

BANK FUNDING SOURCES:

A NEW LOOK AT BROKERED DEPOSITS

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EXECUTIVE SUMMARY

Banks have long relied on a number of funding sources, including equity capital, non-brokered and brokered deposits, and other liabilities, to make various types of loans and investments. And for almost as long, bank regulatory authorities have imposed various restrictions and costs on those funding sources that are perceived to be excessively risky.

In this report, we discuss the growing importance of one such funding source, brokered deposits, a somewhat controversial financial instrument. Brokered deposits have evolved over the past half century, along with the use of electronic transfers and other advances in financial technology, and are used today by nearly half the banking industry. They are somewhat controversial because, empirical evidence to the contrary (at times even from the bank regulatory authorities), they are generally perceived to be linked with bank failures and higher resolution costs. As such, they are subject to stricter regulation than other forms of deposits and purchased funds.

Brokered deposits came into existence in the early 1960s, when electronic technologies made it possible for banks to transfer funds between different geographic areas easily and at almost no cost. In particular, brokers began to market a new financial product, the certificate of deposit (CD), as a way for banks to obtain deposits from savers and investors beyond their local markets—a boon for banks with few or no branches, or whose service areas are not wellsprings of funding.

In the early 1980s, however, bank regulatory authorities grew concerned that brokered deposits were contributing to irresponsible asset growth at some institutions. This led to a series of laws and regulations over time that imposed various restrictions or costs on the use of brokered deposits. Undercapitalized institutions now face the most severe restrictions; they're prohibited from accepting brokered deposits.

A brokered deposit, according to the Federal Deposit Insurance Corporation (FDIC), is “any deposit that is obtained, directly or indirectly, from or through the mediation or assistance of a deposit broker.” The FDIC also informs us that the definition depends upon the meaning of the term “deposit broker.” And because a “deposit broker” can be quite broadly defined, a brokered deposit may be *any* deposit accepted by an insured depository institution, from or through a third party (a person, company, organization) other than the owner of the deposit.

Based on these fairly broad definitions, the FDIC has substantial discretion to determine whether or not certain deposits fall into the category of brokered deposits, and if they do, then which restrictions to impose on them. As we point out, this regulatory leeway means that all deposits are not treated equally, and therefore that all banks do not benefit equally from them. The regulatory treatment adversely affects banks, for example, in terms of additional costs and scrutiny, and more or less depending upon their business models (for example, whether or not they operate branches); and inhibits competition in the industry. Most important, when banks are penalized because they rely on brokered deposits, this adversely affects not only their costs, but their customers.

In this report, we maintain that the regulations on brokered deposits should be no different from those imposed on other deposits and purchased funds, and that such deposits have been unfairly stigmatized. Their stigmatization may also mean higher costs and lower franchise value when a bank fails since the reputation attached to those deposits could prompt potential acquirers to demand that a discount be applied to the brokered deposits. Yet we show that the stigma is misplaced. The “problem” lies not in brokered deposits as a source of funding, but in the leniency extended to troubled banks that, too late in the game, go after *any* funding sources to try to grow as fast as possible out of their financial difficulties. We believe there is a misplaced regulatory focus on brokered deposits, at least for better capitalized institutions.

We begin by examining the extent to which banks rely on brokered deposits, and find that as of Q1 2017, some 2,530 banks, or 43% of all banks, use brokered deposits, with the amount of such deposits totaling \$891 billion. For the period, brokered deposits at these banks constituted 7% of total deposits and 6% of total assets, hardly ratios to raise the alarm bells. We also find that the top 100 banks account for 87% of all brokered deposits in the industry. Furthermore, five banks hold the largest amounts of brokered deposits (Wells Fargo Bank, TD Bank, Citibank, Goldman Sachs Bank and U.S. Bank) and account for more than one-third of all such deposits.

Ranking the top 100 banks on their ratio of brokered deposits-to-total deposits, we find they range from a high of 100% to a low of 29%. These banks generally have fewer branches than do all banks with brokered deposits, and all banks. In addition, the top 100 banks have lower efficiency ratios, which is a good sign, and slightly higher capital ratios than all banks with brokered deposits, as well as all banks. This indicates: (1) that brokered deposits may be an

important source of funds for some banks, depending upon their business models; and (2) that they do not pose the types of problems that regulators have feared. Indeed, brokered deposits may enable some banks to operate more safely and soundly than otherwise.

We also look at fifty-nine fairly widely cited studies that examine causes of bank failures/failure costs, and banking instability. Seventeen of the forty-one empirical studies and fourteen of the non-empirical studies don't include brokered deposits in the examination, consistent with the view that they are not considered contributors to banking problems. Most of the empirical studies do not support the current regulatory treatment of brokered deposits, and those that do consider brokered deposits to be a problem do not consider different types of brokered deposits or control for all non-core sources of bank funding; nor do they generally take into account loan underwriting standards or the extent of fraud involved in bank failures. Most telling, none provide direct evidence that brokered deposits are a causal factor in bank failures, failure costs, or banking instability. In fact, the evidence shows that brokered accounts in better capitalized institutions operate like any other deposits.

In view of the accumulated evidence and inevitable advances in financial technologies, it is time to break with the past and take a new, unfettered look at brokered deposits. Lacking sufficient evidence to the contrary, bank regulatory authorities should consider treating brokered deposits no differently than other bank deposits.

I. INTRODUCTION

Banks have always played an essential role in American growth and prosperity. For more than 200 years, they have functioned by offering financial products and services in the marketplace and then channeled the funds they raise to individuals and businesses through loans and investments for various productive purposes. It's not surprising that over the course of US banking history, the range of financial products and services has evolved to meet growing customer demand and facilitate economic growth and development.

The broadened scope in marketplace offerings has involved both bank assets and liabilities, and off-balance sheet activities. More recently, innovations in financial technology have enabled banks to offer new products and services, and extend their reach to both national and international customers. Today they have more opportunities than ever to contribute to economic activities that benefit local communities and society at large.

Banks, of course, have not been free to operate any way they see fit. A growing number of laws and regulations have been put in place over the years with the goal to ensure safe and sound banking; and it is generally agreed that some requirements on activities are indeed appropriate for the maintenance of a well-functioning and stable banking system. Over time, regulations have restricted the scope of a bank's permissible activities, as well as the geographical range in which it may offer those activities. These limits in scope and range apply to both the asset and liability side of bank balance sheets, and more specifically, to the types, quantities, and prices of the products and services banks may offer. Regulatory authorities have also had some discretion over the restrictions placed on the sources of funds—be they equity capital, non-brokered and brokered deposits, or other liabilities—used to make various types of loans and to support different types of investment projects.

At times banks and their regulators disagree over whether the benefits of a restriction exceed the costs. Those disagreements, coupled with data on actual impacts, have sometimes led to the loosening or eliminating of restrictions; at other times, they have resulted in stricter regulations.

This report addresses the regulatory treatment of a relatively recent and somewhat controversial source of funds, namely brokered deposits. To do this, we consider the extent to which banks rely on brokered deposits, as well as the impact of these funds on bank performance,

bank failures, and bank failure costs. We also consider the changes taking place in technologies and how they continue to affect the way banks obtain funds and provide services to their customers.

The remainder of this report proceeds as follows: Section II provides an overview of brokered deposits, their origins as well as growing concerns among bank regulatory authorities as their use has become more widespread.¹ Section III addresses legal restrictions that have been imposed on the use of brokered deposits by banks. Section IV contains information on regulatory definitions of brokered deposits and the different types of brokered deposits used by banks. Section V presents aggregate and individual bank data on the banking industry's use of brokered deposits. Section VI examines the impact of brokered deposits on bank performance, bank failures, and bank failure costs. Section VIII discusses the role of brokered deposits in a marketplace that is increasingly reliant on financial technologies. The final section contains concluding remarks.

II. ORIGIN AND CONCERN OVER BROKERED DEPOSITS

Brokered deposits first appeared in the early 1960s with the development of electronic funds transfers (EFTs) that made it possible for financial institutions to exchange funds across great distances at high speed and at almost no cost. With the innovation of brokered certificates of deposit (CDs), in particular, banks could raise large sums from savers and investors well beyond their local service markets; and by the 1980s, the same technologies made it possible for banks to turn home mortgages into mortgage-backed securities—in theory not unlike CDs—for resale in the capital markets (Brady, 1989, p. 4). This brought greater liquidity to banks and contributed immensely to growth in the housing market. In short, technological innovations gave banks access to a broader range of funding sources and the sale and creation of mortgage-backed securities enabled them to make money by originating and servicing the mortgages without having to hold all of them as assets on their balance sheets.

The biggest banks were the first to acquire brokered CDs (Harless, 1984, p. 18). They commissioned brokers to secure large-sum CDs from institutional investors across the country.²

1. Throughout this report, we used the term “bank” to refer to a federally insured depository institution, excluding credit unions, unless otherwise noted.

2. Investors liked the large uninsured CDs because the rates offered on them weren't subject to regulatory interest rate restrictions in effect at the time (Harless, 1984, p. 19).

Regional banks followed suit in the mid-1970s, although small- and mid-size banks rarely turned to CD funding sources until the late-1970s. At the time, the CDs were uninsured, but the failure of Penn Square Bank of Oklahoma in July 1982, and the huge losses to its holders of jumbo CDs, proved to be the impetus for growth in the insured brokered CD market. When Penn Square failed after selling nearly \$1 billion in “loan participation” deposit certificates to major banks across the country, the Federal Deposit Insurance Corporation (FDIC) determined it was less costly to pay off only the insured depositors (with insured deposits capped at \$100,000) than to arrange a merger with another bank, as had been typically the case in prior failures. The banks holding Penn Square’s CDs took heavy losses, some in the hundreds of millions of dollars, leading to a crisis nationwide.³ Thus Penn Square acquired the sorry distinction of being the largest bank failure in the FDIC’s history in which uninsured depositors suffered losses. The agency’s refusal to protect uninsured depositors brought about another workaround: it provided brokers with a strong incentive to break up their large deposits into \$100,000 denominations for distribution among different banks to ensure that investors had full FDIC coverage (Goodman and Shaffer, 1984, p. 157).

Of particular concern to bank regulators was Penn Square’s phenomenal growth in assets over just five years, from \$62 million to \$520 million from 1977 to mid-1982 (FDIC, 1998, p. 527). That growth correlated with the use of brokered deposits, from under \$20 million to \$282 million (FDIC, 1997, p. 119). Its failure, as well those of other banks and thrifts at the time, focused attention on the extent to which institutions were using brokered deposits to fuel rapid, irresponsible, high-risk asset growth that could expose the federal insurance funds to losses.⁴ Penn Square showed the classic behavior of a troubled institution—it needed to raise money fast to make excessively risky loans that promised high returns but that could go south in a heartbeat (and did when the price of oil fell worldwide). “The growth of brokered deposits outstanding has recently been phenomenal,” wrote Caroline Harless, at the time a bank examiner in the Department of Supervision and Regulation of the Federal Reserve Bank of Atlanta. “According to the Federal Home Loan Bank Board (FHLBB), brokers ‘had brought in \$26 billion to thrifts as of October

3. The insurance limit at the time was \$100,000, having been increased from \$40,000 to \$100,000 in March 1980. In October 2008, the insurance limit was temporarily increased to \$250,000 and then made permanent by the Dodd-Frank Wall Street Reform and Consumer Protection Act of July 2010.

4. The term “thrifts” refers to savings and loan associations. At the time, banks were insured by the FDIC, while thrifts were insured by the Federal Savings and Loan Insurance Corporation (FSLIC). The FSLIC was governed by the Federal Home Loan Bank Board.

