The Economics of Market-Based Deposit Insurance

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Abstract

We examine the financial stability implications of deposit insurance using reciprocal deposits, a recent financial innovation through which banks can break up large deposits and place them with others in an offsetting manner. Using a regulatory change that incentivized some banks to join the network as a source of exogenous variation, we show that higher insurance coverage allowed banks to stem deposit outflows following the 2023 banking crisis. Network banks paid lower interest rates on deposits, grew larger, and increased their local deposit market share, while taking on additional interest rate risk. Overall, we provide novel evidence of the trade-off between financial stability and moral hazard due to deposit insurance and discuss its potential impact on the industrial organization of the banking sector.

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1 Introduction

Using a recent financial innovation that allows banks to increase deposit insurance coverage well beyond the regulatory limit, we ask one of the most fundamental questions in banking: how does access to deposit insurance affect depositor and bank behavior? Most countries around the world use some form of deposit insurance to promote financial stability (Demirgüç-Kunt et al., 2014). The theoretical literature has emphasized two principal trade-offs of this policy tool: improved financial stability and excessive risk-taking incentives of insured banks (Diamond and Dybvig, 1983; Kane, 1985; Bhattacharya et al., 1998; Goldstein and Pauzner, 2005). Despite the theoretical importance and policy relevance of these questions, causal empirical evidence on the effect of deposit insurance coverage on financial and real outcomes remains elusive. Even less is known about the costs and benefits of market-based alternatives to a blanket increase in the insurance limit by regulators. Our paper attempts to fill this gap in the literature.

The key challenge of teasing out the costs and benefits of deposit insurance is that there is practically no variation in access to deposit insurance coverage across banks. Regulators such as the United States' Federal Deposit Insurance Corporation (FDIC) set nationwide coverage limits, providing depositors the exact same insurance benefits irrespective of their banking relationship. Depositors, as a result, have no preference for banks in terms of how much insurance coverage they can get. The lack of variation in deposit insurance coverage renders a simple cross-sectional analysis empirically undesirable. Any attempt to relate the observed amount of a bank's insured deposits to depositor or bank behavior is fraught with identification challenges. While there are occasional changes in the coverage limit over time, comparing outcomes across time with varying levels of deposit insurance coverage is also likely to be biased; these changes correlate with other attributes such as the strength of the economy and regulations that can independently affect bank and depositor behavior. A similar critique applies to cross-country analyses as countries differ across a host of regulatory and economic factors that likely correlate with the structure of their deposit insurance programs.

We study a recent financial innovation in the U.S. banking sector – reciprocal deposits – to overcome this empirical challenge. Even though the insurance limit of $250,000 per depositor per bank remains the same for every bank in the U.S., banks on the reciprocal deposit network ("network banks") can obtain much higher insurance limits for their depositors. They are able to do so by breaking up their large deposits into smaller amounts, each within the insurance limit of $250,000, and placing them with other banks in a reciprocal, i.e., offsetting, manner. In other words, participating banks effectively help insure a piece of each other's large deposits so that they stay within the FDIC's insurance limit. Depositors of participating banks can thus obtain insurance coverage on the entirety of their deposits through this market-based arrangement, irrespective of the amount deposited with their relationship bank.

Using access to the reciprocal deposit network as a source of variation in insurance coverage during the regional banking crisis of early 2023 (also referred to as the "SVB crisis" after the collapse of Silicon Valley Bank), we study the implications of insurance on depositor and bank behavior during a crisis. The regional banking crisis provides an attractive setting for our study because it amplified depositors' concerns about the safety of their uninsured deposits in the banking system (Drechsler et al., 2023; Chang et al., 2023). At the same time, only some banks had access to the reciprocal deposit network at the onset of the crisis primarily due to historical regulatory reasons (a fact we later exploit for identification). Since joining the network requires a setup period of several months, banks that were not already on the network could not obtain higher insurance for their depositors in the immediate aftermath of the crisis. Therefore, we can compare the differences in depositor and bank behavior across these two groups of banks around the crisis to establish a causal link between enhanced insurance coverage and economic outcomes.

We begin our analysis by providing some key descriptive statistics of this fast-growing, yet relatively unknown, market-based mechanism of insurance coverage. These statistics uncover three stylized facts relating to: (a) the time-series evolution of reciprocal deposits, (b) the cross-sectional pattern in the usage of this product across banks, and (c) the characteristics of depositors that use reciprocal deposits.

While reciprocal deposits have existed since the early 2000s, it came into prominence only after a FDIC ruling in 2018 that lowered the regulatory cost of these deposits levied on banks. Before the ruling, reciprocal deposits were considered brokered deposits, which carries higher deposit insurance premiums compared to core deposits. The ruling exempted reciprocal deposits from being classified as brokered deposits up to certain limit, making them a more attractive form of financing. Only about 18% of banks were on the network before 2015 when discussions and consultations of these rule changes began – a number that increased steadily to over 32% by 2022Q4. Commensurately, the amount of reciprocal deposits increased from $23 billion in 2011Q4 to $157 billion in 2022Q4. Another significant shift occurred around the SVB crisis in 2023. Within two weeks of SVB's collapse in mid-March, the dollar amount of reciprocal deposits in the banking system ballooned by 41% to over $222 billion (representing 1.2% of total U.S. deposits). Interestingly, the share of banks on the network increased by a modest 7% over this time period (32% to 34%), suggesting that most of the increase in reciprocal deposits came from banks that were already on the network by 2022Q4. These trends highlight two key economic drivers of the reciprocal deposit market: regulation and concerns about depositor flight.

In the cross-section, reciprocal deposits are held by banks of all sizes, with small banks (assets below $10 billion) and midsize banks (assets between $10 billion and $100 billion) being the more frequent users. This broad pattern is consistent with the idea that the very large banks enjoy implicit too-big-to-fail guarantees and are less inclined to use reciprocal deposits. In terms of the geographic distribution, participating banks are spread out all over the country, with slightly higher concentrations in the Midwest and Northeast regions.

Finally, the reciprocal deposit base covers high net worth individuals, businesses, and public entities (e.g., municipalities, school districts, public universities, and police departments). Public entities have been one of the prominent users of reciprocal deposits: even though they represent only about 4% of total deposits in the U.S. banking system, about 30% of reciprocal deposits belonged to public funds prior to the SVB crisis.[1] This is mainly due to regulation; when depositing funds at a bank, public entities are required by state law to either back the funds with specific collateral or obtain deposit insurance. Over time, various states amended their laws to allow reciprocal deposits as an acceptable form of insured deposits for public funds. These changes made insurance much less costly to obtain, as the alternative was establishing deposit relationships at multiple banks (for example, a $10 million fund would have to be split up across 40 banks). Public entities became a major component of the reciprocal deposit market following these state deregulations, while the 2018 FDIC ruling made it also desirable for banks to offer the product. Indeed, banks began to use reciprocal deposit services as a means to retain and attract public funds, a fact that we exploit later for our identification strategy.

We first conduct cross-sectional analysis linking higher insurance access to the behavior of depositors and banks. In theory, the reciprocal deposit arrangement can provide insurance for the entire deposit base of the banking sector. There are, however, considerable frictions in doing so because banks must find other banks to enter into the reciprocal arrangement with. Furthermore, some of the largest banks in the country may not be inclined to participate because of the advantage they already enjoy due to their too-big-to-fail status. As search and matching costs can

[1] See Appendix Figures A.4 and A.5.

be substantial, a technology-enabled intermediated solution has emerged: networks operated by independent firms such as IntraFi work as a coordinating device across banks. While any bank can join and use the network, it entails considerable time and upfront costs. To start, banks need to set up their internal control framework and integrate their system with the network provider. The bank also needs to maintain a detailed record of reciprocal arrangements and report the key details to their customers on a regular basis. There are other setup costs such as training bank branch managers about the product, creating customer awareness, and managing reporting costs and compliance issues such as KYC verification. As a result of these frictions, it typically takes a bank at least three to six months to join the reciprocal deposit network based on our conversation with industry experts.

Motivated by these features of the market, we use a bank's presence on the network prior to the regional banking crisis as a proxy for access to higher insurance coverage during the crisis. Due to the aforementioned setup costs, a bank that was not already on the network could not immediately join it following SVB's failure. Indeed, we find that network banks increased their insured deposits by 5.67 percentage points between 2022Q4 and 2023Q4 compared to non-network banks. This was not simply a reshuffling of uninsured deposits to insured ones; the total deposits of network banks grew more by 2.65 percentage points as well. In fact, network and non-network banks had markedly different paths in terms of total deposit growth over this time period; while the dollar amount of total deposits declined sharply at non-network banks following the crisis, it grew considerably at network banks. This implies that network banks experienced deposit growth both through the retention of existing depositors as well as the inflow of new depositors. We are not aware of any other group of banks that saw an absolute increase in their deposit base during the SVB crisis, which underscores the importance of enhanced access to deposit insurance during this period.

The price elasticity of the deposit supply curve is a key parameter with implications for a broad range of banking policies and theoretical models (Fama, 1985). If banks supply insured deposits perfectly elastically, an increase in the demand for insured deposits should not have any effect on their deposit interest rates. Contrary to this prior, we find that network banks paid considerably lower interest rates (9 to 16 basis points) on their insured certificate of deposits (CDs) post-crisis than non-network banks. The increase in the amount of insured deposits at network banks, in conjunction with the increase in its price to depositors (i.e., lower interest rates), is consistent with the interpretation that our results are driven by demand-based factors. Further, the increased price of insured deposits implies that the supply curve for insured deposits is not fully elastic: every 1 basis point decrease in the interest rate (price) is associated with a 0.45 percentage point increase in the quantity of CDs supplied by the banks. Our elasticity estimates have direct implications for several theoretical models of banking, their structural estimation, and policy design issues such as deposit insurance pricing (Duffie et al., 2003; Egan et al., 2017, 2022).

How did banks respond to the increased deposit inflows as a result of enhanced coverage? We focus on measures of interest rate risk since the SVB crisis was predominantly triggered by this risk source (Jiang et al., 2023; Granja, 2023; Granja et al., 2024). Moreover, it is relatively straightforward to assess the interest rate risk of a bank's portfolio using the maturity of underlying assets compared to credit risk, which requires ex-post default information. We show that network banks took on additional interest rate risk by increasing holdings of longer maturity securities; the average maturity of their security portfolio increased by up to 3.97% and the probability of a larger mismatch in the maturity of assets and liabilities, as measured by the one-year maturity gap (Purnanandam, 2007), increased by 5.59%. This implies that banks with higher deposit insurance access took on more interest rate risk as they experienced inflows of new deposits. Documenting an increase in observable measures of risk is a critical first step towards detecting the potential moral hazard effects of deposit insurance.

Are these results causal in nature? There are two key threats to identifying the effect of insurance on bank and depositor behavior. First, it is possible that network and non-network banks (and their depositors) behaved differently due to inherent differences in underlying bank risk, as opposed to variation in access to insurance. Second, depositors at network banks may inherently be less likely to run in the event of a crisis. Our results cannot be explained by observable differences in bank size, leverage, profitability, or exposure to interest rate risk as we control for these variables in the estimation. In addition, our results cannot be attributed to differences in the stickiness of the depositor base, given that network banks attracted new deposits following the crisis.

We address these endogeneity concerns more directly with two complementary identification strategies. In the first strategy, we use the fact that a riskier bank's uninsured deposits are more at risk of a run than its insured deposits (Egan et al., 2017). If non-network banks are indeed riskier than network banks, we can expect higher outflows of uninsured deposits at non-network banks after the SVB crisis. Therefore, the risk-difference channel predicts stronger growth of insured deposits relative to uninsured deposits at non-network banks, compared to the corresponding difference at network banks. In contrast, if our results are driven by the access to insurance channel, we can expect the opposite: insured deposits should grow at a faster rate at network banks. We implement a triple-differences model with multiple levels of fixed effects to soak away the effect of time-varying differences across banks (e.g., differential risk exposure to the crisis) and time-varying differences between aggregate insured and uninsured deposits. Consistent with the deposit insurance channel, we find that network banks experienced a higher growth of insured deposits than uninsured deposits.

Our second test compares a set of banks that joined the reciprocal deposit network in response to a key regulatory change with a set of banks that did not. While several factors can potentially drive a bank's decision to join the network, regulatory concerns are among the most important. One key motivation for banks to join the network relates to state laws on the management of public entity deposits. These public funds can be deposited at a bank only if they are insured or backed by adequate collateral. The advent of reciprocal deposits drastically lowered the cost of taking deposits from public entities, as banks could avoid collateral constraints mandated by states. Furthermore, states independently passed laws to allow reciprocal deposits as an acceptable form of insured deposits for public entities; by 2018, reciprocal deposits were available to public entities in all but one state.

Although many banks with public entity deposits joined the network following the passage of state laws, some were still reluctant to do so due to an additional regulatory burden. Reciprocal deposits have historically been treated as brokered deposits – a classification that attracts higher insurance premiums and supervisory scrutiny. Banks expressed direct concern for these considerations via public outlets, with several suggesting that the FDIC "eliminate all limits on the acceptance of reciprocal deposits."[2] After the FDIC ruled in 2018 that a capped amount of reciprocal deposits can be exempted from being treated as brokered deposits, a large number of banks joined the network. We argue that regulatory factors explain this discontinuous shift in network participation growth around 2018, a period of relative stability in the banking sector. This growth was also likely aided by reciprocal deposit providers, which held regular seminars and awareness sessions during this period. As a result, banks with public entity deposits that joined the network around this period enjoyed improved deposit management efficiency and customer satisfaction.[3]

[2]https://www.fdic.gov/sites/default/files/2024-03/2018-12-18-notice-sum-h-fr.pdf.

[3]See the following quote from the Chairman and CEO of Catskill Hudson Bank, NY: "Our public funds customers

Banks with public funds that joined the network around the passage of the brokered deposits exemption are classified as "switcher" banks and form our treated group. We compare switcher banks' outcomes to those of banks who also had public deposits but never joined the network during this period. Our key identifying assumption is that switchers joined due to relaxed regulatory concerns around 2018 and not due to unobserved differences in their risk characteristics or depositor base. If their incentives are driven by non-regulatory factors, they would have switched soon after state laws allowed them to do so – many years before the FDIC brokered deposit rule change in most cases – even if reciprocal deposits were considered brokered. The identification assumption is strengthened by the fact that the depositor base or the inherent business model of a bank is unlikely to change in the few years before and after 2018. Additionally, since both switcher and non-switcher banks have positive public entity deposits, the difference in their behavior cannot be explained by whether a bank is active in the public funds market.

In a difference-in-differences setting, we show that switcher banks' total deposits grew by 1.64% after the SVB crisis. Similar to the baseline OLS results, the increase came from both the retention of existing deposits and inflow of new insured deposits: insured deposits grew by 4.85% relative to non-switcher banks. These differences cannot be explained by bank size, amount and maturity of security holdings, equity capitalization, the level of public entity deposits, or profitability. We additionally control for the interaction of these characteristics with post-crisis time dummies to soak away the differential effect of these variables throughout the crisis period. The two groups exhibit parallel trends in the amount of deposits before the crisis, providing additional support for the validity of our research design. In robustness tests, we further show that our results are not driven by the inflow or outflow of public entity deposits. In fact, our estimates become modestly stronger if we focus on non-public entity deposits.

We also find consistent results on deposit rates and interest rate risk exposure. Switcher banks paid 10.79 basis points lower interest rates than non-switcher banks off a baseline parallel trend. Importantly, our estimates show that the supply of bank CDs is not perfectly elastic: every 1 basis point increase in price is associated with a 0.41% higher quantity of insured deposits supplied by banks. Additionally, switcher banks expanded their total security portfolios by 3.88%, with a notable increase of 4.84% in their long-dated security holdings. As a result, the overall maturity of their security holdings increased by 3.70%. The probability of asset-liability maturity

appreciate knowing that when they place their funds through [reciprocal deposits], those funds are eligible for FDIC protection beyond $250,000 and earn interest."

mismatch at switcher banks also increased by 8.30%. Overall, these results confirm that the interest rate risk in the banking sector shifted towards banks with higher deposit insurance. Our findings are further supported by the use of reciprocal deposits by network banks, strengthening our causal interpretation.

Furthermore, we exploit the staggered timing of state deregulations that allow public entities to access the reciprocal deposit market. Georgia was the last state to enact such legislation, doing so nearly a year after the FDIC brokered deposits exemption took effect. This implies that public entities in Georgia could not access reciprocal deposits through Georgia-based banks until this later date. Using a matched sample of banks, we demonstrate that the effects of enhanced insurance coverage are weaker for Georgia banks compared to their non-Georgia counterparts. These findings help rule out alternative explanations and reinforce our central claim that access to deposit insurance is the primary driver of deposit stability and bank risk-taking in our setting.

In the final part of the paper, we study the implications of deposit insurance on the industrial organization of the banking sector. Our findings that network banks experienced growth in total assets and local market shares after the crisis, with smaller banks being the primary users of reciprocal deposits, suggest that access to deposit insurance can shift the competitive landscape between large and smaller banks. A key implication of this market-based deposit insurance product is its potential to reduce the value of the implicit guarantees traditionally associated with the largest "too-big-to-fail" banks (O'hara and Shaw, 1990; Flannery and Sorescu, 1996; Flannery, 2010; Iyer et al., 2019). Interestingly, we find that the asset growth is almost entirely driven by small banks, which may have additional advantages arising from their smaller operational scope and a relationship-based business model to effectively disseminate the product.

In sum, we establish that enhanced access to deposit insurance allows banks to attract depositors at a lower rate of interest. Banks take more risk in response; the allocation of interest rate risk shifts towards these banks as they grow bigger. While some of these predictions have been discussed widely in the literature, our paper provides one of the first pieces of causal empirical evidence relating deposit insurance to depositor and bank behavior. Further, we analyze the growing impact of market-based deposit insurance, a financial innovation with potentially large economic implications in the coming years. Understanding these implications is critical for regulators around the world as they debate the costs and benefits of alternative deposit insurance systems to a blanket economy-wide increase.

1.1 Related Literature

This paper relates to the well-established literature on the financial stability role of banks. Deposit insurance, which was discussed in Diamond and Dybvig (1983) as a tool to prevent bank runs, was further explored in subsequent works; in particular, the literature highlights the potential trade-off between the financial stability role of deposit insurance and moral hazard (Kane, 1985; Bhattacharya et al., 1998; Goldstein and Pauzner, 2005). Prior works have also studied different aspects of deposits and deposit insurance, including the effect of deposits on bank value, fair pricing and optimal level of deposit insurance, the effect of deposit insurance on bank portfolio holdings, and the determinants of deposit interest rates (Merton, 1977; Marcus and Shaked, 1984; Pennacchi, 1987; Chan et al., 1992; Dreyfus et al., 1994; Acharya et al., 2010; Allen et al., 2018; d'Avernas et al., 2023; Kim and Rezende, 2023; Egan et al., 2022; Iyer et al., 2023; Dávila and Goldstein, 2023). We provide novel causal evidence of the stabilizing effect of deposit insurance during a classical banking crisis and discuss its implications for regulation and policy.

From an empirical perspective, our paper expands on previous work on the causal effects of deposit insurance. Calomiris and Jaremski (2019) and Jaremski and Schuster (2024) provide important insights into the effect of deposit insurance on financial stability outcomes using historical data prior to the establishment of the FDIC. Our study builds on these works but differs in four key dimensions. First, our paper studies a market-based mechanism of insurance access, which is fundamentally different from the centralized system focused on in these prior studies. Second, it is unclear whether the effect of explicit insurance on depositor and bank behavior is similar after the creation of the FDIC, the use of modern tools for liquidity injections (Carpinelli and Crosignani, 2021), and the expectation of Fed bailouts for large institutions (Flanagan and Purnanandam, 2024). Third, due to data limitations, historical studies are unable to trace the price elasticity of the insured deposit supply curve or its effect on the local market share of banks – outcomes that, to the best of our knowledge, we are able to examine for the first time in the literature (Baron et al., 2021). Finally, these studies focus on small banks (often unit banks with one branch), whereas our study includes all the banks in the economy.[4] Our setting facilitates a sharper analysis of the industrial organization implications of deposit insurance for the banking industry.

This paper is also related to the quantitative literature on deposit insurance under modern banking systems (Demirgüç-Kunt and Detragiache, 2002; Ioannidou and Penas, 2010; Iyer and

[4] Larger institutions and banks with a large branch network face different constraints in liquidity risk management and deposit outflows (Gilje et al., 2016).

Puri, 2012; Martin et al., 2018; Iyer et al., 2019). In general, the empirical evidence surrounding deposit insurance arises from a within-bank setting or from programs outside the U.S. Our study is most closely related to Iyer and Puri (2012) and Martin et al. (2018), who study the run behavior of depositors at failing or distressed banks. Unlike these works, we focus on cross-sectional differences in banks' access to deposit insurance during a crisis featuring uninsured depositor runs. This setting additionally allows us to estimate the impact of deposit insurance on the competitive landscape of the banking sector. Similarly, Iyer et al. (2019) study a related but different topic: the distortive effect of implicit too-big-to-fail guarantees on retail deposits in Denmark. Our study provides a more general framework on the value of deposit insurance for banks of all sizes. To the extent that reciprocal deposits have distinct costs and benefits, our setting complements the ongoing discussions surrounding the optimal design of deposit insurance schemes.

