/j.jfs.2018.08.001.

Liao, Gordon Y. and John Caramichael, 2022, "Stablecoins: Growth Potential and Impact on Banking," Federal Reserve International Finance Discussion Papers 1334. DOI: https://doi.org/10.17016/IFDP.2022.1334.

Morgan, Luke, Anthony Sarver, Manjola Tase, and Andrei Zlate, 2022. "Bank Deposit Flows to Money Market Funds and ON RRP Usage during Monetary Policy Tightening," Finance and Economics Discussion Series 2022-060. DOI: https://doi.org/10.17016/FEDS.2022.060.

Presidential Working Group, 2021, Report on Stablecoins. Available at https://home.treasury.gov/system/files/136/StableCoinReport_Nov1_508.pdf, last accessed on June 30, 2025.

Stock, James H., and Mark W. Watson, 2004, "Combination Forecasts of Output Growth in a Seven-Country Data Set." *Journal of Forecasting,* 23 (6), pages 405–430.S&P Global, 2023, USDC Stablecoin Stability Assessment. Available at https://www.spglobal.com/_assets/documents/ratings/research/101590836.pdf, last accessed on June 30, 2025.

Timmermann, Allan, 2006, "Forecast Combinations." In *Handbook of Economic Forecasting*, edited by Graham Elliott, Clive W. J. Granger, and Allan Timmermann, vol. 1, pages 135–196.

US Department of Agriculture, 2025, Population and Migration." Available at https://www.ers.usda.gov/topics/rural-economy-population/population-migration, last accessed on June 30, 2025.

Xiao, Kairong, 2020, Monetary Transmission through Shadow Banks, The Review of Financial Studies, Volume 33(6), pages 2379-2420.

Appendix A: Data sources

Table A.1 reports the data sources used in our analyses, any transformations, and additional construction steps. Data marked with an asterisk (*) indicates daily series averaged to the monthly level, because the corresponding monthly data is often reported with low precision.

Table A.1: Data, sources, and transformations

Variable code	Variable description	Source	Transformation
ind_prod_index	Industrial Production Total Index, not seasonally adjusted	FRED: https://fred.stlouisfed.org/series/IPB50001N	Log difference
public_debt	Total public debt outstanding	US Treasury: https://fiscaldata.treasury.gov/datasets/monthly-statement-public-debt/summary-of-treasury-securities-outstanding	Log difference
cpi	Consumer Price Index	FRED: https://fred.stlouisfed.org/series/CPIAUCSL	Log difference
initial_jobless_claims	Initial Jobless Claims, weekly	FRED: https://fred.stlouisfed.org/series/ICNSA	Log difference
disposable_income	Disposable Personal Income (DPI)	FRED: https://fred.stlouisfed.org/series/DSPI	Log difference
policy_uncertainty	Daily News-based Economic Policy Uncertainty Index	https://www.policyuncertainty.com/us_monthly.html	Log difference
bitc*	Bitcoin price	FRED: https://fred.stlouisfed.org/series/CBBTCUSD/	Log difference
sp500*	SP500	Yahoo finance	Log difference
vix*	CBOE volatility index	Yahoo finance	Log difference
deposits_cb	Community Bank Deposits	Derived from: https://fred.stlouisfed.org/series/QBPBSTLKDP/ https://fred.stlouisfed.org/series/QBPBSTAS/	Raw difference
usdc_mcap*	USDC Estimated Market Cap	Coinmetrics: https://charts.coinmetrics.io/crypto-data	Raw difference