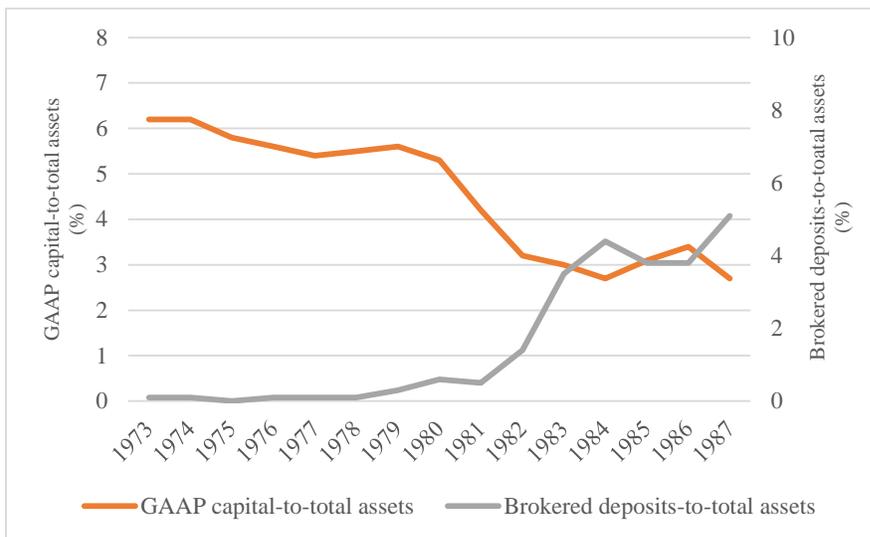
1983, up from \$4.6 billion in June 1982.” She added, “According to unedited call report data, as of September 30, 1983, 536 commercial banks ... indicated the use of brokered deposits... [and] ... these deposits amounted to \$19.2 billion” (Harless, 1984, pp. 16–17).

In view of this situation, “... FDIC and the Federal Home Loan Bank Board (FHLBB) studied the issue of brokered deposits” and “... expressed their concern that the practice of deposit brokering ‘enable[d] virtually all institutions to attract large volumes of funds from outside their normal market area irrespective of the institutions’ managerial and financial characteristics” (FDIC, 1998, p. 541).⁵ More specifically, the regulators were concerned “... about deposit brokers ... [not] necessarily conducting any credit analysis to ascertain the conditions of the offering institutions” (FDIC, 1997, p. 119). In addition, there was the concern that “... [the] use of brokered CDs therefore may actually increase the cost to the FDIC of disposing of a troubled institution, because the institution will have had access to more insured deposits than it otherwise would” (as cited by Goodman and Shaffer (1984, p. 157)).

Although it appears that data on the use of brokered deposits by insured depository institutions isn’t available electronically from the regulatory authorities before 1992, some hard-copy data are available for thrift institutions in earlier years. It’s useful to examine these data to better understand the relationship between the growth in brokered deposits and the growth in assets by thrifts. In particular, Figure 1a shows brokered deposits as a percentage of total assets for all thrift institutions over the period 1973–1987. The GAAP capital-to-total assets ratio is also shown.

5. Notice that a concern was not that insured brokered deposits per se would increase the cost of a bank failure, but that any and all insured deposits would increase the cost of failure. Insured brokered deposits were therefore viewed no differently than other insured deposits with respect to the cost of a bank failure.

Figure 1a. All thrift institutions: Capital and brokered deposits ratios



As shown in Figure 1a, the use of brokered deposits by thrifts increased significantly only after their capital ratios began to decline fairly rapidly in the early 1980s. This is consistent with the view that troubled institutions may turn to the brokered deposit market and other funding sources to overcome their financial difficulties through more rapid asset growth. But here it is important to note two important points. First, the brokered deposits per se weren't the problem. The problem lay in the assets that these and other funds acquired. William Seidman, a former chairman of the FDIC, made this important point in 1989:

“A dollar deposited in an insured institution is the same whether obtained directly from a local depositor or through the intermediation of a deposit broker. There may be differences in the cost and stability of that dollar deposit depending on its source. However, losses in banks do not occur, generally speaking, by virtue of the source of their deposit liabilities. Instead, the losses arise from the quality of and return on loans and investments made with those funds. Consequently, the focus of attention should be on the employment of brokered deposits rather than their source” (Clark, 2013, p. 137).

A second point is this: the rise in use of brokered deposits, among other funding sources, correlated with a decline in capital relative to assets. This was a classic symptom of a troubled institution, and means that regulators should focus on curtailing the rapid growth in assets when it occurs in such institutions.

It's also useful to look a bit deeper and examine how thrifts in two different Federal Home Loan Bank districts used brokered deposits. Figure 1b shows the brokered deposit ratios for thrifts in the Pittsburgh and Dallas districts, and it is clear that each used brokered deposits quite differently. The Pittsburgh thrifts show no sharp increase in the use of brokered deposits over the entire period 1973–1987 because even though their collective capital ratio declined, the decline was relatively modest and occurred for only a short period before increasing in the latter part of the period. However, in the Dallas district, we see a sharp increase in thrifts' use of brokered deposits in the second half of the period, when the capital ratio was sharply declining without ever reversing. Stated another way, in the case of Pittsburgh thrifts, there was no correlation between the ratio of brokered deposits-to-total assets, and the ratio of capital-to-assets, whereas for Dallas thrifts, there was a significantly negative correlation between the two ratios. The explanation? The Dallas thrifts were far more deeply troubled and using brokered deposits to try to grow their way out of their problems.

Figure 1b. Thrifts in two Federal Home Loan Bank districts: Capital and brokered deposits ratios



More generally, hard-copy data indicate that the Dallas district thrifts had rapidly increased their *purchased funds-to-total asset* ratio at the same time (brokered deposits were only one component of these), from 1% in 1973 to 17.1% in 1987. This means that all purchased funds helped fuel asset growth, not just brokered deposits.⁶ The data in these figures are consistent with statements made by Nicholas Brady, then Secretary of the Department of the Treasury, who stated

6. It should be noted that the ratio of core deposits for Dallas thrifts declined to a low of 57.6% in 1984, while for Pittsburgh thrifts the ratio was 82.2% in the same year.

that “[s]upervisory and regulatory laxity in oversight ... contributed to the ... [thrift] problem. Inadequate capital requirements allowed thrifts to grow quickly with almost no ‘at-risk’ capital. Low equity, in turn, encouraged greater risk taking” (Brady, 1989, p. 5).

Of note as well, the FHLBB issued a research paper on the costs of resolving failed thrift institutions from December 1981 to October 1985. Based on an econometric analysis, Barth, Brumbaugh and Sauerhaft (1986) found that brokered deposits did not have significant or positive relationships to the costs of such failures. Instead, it was the use to which the funds of thrifts were put and the delay in resolving troubled institutions that increased the costs. Specifically, acquisition-and-development land loans and direct investments did have significant and positive relationships to the resolution costs, as did the length of time between insolvency and closing by the regulatory authorities.⁷ In short, the paper supports the view that the thrift problem in the early 1980s wasn’t caused by brokered deposits per se, but because deeply troubled institutions were allowed to remain open and obtain additional funds, from various sources, to make excessive risky acquisition-and-development land loans and direct investments.

III. LEGAL RESTRICTIONS ON BROKERED DEPOSITS

In view of the problems in the thrift industry in the early 1980s, Edwin Gray, then chairman of the FHLBB, stated that “[f]rom a safety and soundness point of view, the Board is very concerned about the heavy focus on rapid deposit and asset growth by too many savings institutions today” (Gray, 1984, p. 9). Both the FHLBB and the FDIC were now concerned about the use of brokered deposits to bring about irresponsible asset growth, and they jointly proposed in October 1983 to limit the insurance coverage afforded to deposits placed by or through a broker with an insured bank or thrift.⁸ The proposal was to take effect in October 1984 (FHLBB, 1984,

7. See also Barth, Bartholomew and Labich (1990), who examine the 205 thrifts that failed and were resolved in 1988 and find that brokered deposits had a significantly negative relationship to the cost of resolution. Barth and Brumbaugh (1994) analyze FSLIC losses due to thrift failures from December 1981 to October 1985 and find that brokered deposits were not a significant explanatory variable.

8. As Gray states, “I began to warn, in congressional testimony and in speeches to industry groups in late 1983 and throughout 1984 and later, that excessive risk-taking was occurring at too many institutions and that this was leading inexorably to more and more very expensive bad-asset cases. This phenomenon was taking place in an atmosphere of excessive growth in liabilities, which clearly was fueling very fast asset growth at too many institutions” (Gray, 1985, p. 11).

pp. 42–43). Then in March 1984, both agencies voted to limit insurance to \$100,000 per broker per institution for accounts.⁹ At the same time and as an interim measure, the FHLBB voted to prohibit thrifts whose current regulatory net worth was below 3% of liabilities from accepting more than 5% of their deposits by or through a broker. In June 1984, and then again in January 1985, the courts voided the rule to limit federal insurance coverage for brokered deposits. However, the FHLBB in February 1985 made permanent its own interim measure, while providing temporary exemptions for certain thrifts suffering from a shortage of liquidity or substantial dissipation of assets (FHLBB, 1985, p. 18).

It is important to note the difference between the FHLBB action and the FDIC. The FHLBB turned its focus to asset growth and ensuring that there was adequate capital underlying that growth. Thus, in 1985, thrifts had to increase their capital as their growth rates rose. Plus, institutions with more than \$100 million in assets had to seek permission from the FHLBB to grow faster than 25% a year. More capital also was required for thrifts with direct investments. And, finally, the five-year averaging used to calculate net worth was gradually eliminated (Barth and Regalia, 1988, pp. 138–139). Clearly, the emphasis was to ensure that asset growth was supported by adequate capital, irrespective of the extent to which kinds of deposits were a source of funds.

But court rulings and a redirected focus by the FHLBB toward adequate capital ratios did not bring an end to restrictions on the use of brokered deposits. They continued to be targeted by bank regulatory authorities. Moreover, the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA) of 1989 prohibited any troubled institution from obtaining deposits by or through deposit brokers without a waiver from the FDIC. The law defined a “troubled institution” as any insured depository institution that failed to meet its minimum capital requirements (US Congress, 1989). In 1991 the Federal Deposit Insurance Corporation Improvement Act (FDICIA) altered the earlier law so that restrictions applied to any insured depository institutions that weren’t “well capitalized” (i.e., those not ranked in the highest of the FDIC’s five capital-ratio categories). Institutions rated “adequately capitalized” (the second-highest category) could accept brokered deposits only upon obtaining a waiver from FDIC. Those

9. The Office of the Comptroller of the Currency opposed the proposal arguing for “a supervisory approach that would allow an institution to accept up to twice its capital in brokered deposits as long as brokered deposits did not exceed 15 percent of total deposits.” See FDIC (1997, p. 120).

“undercapitalized institutions” in the lowest three categories were prohibited from accepting brokered deposits.¹⁰

The 1991 law, moreover, prohibited any institution that wasn’t rated “well capitalized” from paying a rate of interest on its brokered deposits that significantly exceeded the rate paid on deposits of similar maturity in its normal market area—or, for deposits accepted outside the institution’s normal market area, the “national rate” on deposits of comparable maturity, as established by the FDIC (US Congress, 1991). In 1992, in the case of retail deposits, the FDIC stated that the national rate would be 120% of the current yield on similar maturity Treasury securities, while in the case of institutional (wholesale) deposits, the national rate would be 130% of the current yield on similar maturity Treasury securities (Federal Register, 1992). Much more recently, in 2009, the FDIC specified that insured depository institutions that were not well capitalized would be permitted to offer a new “national rate” plus 75 basis points. The new national rate is defined as a simple average of rates paid by all insured depository institutions and branches for which data are available (Federal Register, 2009).¹¹

As of July 2017, the following restrictions were in effect on brokered deposits: (1) well-capitalized banks may accept brokered deposits at any time and pay any rate on those deposits; (2) adequately capitalized banks may accept brokered deposits if they obtain a waiver from the FDIC and pay a rate on the deposits that doesn’t exceed the “national rate” plus 75 basis points; and (3) undercapitalized banks may not accept brokered deposits. In addition, as of December 2016, select insured depository institutions are subject to deposit insurance assessment rate adjustments for brokered deposits.¹² The FDIC stated that all established (i.e., those insured five or more years) small institutions would no longer be subject to brokered deposit adjustments.

However, the FDIC’s methodology for determining the insurance assessment rate includes a core deposit ratio (core deposits/total assets) component, which operates, in effect, as a brokered deposit adjustment. For example, if a highly rated, well-capitalized bank with a 10% brokered deposit ratio should increase the ratio to 50%, the deposit insurance assessment would increase a

10. Of 5,838 banks, as of Q1 2017, 5,794 were well capitalized, 23 were adequately capitalized, and 21 were undercapitalized.