A few prior works have documented the reciprocal deposits market and its correlation with bank risk measures (Shaffer, 2012, 2013; Li and Shaffer, 2015). These studies trace reciprocal deposits from the Great Recession when major regulatory reforms surrounding deposits, such as insurance limit expansions, were concurrently affecting the banking sector. Importantly, reciprocal deposits were considered brokered during this period; due to costs associated with using brokered deposits, a bank's decision to join the network was likely driven by unobserved risk or depositor characteristics. To our best knowledge, our study is one of the first to demonstrate the significant growth of reciprocal deposits around a key regulatory change in 2018 as well as the 2023 banking crisis.[5] We use deregulation and the sudden shift in public demand for insured deposits to estimate the causal relationship between access to deposit insurance and subsequent bank and depositor behavior.

Lastly, our paper contributes to the ongoing debate on the causes and consequences of the regional banking crisis of 2023 (Jiang et al., 2023; Meiselman et al., 2023; Chang et al., 2023; Granja et al., 2024; Cookson et al., 2023; Granja, 2023). We provide novel evidence that the crisis also had a significant impact on the demand for insured deposits, leading to meaningful reshuffling of deposits within and across banks through the reciprocal deposit network. We also present suggestive evidence that banks that benefited from enhanced insurance access took on additional securities investments, which has been identified to be one of the primary drivers of the crisis.

[5]See Prescott and Rosenberger (2024) and Ryfe and Saretto (2023) for a historical overview of the market and policy discussions of recent developments.

2 Institutional Background

The reciprocal deposit market allows banks to offer FDIC insurance coverage that extends beyond the usual limit of $250,000 per depositor. This is accomplished through a network of financial institutions facilitated by an intermediary such as IntraFi.[6] Prior to the introduction of reciprocal deposits, households, businesses, and public entities hoping to maximize insurance coverage had to open separate accounts – each with under $250,000 – at multiple banks. At the basic level, reciprocal deposits significantly reduced the frictions associated with this endeavor (e.g., time and set-up costs) while providing the same liquidity and interest-earning properties.[7]

To provide enhanced coverage to depositors via reciprocal deposits, banks must complete several crucial steps. The key participants in the system are: (a) the depositor; (b) the relationship bank, which is where the depositor initially places their funds; (c) issuing institutions, which receive portions of the depositor's money in FDIC-insured amounts through reciprocal arrangements; (d) network providers like IntraFi, who manage the communication and transactions within the network; and (e) custodians or independent institutions (e.g., Bank of New York Mellon) that are responsible for record-keeping and maintaining asset custody for deposited funds.

To begin offering these services to depositors, banks must first undergo an onboarding process, which involves signing a contract with a network provider. This step requires integrating with the network's platform to ensure smooth communication and transaction processing. Banks must also train their staff to guide depositors effectively and market the product to attract those seeking enhanced FDIC coverage. For banks not already on the network, this onboarding process can take two to three months. This friction can inhibit swift adoption of this market-based deposit insurance mechanism.

When depositors place a large sum with their relationship bank, they lock in an interest rate set by that bank (the relationship bank). The relationship bank then uses the network to divide the large deposit into smaller FDIC-insured amounts and place them at other network banks. To maintain transparency and control, depositors sign a Deposit Placement Agreement (DPA) that authorizes this distribution. This agreement often allows depositors to exclude specific banks if

[6] For more details, visit: https://www.intrafinetworkdeposits.com/how-it-works/. There are two types of reciprocal deposit networks: CDARS (Certificate of Deposit Account Registry Service) for certificates of deposits and ICS (Insured Cash Sweep) for demand deposits.

[7] Many network banks advertise these benefits in their promotional material; see an example here: https://www.cbhou.com/Portals/CentralBankHouston/PDF/ICS_CDARS.pdf.

they wish. Our conversations with industry professionals suggest that this exclusion option is frequently used.

A critical aspect of reciprocal deposits is rate management. Since different issuing banks may offer varying interest rates, a "rate-bridge" agreement is used to ensure consistency. This agreement requires a network bank offering the higher rate to compensate the other bank for the difference, ensuring depositors have a consistent experience regardless of which bank holds their funds.

3 New Facts on the Reciprocal Deposit Market

We begin our empirical analysis by uncovering several new insights on the development of the reciprocal deposit market. First, we show that the reciprocal deposit market is a major source of deposit funding for banks today in Figure 1. At the beginning of 2011, the total amount of reciprocal deposits in the U.S. banking system was $25 billion, representing 0.3% of total deposits. Today, these figures are $380 billion or 2% of total deposits, representing a cumulative growth rate of 666%. While reciprocal deposits have existed since the early 2000s, they were not commonly used by banks due to their classification as brokered deposits; brokered deposits are generally unattractive because they carry higher deposit insurance premiums compared to standard deposits. This changed after May 2018, when the Economic Growth, Regulatory Relief, and Consumer Protection Act (EGRRCPA) prompted a series of bank deregulation measures, one of which was the FDIC's new rule to exempt reciprocals from being classified as brokered deposits under certain criteria.[8] The rule made reciprocal deposits a relatively attractive form of financing, and we thus observe a steady increase in the volume of these deposits after June 2018. Specifically, the total amount of reciprocal deposits increased from $48 billion in the beginning of 2018 to $157 billion by the end of 2022, representing an annual growth rate of around 19%. For comparison, the total amount of reciprocal deposits increased from $25 billion to $46 billion from 2011 through 2017, representing an annual growth rate of 9%.

While these findings indicate that reciprocal deposits play a more salient role in funding markets today, it is unclear whether this increased utilization is driven by the intensive margin or by the extensive margin. To address this, we examine the share of U.S. network banks in Figure 2. While the percent of banks on the network remains around 20% from 2011 through 2018, we

[8]See the Federal Register for more details.

observe a notable increase from the beginning of 2018 through the end of 2022; 32% of banks are on the network by the end of 2022. Since the SVB crisis, there has been a sharp increase in the number of network banks to 42% by the end of 2023. Still, the increase in network membership during this period was not instant; assuming that growth would have remained at constant levels absent the bank failures, we only observe a 1 to 2 percentage point increase in network membership in the two weeks immediately following SVB's failure. June 2023 marks the first strong period of growth (around 3%), with participation continuing to rise through the end of 2023 and early 2024. This supports the industry insight that onboarding may take several months.

Second, we show that reciprocal deposits are utilized primarily by small (assets below $10 billion) and midsize (assets between $10 billion and $100 billion) banks; the largest banks of the country (assets above $100 billion) persistently exhibit low usage of reciprocal deposits. Prior to the brokered deposits exemption rule, reciprocal deposits accounted for less than 2% of total deposits for small banks and less than 1% for midsize banks, with the largest banks reporting negligible amounts (less than 0.05%). The usage of reciprocal deposits increased across the bank size distribution following the regulatory change; small banks saw their share rise to around 3.1% by 2022Q4, whereas midsize banks reached 1.6%, and large banks continued to report minimal utilization. After the SVB crisis, we observe a significant rise in reciprocal deposits as a proportion of total deposits, particularly for midsize banks. Midsize banks' share of reciprocal deposits jumped from 1.6% in 2022Q4 to 5.8% by 2023Q4. Smaller banks also saw an increase, with their share growing from around 3.1% to 6.0% over the same period. The largest banks, however, only experienced a modest increase in this ratio (0.16% to 0.29%). These trends suggest that banks have increasingly turned to reciprocal deposits following the crisis, but that usage is not uniform across bank size groups.

Overall, we provide evidence that midsize and small banks are the primary users of reciprocal deposits, with midsize banks showing the largest uptick in reliance after the crisis. For illustration, none of the global systemically important banks (G-SIBs) are ranked among the top 8 banks by total amount of reciprocal deposits or share of reciprocal deposits in 2017Q4, 2022Q4, and 2023Q4, as shown in Appendix Tables A.1 and A.2, respectively. High reciprocal deposit usage from banks above $100 billion in assets are first observed in 2022Q4, namely UBS Bank (foreign) and First Republic Bank (now defunct), Huntington National Bank, and Citizens Bank. Of note, none of the large institutions are included in the top banks list when ranked using the share of total deposits measure.[9] Large banks are even less represented after the crisis – the only exceptions are Citizens Bank with assets of $221 billion and $8.2 billion in reciprocal deposits (3.7% of total assets) and First Citizens Bank with assets of $214 billion and $7.6 billion in reciprocal deposits (3.6% of total assets).[10] These findings implies that at the margin, smaller banks value access to deposit insurance more than their larger counterparts possibly due to the lack of implicit guarantees.

Third, we document that reciprocal deposits are an important financial innovation that provides enhanced insurance for banks nationwide. Figure 3 illustrates the geographic expansion of the reciprocal deposit network from 2011 to 2022. Across both periods, we observe significant heterogeneity of network banks both in terms of location and the concentration of reciprocal deposit shares. While there tend to be more network banks in the midwest and northeast regions, this is in part driven by the higher number of banks incorporated in those areas. Overall, access to the network is close to universal; network banks are not necessarily concentrated in the coastal regions or in the most populous counties, nor are they growing at different rates over time. This pattern can be explained by the nature of the technology-enabled platform, which allows banks to connect with others nationwide.[11]

Finally, we note that the depositor base for reciprocal deposits typically includes large retail depositors, small businesses, and local government entities such as municipalities and school districts. Appendix Figure A.4 provides a breakdown of reciprocal balances, highlighting that public entities account for nearly 30% of all reciprocal deposits, despite representing only about 4% of total U.S. banking sector deposits.[12].

The subsequent sections outline the data utilized in this study and examine the impact of network access on depositor and bank behavior.

[9]We also analyze the outcomes of large regional banks that failed or faced distress during the 2023 banking crisis. Appendix Figure A.1 shows the evolution of reciprocal and uninsured deposits at Silicon Valley Bank, First Republic Bank, Signature Bank, Pacific Western Bank, and Western Alliance Bank. While all five banks had joined the reciprocal deposit network by 2022Q4, only Pacific Western and Western Alliance had made notable use of these deposits at the onset of the SVB crisis. This is reflected in their uninsured deposit shares as of 2022Q4: 94% at Silicon Valley Bank, 68% at First Republic Bank, 90% at Signature Bank, 52% at Pacific Western Bank, and 55% at Western Alliance Bank. Notably, both Pacific Western and Western Alliance significantly increased their usage of reciprocal deposits during the crisis and were the the only banks in this group that survived.

[10]For reference, domestic G-SIBs reported zero reciprocal deposits in 2023Q4, with the exception of Morgan Stanley ($1.1 billion) and Bank of America ($653 million).

[11]See the Online Appendix Figures A.2 and A.3 for a more detailed county- and state-level overview of the network's geographic expansion.

[12]https://www.ohioapt.org/wp-content/uploads/2012/02/7-Stanic-Basics-of-Investing-Public-Funds.pdf

4 Data and Descriptive Statistics

Reciprocal Deposits and Network Status. We define the network status of a bank using data from the quarterly Call Reports (FFIEC 031/041). Reciprocal deposits were originally classified as brokered deposits, which have historically been associated with increased regulatory costs. In 2018, the EGRRCPA rule exempted reciprocal deposits from being considered brokered deposits up to a cap. To account for reporting rule changes associated with EGRRCPA, we take either the sum of RCONJH83 and RCONJH84 (Total reciprocal deposits) or RCONG803 (Reciprocal brokered deposits) to construct a consistent series of reciprocal deposits at the bank-quarter level. We define "network" banks as those with positive reciprocal deposits and "non-network" banks as those with zero reciprocal deposits in a given quarter.

Insured Deposits and Public Entity Deposits. Bank-level estimates of the share of insured deposits are collected from the Call Reports and supplemented with FDIC's Statistics on Depository Institutions (SDI). The SDI is an advanced feature of the Institution Directory (ID) that provides detailed financial reports. Importantly, it provides estimates for banks with total assets less than $1 billion, which can be missing in the corresponding Call Reports data. We construct the share of uninsured deposits by subtracting insured deposits from total deposits. Public entity deposits are also obtained from the Call Reports and are defined as deposits of states and political subdivisions in the U.S., both in transaction accounts (RCON2203) and nontraction accounts (RCON2530).

Deposit Rates. We obtain deposit rate data from the S&P Global's RateWatch database. We focus on the 12-month certificate of deposit accounts with a minimum of $10,000 due to its comprehensive reporting coverage. To mitigate bias from misreporting, we first calculate the quarterly average CD rate at the branch level and then aggregate these rates across all branches of each commercial bank.

Bank Locations and Branch Deposit Holdings. We compile location and deposit holdings information for bank branches using data from the FDIC's Summary of Deposits (SOD). In other words, we construct an annual measure of bank-level branch counts and average deposits per branch. To study implications for the industrial organization of banks, we additionally identify the street address and state of incorporation for each bank using the Call Report's Panel of Reporters.

Other Bank Characteristics. Quarterly bank data on the level of total assets, loans, deposits, equity, and securities, are obtained from the Call Reports. We additionally use the Call Reports to calculate interest rate risk; the average maturity of securities is calculated as the weighted-average maturity of holdings across maturity types, using the midpoint of each maturity bucket. Deriving from Purnanandam (2007), we also measure the average maturity gap as the absolute difference between short-term assets (sum of loans and leases, securities, and federal funds sold with less than one year remaining until maturity) and short-term liabilities (federal funds purchased and other borrowed money).

Sample and Descriptive Statistics. The sample period for our study is 2011Q1 through 2023Q4. The maximum deposit insurance limit was permanently raised from \$100,000 to \$250,000 in July 2010, which motivates the use of 2011 as the starting point of our sample. The unit of observation used in the study is a bank-quarter pair. In our main analysis, we study the cross-section of commercial banks that were in operation between 2022Q4 and 2023Q4, the period around the 2023 regional banking crisis. In 2022Q4, the quarter prior to SVB's failure, our sample consists of 4,756 banks, of which 1,539 were classified as network banks.

Table 1 reports summary statistics of network and non-network banks as of 2022Q4.[13] On average, network banks tend to be larger than non-network banks while having similar profitability. Network banks also exhibit a larger loan portfolio and lower leverage. Importantly, network banks have lower holdings and higher average maturity in terms of securities than non-network banks. Network banks also generally tend to have lower insured deposit ratios, marginally higher reliance on public entity deposits, and larger branch networks. These statistics collectively imply that operations and investment decisions may have been different across the two groups prior to the crisis. In our main empirical analysis, we provide specifications that directly control for several of these covariates, especially light of the outsized role of interest rate risk during the SVB crisis.

Figure 4 plots the evolution of eight bank characteristics in the pre-BDE (2011Q4 and 2017Q4), Pre-SVB (2022Q4), and Post-SVB (2023Q4) periods. While baseline differences across groups persist, we do not find that the average characteristic and their relationship across the two groups evolve in a notable manner throughout our sample period.

[13] Appendix Table A.3 reports summary statistics of network and non-network banks, one year later, as of 2023Q4.

In our main difference-in-differences analysis, we restrict our sample to switcher and non-switcher banks. Switchers are defined as banks with positive public entity deposits and not on the network in 2014Q4 that subsequently joined the network around the FDIC ruling (between 2015Q1 and 2020Q2).[14] Non-switchers are non-network banks that also had positive public entity deposits in 2014Q4 but never joined the network during the switching period.

5 Main Results

We ask three main questions in the paper: (a) how does enhanced access to deposit insurance affect depositor behavior?, (b) how does it affect banks'investment decisions?, and (c) what implications does it have for the industrial organization of the banking sector? We begin our analysis by relating these outcomes to our main proxy for enhanced access to deposit insurance: participation in reciprocal deposit networks as of 2022Q4. This is motivated by one key assumption: banks could not immediately join the network once the crisis began, since joining the network entails significant setup costs and delay. This institutional feature provides us the variation necessary for our analysis. After presenting the baseline results, we apply three complementary empirical strategies to establish a causal link.

Our analysis centers on the period surrounding the regional banking crisis for one simple reason: during this time, concerns over deposit safety became a top priority for many depositors.[15] This allows us to examine the role of deposit insurance during a banking crisis, directly mapping to theoretical models that ask whether greater access to insurance limits depositor outflows.

5.1 Validation of Assumptions

The key assumption in our empirical analysis is that banks could not quickly join the network in response to the crisis due to substantial setup costs and significant time delays. We validate this assumption by demonstrating that adoption was gradual; non-network banks faced difficulties in joining at the onset of the crisis. Consequently, existing network banks increased their utilization of the network and accounted for the majority of the post-crisis growth in reciprocal deposits.

[14] While the FDIC brokered deposits exemption was enacted in 2018, the initial announcement and the public comment period began in early 2015. The 2015Q1 to 2020Q2 window allows for the fact that banks may have joined the network in anticipation of the ruling and does not incorporate banks that joined two full years after the rule took effect.

[15] Total bank deposits fell by 2.4% immediately following the SVB failure. See: https://www.wsj.com/articles/state-street-schwab-see-deposits-drop-4b0438ac

Figure 5a tracks network participation between 2022Q1 and 2023Q4 for banks that were already part of the network in 2022Q1 and those that were not. We find that nearly all banks that were already on the network in 2022Q1 (blue bars) remained on the network through the end of the sample period. In contrast, few non-network banks from 2022Q1 (orange bars) joined the network despite the increasing benefits of enhanced deposit insurance during the banking turmoil. Specifically, while network membership among non-network banks grew gradually, the expansion was slow, not only throughout 2022 but also during the 2023 banking crisis. By 2023Q1 and 2023Q2, only 3.3% and 5.7% of pre-crisis non-network banks had joined the network, respectively, with just 18% having done so by 2023Q4. These findings support our assumption that joining the network is not a straightforward process and often takes several months. As a result, banks already on the network enjoyed a distinct advantage in accessing higher insurance limits in the immediate aftermath of the regional banking crisis.

The differences in network participation are reflected in the reciprocal deposit growth for network and non-network banks. Panel 5b presents the reciprocal deposit growth around the SVB crisis. For banks already on the network by 2022Q1, reciprocal deposit volume remained steady at around $120 billion throughout 2022. However, beginning in 2023Q1, reciprocal deposits at network banks surged, nearly doubling to $233 billion by the end of June, with continued growth throughout the year. This indicates that existing network members capitalized on the enhanced deposit insurance benefits during the crisis.

Indeed, the sharp increase in reciprocal deposit activity for network banks translated into a significant rise in both the amount and proportion of insured deposits, as shown in Panels 5c and 5d. Notably, Panel 5d highlights a substantial increase in insured deposits (as a percentage of total deposits) for network banks compared to non-network banks. In contrast, non-network banks showed limited use of reciprocal deposits, and their insured deposit growth was similarly constrained.

5.2 Depositor Behavior

Thus far, we have shown that banks already on the network enjoyed a distinct advantage in accessing higher insurance limits immediately following the SVB failure. We now turn to examine how this advantage affected the quantity and pricing of deposits by testing the relationship between network participation in 2022Q4 and changes in deposit characteristics during the banking turmoil, using the following cross-sectional regression model:

$$\Delta ln(D)^{j}_{2023Q4,2022Q4} = \alpha + \beta \mathbb{1}_{Network,j,2022Q4} + X_j + \epsilon_j, \tag{1}$$

where $\Delta ln(D)^{j}_{2023Q4,2022Q4}$ measures the log change in deposits for bank j from 2022Q4 to 2023Q4. $Network^{j}_{2022Q4}$ equals one if a bank is on the network on 2022Q4, zero otherwise. X_j is a vector of control variables such as bank's asset size, security holdings, and profitability. Our model allows us to establish a correlation between higher access to insurance, as measured by presence on the network just before the crisis, to depositor behavior during the crisis.

We begin by examining whether access to enhanced insurance coverage increased insured deposits, as shown in Table 2. Column (1) reports that network participation in 2022Q4 is associated with a 7.80 percentage point increase in the growth rate of insured deposits, relative to non-network banks. During the crisis, many depositors flocked to the largest banks to avail of the implicit "too-big-to-fail" guarantee. In addition, banks with large securities holdings were subject to greater scrutiny during the SVB crisis. These factors could independently affect deposit growth. To account for these forces, column (3) controls for bank size, securities holdings, equity capitalization, and profitability, all measured pre-crisis, as of 2022Q4. Our results remain similar: network banks still show 5.67 percentage points higher growth in insured deposits compared to non-network banks. Considering the average quarterly growth rate of 4.3% for total insured deposits across all U.S. banks from 2010 to 2022, the estimated growth of 5.67 to 7.80 percentage points over four quarters is economically significant.

A key question arises: Is the observed increase in insured deposits merely a reshuffling of previously uninsured deposits into insured status, or does it reflect a broader ability to attract more deposits overall? We address this by estimating the impact of network status on total deposit growth from 2022Q4 to 2023Q4. Column (2) of Table 2 shows that total deposits for network banks increased at a 3.96 percentage points higher rate than non-network banks. Column (4) confirms that this increase is not driven by differences in size, securities holdings, equity capital, or profitability. Even after controlling for these variables, network banks experienced 2.65 percentage points higher growth in total deposits compared to non-network banks. These results suggest that access to enhanced deposit insurance not only helped banks retain existing deposits but also attracted additional deposits. This indicates a substantial reallocation of deposits across the banking system, not just within individual banks.[16]

Our cross-sectional regressions provide a snapshot of the differences in bank behavior between network and non-network banks from 2022Q4 to 2023Q4. To investigate whether there were pre-existing differences in deposit characteristics prior to the SVB failure, and to assess the persistence of these effects, we analyze the dynamics of insured deposits and total deposits over time in Figure 6.