ffr*	Federal Funds Rate	FRED: https://fred.stlouisfed.org/series/DFF	Raw difference
t3m*	3-month Treasury Rate	FRED: https://fred.stlouisfed.org/series/DGS3MO	Raw difference
t10y*	10-year Treasury Rate	FRED: https://fred.stlouisfed.org/series/DGS10	Raw difference
unrate	unemployment rate	FRED: https://fred.stlouisfed.org/series/UNRATE	Raw difference
BBKMLEIX	Brave-Butters-Kelley Indexes	Indiana University: https://www.ibrc.indiana.edu/bbki	Raw difference
economic_activity*	Weekly Economic Index	Federal Reserve Bank of Dallas: https://www.dallasfed.org/research/wei/series	Raw difference
deposits_all_commercial_banks	Deposits, All Commercial Banks	FRED: https://fred.stlouisfed.org/series/DPSACBM027NBOG	NA
total_assets	Total Assets	Federal Reserve: https://www.federalreserve.gov/releases/z1	We linearly interpolated quarterly series to obtain monthly series

Appendix B: Deposits and adoption of money market funds

Money market funds (MMFs) first appeared in the early 1970s. They were a financial innovation in response to regulatory caps (Regulation Q) placed on the rates that banks could pay on deposits. MMFs grew rapidly during the 1980s-1990s; see Figure B.1. As inflation and market interest rates were increasing during the 1980s, MMFs could offer higher yields than the regulated banks. The ratio of MMFs' total assets to commercial banks' deposits reached the peak of more than 50% in 2001. After the drop that followed the 2007-2009 financial crisis, and the rebound in 2023–2025 (during another period of rising interest rates when MMFs offered higher yields than bank deposits), this ratio fluctuated around 30% to 40%. Currently, their total assets are around $7.4 trillion, compared with the deposits in all commercial banks of around $18.2 trillion.

Xiao (2020) points out that MMFs and commercial banks offer differentiated products: MMFs offer lower transaction convenience compared with commercial bank deposits, and they must instead differentiate themselves by competing on yields. This results in different clienteles: commercial banks attract transaction-oriented depositors who value transaction services but are insensitive to yields. In contrast, MMFs attract a group of yield-oriented depositors.

There are three types of MMFs: (1) prime funds, which invest mainly in short-term private debt instruments; (2) government-only MMFs, which typically hold only obligations of the Treasury, US government agencies, and government-sponsored enterprises; and (3) tax-exempt MMFs, which generally hold municipal securities. Since prime MMFs invest in riskier securities, they may suffer losses during crises. For instance, prime MMFs held Lehman Brothers debt when the company defaulted in 2008 and had exposure to eurozone banks in 2011. Prime funds accounted for most MMF assets before the financial crisis in 2008. Since then, prime and tax-exempt MMFs combined have declined in size by 30%, both as a result of changed perception of their riskiness among investors and regulatory reforms designed to limit risk from past market failures, see Figure B.2 from Hiltgen (2024). On the other hand, government MMFs experienced inflows during the global financial crisis of 2008, euro debt crisis of 2011, COVID-19 pandemic of 2020, and the banking crisis of 2023. These MMFs offer investments with high credit quality and liquidity, as well as an explicit guarantee by the US federal government for certain government securities (e.g., Treasury securities) and a perceived implicit guarantee for others (e.g., Federal Home Loan Bank securities). As a result, during times of market turmoil and volatility, retail and institutional investors tend to shift their investments to government MMFs.