11. The FDIC makes the national rate available weekly on its website at: www.fdic.gov/regulations/resources/rates/previous.html.

12. Reciprocal deposits are excluded from brokered deposits for making this calculation, but sweeps, referrals from affiliates, and all other brokered deposits are included (FDIC, 2011, p. 34).

huge 550 basis points. Newly established small institutions in the FDIC Risk Categories II, III, and IV, and all large and highly complex institutions, were subject to assessment rates for brokered deposits. The brokered deposit adjustment was limited to those institutions for which the ratio of brokered deposits to domestic deposits was greater than 10% and ranged from 0 to 10 basis points (FDIC, 2016).¹³ In addition, the brokered deposits of banks with more than \$50 billion in assets were subject to stricter restrictions with respect to the liquidity coverage ratio and the net stable funding ratio.

IV. DEFINITION AND TYPES OF BROKERED DEPOSITS

There has always been debate as to what exactly constitutes brokered deposits and what types of brokered deposits should be restricted—and it doesn't seem to have gotten easier over time. The first official attempt to define the different types of these deposits appears in November 1983, when the FHLBB and the FDIC described three forms of deposit brokering: (1) *simple brokering*, in which a money broker solicits deposits from customers for placement by the broker or by the customer at banks; (2) *CD participations*, in which a broker-dealer purchases a bank-issued CD and sells interests in the CD to customers; and (3) *deposit-listing services*, in which a bank advertises interest rates and maturities through a third party who arranges for the sale of the bank's deposits to the public (Federal Register, 1983).

In January 1984, the FHLBB and the FDIC defined a “deposit broker” as any person or entity, other than an insured institution or its employee, engaged in the business of placing or listing for placement the deposits of insured institutions (Federal Register, 1984).

Five years later, in 1989, FIRREA defined a brokered deposit as any deposit obtained, directly or indirectly, from or through the mediation or assistance of a deposit broker, where the term “deposit broker” meant: (1) any person engaged in the business of placing deposits, or facilitating the placement of deposits, of third parties with insured depository institutions; or engaged in the business of placing deposits with insured depository institutions for the purpose of selling interests in those deposits to third parties; and (2) an agent or trustee who establishes a

13. Prior to April 1, 2011, deposit insurance assessments were based on domestic deposits, while after that date they were based on total assets.

deposit account to facilitate a business arrangement with an insured depository institution to use the proceeds of the account to fund a prearranged loan.

Most recently, in July 2016, the FDIC defined a brokered deposit to be “any deposit that is obtained, directly or indirectly, from or through the mediation or assistance of a deposit broker.” The FDIC noted as well that “the meaning of the term ‘brokered deposit’ depends upon the meaning of the term ‘deposit broker.’” And one must remember that the definition of a “deposit broker” provided by FIRREA is sufficiently broad that a brokered deposit may be any deposit accepted by an insured depository institution from or through a third party, such as a person or company or organization other than the owner of the deposit (FDIC, 2016, p. 1).

When FIRREA became a law in 1989, banks didn’t use, or barely used, deposit listing and placement services, sweep programs, reciprocal brokered deposits, and general purpose prepaid cards. These are all innovations in financial technology in routine use, and it will be useful to describe them briefly—since some of them are considered brokered deposits.

A *listing and placement service* compiles and publishes information for potential depositors about the deposit accounts available from different banks. But not every such service is considered a deposit broker. “Where the only function of a deposit listing service is to provide information on the availability and terms of accounts,” notes the FDIC, “we believe that the listing service is not facilitating the placement of deposits. Rather, it facilitates the decision of the would-be buyer whether (and from whom) to buy a certificate of deposit; it is not facilitating the *placement* of deposits *per se* [italics original]” (FDIC, 2016, p. 6). In this case, the listing service is not considered to be a deposit broker.

A brokerage firm may operate a *sweep program* in which its customers sweep, i.e., transfer, their excess cash balances into a bank deposit that provides a positive return and insurance coverage on those funds (FDIC, 2011, p. 25). Paul Clark, who advised Merrill Lynch on the structuring of its sweep program in 2000, writes that it “offered a savings deposit linked to a transaction account, permitting Merrill Lynch customers full transaction capabilities through their [cash management account]” (2013, p. 103). Although the FDIC generally considers any securities firm or investment company that places deposits in a bank to be a deposit broker, it made an exception for a firm when the “primary purpose” of its program is to facilitate its clients’ purchase and sale of securities, not to provide them with a deposit-placement service.

In making this determination, the FDIC relies on three factors: (1) the funds are not swept into time deposit accounts; (2) the amount of swept funds doesn't exceed 10% of the total amount of program assets handled by the brokerage firm on a monthly basis; and (3) the program fees are "flat" (i.e., equal "per account" or "per customer" fees, representing payment for recordkeeping or administrative services, and not representing payment for placing deposits) (FDIC, 2011, pp. 26–27). If these requirements are satisfied, the company is not a deposit broker under the "primary purpose" exception with respect to the "swept" funds.¹⁴ If the requirements are not satisfied, the company is a deposit broker.¹⁵

A *reciprocal deposit* is one that "an insured depository institution receives through a deposit placement network on a reciprocal basis, such that: (1) for any deposit received, the institution (as agent for depositors) places the same amount with other insured depository institutions through the network; and (2) each member of the network sets the interest rate to be paid on the entire amount of funds it places with other network members" (Government Publishing Office, 2012). Reciprocal deposits are almost all insured since they exist only to increase a depositor's insurance coverage. The FDIC considers these deposits to be brokered deposits.¹⁶

A *general purpose prepaid card* is sold at retail stores or other public venues. After the funds are collected from the card purchaser, they may be deposited by the card company or other third party into a custodial account at an insured depository institution. The cardholder can then access the funds by using the card. The FDIC considers prepaid card companies or other third parties who sell these cards to be deposit brokers, and the deposits are classified as brokered deposits (FDIC, 2012, pp. 11–12).

14. The FDIC issued an opinion on February 3, 2005, that funds in accounts that are "swept" into money market deposit accounts at affiliated banks are not brokered deposits. See www.fdic.gov/regulations/laws/rules/4000-10350.html.

15. According to Clark, brokerage firms with affiliated banks included Merrill Lynch, Lehman Brothers, Smith Barney, Charles Schwab, UBS, E*Trade, and Morgan Stanley (2013, p. 103). Clark and Freeman (May 2015) estimate that brokered deposits of \$400–\$450 billion were exempt broker-dealer "sweep" deposits. It should be noted that IDC Financial Publishing provides estimates of the breakdown of brokered deposits for domestic banks on a regular basis.

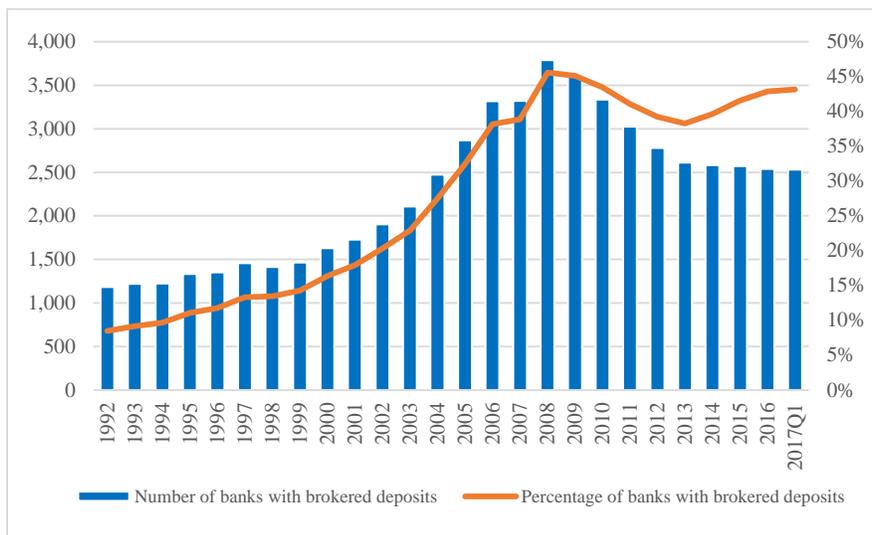
16. However, "the assessment system excludes all reciprocal deposits from the adjusted brokered deposit ratio that applies to well-capitalized, well-managed small banks, and from the brokered deposit adjustment when applied to well-capitalized, well-managed large banks" (FDIC 2011, p. 54). Also, banks began reporting reciprocal deposits in June 30, 2009 (p. 117). As of the first quarter 2017, reciprocal deposits amounted to \$43 billion.

The bottom line? The FDIC has substantial discretion to determine whether or not various deposits acquired by banks are brokered deposits. Once a type of deposit gets so labeled, it is generally subject to the same restrictions as all other brokered deposits, even though this one-rule-fits-all can significantly influence the ability of banks with different business models to compete on equal terms in the financial marketplace. Most important, when these deposits are treated differently from other deposits (e.g., core deposits), some banks may be placed at a competitive disadvantage, adversely affecting both the banks and their customers. The question is whether any “benefits” of treating different types of deposits differently exceed the costs of doing so—for the regulators, the banks, and its clients.

V. USAGE OF BROKERED DEPOSITS BY BANKS

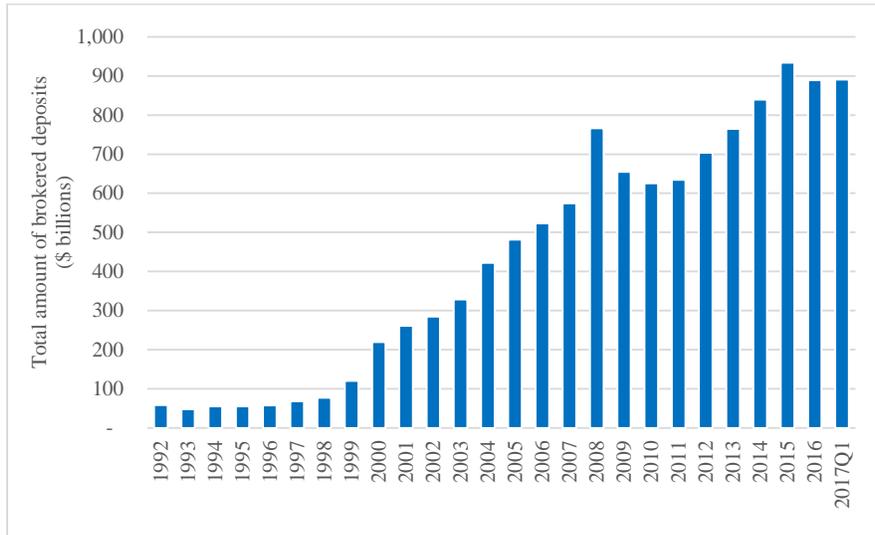
In this section, we look at data, on the individual and aggregate level, to help understand the extent to which banks actually use brokered deposits. As shown in Figure 2, for the period 1992–2008, the number of banks using brokered deposits increased from 1,185 to 3,788; the number then declined to 2,530 by Q1 2017. (Of course, the total number of banks also declined from 2008 to Q1 2017.) Figure 2 also shows that the percentage of banks using brokered deposits increased from 8% in 1992 to a high of 46% in 2008, and then declined somewhat, to 38%, in 2013, before rebounding to 43% in Q1 2017. Clearly, a large percentage of banks considers brokered deposits to be a useful source of funds.

Figure 2. Number and percentage of banks with brokered deposits



In terms of the amount of such funds, Figure 3 shows that brokered deposits increased from \$59 billion in 1992 to a high of \$934 billion in 2015, before declining slightly, to \$891 billion, in Q1 2017.

Figure 3. Total amount of brokered deposits, 1992–Q1 2017



One can also consider the importance of brokered deposits, in terms of both share of total deposits and share of total assets. Figure 4 shows these shares, first, for all banks and then for only those banks with brokered deposits. In both cases, the share of brokered deposits has been 10% or less over the entire period. The share increased after 1998 and then tended to level off for the latter part of the period.