Panel 6a plots the quarter-by-quarter growth rate of insured deposits for both network and non-network banks from 2022Q1 to 2023Q4. Both groups had similar growth rates until 2022Q4, after which a sharp divergence occurred. Network banks experienced significantly higher growth in insured deposits in 2023Q1, immediately following the crisis. This divergence persisted throughout 2023, with network banks showing much higher quarterly growth rates in insured deposits compared to non-network banks from 2023Q1 to 2023Q3. By 2023Q4, as concerns over the crisis subsided, growth rates between the two groups began to converge. However, the cumulative difference remained significant, as illustrated in Panel 6b. From 2022Q1 to 2023Q4, network banks achieved 17.9% insured deposit growth, compared to just 7.1% for non-network banks – a 10.8% gap. This gap highlights the pronounced impact that network membership has on insured deposit growth, particularly during times of financial uncertainty. Further, the dynamics of deposit growth across the two groups provide support to our argument that access to higher insurance affected depositor behavior during crisis.

Figures 6c and 6d plot the quarterly and cumulative growth of total deposits to provide a closer look at the dynamics of deposit evolution. Network banks gained a significant amount of deposits compared to non-network banks after the SVB crisis, a difference that persisted until the end of our sample period. In fact, network banks experienced an increase in total deposits whereas non-network banks experienced a decline in total deposits, in the immediate aftermath of the crisis. This finding highlights the heterogeneous response of depositors to a sudden shift in the importance of insurance coverage. Banks with access to reciprocal deposits were able to grow their deposits in absolute terms despite the heightened scrutiny on banking sector risk. We are not aware of any other group of banks that experienced an increase in their deposit base, in absolute terms, during the crisis period. The significant difference in the deposit growth trajectories of network and non-network banks has a notable cumulative impact. As shown in Panel 6d, network

[16] Unreported analysis shows similar results for the number of deposit accounts, with network banks experiencing a greater increase.

banks had a cumulative growth advantage of 5.5% in total deposits compared to non-network banks by the end of 2023 (off the baseline in 2022Q1).

5.2.1 Interest Rates on Deposits

We next investigate how access to enhanced deposit insurance coverage affects the interest rates banks offer on insured deposits, applying the same cross-sectional regression approach used earlier to examine deposit quantities. Interest rates on deposits are influenced by various factors, including market rates on safe assets, the competitiveness of the banking sector, and the availability of deposit insurance. For insured deposits, interest rates should not be sensitive to bank risk. Moreover, if banks supply these deposits elastically, we should not observe differences in interest rates between network and non-network banks. However, with an upward-sloping supply curve for insured deposits, an increase in the quantity of insured deposits would result in higher prices, i.e., lower interest rates in equilibrium.

Estimation of the elasticity of supply curve for insured deposits, a primitive parameter, has wide-ranging implications for our understanding of how banks compete, several structural models of banking market that requires a model of supply behavior of banks, and policy design such as pricing of deposit insurance. For example, if banks compete in a local market as in a Bertrand-Nash equilibrium, they should supply insured deposits elastically and even a handful of banks can achieve a perfectly competitive equilibrium. On the other hand, if banks differentiate their product by offering varying degree of service and convenience by incurring additional costs, for example, through a larger network of ATMs, then the supply curve can be upward sloping. In that case, we should observe an increase in the price of insured deposits at the network banks after the crisis.

We examine changes in interest rates for a specific product: 12-month Certificates of Deposit (CDs) with a minimum deposit size of $10,000, an amount well below the FDIC insurance limit. These CDs are particularly appealing to risk-averse savers, and interest rates on these products can be obtained precisely from the RateWatch database. The estimation results are provided in Table 3 of the paper. Column (1) shows that banks on the network lowered their interest rate by 16.33 basis points compared to the non-network banks around the crisis period.[17] Since our dependent variable is changes in deposit rate for the same product by the same bank, these estimates are not

[17] The sample size for the interest rate analysis is smaller than for the deposit quantity analysis, as the RateWatch dataset is required for interest rate data.

affected by time-invariant bank characteristics such as their management style. Column (3) shows that the effect of network status on interest rates cannot be explained away by bank size, security holdings, equity capitalization, or profitability. The estimated coefficient is still significant with a coefficient of 8.69 basis points.

Table 3 also presents the corresponding estimates for deposit quantities based on the same sample used for the interest rate regression, focusing on time deposits. We find that banks on the network grew their insured deposit base by 4.06 percentage points around the crisis period in column (4). Together, these results show an increase in quantity of 4.06 percentage points and an increase in price of 8.99 basis points. This simultaneous increase in deposit quantity and reduction in interest rates suggests that our findings are driven by an upward shift in the demand curve for insured deposits. By relating the two regression coefficients, we estimate the semi-elasticity of the supply curve for insured deposits: for every 1 percentage point increase in insured deposit quantities, banks lower interest rates by approximately 2.23 basis points. These results align with a model in which banks offer differentiated products to depositors and incur higher marginal costs to supply larger quantities of insured deposits.

5.3 Bank Behavior

Does higher deposit insurance lead to increased risk-taking by insured banks? To investigate this relationship, we employ a similar framework to the one used to study depositor behavior. We focus on interest rate risk for two primary reasons. First, exposure to interest rate risk was a major concern for market participants and regulators during the banking turmoil. Therefore, a bank's exposure to this risk and its evolution over time is economically significant in our sample period. Second, unlike credit risk, interest rate risk can be measured more precisely at the time of the event. For example, interest rate risk can be measured by analyzing the maturity structure of a bank's assets and liabilities, which provides a direct assessment. In contrast, reliable measures of credit risk require observing actual borrower repayment behavior, often resulting in a time lag.

We use two measures to quantify interest rate risk: (a) the duration of securities held by banks and (b) the one-year maturity gap between a bank's assets and liabilities. Call Reports break securities in broad buckets such as securities due to mature within 3 months, or between 1 to 3 years. We calculate the duration of securities by taking a weighted average of the volume of securities in each maturity category, with weights based on the average maturity within each category. The one-year maturity gap is calculated according to Purnanandam (2007), by subtracting the total liabilities that are due to reprice or mature within a year from the corresponding total for assets. Since our focus is on risk-taking behavior linked to deposit insurance, we exclude deposits from the maturity gap calculation.

The results are presented in Table 4. Column (1) shows that banks within the network increased their security holdings by 2 percentage points during the crisis period. After controlling for the effects of other variables, column (4) indicates an increase of 1.33 percentage points in their security holdings. Columns (2) and (3) present estimates for measures of interest rate risk. The dependent variable in column (2) is the log change in the duration of securities from 2022Q4 to 2023Q4, which captures the change in the level of interest rate risk undertaken by banks after the SVB crisis. Our findings reveal that network banks extended the duration of their securities holdings by 3.97 percentage points during this period. In column (5), after controlling for other covariates, we observe a significant increase of 1.73 percentage points for network banks. Unlike our earlier regressions, we do not control for security holdings in this specification because the key dependent variable focuses on the maturity of these securities.

Columns (3) and (6) use the maturity gap between the bank's assets and liabilities as the dependent variable. This variable equals one for banks that increased the mismatch in the maturity of their assets and liabilities maturing or repricing within a year, and zero otherwise. Therefore, the regression coefficient measures the effect of network status on the likelihood of increasing the maturity gap. As shown in column (3), network banks were 5.52 percentage points more likely to increase their maturity gap compared to non-network banks. The results strengthen in column (6), where we also control for additional covariates.

Given these findings, one might wonder why banks did not join the reciprocal deposit network earlier. On the demand side, it is possible that uninsured depositors were compensated as such and did not experience safety concerns before SVB's failure. Chang et al. (2023) suggests that banks with higher levels of uninsured deposits were more specialized, with superior project screening capabilities that enabled them to generate higher returns. Consistent with this, we observe a spread of 5-10 basis points between uninsured and insured deposit rates during the decade leading up to the SVB crisis – see Appendix Figure A.6.[18] Limited depositor awareness of reciprocal deposit products may have also contributed to variation in network adoption decisions.

Given these findings, one might wonder why banks did not join the reciprocal deposit network earlier. On the demand side, it is possible that uninsured depositors were effectively com-

[18]By 2022Q4, this gap had widened to 20 basis points.

pensated for the lack of insurance and did not experience significant safety concerns prior to the SVB failure. Chang et al. (2023) suggests that banks with higher levels of uninsured deposits were more specialized, with superior project screening capabilities that enabled them to generate higher returns. Consistent with this, we observe a positive spread between uninsured and insured deposit rates throughout our sample – see Appendix Figure A.6.[19] Limited depositor awareness of reciprocal deposit products may have also contributed to varying adoption decisions.

From the banks' perspective, several factors can inhibit participation in the network. First, there are material costs associated with reciprocal deposits. In addition to the resources required to set up an account, banks must pay to transfer deposits on a per-transaction basis.[20] Second, practical challenges arise in finding counterparties that can match deposit amounts and maturities on demand, particularly if usage is infrequent or involves large accounts. Third, in periods when safety concerns are muted, these operational frictions can further disincentivize banks from joining the network.

Overall, our results indicate that banks with enhanced insurance coverage held more illiquid assets. This suggests that banks experiencing higher inflows of insured deposits during the crisis period took on greater levels of interest rate risk. While we do not evaluate whether this increase in interest rate risk is efficient, the heightened level of risk itself is a critical consideration in banking regulation.

6 Identification

The key endogeneity concern for our empirical analysis arises from non-random selection; network banks may be systematically different from non-network banks in a manner that make them less susceptible to a crisis for reasons independent of insurance coverage. Two economic forces are of particular concern: (i) depositors of network bank could be more "sticky" and less likely to leave these banks during a crisis, and (ii) network banks may have underlying risk exposures such that they retain and attract more depositors compared to non-network banks.

As discussed earlier, our results cannot be explained by differences in size or observable interest rate risk (e.g. maturity of security holdings) because we directly control for these attributes

[19]The spread between uninsured and insured deposit rates was 5-10 basis points during the decade leading up to the SVB crisis. By 2022Q4, this gap had widened to 20 basis points.

[20]Intrafi charges 12.5 cents per $10,000 transferred and reported $415 million in profits on $525 million in revenue in 2023, reflecting an 80% margin (Hoffman, 2024).

in our cross-sectional regressions. Consequently, the primary identification concern stems from unobserved heterogeneity across network and non-network banks. For instance, if depositors perceive network banks as systematically safer due to unobservable characteristics, our findings can be explained by risk exposure rather than deposit insurance.

In the following sections, we apply three complementary empirical strategies, which address these endogeneity concerns.

6.1 Within Bank-Quarter Regression

Our first test is motivated by a simple observation: if non-network banks are riskier than network banks, they should experience a greater decline in their uninsured deposits than their insured deposits, compared to the corresponding decline for network banks after the crisis. Egan et al. (2017) provide evidence supporting our assumption that as a bank's financial distress increases, it loses uninsured deposits, whereas there is no response in insured deposits.[21] In other words, after the crisis, a non-network bank's insured deposits should increase by more compared to its uninsured deposits, relative to the corresponding difference for network banks. Therefore, the risk-difference channel predicts a larger increase in insured deposits of a non-network bank compared to its uninsured deposits after the crisis. The access to insurance channel that we focus on predicts just the opposite: the difference between a bank's insured and uninsured deposits should increase for the network banks compared to the corresponding difference for the non-network banks. The contrasting prediction that we obtain from these two channels can be tested using the following bank-quarter fixed effect regression model:

$$Y^i_{b,q} = \alpha_{b,q} + \alpha_{Ins,q} + \alpha_{b,Ins} + \beta_1 \cdot \mathbb{1}_{Network_b} \times \mathbb{1}_{post_q} \times \mathbb{1}_{Ins_i} + \epsilon^i_{b,q}. \tag{2}$$

For each bank in the dataset we create two observations per quarter: one for the balance of insured deposits and one for uninsured deposits. $Y^i_{b,q}$ measures the log value of the deposits of either type i, insured or uninsured, for bank b in quarter q. $\mathbb{1}_{Ins_i}$ is an indicator variable that equals one for insured deposits and zero for uninsured deposits. The inclusion of bank-quarter fixed effects, $\alpha_{b,q}$ soaks away time-varying bank specific factors such as hidden risk or depositor characteristics. In addition, Insured deposit-quarter fixed effects, $\alpha_{Ins,q}$, accounts for aggregate time-varying differ-

[21] As an example, see Figure 1 of Egan et al. (2017) where they show the responsiveness of uninsured deposits to bank risk using an example of CitiBank and JP Morgan Chase.

ences between insured and uninsured deposits, while bank-insured deposit fixed effects, $\alpha_{b,Ins}$, controls for permanent differences between the insured and uninsured deposit base at each bank. The coefficient of interest is on the triple interaction term (β_1) and measures the effect of network membership on the differential increase in insured deposits compared to uninsured deposits after the crisis.

Table 5 presents the estimation results. As expected, we find a strong positive coefficient on the interaction term $\mathbb{1}_{Post} \times \mathbb{1}_{insured}$ (column 1), showing that the level of insured deposits increased by 8.22% for the average bank in the country following SVB's failure. However, as shown by the coefficient on the triple interaction term with the full set of fixed effects (column 3), banks on the network received an even larger inflow of insured deposits compared to their uninsured portion over this time period. The estimated coefficient of 9.61% is economically large and statistically significant. The finding is inconsistent with the risk channel and in line with our argument that access to insurance coverage led to the higher inflow of deposits into network banks.

6.2 Regulatory Incentives

In our second test, we exploit variation in a bank's incentive to join the reciprocal deposit network, which arises from historical banking regulation and is plausibly exogenous to the bank's other risk-taking incentives or depositor base.

6.2.1 Regulation on Public Funds and Brokered Deposits

Government or public institutions such as local municipalities, school districts, public hospitals and police departments have fiduciary responsibilities to protect their public funds. Therefore, they face state-specific regulations when depositing funds at a bank. While the details vary somewhat across different states, there are two generally acceptable methods for investment: collateralization or deposit insurance coverage.[22] The advent of the reciprocal deposit network relaxed the collateralization constraint on the deposit of public funds – banks were no longer required to hold specific collateral to protect their public funds.

[22] As an example, Minnesota writes in its statement of position on the deposit of public funds that: "All public funds on deposit in a bank or credit union must be protected by deposit insurance, a corporate surety bond or pledged collateral. Most institutions choose to pledge collateral for amounts not covered by the deposit insurance. The process involves the depository placing securities it owns within an account in the trust department of a commercial bank or a restricted account at the Federal Reserve, and pledging these securities to the government entity. If the depository fails, the government entity can take the securities pledged to make up for any loss to its deposited funds." See https://www.osa.state.mn.us/media/4zibjp05/depositspublicfunds1102statement.pdf.

While reciprocal deposits help banks attract and retain public funds in principle, state laws initially did not recognize it as an acceptable solution. Reciprocal deposits only became viable after states passed legislations permitting public institutions to invest in reciprocal deposits. Appendix Figure A.7 plots state deregulation events over time. Throughout the 2010s, all states eventually enacted legislation permitting reciprocal deposits as a qualified investment vehicle for public funds.[23] As states enacted these laws, banks joined the network to attract public funds and the reciprocal deposit network expanded nationally.

Despite state deregulations, the cost of holding reciprocal deposits was still higher than that of core deposits due to their classification as brokered deposits. Following the EGRRCPA enacted by the U.S. Congress in 2018, reciprocal deposits, within a threshold, were treated by banking regulators as core deposits (Ryfe and Saretto, 2023). Consequently, many banks securing public funds further joined the network around this time.

Figure 7 illustrates the adoption of reciprocal deposits across states, presenting the share of banks on the network over time. We distinguish between states that enacted enabling regulations early, before 2010, and those that did so later, after 2010. Two key patterns emerge: (a) state laws have a lasting impact, as reflected in the persistent difference in network participation and utilization between early and late deregulating states, and (b) the passage of the brokered deposits exemption had a significant impact on banks' incentives to join the network, as evidenced by the sharp increase in participation around the rule's implementation.

We argue that banks that joined the network after the passage of the brokered deposits exemption rule did so primarily due to the relative costs of the two methods of securing public funds, rather than other confounding factors such as their hidden risk characteristics or depositor base. Therefore, comparing banks that joined the network around the passage of the rule with those that did not allows us to compare outcomes across two groups of banks that differed in terms of their assessment of regulatory costs, not other unobserved characteristics; banks that found it optimal to join the network for unobserved reasons would have joined it even before the passage of the FDIC ruling. This observation provides us with a source of variation that is likely exogenous in nature.

Due to the lengthy rule-making process for regulatory changes, we define banks that joined

[23] For example, Michigan passed relevant laws in 2008 under its section 307 and 308 (https://legislature.mi.gov/documents/2009-2010/billanalysis/House/htm/2009-HLA-4397-3.htm). An industry observer also wrote: "Most states have passed legislation allowing local subdivisions, including school districts, to use these reciprocal networks as an alternative to collateralization (https://www.bankingdive.com/news/reciprocal-deposits-community-banks-save-small-business/576309/).

the network within a broad window surrounding the key policy discussions as "switcher" banks. Serious discussions regarding the treatment of reciprocal deposits as core deposits began in 2015.[24] We include all banks with non-zero public deposits of December 2014, as these institutions faced constraints imposed by regulations surrounding the safety of public deposits. Banks that joined the network between 2015 and 2020, encompassing the period of the policy discussions, are classified as "switcher" banks and form our treatment group.[25] All remaining banks constitute the control group.

Table 6 tabulates summary statistics of switcher and non-switcher banks as of 2022Q4, the quarter immediately preceding the SVB crisis. Across all variables with the exception of leverage, there are statistically significant differences between the means of covariates (e.g., size, profitability, security holdings, interest rate risk). While it is plausible that switchers joined the network around the FDIC rule for reasons unrelated to bank risk and depositor base characteristics following the crisis, we control for these key covariates in our preferred difference-in-differences specification.

We estimate the following difference-in-differences model to estimate the effect of enhanced insurance coverage on depositor and bank outcomes:

$$Y_{b,q} = \alpha_b + \delta_q + \beta \cdot Switcher_b \times Post_q + \Sigma\gamma(X_b \times post_q) + \epsilon_{b,q}. \tag{3}$$

Our analysis spans bank-quarter observations from 2022Q1 to 2023Q4. This sample period starts sufficiently after the implementation of FDIC's brokered deposit exemption rule and precedes the banking turmoil, enabling us to assess parallel trends. Our results remain robust when extending the sample further back in time. $Y_{b,q}$ is the outcome variable for bank b in quarter q. The model includes bank and quarter fixed effects. The variable *Post* is equal to one for all quarters starting from and including 2023Q1, while *Switcher* is an indicator variable that equals one for banks that joined the network in response to the FDIC ruling and zero otherwise. To account for the independent effects of characteristics such as bank size and interest rate risk on post-crisis performance, we include a comprehensive set of control variables along with their interactions with the *Post* indicator. Specifically, the variables included, measured as of 2022Q4, are: log of assets, securities-to-total assets ratio, log of the average maturity of security holdings, equity-to-asset

[24] See https://www.federalregister.gov/documents/2016/02/04/2016-01448/assessments.

[25] This window is consistent with our observations in Figure 7, where network participation began to increase in 2015Q1 and plateaued after 2020Q2.

ratio, log of public state deposits, and return on assets.

6.2.2 DiD regression for Depositor Behavior

We use our difference-in-differences specification from Equation 3 to estimate the causal effect of deposit insurance on depositor behavior.

Table 7 presents the estimation result with the quantity of deposits as the dependent variable. Our main results are in columns (2) and (4), where we use the log amount of total deposits as the dependent variable. As indicated in column (2), the switcher banks experience an increase of 3.73% in their total deposit following SVB's failure, compared to the corresponding change for the non-switchers. When we use all the control variables in column (4), the estimate remains economically and statistically significant at 1.64%. Columns (1) and (3) confirm that this increase is primarily due to a rise in insured deposits for the switcher banks during this period, with their insured deposits increasing by a notable 4.85% after the crisis in a model that incorporates all control variables. To further robustness-check our findings, we exclude public entity deposits in Appendix Table A.4. Notably, the point estimates increase when public entity deposits are excluded.

To establish a causal link between enhanced deposit insurance and deposit quantities, we conduct a parallel trends analysis to test whether the observed differences in deposit growth post-crisis are influenced by unobserved factors or pre-existing trends specific to either group. Figure 8 plots the quarterly estimates from the following regression model to check for any preexisting trend in total deposits of these two sets of banks:

$$Y_{b,q} = \alpha_b + \delta_q + \Sigma\beta^{q-2023Q1} \cdot Switcher_b \times Q_{q-2023Q1} + \Sigma\gamma(X_b \times Post_q) + \epsilon_{b,q}. \tag{4}$$

The model estimates separate coefficient for each quarter in the sample. As shown in Figure 8a, there is a significant increase in the total deposit amount for the switchers starting with 2023Q1, but there is no evidence of any trend across the two groups before the crisis. The increase is steepest during the first three quarters after the crisis, after which the differential effects stabilize.

Table 8 presents the estimation results for interest rates offered on time deposits. According to column (3), switcher banks paid 10.79 basis points lower interest rates in the post period compared to the corresponding change in non-switchers, based on the estimation model that includes all the control variables. Further, for the same sample, we find that time deposits increased by

4.44% for the switcher banks. Therefore, the results document an outward shift in the demand curve for insured deposits. The estimates show that every 1% increase in deposit supply corresponds to a decrease of 2.43 basis points in interest rates.

Figure 8b presents the estimate for quarterly trends in the difference in interest rates between switcher and non-switcher banks. There is no differential trend in interest rates offered by both types of banks to their depositors prior to the crisis. However, a remarkable shift occurred starting a quarter after the crisis. Combined with Figure 8a that shows the quarterly estimate for the quantity of deposits, a stark pattern emerges: switcher banks attracted more deposits at a lower rate soon after the SVB crisis.