Figure B.1: Total MMFs as a Percentage of Commercial Bank Deposits

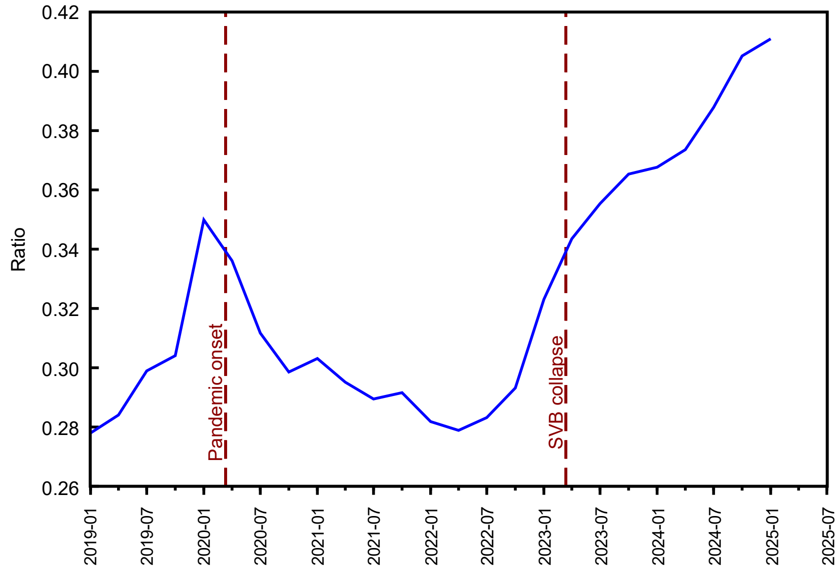
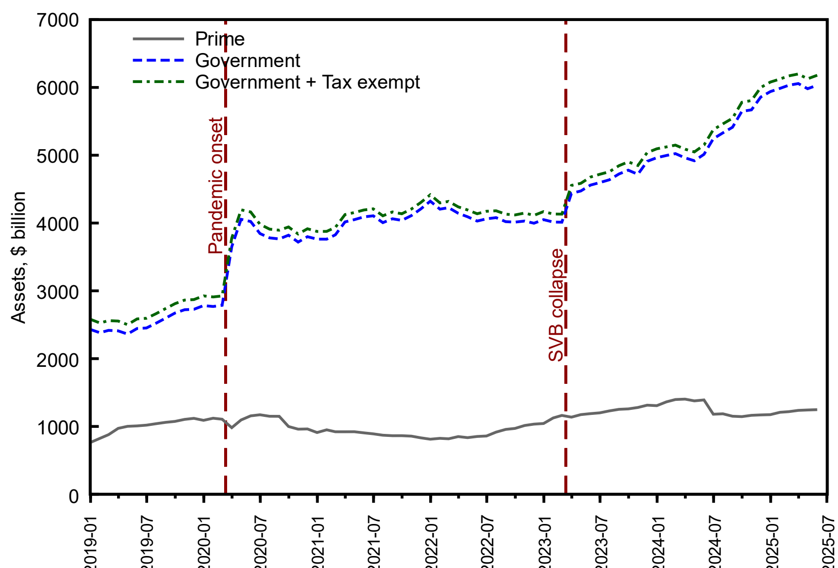


Figure B.2: Assets Under Management in Different Types of MMFs



One key difference between MMFs and bank deposits is that MMFs' net yields closely track changes in the federal funds rate, while banking rates are determined by the banks' funding needs, balance sheet, demand for bank deposits, and presumed sticky depositor base. As a result, MMFs tend to grow when the market interest rates increase (e.g. during monetary tightening episodes), while banks are slow to increase deposit rates. On the other hand, near-zero interest rates have a negative impact on the size of the MMF industry.

Early study by Hubbard (1983) explored the substitutability of MMFs and bank deposit accounts found limited evidence of direct substitution. However, these early findings may be influenced by the nascent stage of MMMF development and differing market structures and regulations.

Agapova and Davydov (2025) use quarterly data on individual banks' deposits and aggregate MMF flows from January 2010 to June 2023. Their panel data regression results suggest that aggregate MMF flows are negatively related to bank deposit growth, indicating their substitutability. Specifically, a 10% increase in quarterly aggregate MMF flows is, on average, associated with a 0.76% decrease in bank-level total deposits in the same quarter. Both retail and institutional MMF investors treat MMFs as substitutes for bank deposits, with retail investors being more sensitive to substitution than institutional investors. This relation holds across all types of bank deposits (money market deposit accounts (MMDA), other savings, and demand), except for time deposits. These findings are consistent across banks of all sizes, with the highest sensitivity of total deposit growth to aggregate MMF flows observed for small and medium banks. They also find that the shocks to deposits translate into bank lending. They find that substitutability of MMFs and bank deposits translates into a negative relation between MMF flows and bank-level lending.