Figure 4. Brokered deposits-to-total deposits/brokered deposits-to-total assets

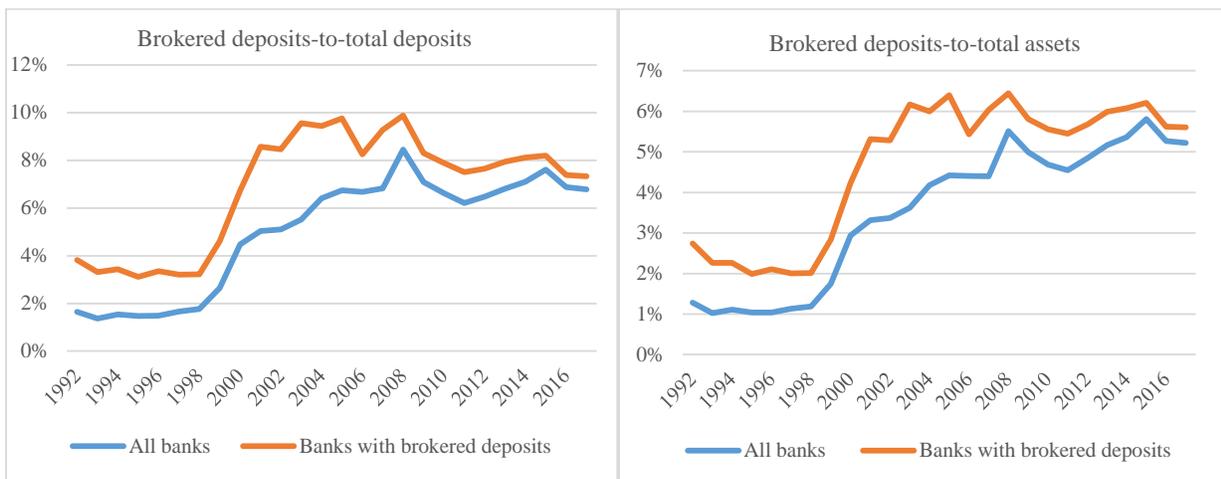
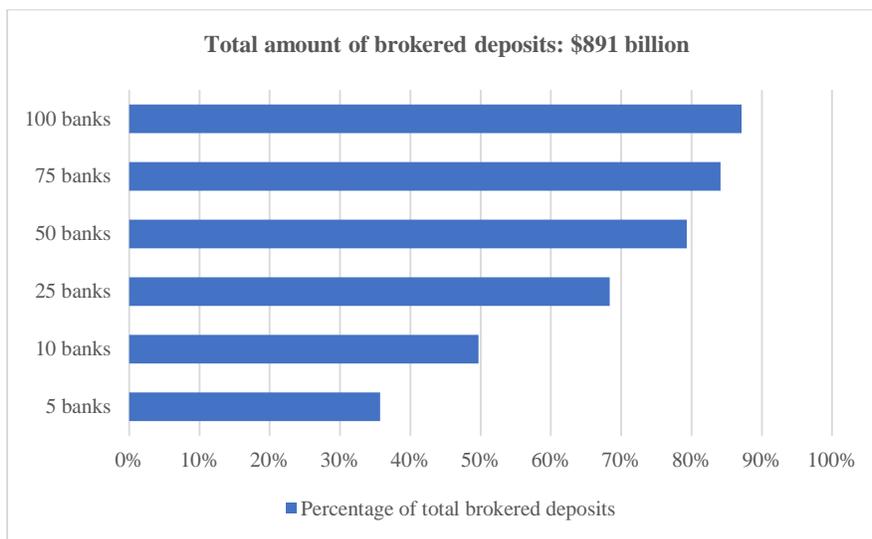


Figure 5 shows the concentration of brokered deposits within the banking industry. Specifically, it shows that when institutions are ranked by the amount of brokered deposits they hold, the top 100 banks hold 87% of all these deposits. Of course, as we count fewer banks, we see lower shares of total brokered deposits. But even the top five banks still account for more than one-third of all such deposits. Of these five banks, Wells Fargo Bank leads the list, with \$96 billion, followed by TD Bank with \$76 billion; Citibank with \$60 billion; Goldman Sachs Bank with \$50 billion; and US Bank with \$37 billion.

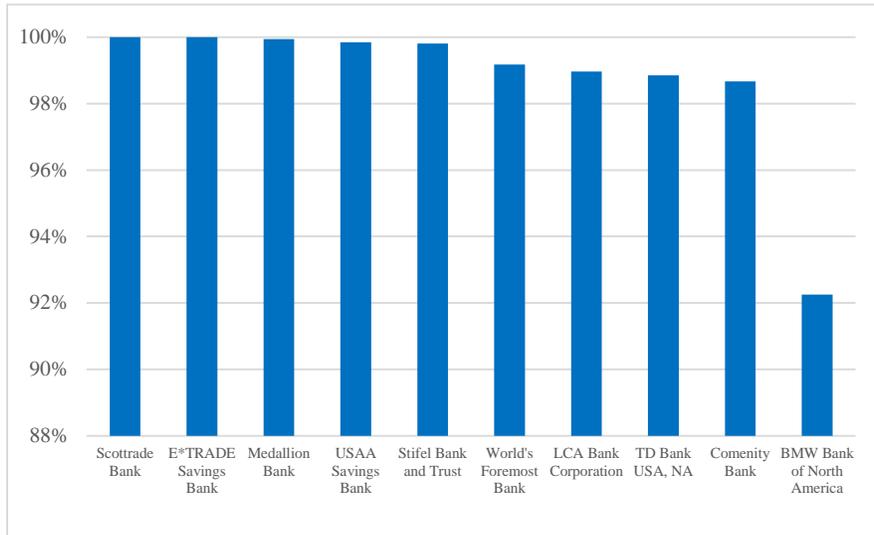
Figure 5. Concentration of brokered deposits among banks, Q1 2017



The picture looks quite different when one ranks the banks by their ratio of brokered deposits-to-total deposits. Figure 6 shows the top ten banks, according to this ranking. The two top banks, Scottrade Bank and E*Trade Savings Bank, both have ratios of 100%, while even the bank ranked tenth, BMW Bank of North America, has a relatively high ratio of 92%. Four of these banks are industrial loan companies (ILCs), with one of them being a commercial ILC (BMW Bank of North America) and the other three financial ILCs. One of these banks, TD Bank USA, also ranks among the top ten banks in terms of the actual amount of brokered deposits.¹⁷

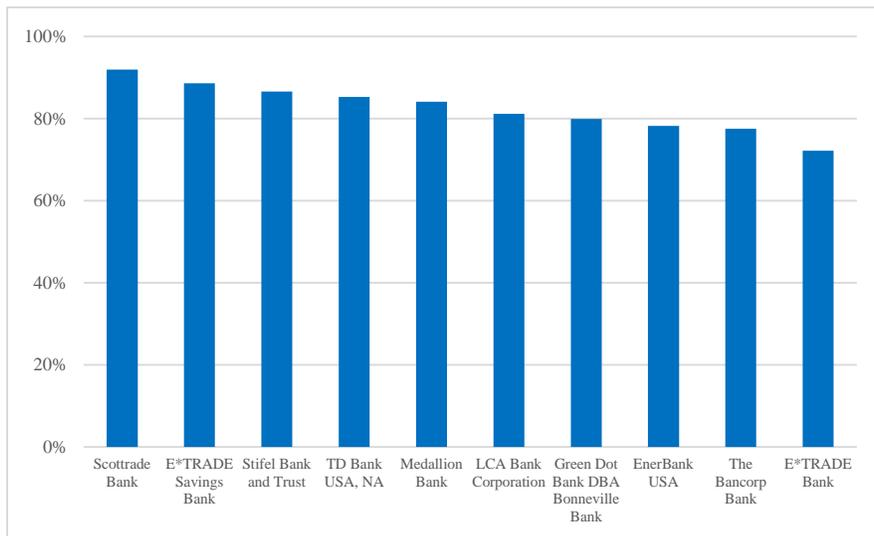
¹⁷ It should be noted that brokered deposits reported on the bank call reports may in fact be mainly sweep deposits, though the latter are not covered by the primary purpose exception and therefore simply reported as brokered deposits. For example, according to the parent quarterly financial reports almost all of the brokered deposits reported on the bank call reports for the subsidiary banks at Scottrade Bank (95.5%) as well as E*TRADE Savings Bank and E*TRADE Bank combined (99.7%) are sweep deposits, but not covered by the primary purpose exception.

Figure 6. Top 10 banks by ratio of brokered deposits-to-total deposits



Things also look different when the banks are ranked in terms of the ratio of brokered deposits-to-total assets. As shown in the Figure 7, four different banks make an appearance in this top-10 ranking. Moreover, the ratio of brokered deposits-to-total assets ranges from a high of 92% to a low of 72% in this figure. Here, three of the banks are ILCs (as compared to four in Figure 6), with one being a commercial ILC (EnerBank USA) and the other two financial ILCs.

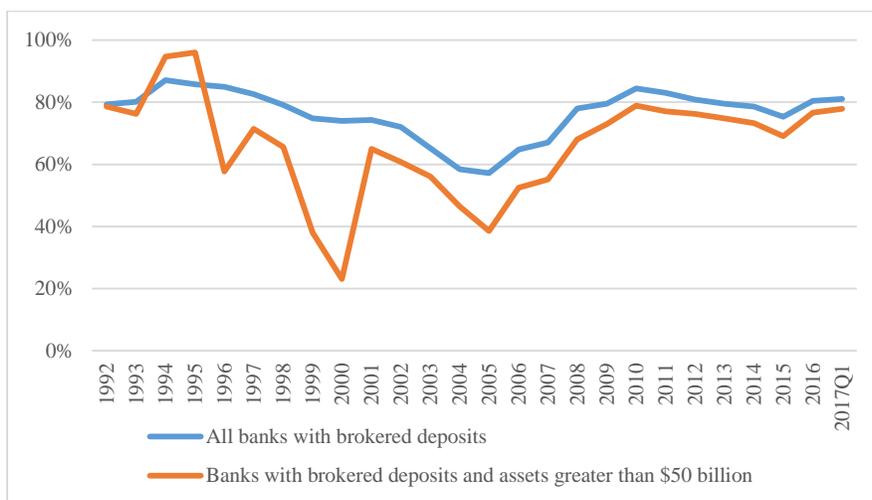
Figure 7. Top 10 banks by ratio of brokered deposits-to-total assets



Also important, not all brokered deposits are fully insured. Figure 8 shows the ratio of fully insured brokered deposits to the total number of brokered deposits. The ratio is shown for all banks with brokered deposits, as well as for banks with brokered deposits and assets greater than \$50

billion. The former ratio declined from a high of 87% in 1994 to a low of 57% in 2005, before increasing to 84% in 2010. It stood at 81% in Q1 2017. The ratios for the largest banks show the greatest declines in percentages, as well as the biggest rebounds.

Figure 8. Ratio of fully insured brokered deposits-to-total brokered deposits



It's useful as well to look at some of the characteristics of banks relying fairly heavily on brokered deposits. Table 1 ranks the top 100 banks on the ratio of brokered deposits-to-total deposits. The ratios range from a high of 100% to a low of 29%. The table also provides information on the ratio of brokered deposits-to-total assets; the ratio of insured brokered deposits-to-total brokered deposits; the number of branches; the efficiency ratio (noninterest expense less amortization of intangible assets as a percentage of net interest income plus noninterest income)¹⁸; their capital-to-asset ratios; and whether a bank is an ILC. At the bottom of the table, the averages and medians for the different items are broken down for the top 100 banks, the ILCs, all banks with brokered deposits, and all banks. As the table shows, the averages and medians indicate that the top 100 banks have significantly higher ratios of brokered deposits-to- both total deposits and total assets. The same group also has a slightly higher average ratio of insured brokered deposits-to-total deposits, relative to all banks with brokered deposits.

18. This ratio measures the proportion of net operating revenues that are absorbed by overhead expenses, so that a lower value indicates greater efficiency.