6.2.3 DiD Regression for Bank Risk

We next analyze the difference in bank risk-taking behavior between switcher and non-switcher banks using the same difference-in-differences specification as in Equation 3. The results are presented in Table 9. We find that switcher banks increased their security holdings by 3.88% after the SVB crisis, as shown in column (1). Results on measures of interest rate risk are provided in columns (2) to (4). Switcher banks increased their holdings of very long-dated securities, with maturities more than 15 years, by 4.84%. Consequently, the overall maturity of their security holdings increased by 3.70%. Additionally, they increased the mismatch in the maturity of their assets and liabilities, as measured by the one-year maturity gap, by 8.30%. Figure 8c presents the estimate for quarterly trend in the maturity gap of the switcher banks compared to the non-switchers, according to Equation 4, confirming parallel trends in their risk-taking behavior before the crisis.

Overall, these regression estimates establish a causal link between access to enhanced deposit insurance and depositor and bank behavior around the crisis.

6.2.4 Mediation through Reciprocal Deposits

Thus far, our difference-in-differences results indicate that banks that switched around the FDIC brokered deposits exemption attracted more deposits during the crisis and increased their interest rate risk exposure. Are these results mediated through the use of reciprocal deposits, the channel that we propose? We directly answer this question by estimating a difference-in-differences instrumental variables (IV) model using *Switcher* $\times$ *Post* as an instrument for the use of reciprocal deposits by a bank. In that context, the difference-in-differences results presented thus far correspond to the reduced form estimates of our model, linking the instrument to the outcome variables.

Table 10 presents the result of the corresponding first stage regression with reciprocal deposits to total asset ratio of the bank as the dependent variable. As shown in column (2), switcher banks saw an increase of 1.36 percentage points in the reciprocal deposits to total assets ratio following the SVB crisis compared to non-switchers. This is an economically large effect given the unconditional average of the reciprocal deposits to total assets ratio of 0.84%. Our instrument is statistically strong as well, as indicated by the F-statistics of the instrument.

In Table 11, we produce the second stage estimate for all the outcomes variables used in our reduced form difference-in-differences regression model. These regressions provide us with the estimates of the effect of reciprocal deposits on various outcomes, as instrumented by the $Switcher \times Post$ variable. The results show economically significant and statistically significant effects across all outcome variables. Therefore, the effect of enhanced access to deposit insurance, as proxied by $Switcher \times Post$ variable, is mediated through our channel: an increase in the usage of reciprocal deposits. These findings alleviate endogeneity concerns that the relationship between network status and outcomes may be driven by unobserved risk factors or depositor heterogeneity.

6.2.5 Matched Sample Difference-in-Differences

In the ideal experiment, banks in one region would be randomly assigned deposit insurance while those in another region would not. While such a randomized trial is not feasible in practice, our third test approximates this ideal by exploiting the staggered timing of state deregulations that allowed public entities to access the reciprocal deposit market. This approach is motivated by Figure 7, which demonstrates the lasting impact of state laws, with late deregulators exhibiting lower network participation and utilization compared to early deregulators.

By the time the FDIC's brokered deposits exemption rule was implemented, all but one state had already authorized public entities to access the reciprocal deposit market. Georgia was the last state to enact legislation in May 2019 – nearly one full year after the FDIC rule took effect. This means that while the FDIC rule reduced banks' regulatory costs of using the reciprocal deposit market, public entities in Georgia could not access the market through Georgia-based banks until 2019. Figure 9 supports this, showing that Georgia banks did not join the network as quickly as those in other states following the brokered deposits exemption in 2018, but did so at a much higher rate after Georgia's reciprocal deposit deregulation in 2019.

To test for differential effects of enhanced deposit insurance, we use a matched sample analysis to compare depositor and bank behavior between Georgia-incorporated banks and non-Georgia banks after the SVB failure. We adopt an intention-to-treat (ITT) approach, classifying banks based on their headquarter location – Georgia or non-Georgia – regardless of actual network participation.

We estimate the following equation:

$$Y_{b,q} = \alpha_b + \delta_q + \beta \cdot Georgia_b \times Post_q + \Sigma\gamma(X_b \times Post_q) + \epsilon_{b,q}, \tag{5}$$

where $Y_{b,q}$ is the outcome variable for bank b in quarter q, $Georgia_b$ is a binary variable equal to 1 for Georgia-based banks, and $Post_q$ is a binary variable equal to 1 from 2023Q1 onward. We include bank and quarter-year fixed effects, as well as controls for bank-level characteristics measured in 2022Q4, to absorb differential trends.

To address potential selection bias, we use propensity score matching to construct a control group. The treatment variable is an indicator for whether a bank is incorporated in Georgia, and the outcome is whether the bank was on the network in 2022Q4. We calculate propensity scores using a logistic regression, including six covariates likely to influence both treatment and outcome: size, securities share, profitability, interest rate risk, public entity deposits, and equity capitalization. After calculating scores, we sort them in descending order and match without replacement. The matched sample includes 136 Georgia banks and 136 non-Georgia banks. Of these, 32 Georgia banks were on the network in 2022Q4, compared to 53 non-Georgia banks. Table 12 presents a balance test, showing that the covariates are similarly distributed between the two groups. Since state deregulations impact network incentives primarily for banks with public entity deposits, we further restrict the sample to such banks.

Table 13 presents the regression results. Column (1) shows that Georgia banks reported 4.43% lower insured deposits than non-Georgia banks following SVB's failure. However, no significant difference in total deposits is observed. Column (3) indicates that Georgia banks paid 22 basis points more on insured deposits compared to non-Georgia banks post-SVB failure. Taken together, columns (3) and (4) suggest that a 1% increase in deposit supply is associated with a 2.92 basis points reduction in interest rates – comparable to our the estimates produced by our baseline specification and switcher-DiD strategy.

6.3 Reallocation of Deposits

Market-based financial innovation in deposit insurance has the potential to reshape the industrial organization of the banking sector by reducing the advantage of the "too-big-to-fail" guarantee enjoyed by the largest banks. Under the traditional insurance design, where a nationwide limit is set for all banks and depositors, smaller banks are likely to face a competitive disadvantage due to differential access to "implicit" insurance. Reciprocal deposits can potentially mitigate this disadvantage by allowing smaller banks to obtain explicit insurance for their large clients.

This has immediate implications for the pricing of financial products in local markets even in those with just a handful of banks such as markets with a Bertrand-Nash equilibrium. If smaller banks can retain their depositors through reciprocal deposits, it could significantly impact the economy. Depositors may build deeper relationships with one or two banks instead of maintaining multiple banking relationships solely for higher insurance coverage. This could, in turn, influence the volume and type of loans banks issue.

However, the impact of reciprocal deposits on the overall banking market remains an empirical question. Some may argue that access to higher deposit insurance simply redistributes existing liabilities within a bank, leaving its overall asset size unchanged. For instance, banks may utilize the network to reclassify uninsured deposits as insured, resulting in no net change in total assets. On the other hand, enhanced insurance could enable banks to grow by issuing more loans and holding additional securities.

To formally assess the effect of deposit insurance access on asset growth, we employ the difference-in-differences empirical strategy across switchers and non-switchers, as in Equation 3.[26] Table 14 reports the results. The dependent variable is the log of total assets for a bank in a given quarter. Column (1) does not include any bank controls. Column (2) controls for the interaction of bank-level characteristics, including securities holdings, maturity of securities portfolio, capitalization, total state deposits and profitability, measured in 2022Q4, with the *Post* variable. Column (3) adds an additional interaction term between bank size, measured in 2022Q4, and the *Post* variable. Our results indicate that network banks experienced an additional 1.53% to 1.55% growth in assets during this period. These estimates are statistically significant at the 1% level

[26] Our findings are robust across alternate specifications employed in this study.

and economically meaningful in light of the average quarterly growth rate of bank assets of 3% between 2010 and 2022.

Next, we examine the heterogeneous effects of deposit insurance access on total assets by bank size. Using Equation 4, we compare the dynamic effects of deposit insurance on total assets for small banks (assets below $10 billion) versus midsize and large banks (assets above $10 billion). Figure 10 shows that the positive impact of deposit insurance on total assets is primarily driven by small banks in the aftermath of the SVB crisis. While Figure 10a reveals a statistically significant and economically meaningful increase in total assets among small banks post-SVB crisis, Figure 10b shows a slight contraction in total assets for midsize and large banks that joined the network.

We rigorously test these relationships in Table 15, employing the model specified in Equation 3. Consistent with the visual evidence, small banks experienced a 2.63% to 4.76% increase in total assets following the SVB crisis, more than triple the baseline estimate reported in Table 14. These findings, while broadly consistent with utilization patterns by size group in Figure 1, suggest that enhanced deposit insurance disproportionately benefits small banks relative to midsize and large banks.

To supplement these findings, we turn to micro-level evidence to directly test whether enhanced access to deposit insurance influences the industrial organization of local banking markets. Specifically, we analyze how network membership affects changes in local deposit market share. For each zip code in the country, we calculate the bank's market share as the fraction of local deposits it holds. We measure the change in a bank's market share between 2022Q2 and 2023Q2, reflecting the change in local market share around the crisis period. The change in market share is the dependent variable in our model. We include zip code fixed effects to control for any zip code-specific trends in deposit growth. In column (1) of Table 16, we show that network banks increased their market share by 0.22% over this time period. This point estimate remains relatively stable even when we include all bank characteristics in column (4). Column (4) reveals a 0.17% increase in their market share among network banks during the banking turmoil.

Collectively, our findings imply that access to insurance can partially limit the advantage of large banks of the economy and improve the competitiveness of small banks. These results are important for policy debates surrounding implicit government guarantees as well as for understanding the effect of deposit insurance on market structure.

6.4 Robustness Tests

As a robustness test, we exclude the largest banks with more than $1 trillion in assets from the sample. The main motivation behind this exercise is to address concerns that special circumstances of some of the largest banks of the country may affect our results. For example, soon after the onset of the regional banking crisis, depositors began to move their money towards some of the largest banks for safety. Furthermore, some large banks were implicitly and explicitly providing support to other struggling banks at the time (for instance, JP Morgan Chase acquired First Republic Bank in March 2023). By excluding the largest banks, we ensure that our results are not driven by these considerations. The robustness test results are presented in Appendix Table A.5. Our results on deposit flows are slightly stronger for this specification. Similarly, the effect on deposit interest rates is larger when we exclude the largest banks. Overall, our results are robust to the exclusion of the largest banks from the sample.

7 Discussion and Policy Recommendations

Our findings have several important implications for banking regulation. One of the key objectives of the FDIC is to protect small depositors.[27] The increasing use of reciprocal deposits impacts this objective by effectively extending deposit insurance coverage to large depositors, thereby altering the scope of protection within the system. Whether this extension is desirable from a social welfare perspective requires a much deeper analysis of costs and benefits of this system, a topic beyond the scope of our work. However, our study raises at least two immediate policy questions.

First, the FDIC may need to reconsider its deposit insurance pricing scheme, as it is now effectively insuring a larger pool of deposits. While deposit insurance was initially focused on small accounts, reciprocal deposits allow banks to insure larger amounts. Policymakers should assess whether to raise insurance premiums for reciprocal deposits, given their potential to increase the FDIC's overall liability. Second, regulators should consider whether to raise the current deposit insurance limit, as banks are effectively able to achieve higher insurance coverage through reciprocal deposit arrangements. While our findings are suggestive of overall demand for increased

[27] See https://www.fdic.gov/analysis/options-deposit-insurance-reform: "Protecting small depositors, who hold most of the deposit accounts, has been an objective of the deposit insurance system since its founding."

coverage, we leave rigorous quantification of the optimal insurance limit to future work (Dávila and Goldstein, 2023).

A precise answer to these questions depends on various trade-offs highlighted in our paper. For instance, banks using reciprocal deposits must find counterparties in the network to insure larger deposits, while depositors retain the ability to exclude banks they do not find creditworthy. Reciprocal deposits, therefore, introduce a combination of regulatory insurance and market discipline. A blanket increase in the insurance limit would diminish the market-discipline mechanism inherent in reciprocal deposits.

Our main finding that reciprocal deposits can promote financial stability for distressed banks demonstrates a clear benefit of access to deposit insurance. As shown in Appendix Figure A.1, troubled banks active on the network – such as PacWest Bank – increased their use of reciprocal deposits and were able to survive the recent crisis. However, while reciprocal deposits can enhance stability, they may also increase interconnectedness in the banking system. Since network banks have exposure to counterparties across the country, a disruption in one segment could lead to contagion. Policymakers will need to weigh these risks against the benefits when considering alternative designs.

Our results also have implications for antitrust and competition. The reciprocal deposit network reduces the too-big-to-fail advantage of the largest banks in the economy, which can be desirable from the perspective of limiting implicit bailout guarantees that these banks enjoy. However, on the other hand, smaller banks may not be fully incentivized to compete with each other when they exchange deposits through the reciprocal deposit network.

Lastly, our study highlights the importance of disclosure requirements regarding a bank's reciprocal deposit counterparties. During a crisis, reciprocal banks associated with a failing institution may face elevated withdrawal risks, even if deposits are insured. This can occur, for instance, due to depositors' concerns about the liquidity of their deposits at the failed bank. Precise information on the network structure can help policymakers formulate better resolution plans in the event of a crisis.

While a comprehensive evaluation of these issues is beyond the scope of this paper, our findings offer a starting point for improving the design of deposit insurance programs that incorporate market-based elements.

8 Conclusion

A common feature of deposit insurance programs worldwide is that regulators set a national insurance limit, providing the same level of insurance to each depositor at a bank. This uniformity leaves little room for banks to enhance their clients' insurance coverage. A recent financial innovation – reciprocal deposits – has disrupted this system, allowing banks to offer significantly larger insurance coverage without requiring depositors to open multiple accounts with other institutions. In this paper, we study the economic implications of such market-based insurance programs.

While an extensive literature exists on traditional deposit insurance programs, our understanding of market-based provisioning of deposit insurance is limited. Since there is no theoretical limit to the amount of deposits that can be insured under this new system, market-based enhancements in insurance coverage can potentially have positive and negative effects. On the one hand, it could serve as a strong deterrent against depositor runs during times of instability. On the other hand, it could encourage banks to take on greater risks. Moreover, the emergence of a market-based system may alter the industrial organization of the banking sector by reducing the implicit too-big-to-fail guarantees that the largest banks typically enjoy. Finally, this system can change the dynamics of bank-client relationships, as larger clients no longer need to maintain multiple banking relationships to increase insurance coverage. Consequently, market-based deposit insurance could have significant long-term implications for the economy.

Our paper provides one of the first comprehensive analyses of the reciprocal deposit insurance market, using the regional banking crisis as an experimental setting and the presence on the reciprocal deposit network as a proxy for access to enhanced market-based coverage. Our findings suggest that depositors are less likely to withdraw their money from banks with higher access to insurance, and banks with enhanced insurance access pay lower deposit rate to their borrowers. Banks with enhanced access grew their deposit base around the time of the SVB crisis, while those without access experienced deposit outflows. Network banks became larger during this period, indicating that the increased deposits were not necessarily used by these banks to substitute other sources of funding. Instead, we find evidence that these banks invested the additional funds in assets with higher interest rate risk.

Collectively, our results suggest that market-based deposit insurance can be an effective tool for containing depositor runs but may also have lasting consequences for risk-taking and the competitive structure of the banking industry. While we do not evaluate the overall welfare impact of these effects, our findings can inform future analyses and guide policy design for deposit insurance markets.

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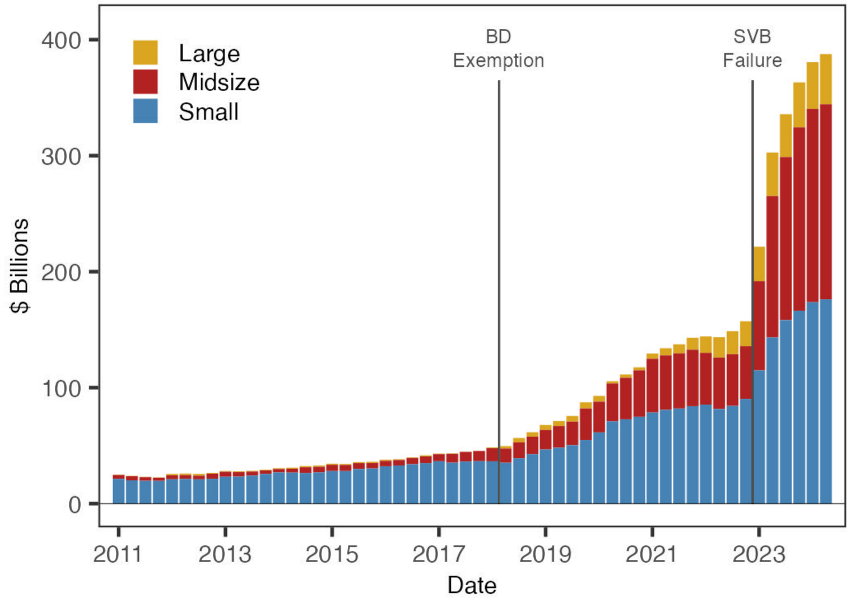
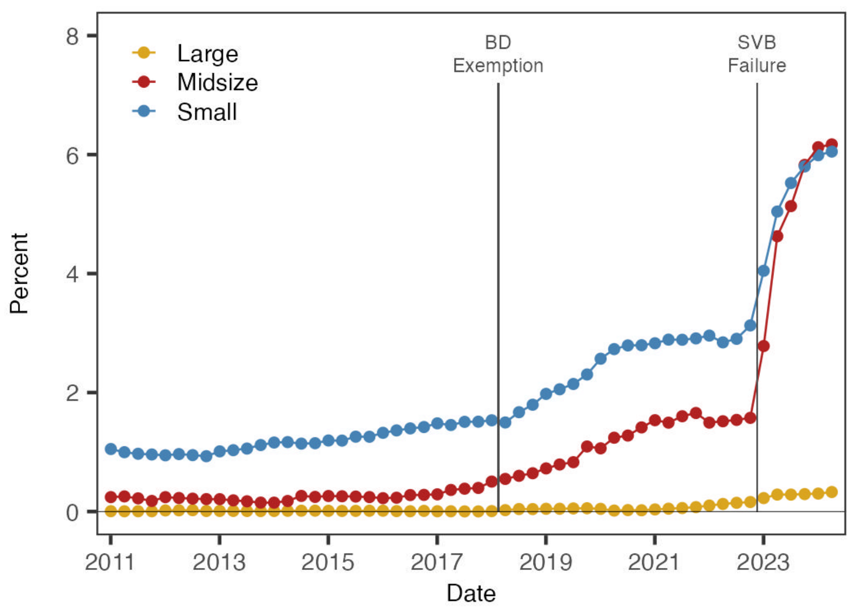
Figure 1: Reciprocal Deposits in the U.S. Banking System

(a) Reciprocal Deposits by Volume

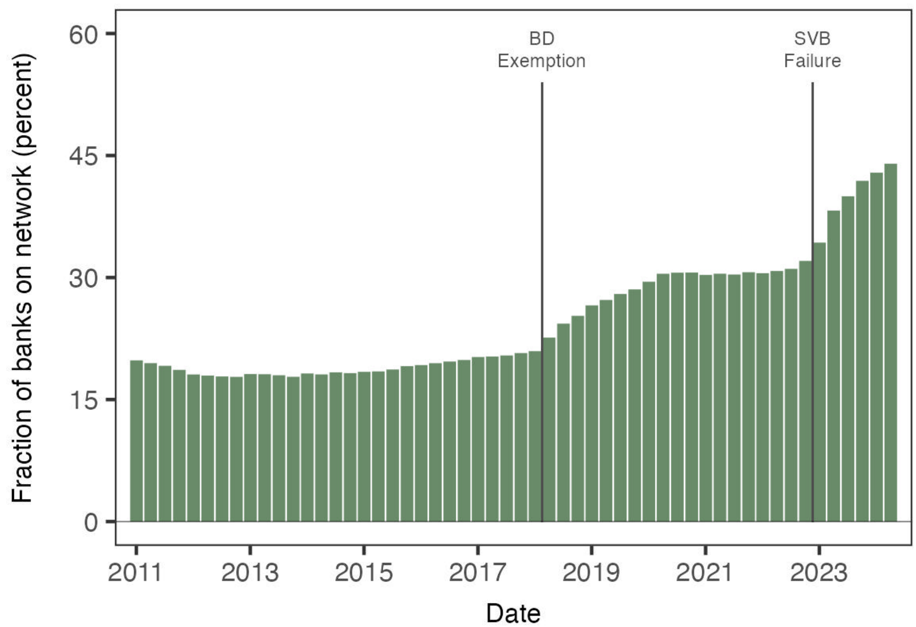


(b) Reciprocal Deposits to Total Deposits



Notes: This figure plots the evolution of reciprocal deposits between 2010Q1 and 2024Q2, both in terms of volume (top panel) and as a share of total deposits (bottom panel). "Large," "Midsize," and "Small" banks refer to banks with more than $100 billion in assets, between $10 billion and $100 billion in assets, and less than $10 billion in assets, respectively. "BD Exemption" signifies when the EGRRCPA exempted a capped amount of reciprocal deposits from being treated as brokered deposits, and "SVB Failure" marks the start of the 2023 regional banking crisis.
Source: Call Reports.

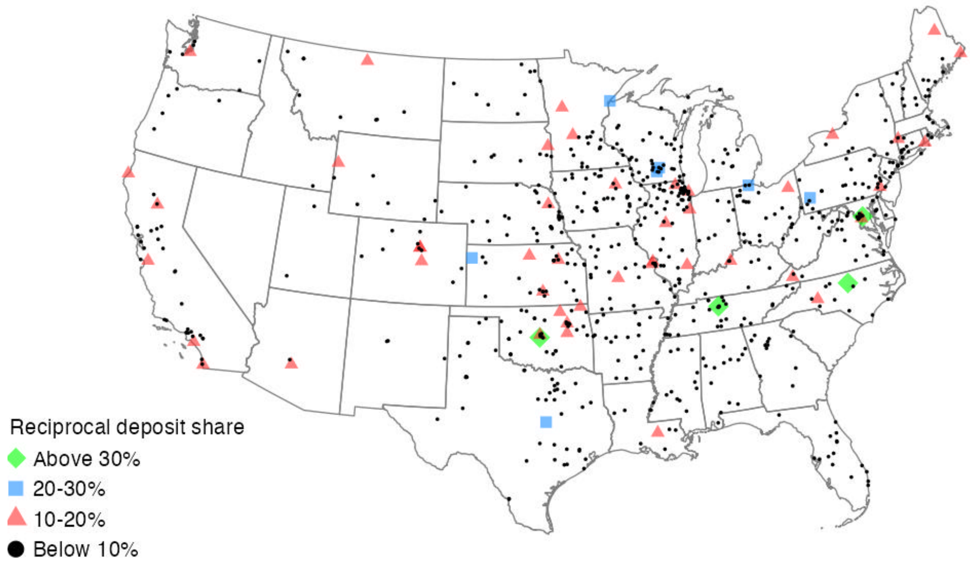
Figure 2: Evolution of the Reciprocal Deposit Network



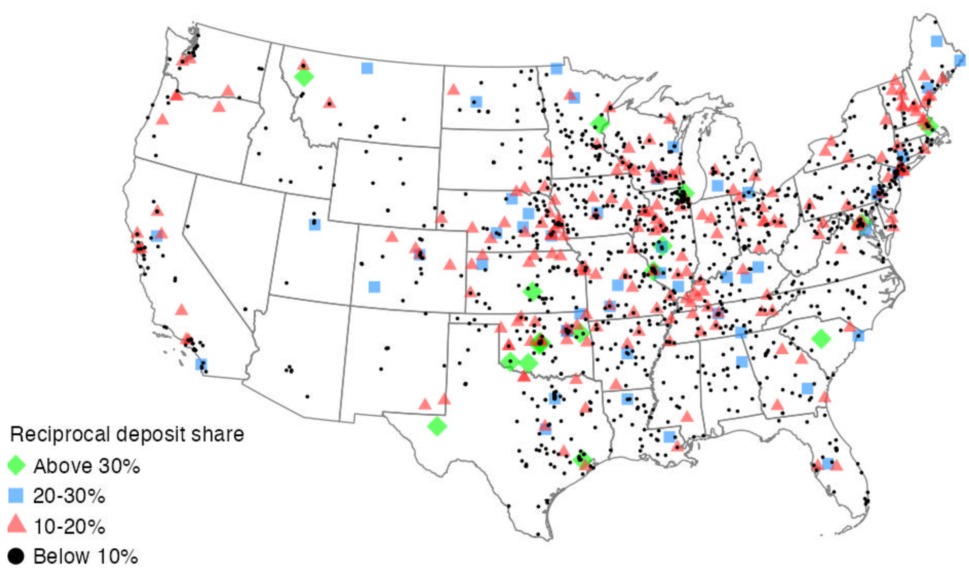
Notes: This figure plots the share of banks with positive reciprocal deposits ("network banks") between 2010Q1 and 2024Q2. "BD Exemption" signifies when the EGRRCPA exempted a capped amount of reciprocal deposits from being treated as brokered deposits, and "SVB Failure" marks the start of the 2023 regional banking crisis.
Source: Call Reports.

Figure 3: Geographic Expansion of Reciprocal Deposits

(a) 2011

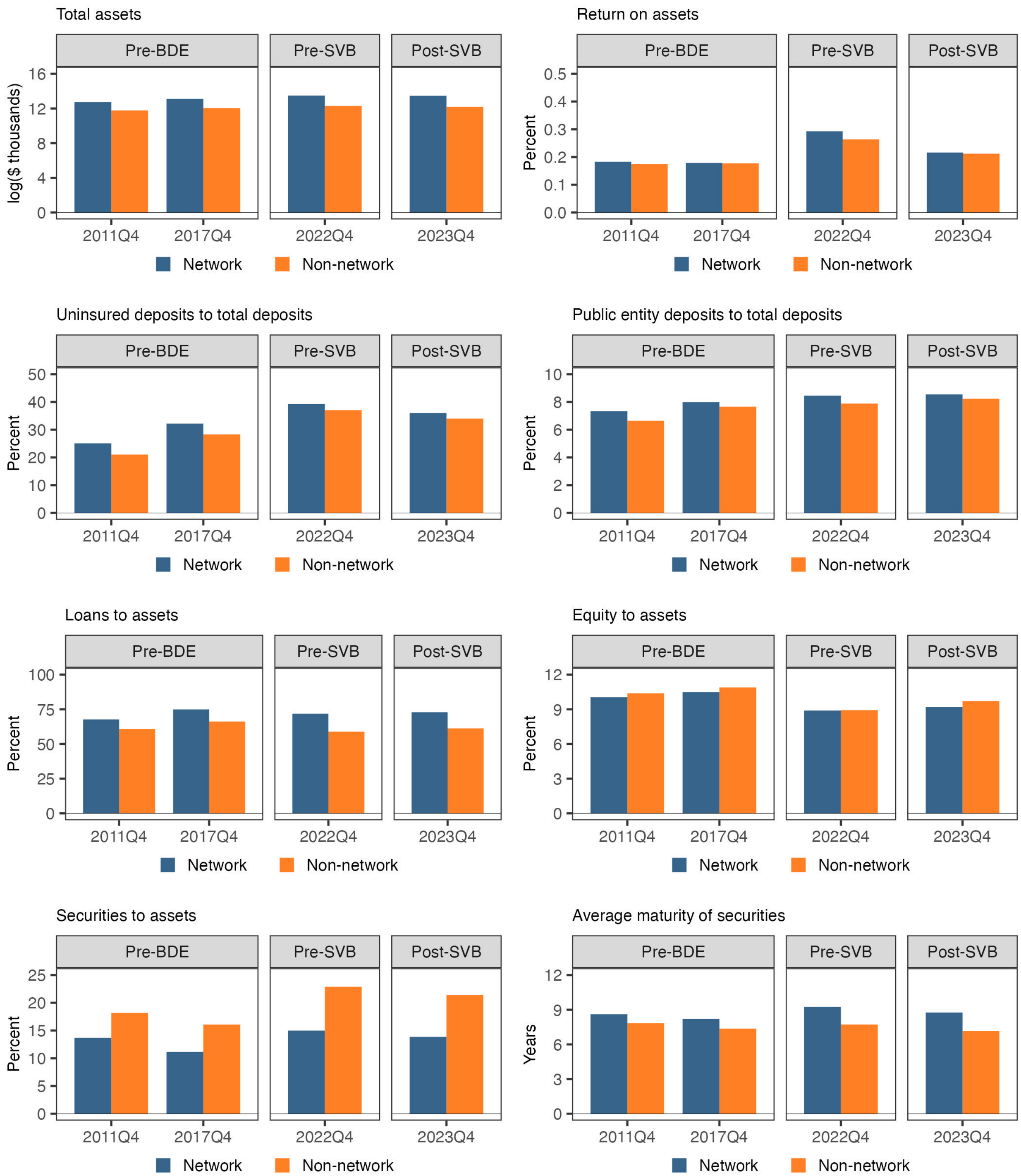


(b) 2022



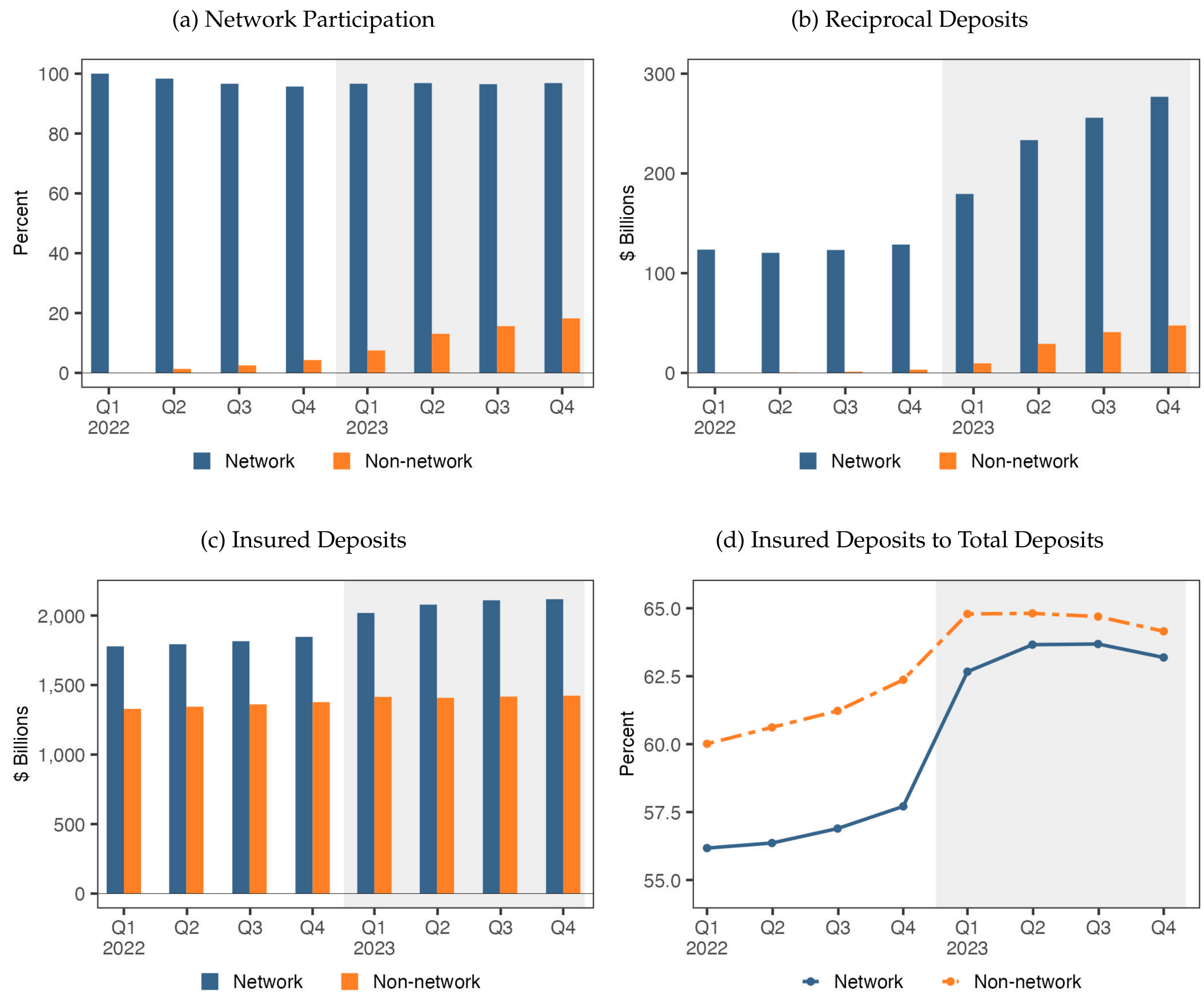
Notes: This figure plots the expansion of network banks between 2011Q4 and 2022Q4, organized by each bank's reliance on reciprocal deposits. Network banks are defined as banks with positive reciprocal deposits. Each point corresponds to the location of a bank's headquarters and represents the reciprocal deposits to total deposits ratio (percent).
Source: Call Reports.

Figure 4: Network Status and Bank Characteristics



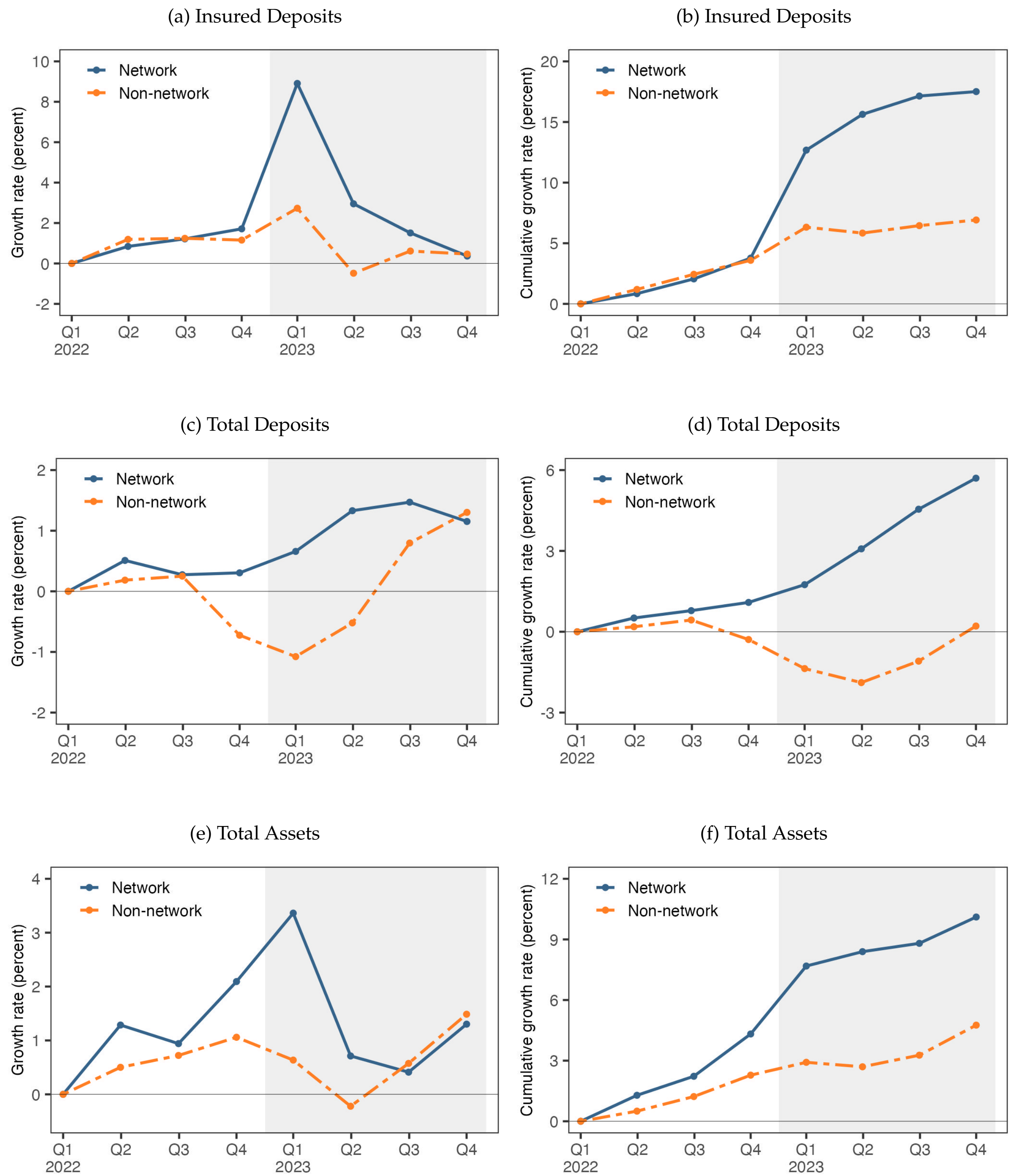
Notes: This figure plots the median of eight characteristics of network and non-network banks in 2011Q4 and 2017Q4 (prior to the FDIC brokered deposit rule), 2022Q4 (pre-SVB crisis), and 2023Q4 (post-SVB crisis). The sample includes small and midsize banks (less than $100 billion in assets) that were active between 2011Q1 and 2023Q4.
Source: Call Reports.

Figure 5: Network Participation and Reciprocal/Insured Deposit Growth



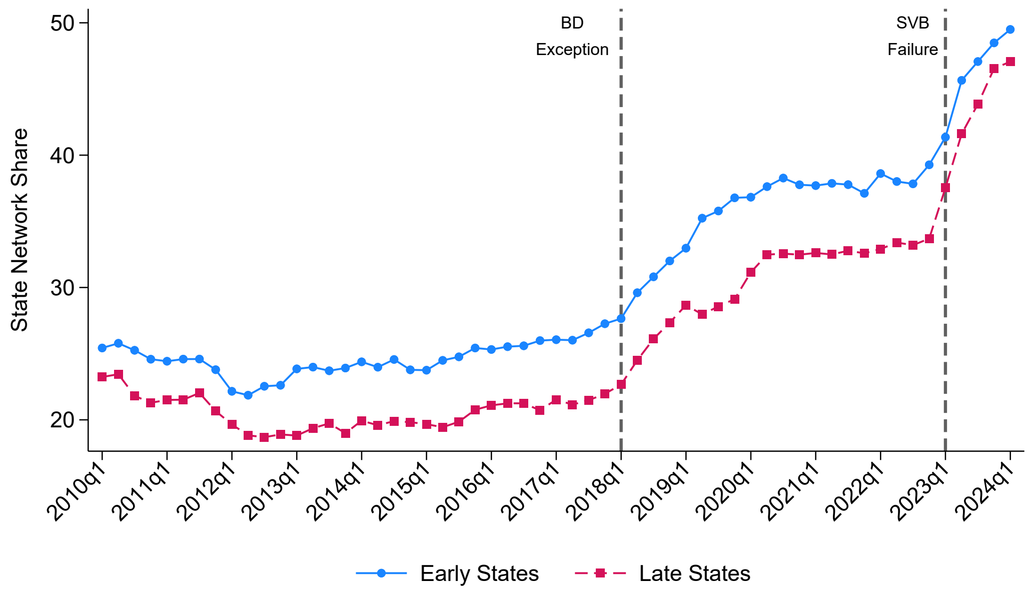
Notes: The top-left panel plots the transition of network status for network and non-network banks in 2022Q1. The top-right panel plots the growth of total reciprocal deposits by each group. The bottom panels plot the growth of insured deposits, both in terms of dollar amounts and as a share of total deposits. The sample includes small and midsize banks (less than $100 billion in assets) that were active between 2011Q1 and 2023Q4. The grey shaded area denotes the period after SVB's failure.
Source: Call Reports.

Figure 6: Deposit and Asset Growth by Network Status



Notes: This figure plots the quarterly change in insured deposits, total deposits, and total assets at network and non-network banks. Panels (b), (d), and (f) plot cumulative growth rates. Network status is measured in 2022Q1. The sample includes small and midsize banks (less than $100 billion in assets) that were active between 2022Q1 and 2023Q4. The grey shaded area denotes the period after SVB's failure.
Source: Call Reports.

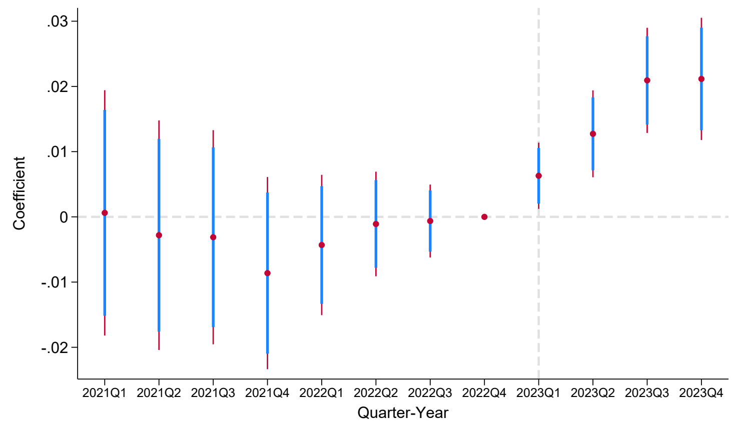
Figure 7: Network Participation Among Early and Late Deregulators



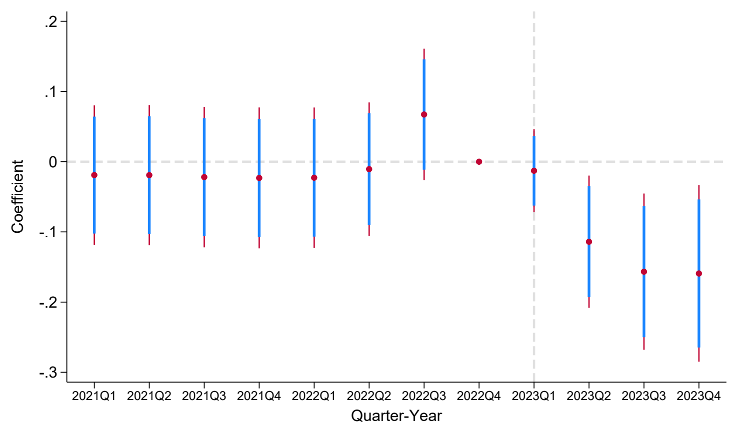
Notes: This figure presents network participation from 2010Q1 to 2023Q4. The figure presents the trend in the state share of banks participating in the network. Two significant events occur during this period: the brokered deposits exemption in 2018Q1 and the collapse of Silicon Valley Bank (SVB) in 2023Q1.
Source: Call Reports, IntraFi, authors' calculations.