Table 1. Top 100 banks with the highest ratio of brokered deposits-to-total deposits

Rank	Name	BD/TD (%)	BD/TA (%)	IBD/BD (%)	Number of branches	Efficiency ratio (%)	Capital ratio (%)	ILC
1	Scottrade Bank	100.0	91.9	73.6	0	32.7	7.7	No
1	E*TRADE Savings Bank	100.0	88.6	84.6	0	53.2	10.8	No
3	Medallion Bank	99.9	84.1	100.0	0	23.3	15.3	Yes
4	USAA Savings Bank	99.8	29.5	68.3	0	54.6	14.7	Yes
5	Stifel Bank and Trust	99.8	86.6	82.1	1	14.6	6.9	No
6	World's Foremost Bank	99.2	22.2	100.0	0	57.3	11.1	No
7	LCA Bank Corporation	99.0	81.1	100.0	0	36.3	12.0	Yes
8	TD Bank USA, National Association	98.9	85.3	21.0	0	64.5	10.3	No
9	Comenity Bank	98.7	34.5	100.0	0	43.0	14.3	No
10	BMW Bank of North America	92.3	53.4	100.0	0	24.6	15.3	Yes
11	American Express Centurion Bank	92.2	49.0	100.0	1	46.1	18.8	Yes
12	EnerBank USA	90.8	78.2	100.0	0	36.4	12.5	Yes
13	Green Dot Bank DBA Bonneville Bank	90.5	79.9	100.0	0	15.3	11.0	No
14	The Bancorp Bank	83.7	77.5	64.3	0	75.6	6.8	No
15	Comenity Capital Bank	82.2	54.9	100.0	0	36.2	13.5	Yes
16	E*TRADE Bank	80.5	72.1	90.0	1	45.8	7.8	No
17	Continental Bank	79.7	65.2	100.0	0	57.5	16.5	No
18	Rancho Santa Fe Thrift & Loan Association	79.5	49.8	0.0	0	54.4	36.3	Yes
19	State Farm Bank, FSB	77.4	51.0	81.6	0	83.4	10.6	No
20	The Citizens State Bank	72.7	55.5	100.0	1	92.2	14.6	No
21	1st Financial Bank USA	72.1	52.7	100.0	1	72.4	20.6	No
22	WebBank	71.9	55.7	99.8	0	36.4	20.2	Yes
23	Luana Savings Bank	69.5	61.8	100.0	4	32.5	8.5	No
24	Beal Bank SSB	67.2	45.6	100.0	18	37.5	27.7	No
25	WEX Bank	65.3	48.3	100.0	0	53.4	12.2	Yes
26	Celtic Bank	59.8	41.7	99.7	0	53.8	17.2	Yes
27	Farm Bureau Bank FSB	57.8	50.6	95.3	1	71.8	10.2	No
28	Marlin Business Bank	56.4	45.6	100.0	0	69.5	14.5	No
29	Merrick Bank	55.6	43.0	99.9	0	29.3	20.8	Yes
30	Mizuho Bank (USA)	54.5	34.9	100.0	2	54.5	20.0	No
31	Stearns Bank National Association	52.8	41.5	93.3	8	37.1	18.0	No
32	Enterprise Bank	52.7	41.5	99.3	0	83.2	9.0	No
33	Beal Bank USA	52.3	26.0	100.0	22	36.4	41.0	Yes
34	Farmers and Merchants Bank	52.2	42.9	98.3	10	51.0	10.4	No
35	First National Bank of America	49.4	38.2	100.0	2	40.5	9.2	No
36	The First National Bank of Syracuse	48.3	42.4	84.3	3	52.0	10.2	No
37	Sallie Mae Bank	47.9	34.9	98.9	0	32.0	11.1	Yes
38	Patriot Bank	47.4	40.2	99.7	0	40.6	11.0	No
39	Transportation Alliance Bank, Inc. DBA TAB Bank	45.4	34.4	100.0	0	71.2	13.9	No
40	Goldman Sachs Bank USA	45.3	32.2	95.4	4	41.0	16.0	No
41	The Peoples Bank	45.3	30.8	100.0	2	58.8	9.4	No
42	Safra National Bank of New York	45.2	39.9	100.0	2	35.0	8.7	No
43	First Federal Savings and Loan Bank	44.7	36.7	95.4	0	34.9	10.8	No
44	Plus International Bank	44.7	36.7	0.7	0	113.3	17.4	No
45	Genesee Regional Bank	44.1	39.8	100.0	2	61.0	9.4	No
46	Talbot State Bank	42.1	38.7	24.9	1	91.3	8.0	No
47	Bank of Deerfield	41.9	36.3	13.3	1	57.5	12.6	No

Rank	Name	BD/TD (%)	BD/TA (%)	IBD/BD (%)	Number of branches	Efficiency ratio (%)	Capital ratio (%)	ILC
48	MetaBank	41.4	30.0	93.8	9	51.1	12.6	No
49	Androscoggin Savings Bank	41.1	32.4	99.0	11	75.2	11.1	No
50	Toyota Financial Savings Bank	40.6	32.7	100.0	0	101.3	18.5	Yes
51	First Business Bank	40.2	33.1	97.4	3	58.5	10.2	No
52	Katahdin Trust Company	39.6	34.0	100.0	16	77.8	9.2	No
53	DMB Community Bank	38.6	34.2	100.0	1	57.2	10.6	No
54	State Bank of New Richland	38.3	28.4	100.0	0	39.4	10.1	No
55	Citizens Savings Bank and Trust Company	38.1	32.7	100.0	3	91.8	10.0	No
56	Bankers' Bank of Kansas	37.8	31.8	100.0	0	78.8	13.3	No
57	SouthEast Bank	37.3	33.9	100.0	14	65.6	8.3	No
58	Admirals Bank	37.2	28.4	99.2	1	125.8	10.4	No
59	First Central Bank McCook	37.1	31.3	100.0	1	49.5	11.9	No
60	Barclays Bank Delaware	37.1	26.0	98.5	0	33.3	13.8	No
61	Discover Bank	36.6	22.0	96.0	1	35.8	11.3	No
62	Metropolitan Capital Bank & Trust	36.2	32.3	100.0	0	80.1	8.0	No
63	St. Louis Bank	36.0	32.7	100.0	0	68.5	8.8	No
64	Bank 7	35.9	32.1	100.0	7	33.5	9.8	No
65	McClave State Bank	35.8	31.6	91.5	0	58.5	11.4	No
66	Sunrise Banks, National Association	35.7	31.3	100.0	6	92.1	10.0	No
67	Frontier Bank	35.6	30.8	37.2	8	50.1	10.7	No
68	First Bank of Charleston Inc.	35.3	27.8	96.6	0	56.4	11.2	No
69	Great Plains State Bank	35.3	29.1	100.0	2	78.6	12.0	No
70	OptimumBank	35.2	26.2	99.2	2	97.4	7.9	No
71	Independence Bank	35.1	29.5	98.9	5	43.7	12.5	No
72	Jonesboro State Bank	34.6	29.6	100.0	0	39.6	12.3	No
73	The First National Bank and Trust Company of Vinita	34.1	29.7	48.7	3	64.5	7.9	No
74	Western National Bank	33.9	30.6	100.0	0	83.5	9.3	No
75	Farmers and Merchants Bank	33.8	28.1	100.0	1	50.5	11.4	No
76	First Business Bank–Milwaukee	33.7	30.5	80.8	0	70.7	8.9	No
77	Bank of Belleville	33.4	29.3	100.0	0	69.9	7.9	No
78	The Capital Bank	33.3	22.0	0.0	0	72.9	9.4	No
79	Treynor State Bank	33.1	28.1	100.0	7	97.1	7.1	No
80	United Bankers' Bank	33.0	27.4	100.0	1	81.3	10.8	No
81	The First National Bank of McGregor	32.8	29.9	90.8	1	66.6	8.3	No
82	TD Bank, National Association	32.5	27.6	95.0	1,297	62.9	12.8	No
83	Commerce Bank	32.0	24.1	100.0	1	69.9	14.6	No
84	Eagle Bank	31.8	28.7	100.0	0	81.3	9.3	No
85	The Bank of Tioga	31.5	25.7	96.9	1	66.6	6.9	No
86	Metropolitan Bank	31.3	25.4	46.3	11	70.8	9.3	No
87	Northern Bank & Trust Company	31.1	25.1	100.0	13	42.6	10.1	No
88	Lincoln 1st Bank	30.6	21.1	100.0	1	73.4	6.4	No
89	Security State Bank	30.4	24.8	0.0	1	34.8	9.5	No
90	Bank 2	30.3	25.4	100.0	0	75.9	12.7	No
91	Meridian Bank	30.3	22.9	77.9	4	98.1	9.3	No
92	The First National Bank–Fox Valley	30.2	25.6	99.6	4	70.6	11.7	No
93	Liberty National Bank	29.9	26.6	100.0	4	73.7	8.9	No
94	Morton Community Bank	29.9	24.6	100.0	36	48.6	11.1	No
95	Stearns Bank Upsala National Association	29.2	24.0	69.5	0	30.6	17.7	No

Rank	Name	BD/TD (%)	BD/TA (%)	IBD/BD (%)	Number of branches	Efficiency ratio (%)	Capital ratio (%)	ILC
96	First National Bank	29.0	22.6	100.0	15	52.8	8.4	No
97	Bank of New England	28.9	25.4	68.3	8	42.3	11.9	No
98	First Sentry Bank Inc.	28.9	23.3	98.9	4	54.5	8.6	No
99	Farmers Bank & Trust	28.8	19.7	100.0	8	41.4	16.8	No
100	Maple Bank	28.7	24.1	100.0	0	110.3	13.2	No
Average of the top 100 banks		50.6	38.9	88.4	16.0	58.9	12.3	N/A
Median of the top 100 banks		40.4	32.3	100.0	1.0	57.2	11.1	N/A
Average of ILCs (15)		75.3	50.8	91.1	2	43.6	18.6	N/A
Median of ILCs (15)		79.5	49.0	100.0	0	36.4	15.3	N/A
Average of banks with brokered deposits (2,521)		8.0	6.4	85.2	28	67.5	11.0	N/A
Median of banks with brokered deposits (2,521)		4.7	3.8	100.0	4	66.9	10.6	N/A
Average of all banks (5,856)		3.4	2.8	N/A	15	71.7	12.0	N/A
Median of all banks (5,856)		0	0	N/A	3	69.8	10.7	N/A

Source: FDIC.

The top 100 banks generally have fewer branches than do all banks with brokered deposits, as well as all banks, especially if one does not consider TD Bank, which has 1,297 branches. The top 100 banks also have lower efficiency ratios and slightly higher capital ratios than all banks with brokered deposits, as well as all banks.

Fifteen ILCs (out of a total of 25 ILCs) are included in the top 100 banks.¹⁹ These banks rank higher on average (both in terms of arithmetic means and medians) than all the other categories of banks: they have higher ratios of brokered deposits-to-total deposits, higher ratios of brokered deposits-to-total assets, and higher ratios of insured brokered deposits-to-total brokered deposits. They also on average have fewer branches, lower efficiency ratios (indicating greater efficiency), and higher capital ratios than the other banks.²⁰

19. As of the first quarter of 2017, twenty ILCs account for 4.6% of all brokered deposits, while five had no brokered deposits.

20. For more detailed information on ILCs, see Barth, Li, Angkinand, Chiang and Li (2011); Barth, Li, Angkinand, Chiang, and Li (2012); and Barth and Sun (2017).

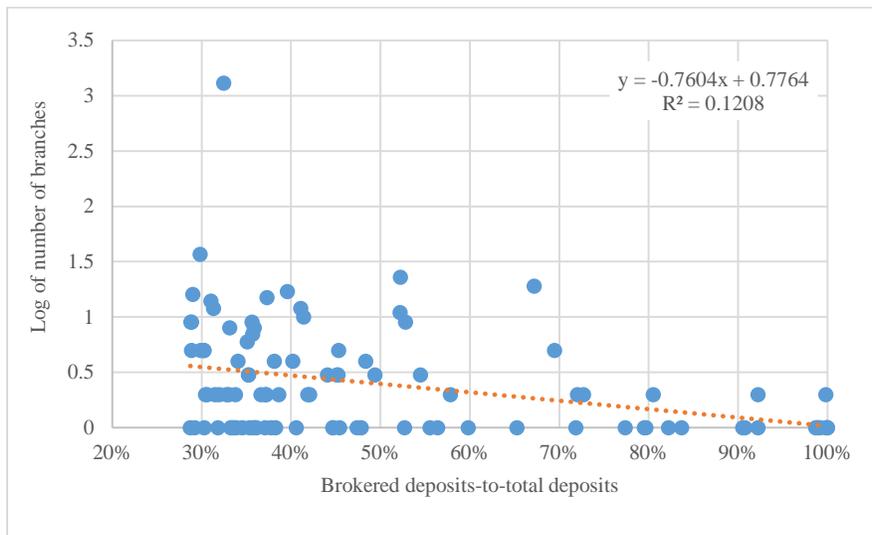
VI. IMPACT OF BROKERED DEPOSITS ON BANK PERFORMANCE, FAILURES AND FAILURE COSTS

Part I: Some General Observations

Given the concern of the bank regulatory authorities since the early 1980s with regard to brokered deposits, it is important to consider the impacts of such deposits on bank performance, failures, and failure costs. To begin, we use data for the top 100 banks (by ratio of brokered deposits-to-total deposits) from Table 1 to examine some fairly simple and suggestive relationships among variables. In particular, we examine the relationship between the ratio of brokered deposits-to-total deposits and (1) the number of branches a bank operates; (2) a bank's efficiency ratio; and (3) its capital-to-asset ratio.