Figure 8: Assessment of Parallel Trends

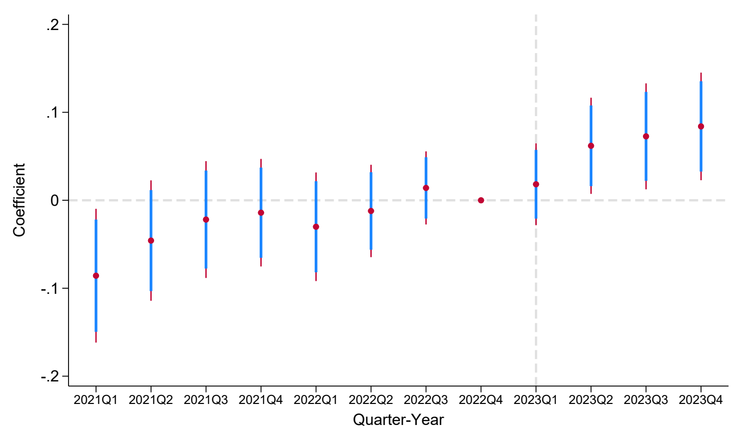
(a) Total Deposits



(b) Deposit Rate

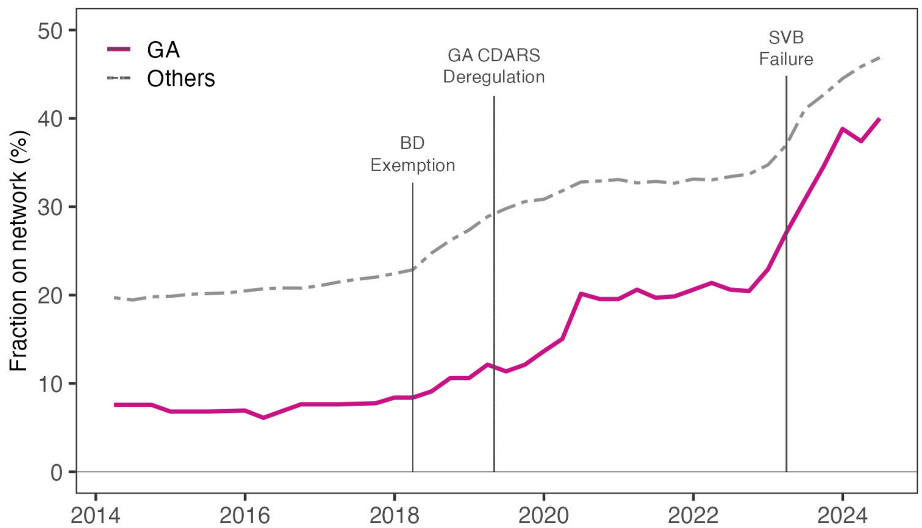


(c) Abs. Maturity Gap



Notes: This figure presents trends in total deposits, deposit rate, and absolute maturity gap from 2021Q1 through 2023Q4. The figure plots the regression coefficients from the following specification $Y_{b,t} = \alpha + \beta \text{Switcher}_b \times \mathbb{1}_t + X_b \times \mathbb{1}_t + \delta_b + \delta_t + \epsilon_{b,t}$. *Switcher* is a binary variable that takes a value of 1 for banks that joined the network during the period surrounding the brokered-deposit ruling (between 2015Q1 and 2020Q2). $\mathbb{1}_t$ is an indicator for the specified quarter. Abs. maturity gap is defined as in Purnanandam (2007). Control variables X_b include the interactions of bank size, capitalization, total state deposits and profitability, measured in 2022Q4, with $\mathbb{1}_t$. Panels A and B additionally include interactions of securities holdings and maturity of the securities portfolio in 2022Q4 with their interactions with $\mathbb{1}_t$. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1. Standard errors are clustered by bank. 90^{th} (95^{th}) percentile confidence interval is in blue (red).
Source: Call Reports.

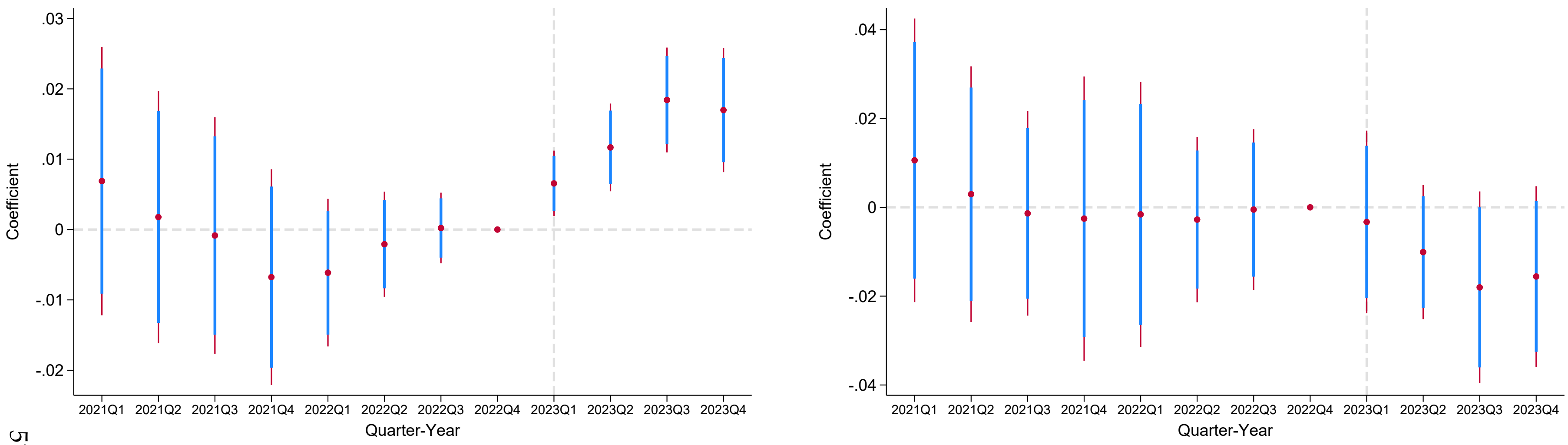
Figure 9: Georgia Deregulation and Network Growth



Notes: This figure plots the share of banks with positive reciprocal deposits ("network banks") in Georgia and all other states between 2014Q1 and 2023Q4. "BD Exemption" signifies when the EGRRCPA exempted a capped amount of reciprocal deposits from being treated as brokered deposits, "GA CDARS Deregulation" is the date Georgia allowed public entities to use reciprocal deposits for obtaining insurance, and "SVB Failure" marks the start of the 2023 regional banking crisis.
Source: Call Reports.

Figure 10: Total Asset Growth by Bank Size

(a) Smaller (b) Larger



Notes: This figure presents trends in total assets from 2021Q1 through 2023Q4 for small, midsize, and large banks. The figure plots the regression coefficients from the following specification $ln(Assets)_{b,t} = \alpha + \beta \text{Switcher}_b \times \mathbb{1}_t + X_b \times \mathbb{1}_t + \delta_b + \delta_t + \epsilon_{b,t}$. *Switcher* is a binary variable that takes a value of 1 for banks that joined the network during the period surrounding the brokered-deposit ruling (between 2015Q1 and 2020Q2). $\mathbb{1}_t$ is an indicator for the specified quarter. $ln(Assets)$ is defined as log-transformed total assets. Control variables X_b include the interactions of bank size, capitalization, total state deposits and profitability, securities holdings and maturity of the securities portfolio measured in 2022Q4, with $\mathbb{1}_t$. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1. In Figure 10a, we report the results for small banks, defined as those with total assets below \$10 billion as of 2021Q1. In Figure 10b, we report the results for midsize and large banks, comprising those with total assets above \$10 billion as of 2021Q1. Standard errors are clustered by bank. 90^{th} (95^{th}) percentile confidence interval is in blue (red).

Source: Call Reports, IntraFi, authors' calculations.

Table 1: Descriptive Statistics

	N	p25	p50	p75	Mean	s. d.
Total assets ($1,000s, log)						
Network	1,524	12.75	13.49	14.43	13.69	1.32
Non-network	3,232	11.58	12.29	13.10	12.42	1.34
Return on assets (pct.)						
Network	1,524	0.20	0.29	0.38	0.28	0.21
Non-network	3,232	0.16	0.26	0.38	0.28	0.32
Total loans/total assets (pct.)						
Network	1,524	62.12	71.84	79.35	69.92	12.87
Non-network	3,232	45.89	58.88	72.13	57.14	20.38
Total equity/total assets (pct.)						
Network	1,524	7.59	8.89	10.59	9.25	3.30
Non-network	3,232	6.85	8.92	11.52	11.14	11.46
Total securities/total assets (pct.)						
Network	1,524	8.59	14.99	23.59	16.74	10.87
Non-network	3,232	11.93	22.88	34.60	24.33	15.86
Average maturity of securities (years)						
Network	1,503	6.19	9.25	12.20	9.24	4.20
Non-network	3,133	4.33	7.72	10.99	7.88	4.29
Insured deposits/total deposits (pct.)						
Network	1,524	51.46	60.77	69.90	59.96	14.71
Non-network	3,180	53.06	62.96	71.47	61.67	15.46
Public entity deposits/total deposits (pct.)						
Network	1,524	4.21	8.45	13.55	9.61	6.90
Non-network	3,180	2.39	7.88	14.60	9.44	8.31
Number of branches (log)						
Network	1,521	1.39	1.95	2.71	2.02	1.15
Non-network	3,168	0.00	1.10	1.79	1.15	0.99

Notes: This table reports summary statistics for network and non-network banks as of 2022Q4. "N" refers to the number of observations. "p25," "p50," and "p75" correspond to the 25th, 50th, and 75th percentiles, respectively. "s.d." denotes standard deviation.
Source: Call Reports, FDIC Summary of Deposits.

Table 2: Total Deposit Growth and Pre-SVB Network Presence

	(1)	(2)	(3)	(4)
	Δln(Ins. Dep.)	Δln(Tot. Dep.)	Δln(Ins. Dep.)	Δln(Tot. Dep.)
Network_{2022Q4}	0.0780***	0.0396***	0.0567***	0.0265***
	(0.0056)	(0.0032)	(0.0060)	(0.0034)
ROA_{2022Q4}			-0.0597***	-0.0321***
			(0.0171)	(0.0108)
$\text{Securities/Assets}_{2022Q4}$			-0.0022***	-0.0017***
			(0.0002)	(0.0001)
$\text{Equity/Assets}_{2022Q4}$			0.0041***	0.0030***
			(0.0009)	(0.0006)
$\ln(\text{Assets})_{2022Q4}$			0.0065***	0.0023**
			(0.0018)	(0.0012)
Constant	0.0476***	0.0078***	-0.0047	-0.0016
	(0.0027)	(0.0019)	(0.0264)	(0.0174)
Observations	4,546	4,546	4,546	4,546
R^2	0.0474	0.0313	0.1194	0.1280

Notes: This table presents the relation between deposit growth from 2022Q4 to 2023Q4 and bank network status in 2022Q4. The dependent variable is the insured deposit growth (Δ ln(Ins. Dep.)) from 2022Q4 to 2023Q4 in columns (1) and (3) and the total deposit growth (Δ ln(Total Dep.)) from 2022Q4 to 2023Q4 in columns (2) and (4). Columns (3) and (4) include controls for bank-level characteristics, including bank size, securities holdings, capitalization, and profitability, as measured in 2022Q4. Heteroskedasticity-robust standard errors are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports.

Table 3: Deposit Rate Change and Pre-SVB Network Presence

	(1)	(2)	(3)	(4)
	ΔDep. Rate	Δln(Time Dep.)	ΔDep. Rate	Δln(Time Dep.)
Network_{2022Q4}	-0.1633***	0.1083***	-0.0869**	0.0406***
	(0.0388)	(0.0113)	(0.0426)	(0.0124)
ROA_{2022Q4}			0.2471**	0.0014
			(0.1086)	(0.0346)
$\text{Securities/Assets}_{2022Q4}$			0.0040***	-0.0021***
			(0.0015)	(0.0004)
$\text{Equity/Assets}_{2022Q4}$			0.0015	-0.0045**
			(0.0057)	(0.0019)
$\ln(\text{Assets})_{2022Q4}$			-0.0431***	0.0446***
			(0.0146)	(0.0044)
Constant	1.0942***	0.3285***	1.4515***	-0.1384**
	(0.0232)	(0.0062)	(0.2066)	(0.0618)
Observations	3,379	3,379	3,379	3,379
R^2	0.0051	0.0283	0.0119	0.0811

Notes: This table presents the relation between network status and the changes in deposit rates and quantities from 2022Q4 to 2023Q4. The dependent variable in columns (1) and (3) is the change in the deposit rate offered on 12-month certificates of deposits with a minimum account size of $10,000. In columns (2) and (4), the dependent variable is time deposit growth. Columns (3) and (4) includes controls for bank-level characteristics, including bank size, securities holdings, capitalization, and profitability, as measured in 2022Q4. Heteroskedasticity-robust standard errors are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: RateWatch, Call Reports.

Table 4: Interest Rate Risk and and Pre-SVB Network Presence

	(1)	(2)	(3)	(4)	(5)	(6)
	Δln(Securities)	Δln(Maturity)	$\mathbb{1}$[Increase MatGap]	Δln(Securities)	Δln(Maturity)	$\mathbb{1}$[Increase MatGap]
Network_{2022Q4}	0.0200***	0.0397***	0.0552***	0.0133*	0.0173**	0.0559***
	(0.0064)	(0.0083)	(0.0155)	(0.0070)	(0.0088)	(0.0172)
ROA_{2022Q4}				0.0508***	0.0332	0.0596**
				(0.0178)	(0.0260)	(0.0286)
$\text{Equity/Assets}_{2022Q4}$				0.0007	0.0012	0.0003
				(0.0005)	(0.0009)	(0.0009)
$\ln(\text{Assets})_{2022Q4}$				0.0060**	0.0193***	-0.0027
				(0.0025)	(0.0032)	(0.0055)
$\text{Securities/Assets}_{2022Q4}$						-0.0004
						(0.0005)
Constant	-0.0761***	-0.1509***	0.5801***	-0.1728***	-0.4133***	0.6027***
	(0.0038)	(0.0053)	(0.0090)	(0.0324)	(0.0425)	(0.0742)
Observations	4,495	4,495	4,495	4,495	4,495	4,495
R^2	0.0021	0.0045	0.0028	0.0099	0.0162	0.0041

Notes: This table presents the relation between measures of interest rate risk from 2022Q4 to 2023Q4 and bank network status in 2022Q4. Δln(Maturity) is the change in the weighted average maturity of total securities from 2022Q4 to 2023Q4. $\mathbb{1}$[Increase MatGap] is an indicator for an increase in the absolute maturity gap from 2022Q4 to 2023Q4, as defined in Purnanandam (2007). Columns (3) and (4) include bank size, capitalization, and profitability in 2022Q4 as control variables. Heteroskedasticity-robust standard errors are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports.

Table 5: Mechanism: Network Banks and Deposits

ln(Dep.)	(1)	(2)	(3)
Network × Post × $\mathbb{1}_{Insured}$	0.1001***	0.0961***	0.0961***
	(0.0124)	(0.0120)	(0.0120)
Network × $\mathbb{1}_{Insured}$	-0.0909***		
	(0.0226)		
Post × $\mathbb{1}_{Insured}$	0.0832***	0.0822***	
	(0.0052)	(0.0050)	
$\mathbb{1}_{Insured}$	0.5269***		
	(0.0121)		
Bank × Quarter-Year FE	✓	✓	✓
Bank × Insured Dep. FE		✓	✓
Insured Dep. × Quarter-Year FE			✓
N	68,056	68,056	68,056
R^2	0.9532	0.9952	0.9952

Notes: This table presents the relation between network participation and insured/uninsured deposits, after the 2023 banking turmoil. We construct a deposit type × bank × quarter-year panel data set, where deposit type includes insured and uninsured deposits (ln(Ins. Dep.) and ln(Unins. Dep.)). To estimate the causal effect of network affiliation on deposit levels, we employ a difference-in-differences analysis with a triple interaction. The coefficient of interest is the coefficient on the interaction term: $Network \times Post \times \mathbb{1}_{Insured}$. Here, $\mathbb{1}_{Insured}$ is an indicator variable for insured deposit type, *Network* is a binary variable indicating network affiliation in 2022Q4, and *Post* is a binary variable indicating time periods after 2022Q4. Standard errors, clustered by bank, are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports.

Table 6: Descriptive Statistics, Difference-in-differences Analysis

	Switcher ($N = 555$)		**Non-switcher** ($N = 2,605$)		
	Mean	s.d.	Mean	s.d.	Diff.
Total assets ($1,000s, log)	13.39	1.27	12.37	1.20	1.03***
					(0.000)
Return on assets (pct.)	0.29	0.20	0.27	0.21	0.02**
					(0.014)
Total loans/total assets (pct.)	69.95	12.91	57.87	17.74	12.07***
					(0.000)
Total equity/total assets (pct.)	9.16	3.33	9.23	4.32	-0.07
					(0.657)
Total securities/total assets (pct.)	16.80	10.76	25.42	15.45	-8.62***
					(0.000)
Average maturity of securities (years)	9.16	4.12	7.91	4.23	1.26***
					(0.000)
Insured deposits/total deposits (pct.)	60.85	13.15	62.17	13.55	-1.32**
					(0.032)
Public entity deposits/total deposits (pct.)	9.70	7.02	10.56	8.35	-0.85**
					(0.012)
Number of branches (log)	1.84	1.04	1.15	0.93	0.68***
					(0.000)

Notes: This table reports summary statistics for switcher and non-switcher banks as of 2022Q4. "Diff." is the difference of means between switcher and non-switcher banks. Statistical significance levels for p-values are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports, FDIC Summary of Deposits.

Table 7: Deposits and Network Adoption

	(1) ln(Ins. Dep.)	(2) ln(Tot. Dep.)	(3) ln(Ins. Dep.)	(4) ln(Tot. Dep.)
Switcher × Post	0.0734***	0.0373***	0.0485***	0.0164***
	(0.0071)	(0.0042)	(0.0073)	(0.0044)
Controls			✓	✓
Bank FE	✓	✓	✓	✓
Quarter-Year FE	✓	✓	✓	✓
N	23,962	23,962	23,962	23,962
R^2	0.9957	0.9972	0.9959	0.9973

Notes: This table presents the relation between deposits and network adopters, after the 2023 banking turmoil. The dependent variable is insured deposits (ln(Ins. Dep.)) in columns (1) and (3) and total deposits (ln(Total Dep.)) in columns (2) and (4). *Switcher* is a binary variable that takes a value of 1 for banks that joined the network during the period surrounding the brokered-deposit ruling (between 2015Q1 and 2020Q2), and 0 for banks that did not join the network through 2022Q2. *Post* is a binary variable that takes a value of 1 from 2023Q1 onwards, and 0 for previous quarters. All columns include bank and quarter-year fixed effects. Columns (3) and (4) include controls for bank-level characteristics, including interactions of bank size, securities holdings, maturity of securities portfolio, capitalization, total state deposits and profitability, measured in 2022Q4, with the *Post* variable. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1 and spans eight quarters. Standard errors, clustered by bank, are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports.

Table 8: Deposit Rates and Network Adoption

	(1) Dep. Rate	(2) ln(Time Dep.)	(3) Dep. Rate	(4) ln(Time Dep.)
Switcher × Post	-0.1494***	0.1166***	-0.1079*	0.0444***
	(0.0551)	(0.0142)	(0.0595)	(0.0150)
Controls			✓	✓
Bank FE	✓	✓	✓	✓
Quarter-Year FE	✓	✓	✓	✓
N	16,942	16,942	16,942	16,942
R^2	0.7468	0.9827	0.7482	0.9837

Notes: This table presents the relation between deposits and network adopters, after the 2023 banking turmoil. The dependent variable is deposit rate offered on 12-month certificates of deposits with a minimum account size of $10,000 deposits (Dep. Rate) in columns (1) and (3) and time deposits (ln(Time Dep.)) in columns (2) and (4). *Switcher* is a binary variable that takes a value of 1 for banks that joined the network during the period surrounding the brokered-deposit ruling (between 2015Q1 and 2020Q2), and 0 for banks that did not join the network through 2022Q2. *Post* is a binary variable that takes a value of 1 from 2023Q1 onwards, and 0 for previous quarters. All columns include bank and quarter-year fixed effects. Columns (3) and (4) include controls for bank-level characteristics, including interactions of bank size, securities holdings, maturity of securities portfolio, capitalization, total state deposits and profitability, measured in 2022Q4, with the *Post* variable. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1 and spans eight quarters. Standard errors, clustered by bank, are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: RateWatch, Call Reports.

Table 9: Interest Rate Risk and and Network Adoption

	(1)	(2)	(3)	(4)
	ln(Securities)	ln(Sec.>15Y)	ln(Maturity)	ln(Abs. MatGap)
Switcher × Post	0.0388***	0.0484**	0.0370***	0.0830***
	(0.0102)	(0.0230)	(0.0110)	(0.0274)
Controls	✓	✓	✓	✓
Bank FE	✓	✓	✓	✓
Quarter-Year FE	✓	✓	✓	✓
N	18,403	18,403	18,403	18,403
R^2	0.9897	0.9805	0.9920	0.9264

Notes: This table presents the relation between measures of interest rate risk and network adopters, after the 2023 banking turmoil. The dependent variable is the total securities (ln(Securities)) in column (1), total securities with maturity over 15 years (ln(Sec.>15Y)) in column (2), maturity of securities portfolio (ln(Maturity)) in column (3), and abs. maturity gap (ln(Abs. MatGap)) in column (4). *Switcher* is a binary variable that takes a value of 1 for banks that joined the network during the period surrounding the brokered-deposit ruling (between 2015Q1 and 2020Q2), and 0 for banks that did not join the network through 2022Q2. *Post* is a binary variable that takes a value of 1 from 2023Q1 onwards, and 0 for previous quarters. Abs. maturity gap is defined as in Purnanandam (2007). All columns include bank and quarter-year fixed effects. All columns include controls for interactions of bank-level characteristics, including bank size, capitalization, total state deposits and profitability, measured in 2022Q4, with the *Post* variable. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1 and spans eight quarters. Standard errors, clustered by bank, are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports.