Figure 9 shows a significantly negative relationship between the number of branches and the ratio of brokered deposits-to-total deposits. Banks, of course, can secure deposits through branches or brokers, or some combination of the two sources of funds; and they'll incur either the costs of operating their branches or the fees of acquiring brokered deposits, or both costs if they're securing funds from both sources. *It's important to acknowledge that the business models of some banks make it less costly to rely on brokers than to operate a network of branches.* This may help explain the finding that the higher a bank's brokered deposits ratio, the fewer branches it operates.

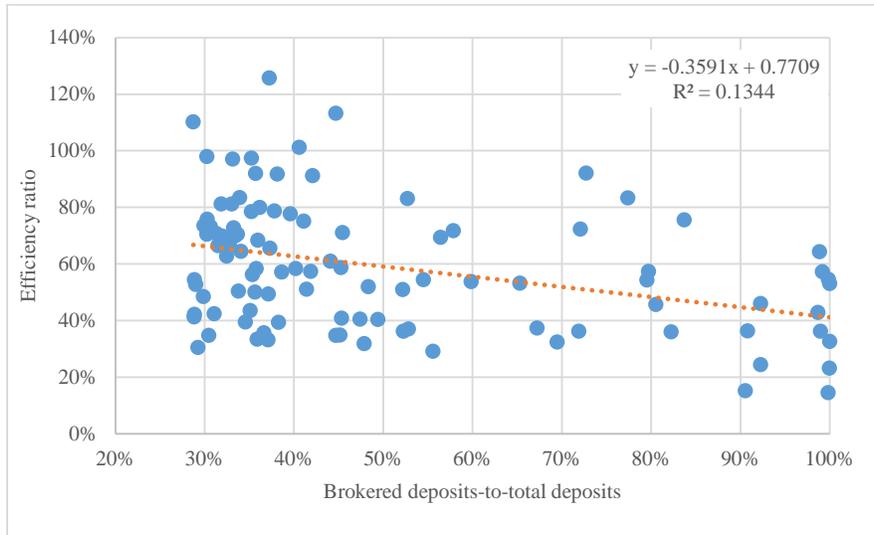
Figure 9. Number of branches vs. ratio of brokered deposits-to-total deposits



Note. The relationship is statistically significant at the 1% level.

Figure 10 looks at the relationship between a bank’s efficiency ratio and its ratio of brokered deposits-to-total deposits, and shows a significantly negative relationship between the two, consistent with a view that banks with higher brokered deposit ratios operate more efficiently than those with lower ratios. *This finding is consistent with the previous finding insofar as banks with fewer branches are most likely to incur lower non-interest expenses.*

Figure 10. Efficiency ratio vs. ratio of brokered deposits-to-total deposits



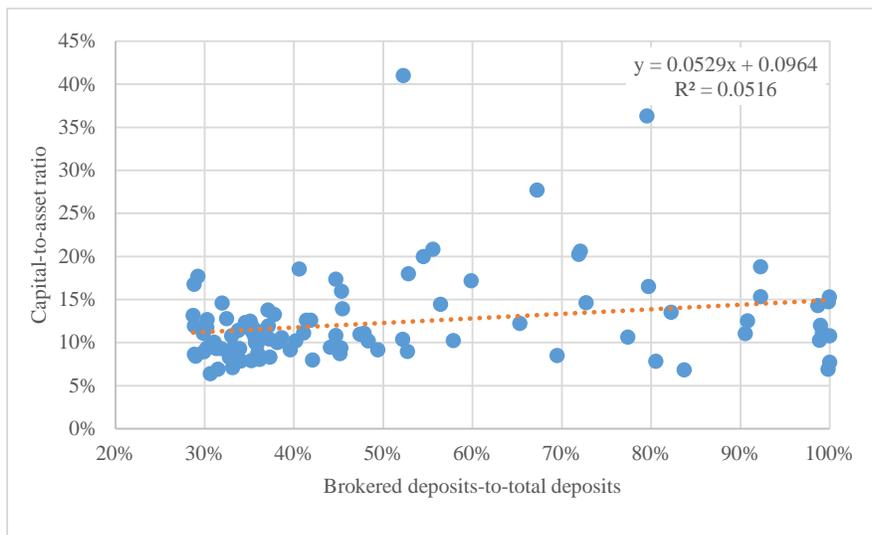
Note. The relationship is statistically significant at the 1% level.

Figure 11 examines the relationship between a bank’s capital-to-asset ratio and its ratio of brokered deposits-to-total deposits. It shows a significantly positive relationship, indicating that the higher the brokered deposits ratio, the higher the capital asset ratio. *This finding, coupled with the previous two findings, suggests that on average that greater use of brokered deposits is associated with higher capital ratios and better efficiency ratios for the top 100 banks.*

These findings also indicate that *brokered deposits may be an important source of funds for some banks, depending on their business models, and do not pose the types of problems of concern to regulators.* Indeed, brokered deposits may enable some banks to operate more safely and soundly.

Still, it is important to consider more rigorous studies of the impacts of brokered deposits on bank performance, bank failures and bank failure costs, which we do next.

Figure 11. Capital-to-asset ratio vs. ratio of brokered deposits-to-total deposits



Note. The relationship is statistically significant at the 5% level.

Before we examine the impacts of brokered deposits on bank performance, bank failures and bank failure costs, it is important to clarify that banks hold two types of deposits: brokered deposits and core deposits. Through 2010 (when the definition underwent a change; we address this shortly), the Federal Financial Institutions Examination Council (FFIEC) included as “core accounts” all demand and savings deposits, including money market deposits, NOW and ATS accounts, other savings deposits, and time deposits in amounts under \$100,000 (FDIC, 2011, p. 115).²¹

Regulatory authorities don’t, of course, treat core deposits and brokered deposits equally; they have historically perceived, and categorized, core deposits as stable, less costly funds obtained from local customers who maintain relationships with the institution. Meanwhile, they perceive brokered deposits to be volatile because they draw customers more broadly mainly in search of yield.

Yet this view isn’t necessarily supported if one looks at the characteristics of both types of deposits. Core deposits typically have few or no restrictions on early withdrawals—which makes the banks more vulnerable to “runs” during periods of uncertainty. Brokered deposits, on the other hand, don’t permit early withdrawals unless the depositor dies or is declared incompetent by a

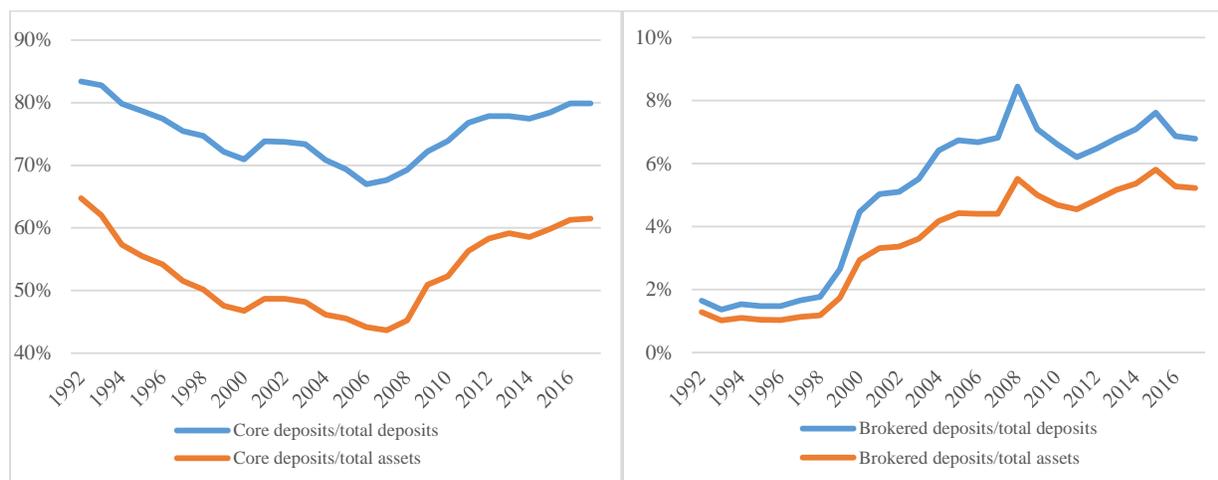
21. It should also be noted that core deposits are not defined by any particular law, but are instead defined in the user guide for the Uniform Bank Performance Report (“UBPR”). See: <https://cdr.ffiec.gov/Public/DownloadUBPRUserGuide.aspx>.

court of law, making it impossible for these depositors to flee. But even considering these factors, the volatility of any deposits should depend ultimately on whether the bank itself is well capitalized and whether the rates it offers on its various deposits are competitive in the marketplace.

Despite these historical perceptions of stability versus volatility, the FDIC nonetheless stated in 2011 that “examiners do not necessarily view the presence of any certain source of funding as inherently bad,” and adds that “there should be no particular stigma attached to the acceptance of brokered deposits per se and the proper use of such deposits should not be discouraged” (FDIC, 2011, p. 32). Yet brokered deposits are certainly not treated like core deposits. Worse, this treatment is not justified by any consensus based upon a thorough quantitative analysis.

Figure 12 looks at core and brokered deposits in terms of their relative roles in funding, respectively, total deposits and bank assets. Looking first at core deposits, we see that they constitute a significantly larger portion of total deposits than they do of total assets. Over the period 1992–Q1 2017, core deposits ranged from 67% to 83% of total deposits. The percentage declined over the first half of the period to its lowest value of 67% in 2006, and then increased during the second half to end at 80% in Q1 2017. The pattern is similar when we examine the role of core deposits in funding total assets, but the percentages are on average 22 points lower. *This means that all non-core sources of funds, and not just brokered deposits, are quite important in supporting the assets of banks.*

Figure 12. Core deposits and brokered deposits: Ratios to total assets and total deposits



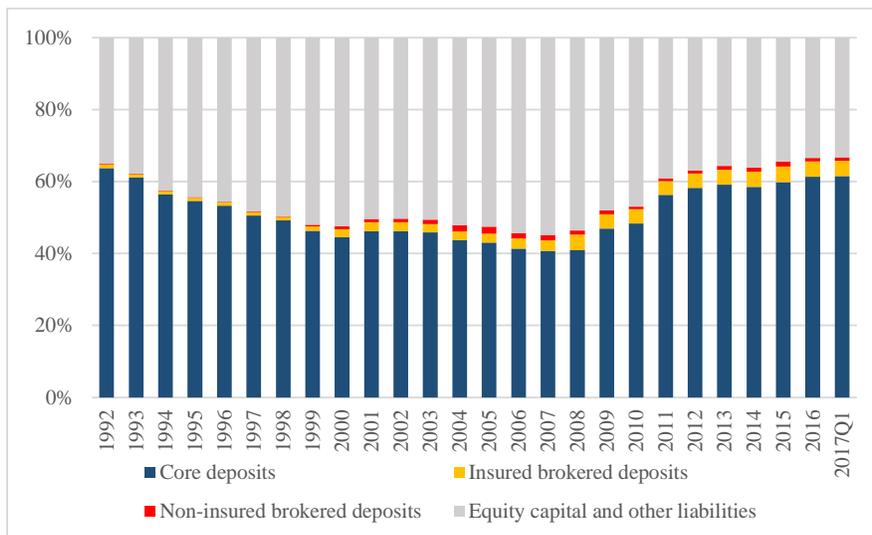
Turning to brokered deposits, Figure 12 shows that their percentage of both total deposits and total assets generally increased over the period, beginning in 1992 with values of 2% and 1%, respectively, and ending in Q1 2017 with values of 7% and 5%. Of note, the core deposit ratio generally decreased leading up to and during the financial crisis, while the brokered deposit ratio generally increased over the same period. Yet toward the end of the period, the brokered deposit ratios were tending to level off, even as the core deposit ratios were still increasing.