Table 10: Mechanism: Validation of Network Utilization

Recip. Dep./Assets	(1)	(2)
Switcher × Post	0.0154***	0.0136***
	(0.0015)	(0.0016)
Controls		✓
Bank FE	✓	✓
Quarter-Year FE	✓	✓
N	16,918	16,918
R^2	0.8828	0.8837
KP LM Statistic	85.624	62.033
CD Wald F Statistic	1116.880	751.498
KP Wald F Statistic	99.340	68.016

Notes: This table presents the relation between banks' share of reciprocal deposits and network adopters, after the 2023 banking turmoil. The dependent variable is banks' share of reciprocal deposits (Recip. Dep./Assets) in columns (1) through (3). *Switcher* is a binary variable that takes a value of 1 for banks that joined the network during the period surrounding the brokered-deposit ruling (between 2015Q1 and 2020Q2), and 0 for banks that did not join the network through 2022Q2. *Post* is a binary variable that takes a value of 1 from 2023Q1 onwards, and 0 for previous quarters. Columns (2) and (3) include bank and quarter-year fixed effects. Column (3) includes controls for the interaction of bank-level characteristics, including bank size, securities holdings, maturity of securities portfolio, capitalization, total state deposits and profitability, measured in 2022Q4, with the *Post* variable. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1 and spans from 2022Q1 through 2023Q4, spanning eight quarters. Standard errors, clustered by bank, are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports.

Table 11: Mechanism: Mediation through Reciprocal deposits

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ln(Ins. Dep.)	ln(Tot. Dep.)	Dep. Rate	ln(Time Dep.)	ln(Securities)	ln(Maturity)	ln(Abs. MatGap)
Recip. Dep./Assets	3.4638***	1.5201***	-8.1226*	3.2196***	2.2639**	2.2823**	5.2684***
	(0.5732)	(0.3507)	(4.5237)	(1.1580)	(1.0562)	(1.1324)	(1.8250)
Controls	✓	✓	✓	✓	✓	✓	✓
Bank FE	✓	✓	✓	✓	✓	✓	✓
Quarter-Year FE	✓	✓	✓	✓	✓	✓	✓
N	16,918	16,918	16,918	16,918	16,918	16,918	16,918

Notes: This table presents the 2SLS estimates between various bank outcomes and network adopters, after the 2023 banking turmoil. The dependent variable is insured deposits (ln(Ins. Dep.)) in column (1), total deposits (ln(Dep.)) in column (2), deposit rate offered on 12-month certificates of deposits with a minimum account size of $10,000 (Dep. Rate) in column (3), time deposits (ln(Time Dep.)) in column (4), total securities (ln(Securities)) in column (5), maturity of securities portfolio (ln(Maturity)) in column (6), and abs. maturity gap (ln(Abs. MatGap)) in column (7). The independent variable, reciprocal deposits share, is instrumented according to a DiD specification, see Table 10. Abs. maturity gap is defined as in Purnanandam (2007). All columns include bank and quarter-year fixed effects and control for bank-level characteristics, including the interactions of bank size, capitalization, total state deposits and profitability, measured in 2022Q4, with the *Post* variable. Columns (1), (2), (3), and (4) additionally include the interactions of securities holdings, maturity of securities portfolio, measured in 2022Q4 with the *Post* variable. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1 and spans from 2022Q1 through 2023Q4, spanning eight quarters. Standard errors, clustered by bank, are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports.

Table 12: Georgia Case Study: Balance Tests

		Mean		*t*-test	
Variable		**Treated**	**Control**	t	$p > \|t\|$
ln(Assets)	Unmatched	12.585	12.866	-2.33	0.020
	Matched	12.585	12.604	-0.13	0.898
Securities/Assets	Unmatched	21.110	22.791	-1.33	0.184
	Matched	21.110	21.740	-0.36	0.722
ROA	Unmatched	0.335	0.269	2.78	0.005
	Matched	0.335	0.318	0.56	0.573
ln(Maturity)	Unmatched	2.013	1.940	1.19	0.232
	Matched	2.013	2.0544	-0.52	0.606
ln(Public Deposits)	Unmatched	9.868	10.008	-0.90	0.367
	Matched	9.868	10.022	-0.83	0.406
Equity/Assets	Unmatched	9.161	9.243	-0.22	0.826
	Matched	9.161	8.858	0.76	0.449

Notes: This table presents the balance test from propensity score matching between Georgia and non-Georgia banks. The treatment variable is an indicator for whether a bank is incorporated in Georgia and the outcome variable is whether a bank was on the network in 2022Q4. We construct propensity scores using a logistical regression and include six covariates: size, securities share, profitability, interest rate risk, amount of public entity deposits, and equity capitalization. The scores are are sorted in descending order and matched without replacement. The t-stat and p-value denote the statistical significance of the test comparing the means of the treated and control groups for each variable in the unmatched and matched samples.
Source: Call Reports.

Table 13: Georgia Case Study: Matched Sample Difference-in-Differences

	(1) ln(Ins. Dep.)	(2) ln(Tot. Dep.)	(3) Dep. Rate	(4) ln(Time Dep.)
Georgia × Post	-0.0442**	0.0003	0.2220*	-0.0766**
	(0.0193)	(0.0100)	(0.1342)	(0.0338)
Controls	✓	✓	✓	✓
Bank FE	✓	✓	✓	✓
Quarter-Year FE	✓	✓	✓	✓
N	1,579	1,579	1,579	1,579
R^2	0.9947	0.9979	0.7598	0.9809

Notes: This table presents the relation between bank outcomes and banks headquartered in Georgia, after the 2023 banking turmoil. The dependent variable is insured deposits (ln(Ins. Dep.)), total deposits (ln(Tot. Dep.), deposit rate offered on 12-month certificates of deposits with a minimum account size of $10,000 (Dep. Rate), and time deposits (ln(Time Dep.)) in columns (1) through (4), respectively. *Georgia* is a binary variable that takes a value of 1 for banks that are headquartered in Georgia. *Post* is a binary variable that takes a value of 1 from 2023Q1 onwards, and 0 for previous quarters. All columns include bank and quarter-year fixed effects. Column (3) includes controls for the interaction of bank-level characteristics, including bank size, securities holdings, maturity of securities portfolio, capitalization, total state deposits and profitability, measured in 2022Q4, with the *Post* variable. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1 and spans from 2022Q1 through 2023Q4, spanning eight quarters. Standard errors, clustered by bank, are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports.

Table 14: Bank Size and and Network Adoption

ln(Assets)	(1)	(2)	(3)
Switcher × Post	0.0382***	0.0153***	0.0155***
	(0.0040)	(0.0041)	(0.0042)
Controls (exc. Size)		✓	
Controls (inc. Size)			✓
Bank FE	✓	✓	✓
Quarter-Year FE	✓	✓	✓
N	23,962	23,962	23,962
R^2	0.9976	0.9977	0.9977

Notes: This table presents the relation between bank size and network adopters, after the 2023 banking turmoil. The dependent variable is bank size (ln(Assets)) in columns (1) through (3). *Switcher* is a binary variable that takes a value of 1 for banks that joined the network during the period surrounding the brokered-deposit ruling (between 2015Q1 and 2020Q2), and 0 for banks that did not join the network through 2022Q2. *Post* is a binary variable that takes a value of 1 from 2023Q1 onwards, and 0 for previous quarters. All columns include bank and quarter-year fixed effects. Column (2) includes controls for the interaction of bank-level characteristics, including securities holdings, maturity of securities portfolio, capitalization, total state deposits and profitability, measured in 2022Q4, with the *Post* variable. Column (3) builds upon the specifications in column (3) by an interaction term between bank size and the *Post* variable. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1 and spans from 2022Q1 through 2023Q4, spanning eight quarters. Standard errors, clustered by bank, are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports.

Table 15: Bank Size and Small-Bank Network Adoption

ln(Assets)	(1)	(2)	(3)
Small × Switcher × Post	0.0476***	0.0355***	0.0263**
	(0.0074)	(0.0090)	(0.0105)
Switcher × Post	-0.0073	-0.0200**	
	(0.0062)	(0.0082)	
Small × Post	0.0138***	0.0573***	
	(0.0049)	(0.0086)	
Controls (exc. Size)		✓	
Controls (inc. Size)			✓
Switcher × Quarter-Year FE			✓
Small × Quarter-Year FE			✓
Bank FE	✓	✓	✓
Quarter-Year FE	✓	✓	
N	23,962	23,962	23,962
R^2	0.9976	0.9977	0.9977

Notes: This table presents the relation between bank size and small vs. large network adopters, after the 2023 banking turmoil. The dependent variable is bank size (ln(Assets)) in columns (1) through (3). *Small* is a binary variable that takes a value of 1 for banks with assets below $10 billion in 2022Q4, and 0 otherwise. *Switcher* is a binary variable that takes a value of 1 for banks that joined the network during the period surrounding the brokered-deposit ruling (between 2015Q1 and 2020Q2), and 0 for banks that did not join the network through 2022Q2. *Post* is a binary variable that takes a value of 1 from 2023Q1 onwards, and 0 for previous quarters. All columns include bank and quarter-year fixed effects. Column (2) includes controls for the interaction of bank-level characteristics, including securities holdings, maturity of securities portfolio, capitalization, total state deposits and profitability, measured in 2022Q4, with the *Post* variable. Column (3) builds upon the specifications in column (3) by an interaction term between bank size and the *Post* variable. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1 and spans from 2022Q1 through 2023Q4, spanning eight quarters. Standard errors, clustered by bank, are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: FDIC Summary of Deposits, Call Reports.

Table 16: Network Banks and Local Market Share

Δ Market Share	(1)	(2)	(3)	(4)	(5)
Network_{2022Q4}	0.0022***	0.0021***	0.0021***	0.0017***	0.0017***
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
$\ln(\text{Assets})_{2022Q4}$		-0.0004***	-0.0004***	-0.0003***	-0.0003***
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
ROA_{2022Q4}			-0.0054***	-0.0058***	-0.0058***
			(0.0015)	(0.0015)	(0.0015)
$\text{Securities/Assets}_{2022Q4}$				-0.0002***	-0.0002***
				(0.0000)	(0.0000)
$\text{Equity/Assets}_{2022Q4}$					-0.0000
					(0.0000)
Zip Code FE	✓	✓	✓	✓	✓
N	55,968	55,968	55,968	55,968	55,968
R^2	0.2472	0.2476	0.2479	0.2489	0.2489

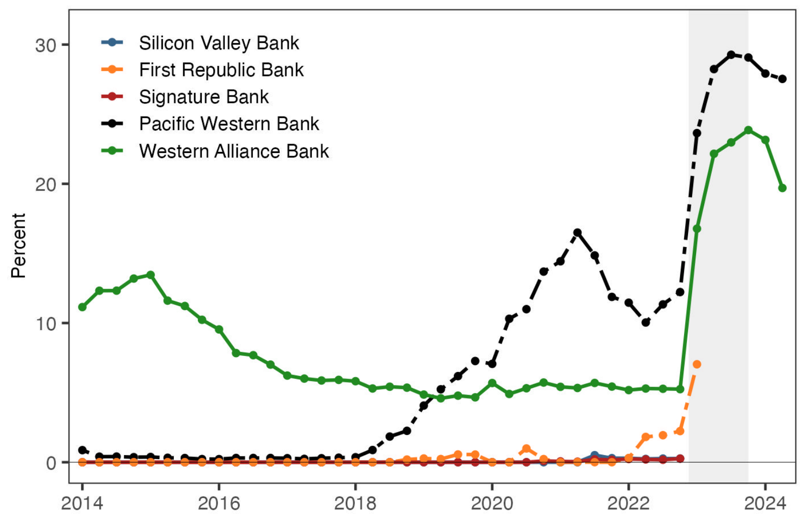
Notes: This table presents the relation between the change in local bank market share from 2022Q4 to 2023Q4 and bank network status in 2022Q4. The dependent variable is the bank's market share ($\Delta \frac{\text{Bank Deposits}_{b,z,2023Q4-2022Q4}}{\text{Total Deposits}_{z,2023Q4-2022Q4}}$) in zipcode z from 2022Q4 to 2023Q4. All columns include zip code fixed effects. Columns (2) to (5) successively add controls for bank-level characteristics, including bank size, profitability, securities holdings, and capitalization as measured in 2022Q4. Heteroskedasticity-robust standard errors are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: FDIC Summary of Deposits, Call Reports.

Online Appendix for:
The Economics of Market-Based Deposit Insurance

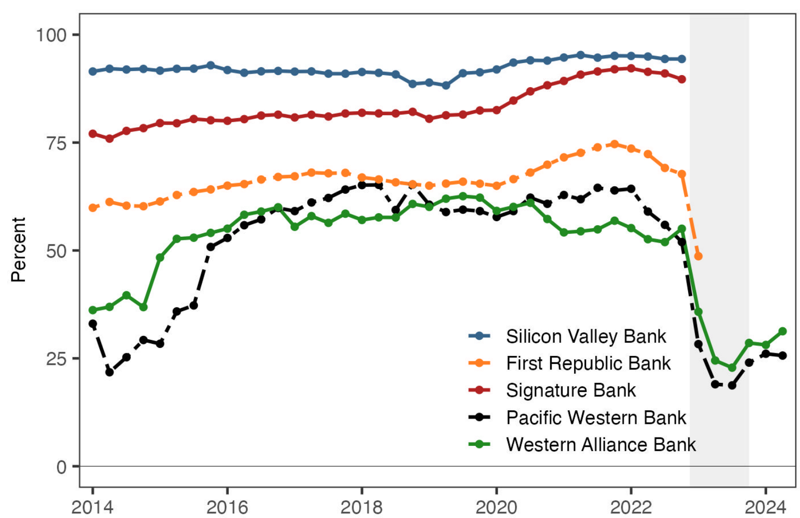
Appendix A Appendix Figures and Tables

Figure A.1: Distressed Regional Banks during the 2023 Banking Crisis

(a) Reciprocal Deposits



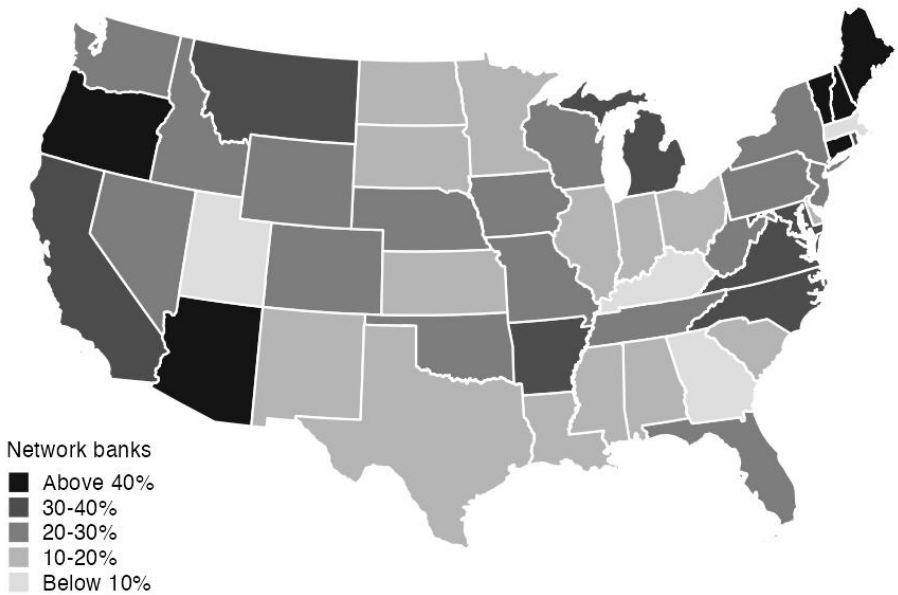
(b) Uninsured Deposits



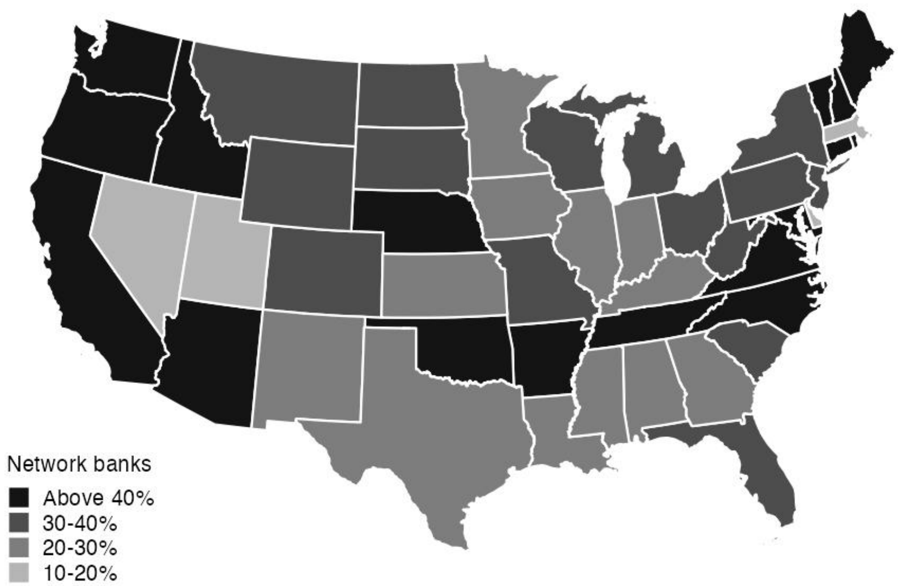
Notes: This figure plots the evolution of reciprocal deposits and uninsured deposits for five banks affected by the regional banking crisis. The sample period is 2014Q1 to 2024Q2. Panel (a) plots the reciprocal deposits to total deposits ratio and panel (b) plots the uninsured deposits to total deposits ratio. The grey shaded area denotes the 4 quarters following SVB's failure.
Source: Call Reports.

Figure A.2: Network Participation Across States

(a) 2017



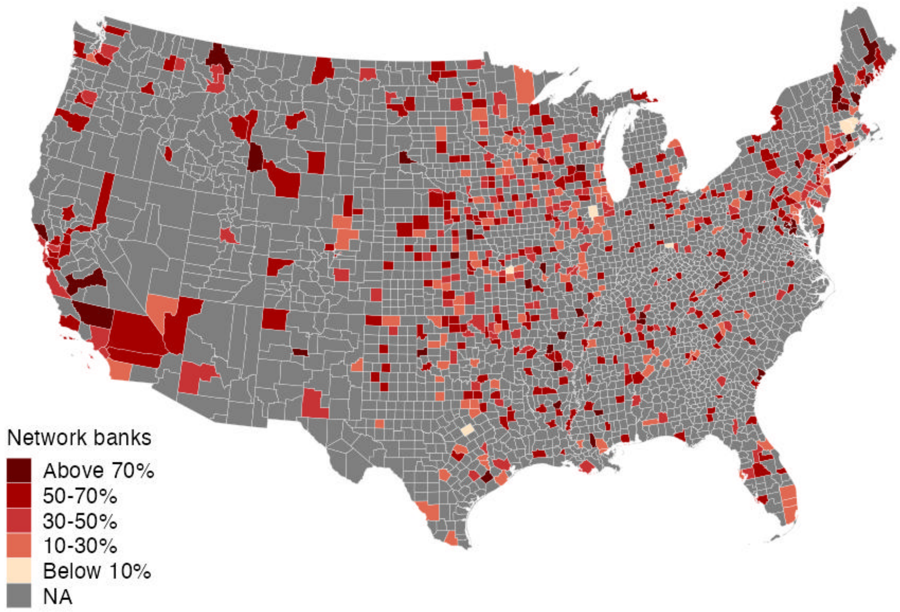
(b) 2022



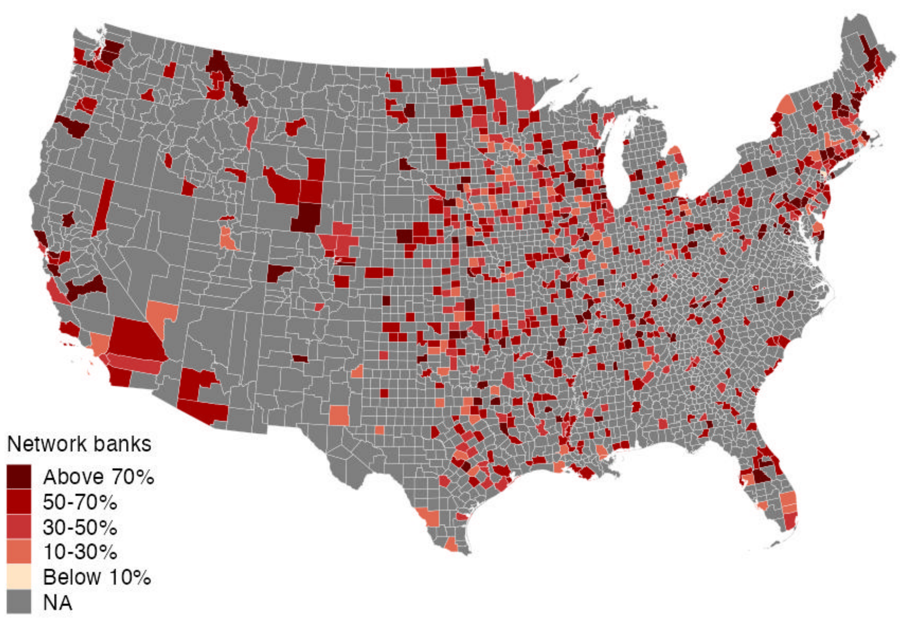
Notes: This figure plots the fraction of reciprocal deposit network banks by state in 2017Q4 and 2022Q4. Network banks are defined as banks with positive reciprocal deposits. Bank locations are determined using the address of the main office.
Source: Call Reports.