Since non-core sources of funds constitute a relatively significant portion of total assets, a comparison of these funds with brokered deposits is helpful. Figure 13 shows the percentage of total assets funded by core deposits, insured brokered deposits, non-insured brokered deposits, and equity capital and other liabilities. The figure shows that brokered deposits, including both insured and non-insured deposits, fund a relatively small portion of total assets, as noted in Figure 12.

Of interest here, *insured* brokered deposits were included in core deposits through 2010. However, on March 31, 2011, a new definition of core deposits included time deposits up to \$250,000, but excluded brokered deposits under \$250,000. At the time, those *insured* brokered deposits accounted for 81% of total brokered deposits. The FDIC study behind the decision cites a number of research papers on core and brokered deposits, but it didn't rely on comparable data or variables, making the reason for the change, and the evidence supporting it, unclear (FDIC, 2011).²²

22. In the study, some of the research papers cited that find core deposits to be beneficial include *insured brokered deposits* in core deposits. Other cited papers don't distinguish between insured and non-insured brokered deposits. Also, the study states that one deposit characteristic that can contribute to potential problems is being uninsured. Furthermore, it doesn't appear from the empirical work that insured and non-insured brokered deposits are included as separate variables, or that the regressions separately control for all non-core deposit variables.

Figure 13. Composition of funding sources for total assets of all banks



*Note: Through 2010, core deposits include insured brokered deposits, which means deposits under \$100,000. In 2011 and thereafter, core deposits exclude brokered deposits under \$250,000.

Part II: Some Research Studies

Over the years, of course, many studies have focused on the causes of bank failures, the costs of resolving bank failures, and bank instability. Here we examine and review a number of these studies to see if there is any consensus in the role brokered deposits play in bank performance, bank failures and bank failure costs, and why. It seems appropriate to focus first on two studies undertaken by bank regulatory authorities themselves. The first, by the FDIC in 2011, is titled “Study on Core Deposits and Brokered Deposits” (FDIC, 2011), while the second was released the same year by the Office of Inspector General (OIG) of the Board of Governors of the Federal Reserve System and titled “Summary Analysis of Failed Bank Reviews” (OIG, 2011).

The FDIC study identifies three of the most important potential problems deposits can pose. The first, referred to as “rapid, risky growth,” occurs if a bank acquires deposits too easily and thus has more funds than it can prudently invest (e.g., if a banks pays a higher rate on its deposits than it earns on its loans, it will ultimately fail). The second, “deposit volatility,” is the greater likelihood that a depositor will withdraw funds for higher rates elsewhere when the bank is under stress, resulting in the greater risk that the bank will encounter liquidity problems.²³ The

23. According to Iyer, Puri, and Ryan (2016, p. 2721), “[w]e find that there is substantial heterogeneity in depositor responses to the true solvency risk facing a bank. ... In particular, they are more likely to run

third problem, “lower franchise value,” occurs when potential buyers of failed banks find that some kinds of deposits—those with low relative costs, those that offer a continuing customer relationship, and those likely to remain at the bank after acquisition—more attractive than others and demand discounts on the “more volatile” brokered deposits.

The FDIC relies on five factors to determine whether brokered deposits create any or all of these three potential problems. They include: (1) deposit accounts that pay high interest rates (which are likely to exhibit all three of the problems)²⁴; (2) many forms of brokered deposits (which can be acquired quickly and in bulk); (3) deposits that are not based on a customer relationship (which again are likely to present all three problems)²⁵; (4) uninsured deposits (which can exacerbate liquidity problems at a weakened bank); and (5) the duration of a deposit (which can present or mitigate the problem of a deposit leaving a bank for higher rates or when the bank is under stress).²⁶

Based on these five characteristics, the FDIC concludes that *reciprocal deposits* should be considered brokered deposits. *Sweep deposits* from affiliates fall within the purview of the primary purpose exception and therefore should not be considered as brokered deposits; although sweep deposits from non-affiliates should be considered as brokered deposits; *Referrals of deposits* from

when the true solvency risk of the bank is high, and less likely to run when the true solvency risk is low. Uninsured depositors are more likely to run under both shocks, but again are relatively more likely to do so when the true solvency risk is high. We also find that depositors with more transaction activity and younger accounts are more likely to run regardless of the solvency risk of the bank. The results support the idea that some types of depositors are, at least partly, informed about solvency risk. Our results speak to the fragility of banks, suggesting that banks with otherwise identical balance sheets can be differently fragile depending on their relationships with depositors.” This suggests that much more empirical research should be conducted before concluding that brokered deposits are more volatile than other deposits or concluding that deposit volatility is a problem rather than a response to a problem, namely, insolvency. It should also be noted that the FDIC stated that “[t]he net effect of brokered deposits on liquidity is, therefore, uncertain and variable for different types of institutions and in different regions.” See FDIC (1991, pp. iv–8).

24. The FDIC admits that “defining a ‘high rate,’ however, is not simple and is hampered by a lack of data.” In addition, the FDIC states that it “is exploring the possibility of gathering additional data with which to conduct a statistical analysis to determine the best definition of a high rate deposit.” We are unaware of whether this has been done as of the date of this report.

25. Defining a “relationship,” according to the FDIC, is also not simple, and its study does not attempt to define it. In addition, the FDIC states that “...additional analysis is needed to determine the proper definition of a relationship”. We are unaware of whether this has been done as of the date of this report.

26. It should be noted once again that brokered CDs only terminate early upon death or incapacity of the depositor.

affiliates and their agents should be considered as brokered deposits. *Listing service deposits* have not yet been identified as a potential problem on account of insufficient data.

However, all high-rate deposits pose a problem. Furthermore, the FDIC recommends that Congress not amend or repeal the brokered deposit statute, since “increasing levels of brokered deposits are correlated with a higher probability of failure and higher losses to the FDIC in the event of failure... [and] ...increasing levels of brokered deposits are associated with lower core deposit ratios, more rapid growth, and riskier underwriting standards, each of which is correlated with a higher probability of failure” (FDIC, 2011, p. 59).²⁷

Of significance, the FDIC study lacks consistency in its findings. In some cases, there is a statistically positive relationship, showing that brokered deposits increase the probability of a bank failure; in others there is no statistically positive relationship. The results are therefore mixed, and their use to support a differential regulatory treatment of brokered deposits is questionable.

Perhaps even more important, while the study provides some information about correlations, it provides no information about causation as it relates to the impact of brokered deposits on bank performance, bank failures, and bank failure costs. This is a major weakness and must be addressed because causation may in fact not derive from brokered deposits, but from the opposite direction—in that troubled institutions can turn to these deposits late in the game and as a last-ditch effort to grow out of their problems by investing the funds in excessively risky assets. When they then fail, it might seem reasonable on the surface to point to brokered deposits as the cause, but that would be an error. The real underlying cause would be that these troubled institutions were allowed to take in more funds and invest them in the risky assets, whether the sources of those funds were brokered deposits or some other sources, including high-rate non-brokered deposits. The FDIC study leaves this question unanswered.

27. Furthermore, the FDIC provided an analysis that included banks and thrifts that failed between January 1, 1988, and April 8, 2011. It found a strong, statistically significant link between the use of brokered deposits and asset growth rates, as well as with higher future rates of noncurrent and nonperforming loans. It also found that bank average growth rates are higher the larger the share of bank assets funded with brokered deposits, but it acknowledged that the relationship is likely to be the result of a complex series of choices made by bank management that drive both a bank’s growth rate and its use of brokered deposits. This means that “[t]he underlying structural choice models are undoubtedly much more complex than the models estimated in this analysis” (FDIC, 2011, 82). It should be noted that the asset growth rate is not included in all the regression models, nor is it interacted with brokered deposits, and in some cases the statistical significances of brokered deposits are mixed.

Another flaw of the study is that it provides no direct information about the relationship between brokered deposits and the terrible trio of problems: “rapid, risky growth,” “deposit volatility,” and “lower franchise value.” Even more confusing, a few years after the study was released, the FDIC stated that “[b]rokered deposits can be a suitable funding source when properly managed as part of an overall, prudent funding strategy. However, some banks have used brokered deposits to fund unsound or rapid expansion of loan and investment portfolios, which has contributed to weakened financial and liquidity positions over successive economic cycles. The overuse of brokered deposits and the improper management of brokered deposits by problem institutions have contributed to bank failures and losses to the Deposit Insurance Fund” (FDIC, 2014).

In other words, the problem again is not brokered deposits *per se*, but troubled institutions and their attempts to fund unsound or rapid expansion of loans and investments, as well as their overuse of brokered deposits. It would seem to follow naturally that regulations (regulators) should therefore be directed (focused) on these factors, rather than on brokered deposits. After all, other sources of funding can contribute to unsound or rapid expansion of excessively risky loans and investments.

The 2011 OIG study examines selected failed state member banks for the period December 2008–February 2011. It cites four common elements in the failures of the 20 institutions that displayed “unusual circumstances,” including: (1) management making poor decisions as they pursued aggressive growth objectives and made strategic choices; (2) rapid loan portfolio growth that exceeded the bank’s risk management capabilities and/or internal controls; (3) asset concentrations that were tied to commercial real estate (CRE) or construction, land, and land development (CLD) loans, thus increasing the bank’s vulnerability to changes in the marketplace and compounding the risks inherent in individual loans; and (4) management failure to raise sufficient capital to cushion mounting losses” (OIG, 2011, p. 8).

The OIG also stated that “[i]n ... supplemental research and analysis comparing failed banks to those that withstood the financial crisis, we found that lower commercial real estate and CLD concentration levels, strong capital positions, and minimal dependence on non-core funding were key differentiating characteristics. Our research also revealed a correlation between high

CLD concentration levels and the likelihood of failure during the recent financial crisis” (OIG, 2011, p. 2)

This seems to suggest that the OIG didn’t consider brokered deposits to be an important factor in the bank failures. Indeed, even when mentioning non-core funding as a factor, the OIG wrote that “[f]unding ... can be very sensitive to changes in interest rates, ... [which includes] brokered deposits, certificates of deposit greater than \$100,000, federal funds purchased, and borrowed money” (OIG, 2011, p. 52). In short, brokered deposits, which accounted for only 10% of non-core funding during the period of bank failures studied by the OIG, played a minor role, if any. The obvious question again is, why treat brokered deposits differently than other non-core funding?

Numerous other studies have also considered the role of brokered deposits in bank failures, failure costs, and banking instability. Our appendix contains information on fifty-nine selected studies (all of which date to 1990 or later), and includes authors, titles, sources, dates, whether an empirical or statistical analysis was performed, whether the study includes brokered deposits, and its conclusions. Rather than discuss each in detail, we summarize their findings in Table 2. Of the fifty-nine studies, forty-one are empirical studies and eighteen non-empirical studies.

Of the forty-one empirical studies, nineteen examine the relationship between brokered deposits and the likelihood of a bank failure. Eight find a significantly positive relationship between brokered deposits and bank failures, five find no such relationship, and six find mixed results. Another seventeen studies examine the relationship between various factors and the likelihood of a bank failure, but these don’t include brokered deposits as one of the factors. This suggests that their authors didn’t consider brokered deposits to be an important explanatory variable.

The remaining five empirical studies examine the relationship between brokered deposits and bank failure costs. Two find no relationship between these two variables, while one study actually finds that an increase in brokered deposits is associated with a decrease in bank failure costs. Two find mixed results in that some relationships were significantly positive, while others were not significant.

A final study actually finds in one case that core deposits were statistically and positively related to the cost of resolving failed banks, while in another case that such deposits were not significantly related to the failure costs of banks (FDIC, 2011, p. 104). This is a study by the FDIC.