Figure A.3: Network Participation Across Counties

(a) 2017

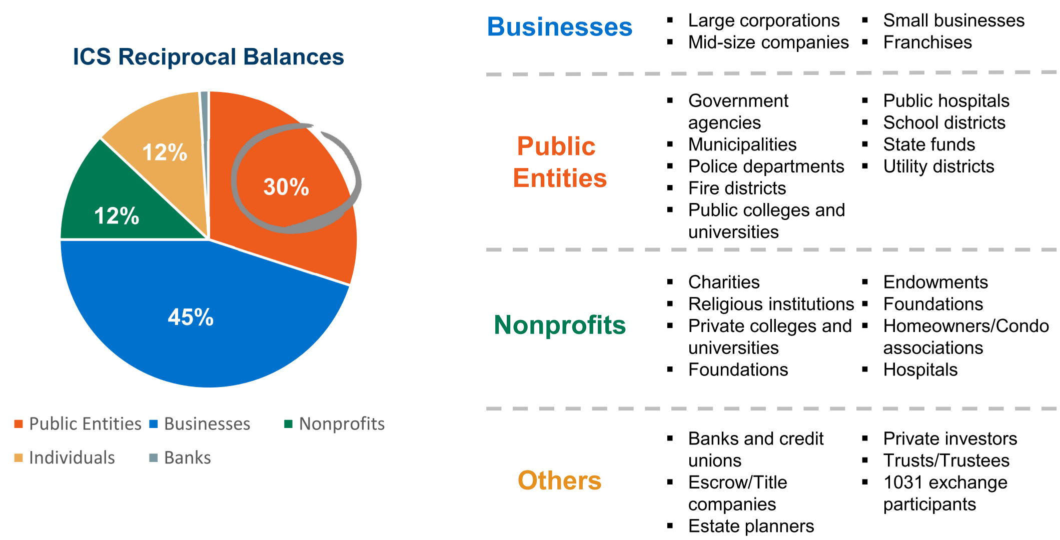


(b) 2022



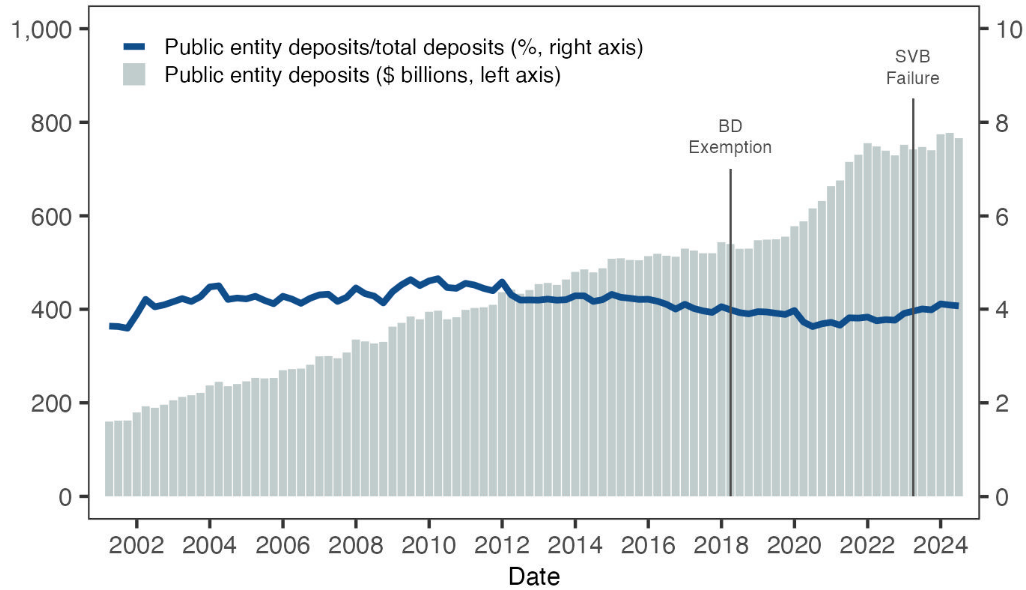
Notes: This figure plots the fraction of reciprocal deposit network banks by county in 2017Q4 and 2022Q4. Network banks are defined as banks with positive reciprocal deposits. Bank locations are determined using the address of the main office and counties with at least two incorporated banks are included.
Source: Call Reports.

Figure A.4: Customers of Reciprocal Deposits



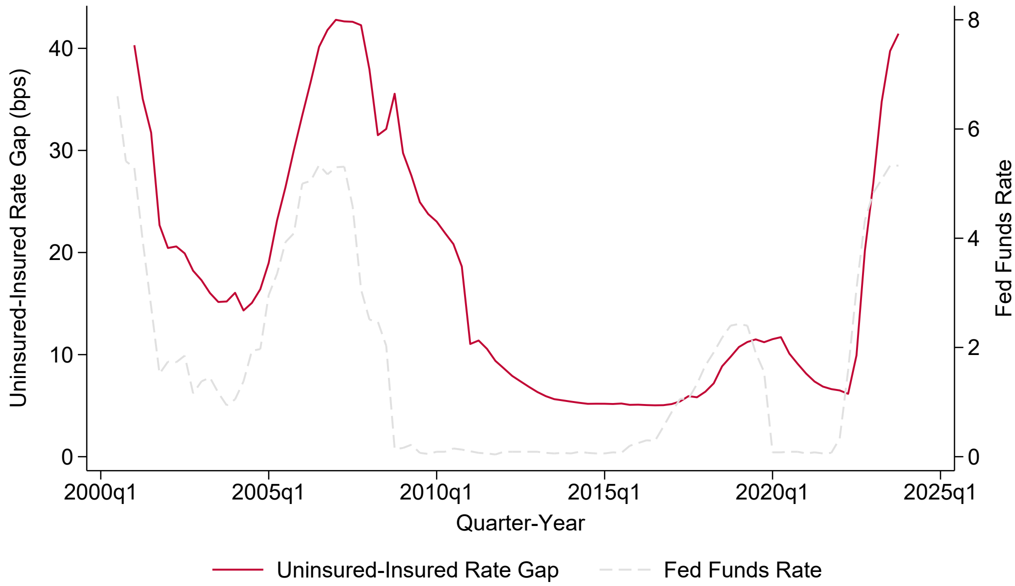
Notes: This figure details the breakdown of the customers of reciprocal deposits. The figure shows that reciprocal deposits are used by a variety of customers, including businesses and public entities.
Source: IntraFi Network LLC (https://napsf.org/file_download/inline/056ae2f2-3b49-45f4-b0b4-ee5e67d81608).

Figure A.5: Growth of Public Entity Deposits



Notes: This figure plots the dollar amount of public entity deposits (grey bars, left axis) and the ratio of public entity deposits to total deposits (blue line, right axis) between 2000Q1 and 2024Q2. "BD Exemption" signifies when the EGRRCPA exempted a capped amount of reciprocal deposits from being treated as brokered deposits, and "SVB Failure" marks the start of the 2023 regional banking crisis.
Source: Call Reports.

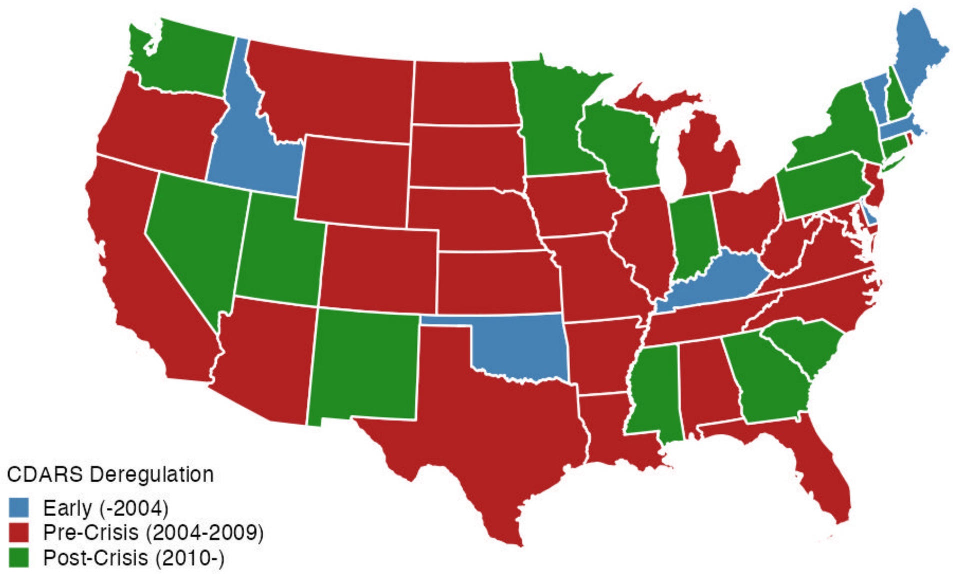
Figure A.6: Uninsured-Insured Rate Gap



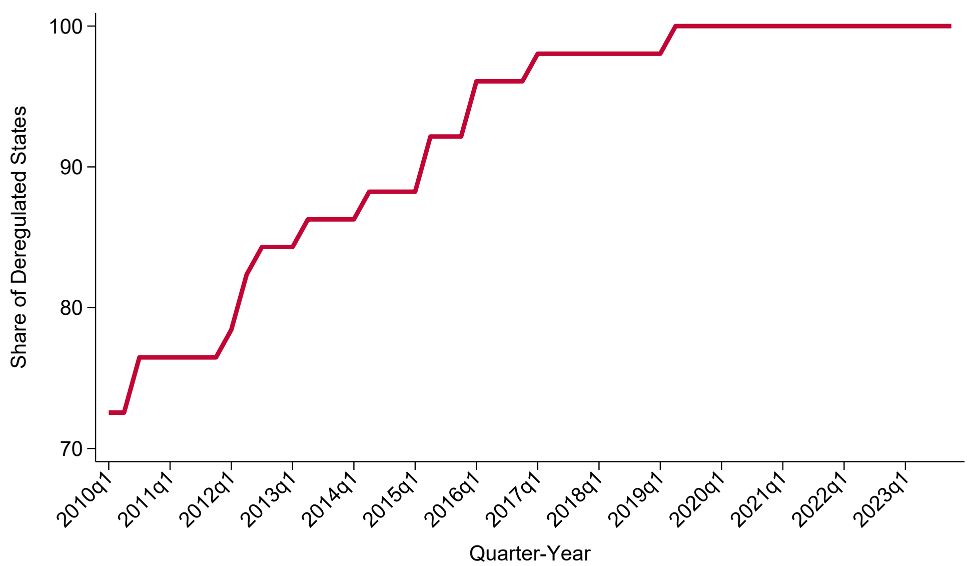
Notes: This figure illustrates the gap (basis points) between uninsured and insured deposit rates over time. Uninsured deposit rates are based on money market accounts with balances $\geq$ \$100,000 (2001-2008Q3) and $\geq$ \$250,000 (2008Q4-2023Q4). Insured deposit rates refer to money market accounts with balances $\geq$ \$25,000. The Federal Funds rate is plotted in grey for reference.
Source: RateWatch.

Figure A.7: Deregulation of Public Entity Deposits

(a) Geography of Deregulation



(b) Time-Series of Deregulation



Notes: Panel a plots the spatial distribution of deregulation by phase (early, pre-crisis, and post-crisis). Panel b plots the fraction of states that authorized public entity deposits in reciprocal deposit accounts. "Early" deregulation states include those that implicitly allowed reciprocal deposits since the network's inception.
Source: IntraFi, authors' calculations.

Table A.1: Network Banks (Ranked by Deposit Amount)

	Name	Location	Reciprocal deposits ($ millions)	Total assets ($ millions)
		Panel A: 2017Q4		
1	United Bank	Fairfax, VA	1,494	19,042
2	Western Alliance Bank	Phoenix, AZ	1,019	20,404
3	Park National Bank	Newark, OH	1,008	7,471
4	BOK Financial	Tulsa, OK	939	32,217
5	Mutual of Omaha Bank	Omaha, NE	754	8,145
6	Iberiabank	Lafayette, LA	684	27,824
7	Flushing Bank	Uniondale, NY	641	6,300
8	Tristate Capital Bank	Pittsburgh, PA	627	4,692
		Panel B: 2022Q4		
1	UBS Bank	Salt Lake City, UT	6,621	120,987
2	Pacific Western Bank	Beverly Hills, CA	4,191	41,184
3	First Republic Bank	San Francisco, CA	3,948	212,639
4	Pinnacle Bank	Nashville, TN	3,587	41,843
5	Western Alliance Bank	Phoenix, AZ	2,830	67,684
6	Huntington National Bank	Columbus, OH	2,806	182,326
7	United Bank	Fairfax, VA	2,704	29,430
8	Citizens Bank	Providence, RI	2,247	226,401
		Panel C: 2023Q4		
1	Western Alliance Bank	Phoenix, AZ	13,288	70,853
2	Raymond James Bank	Saint Petersburg, FL	13,143	41,986
3	Banc of California	Los Angeles, CA	8,891	38,369
4	Pinnacle Bank	Nashville, TN	8,647	47,830
5	Citizens Bank	Providence, RI	8,223	221,750
6	First Citizens Bank	Raleigh, NC	7,602	213,618
7	Zions Bank	Salt Lake City, UT	6,841	87,202
8	Keybank	Cleveland, OH	5,559	185,890

Notes: This table reports the banks with the largest amounts of reciprocal deposits as of 2017Q4 (Pre-BD exception), 2022Q4 (Pre-SVB), and 2023Q4 (Post-SVB). Headquarter location is obtained from the Call Reports' Panel of Reporters. *Source:* Call Reports.

Table A.2: Network Banks (Ranked by Concentration)

	Name	Location	Total assets ($ millions)	Recip/Assets (Percent)
		Panel A: 2017Q4		
1	Eagle Bank	Polson, MT	65	41.4
2	Great Plains State Bank	Petersburg, NE	163	31.2
3	Saint Louis Bank	Town and Country, MO	420	31.9
4	Independence Bank	Havre, MT	715	30.3
5	First National Bank of Syracuse	Syracuse, KS	328	29.2
6	Western National Bank of Cass Lake	Cass Lake, MN	31	28.1
7	Genesee Regional Bank	Rochester, NY	549	27.7
8	Bank2	Oklahoma City, OK	133	27.1
		Panel B: 2022Q4		
1	Chickasaw Community Bank	Oklahoma City, OK	479	47.0
2	Transpecos Bank	Pecos, TX	422	45.9
3	Eagle Bank	Polson, MT	120	65.7
4	Liberty National Bank	Lawton, OK	990	35.0
5	First National Bank of Oklahoma	Oklahoma City, OK	748	34.8
6	Local Bank	Hulbert, OK	295	33.7
7	Saint Louis Bank	Saint Louis, MO	824	32.8
8	Woodlands National Bank	Hinckley, MN	336	29.3
		Panel C: 2023Q4		
1	Transpecos Bank	Pecos, TX	767	53.6
2	Liberty National Bank	Lawton, OK	1,223	50.1
3	Lakeside Bank	Rockwall, TX	352	46.8
4	Optus Bank	Columbia, SC	525	45.4
5	Illinois National Bank	Springfield, IL	2,168	42.8
6	Eagle Bank	Polson, MT	133	42.0
7	Endeavor Bank	San Diego, CA	570	41.7
8	Chickasaw Community Bank	Oklahoma City, OK	447	39.6

Notes: This table reports the banks with the largest share of reciprocal to total assets as of 2017Q4 (Pre-BD exception), 2022Q4 (Pre-SVB), and 2023Q4 (Post-SVB). Headquarter location is obtained from the Call Reports' Panel of Reporters.
Source: Call Reports.

Table A.3: Descriptive Statistics, Post-SVB Crisis

	N	p25	p50	p75	Mean	Std. Dev.
Total assets ($1,000s, log)						
Network	1,944	12.70	13.46	14.40	13.66	1.32
Non-network	2,697	11.49	12.19	12.97	12.30	1.29
Return on assets (pct.)						
Network	1,944	0.12	0.22	0.32	0.21	0.24
Non-network	2,697	0.09	0.21	0.34	0.24	0.37
Total loans/total assets (pct.)						
Network	1,944	63.59	72.93	79.89	70.54	13.05
Non-network	2,697	47.56	61.22	73.15	58.32	20.64
Total equity/total assets (pct.)						
Network	1,944	7.89	9.20	10.85	9.52	3.36
Non-network	2,697	7.77	9.71	12.68	12.43	12.31
Total securities/total assets (pct.)						
Network	1,944	7.74	13.86	22.15	15.83	10.90
Non-network	2,697	11.11	21.43	32.87	23.02	15.46
Average maturity of securities (years)						
Network	1,912	5.73	8.75	11.77	8.84	4.26
Non-network	2,602	3.79	7.17	10.60	7.45	4.36
Insured deposits/total deposits (pct.)						
Network	1,944	55.44	63.99	72.08	62.93	13.41
Non-network	2,641	56.57	66.00	74.33	64.45	15.08
Public entity deposits/total deposits (pct.)						
Network	1,944	4.21	8.55	13.85	9.80	7.09
Non-network	2,641	2.52	8.23	15.33	9.96	8.65
Number of branches (log)						
Network	1,940	1.10	1.79	2.64	1.95	1.15
Non-network	2,634	0.00	1.10	1.61	1.07	0.94

Notes: This table reports summary statistics for network and non-network banks as of 2023Q4. "N" refers to the number of observations. "p25," "p50," and "p75" correspond to the 25th, 50th, and 75th percentiles, respectively. "s.d." denotes standard deviation.
Source: Call Reports, FDIC Summary of Deposits.

Table A.4: Deposits and Network Adoption: Adjusting for Public Entity Deposits

	(1) ln(Adj. Ins. Dep.)	(2) ln(Adj. Tot. Dep.)	(3) ln(Adj. Ins. Dep.)	(4) ln(Adj. Tot. Dep.)
Switcher × Post	0.0843***	0.0386***	0.0547***	0.0174***
	(0.0098)	(0.0045)	(0.0100)	(0.0047)
Controls			✓	✓
Bank FE	✓	✓	✓	✓
Quarter-Year FE	✓	✓	✓	✓
N	23,828	23,828	23,828	23,828
R^2	0.9909	0.9970	0.9911	0.9972

Notes: The table presents the relation between deposits and network adopters, after the 2023 banking turmoil. The dependent variable is insured deposits minus total public entity deposits (ln(Adj. Ins. Dep.)) in columns (1) and (3) and total deposits minus total state deposits (ln(Adj. Total Dep.)) in columns (2) and (4). *Switcher* is a binary variable that takes a value of 1 for banks that joined the network during the period surrounding the brokered-deposit ruling (between 2015Q1 and 2020Q2), and 0 for banks that did not join the network through 2022Q2 – see Figure 7. *Post* is a binary variable that takes a value of 1 from 2023Q1 onwards, and 0 for previous quarters. All columns include bank and quarter-year fixed effects. Columns (3) and (4) include controls for bank-level characteristics, including bank size, securities holdings, maturity of securities portfolio, capitalization, total state deposits and profitability, measured in 2022Q4, as well as their interactions with the *Post* variable. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1 and spans eight quarters. Standard errors, clustered by bank, are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports.

Table A.5: Causal Effects of Deposit Insurance: Robust to Exclusion of Large Banks

	(1) ln(Ins. Dep.)	(2) ln(Tot. Dep.)	(3) Dep. Rate	(4) ln(Time Dep.)	(5) ln(Securities)	(6) ln(Maturity)	(7) ln(Abs. MatGap)	(8) ln(Assets)
Switcher × Post	0.0471***	0.0207***	-0.1089*	0.0437***	0.0324**	0.0326**	0.0753***	0.0191***
	(0.0078)	(0.0045)	(0.0595)	(0.0150)	(0.0147)	(0.0157)	(0.0251)	(0.0044)
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Bank FE	✓	✓	✓	✓	✓	✓	✓	✓
Quarter-Year FE	✓	✓	✓	✓	✓	✓	✓	✓
N	16,918	16,918	16,918	16,918	16,918	16,918	16,918	16,918
R^2	0.9962	0.9977	0.7485	0.9837	0.9843	0.9866	0.9306	0.9980

Notes: This table presents the the causal effects of deposit insurance. The dependent variable is insured deposits (ln(Ins. Dep.)) in column (1), total deposits (ln(Dep.)) in column (2), deposit rate offered on 12-month certificates of deposits with a minimum account size of $10,000 (Dep. Rate) in column (3), time deposits (ln(Time Dep.)) in column (4), total securities (ln(Securities)) in column (5), maturity of securities portfolio (ln(Maturity)) in column (6), abs. maturity gap (ln(Abs. MatGap)) in column (7), and bank size in column (8). *Switcher* is a binary variable that takes a value of 1 for banks that joined the network during the period surrounding the brokered-deposit ruling (between 2015Q1 and 2020Q2), and 0 for banks that did not join the network through 2022Q2 – see Figure 7. *Post* is a binary variable that takes a value of 1 from 2023Q1 onwards, and 0 for previous quarters. All columns include bank and quarter-year fixed effects. Abs. maturity gap is defined as in Purnanandam (2007). All columns include bank and quarter-year fixed effects and control for bank-level characteristics, including the interaction of bank size, capitalization, total state deposits and profitability, measured in 2022Q4, with the *Post* variable. Columns (1), (2), (3), (4), and (8) additionally include interactions of securities holdings, maturity of securities portfolio, measured in 2022Q4, with the *Post* variable. The sample is restricted to banks with state deposits on their balance sheet before 2015Q1 and spans from 2022Q1 through 2023Q4, spanning eight quarters. Standard errors, clustered by bank, are reported in parentheses. Statistical significance levels are indicated by *, **, and ***, representing significance at the 10%, 5%, and 1% levels, respectively.
Source: Call Reports.