Table 2. Summary of studies of bank failures and failure costs

	Are brokered deposits included?		Issue the studies examined	Findings of the studies	
	Yes	No		Yes	No
Empirical studies (41)	Yes	24	Do brokered deposits increase the likelihood of bank failure? (19)	Yes	8
				Mixed	6
				No	5
	No	17	Do brokered deposits increase bank failure costs? (5)	Yes	0
				Mixed	2
				No	3 (1 finds BDs decrease failure costs)
Non-empirical studies (18)	Yes	4	Do brokered deposits increase the likelihood of bank failure? (4)	Yes	4
				No	0
	No	14			

The bottom line here is that most of the empirical studies, either those focusing on bank failures or on bank failure costs, don't provide justification for the current regulatory treatment of brokered deposits. In this regard, the Department of the Treasury in its report titled "Modernizing the Financial System: Recommendations for Safer, More Competitive Banks," stated that "studies of depository institution failures have not found a consistent, statistically significant relationship between brokered deposits and either the probability or cost of failure" (US Treasury, 1991, pp. iv-4).

Most important, the studies don't consider different types of brokered deposits or control for all non-core sources of funding used by banks in the empirical work. They also don't generally take into account the underwriting standards used when loans are made or the extent of fraud involved in bank failures, among other limitations.

Moreover, none of the studies provide direct evidence that brokered deposits are a causal factor with respect to bank failures, failure costs, or banking instability. For example, the FDIC study states that "[b]rokered deposits are correlated with behaviors that increase the risk of failure" (FDIC, 2011, p. 47). However, the correlations that do emerge are totally consistent with the view of Rossi (2010, p. 22), who states that "a picture emerges supporting the view that brokered deposits do not drive asset growth, risk-taking or insolvency. ... Instead, it was shown that greater

risk-taking could promote increased usage of brokered deposits when faced with a constraint on retail deposits.”

Of the eighteen non-empirical studies, four discuss brokered deposits with respect to bank failures, failure costs, or banking instability, and all four conclude that they pose a problem. The other fourteen non-empirical studies don’t mention brokered deposits at all, which is consistent with the view that they are not considered contributors to banking problems. Instead, the studies tend to focus on other factors. In this regard, we provide here the conclusions reached by four highly regarded researchers about the causes of the most recent severe banking and broader financial crisis since the Great Depression:

(1) *Dr. John B. Taylor, Stanford University*: “I have provided empirical evidence that government actions and interventions caused, prolonged, and worsened the financial crisis. ... They prolonged it by misdiagnosing the problems in the bank credit markets and thereby responding inappropriately by focusing on liquidity rather than risk. They made it worse by providing support for certain financial institutions and their creditors but not others in an ad hoc way without a clear and understandable framework”

(2) *Peter J. Wallison, American Enterprise Institute*: “I believe that the sine qua non of the financial crisis was the US government’s housing policies. ... If the US government had not chosen this policy path ... I believe that the great financial crisis of 2008 would not have occurred.”

(3) *Dr. Richard J. Herring, Wharton School, University of Pennsylvania*: “Although debates still rage over the cause of the financial crisis of 2007–2009, most analysts agree that faulty corporate governance of risk was a major contributing factor, if not the principal cause.”

(4) *Dr. Philip E. Strahan, Boston College*: “The financial crisis of 2007–8 is the biggest shock to the banking and financial system since the 1930s. ... The roots of the crisis lie in the overvaluation in housing prices and the subsequent crash in those prices beginning around 2007. ... What are the lessons of the crisis of 2008 for liquidity risk management? ... Depositories that did fail—Countrywide, IndyMac, Washington Mutual, and Wachovia—faced runs having to do with rational

concerns about their solvency; these institutions were all heavily exposed to subprime mortgages. ... To the extent that depositors ran, they ran away from insolvent banks and toward solvent ones.”

Based on studies by these and other researchers, it’s hard to sustain the argument that brokered deposits per se were the cause of banking instability and the associated bank failures/failure costs during the recent crisis. In this regard, it is worthwhile noting that the US and other countries suffered numerous banking crises before brokered deposits existed. The bottom line, more generally, may be best found in statements made by the FDIC in an older but timely study titled “Deposit Insurance for the Nineties: Meeting the Challenge.”

According to the study, proposals regarding limits on brokered deposits “ignore FDIC examination experience, which suggests that supervision can, in general, effectively discriminate between sound and unsound use of brokered funds. ... Moreover, recently proposed changes in reporting requirements should enhance examiners’ ability to detect brokered-deposit abuses early. Supervisors will get clear signals that closer scrutiny is warranted. These signals take the form of increases in offering rates and the growth of brokered-funds purchased. Once in the bank, supervisors can evaluate the quality of lending in the usual manner. This indicates that brokerage of funds is not a special problem, but part of the more general incentive problem in deposit insurance” (FDIC, 1989, pp. 95–96).

VII. PERSPECTIVES ON BROKERED DEPOSITS IN A MORE TECHNOLOGICALLY-ORIENTED FINANCIAL MARKETPLACE

As stated earlier, brokered deposits came into use as a natural consequence of a more technologically oriented financial marketplace. In this regard, it is worthwhile to quote extensively from an article by Caroline Harless, published in the Federal Reserve Bank of Atlanta’s *Economic Review*. The article was published in March 1984, but most of it seems as relevant today as it did then. She writes:

“CD brokers act as conduits among financial institutions; they have played and continue to play an important role in our economy. Their services have benefited

not only the banking system but the individual consumer as well. This brokered-deposit mechanism has:

1. Provided national sources of funding, an alternative for many sound and stable small, medium-sized, and regional deposit-seeking institutions. Previously, market bias toward the largest banks and thrifts confined smaller institutions, regardless of financial condition, to their local regions for funding.
2. Facilitated the transfer of excess savings from savings-rich areas to areas short of funds to meet credit needs of individuals and businesses. For example, a bank with greater loan demand than it can meet through local deposits may sell one of its own certificates to another bank in an area with slack loan demand, allowing each institution to satisfy its customers' needs profitably. Without the use of a third party, the investor and the deposit-seeking institution probably would not know of each other's need. The CD broker allows small creditworthy and medium-size depository institutions to solicit funds in a national capital market from institutional investors as well as individuals.
3. Provided the deposit-seeking and the investing institutions greater flexibility in managing funds by allowing them to match more closely the maturities of assets with those of liabilities. The brokerage process allows smaller and medium-size banks and thrifts to raise funds with maturities longer than "overnight" This allows them to hedge more effectively against margin squeezes when overall interest rates and the cost of funding rise quickly.
4. Provided a quicker, more efficient, and often cheaper source of funding for deposit seeking institutions than they can obtain within the local market Many CD brokers have an elaborate distribution system or an exchange service that enables the transaction to occur almost immediately. The deposit-seeking institution often pays a higher rate for CDs placed through a broker than it would pay in its local market, but brokered deposits do not require additional investment in "bricks and mortar" for branch facilities, or increased expenditures for additional personnel or advertising. Additionally, for a small

- and middle-size bank or thrift, soliciting funds needed for a specific lending purpose in a national rather than a local market avoids possible competitive repercussions from bidding up the local cost of funding. (In certain cases, these funds also have proven to be more stable than funds derived locally.)
5. Increased the investment alternatives available for the institutional investor and for the small investor. Higher competitive rates and liquidity provided by an active secondary market are now available for the small investor through various broker retail deposit programs. The disparity between what institutional investors are able to command and what the individual investor can demand has been narrowed.
 6. In conjunction with deregulation, CD brokerage has helped to reverse the flow of funds to the money market funds and other competitive investments. Merrill Lynch estimates that 30 percent of the deposits it has placed for banks and thrifts were transferred from money market funds that it sponsors.
 7. Increased the ability of regional banks and thrifts to compete with the largest financial institutions as they expand their efforts in soliciting individual deposits in a national marketplace. The improved competitive position of the regional banks lessens the possibility of deposit concentration in a few large money center banks”

This certainly seems as appropriate an assessment today as when it was made, with respect to the positive role brokered deposits can play in a modern financial marketplace.

The FDIC has also identified some potential benefits of brokered deposits. First, they may reduce the cost of inter-regional flows of funds, thereby reducing regional interest rate differentials and allocating funds to areas where they can be more profitably invested. Second, they may provide an important source of funding at lower costs than uninsured alternatives. Third, a bank may find it less expensive to pay higher interest rates on a specific set of funds raised through a brokered deposit program, while maintaining stable rates on other types of deposits, than to try to attract funds by increasing the rates on a broad range of accounts. Fourth, if brokered deposits can substitute for more expensive, uninsured funds, this could reduce operating losses in periods prior to closure, thus reducing the magnitude of insolvency when a failure was resolved. Fifth, brokered

deposits can enhance liquidity when other sources of funds aren't available, and may reduce interest rate risk when brokered deposits are a source of longer-term funds than would be available in local market (FDIC, 1991, pp. iv-6–iv-8).

Given that some of these benefits are couched in terms of interest rates, it's useful to compare the actual rates paid on alternative sources of funds available to banks. Table 3 provides information on rates paid on selected bank deposit accounts and FHLB advances as of August 1, 2017. As shown, the rates offered on CDs vary by term to maturity and are higher over longer terms. The rates offered on brokered CDs are always higher than the national average CD rate, but sometimes lower than the best rates offered by some banks. The rates offered on brokered CDs are generally fairly similar to those on FHLB advances.

Table 3 also shows that the rates offered on brokered CD are higher than the national average rates on core deposits, but that they're not always the best rates available. Once again, note that brokered deposits enable banks to avoid the costs associated with branch networks, as well as the costs of service centers associated with Internet banks. Brokered deposits can therefore offer higher rates due to these kinds of cost savings. Furthermore, brokered deposit CDs have evolved since the 1980s, when they had the whiff of "hot money." They're now a relatively rational funding source, with rates that are typically no more than 50 basis points higher than the rates offered on US Treasury securities, depending on the term to maturity.²⁸

Table 3. Rates on Selected Bank Deposit Accounts and FHLB Advances, August 1, 2017

CD term	Rate on brokered CDs (%) (Fidelity)	Rate on FHLB advances (%) (Boston)	National average CD rate (%)	Best bank CD rate (%)	Bank offering best rate
3 months	1.25	1.40	0.22	1.21	First Internet Bank of Indiana
6 months	1.40	1.41	0.38	1.37	First Internet Bank of Indiana
9 months	1.45	1.42	N.A.	1.56	Iowa State Bank (14291)
1 year	1.50	1.47	0.59	1.66	Texas Exchange Bank
2 years	1.70	1.78	0.84	2.00	Primary Bank (New Hampshire)
3 years	1.95	1.96	1.06	2.25	Primary Bank (New Hampshire)
5 years	2.35	2.28	1.53	2.51	SouthEast Bank (Tennessee)
Product name	National average rate (%)			Best rate (%)	Bank offering best rate
Money market	0.21			1.51	West Town Bank & Trust (Illinois)
Personal savings	0.19			1.40	DollarSavingsDirect

²⁸ See Harless (1984, p. 21) for a citation to "The Hot Money" (*Forbes*, January 2, 1984). Harless (p. 16) also points out that at the time CD money brokers charged a fee, "which generally ranges from 25 to 100 basis points (annualized) per CD."

CD term	Rate on brokered CDs (%) (Fidelity)	Rate on FHLB advances (%) (Boston)	National average CD rate (%)	Best bank CD rate (%)	Bank offering best rate
					(Internet Bank)
Standard checking		0.14		1.97	Colonial Co-operative Bank (Massachusetts)
Reward checking		1.83		5.01	Hometown Community Banks (Illinois)

Sources: DepositAccounts, www.depositaccounts.com/cd/3-month-cd-rates.html

Fidelity, www.fidelity.com/fixed-income-bonds/cds

Federal Home Loan Bank of Boston, www.fhlbboston.com/rates/historicalrates/index.jsp, accessed August 1, 2017

Note: SouthEast Bank has a brokered deposit to total asset ratio 31%; Texas Exchange Bank, 16%; West Town Bank & Trust, 12%; Iowa State Bank, 8%; and the remaining banks, all less than 1%.

Despite these benefits, the FDIC still expresses concern over the use of brokered deposits by banks, and by ILCs in particular, stating that “for ... industrial loan companies ... brokered deposits made up virtually all of their domestic deposits” (FDIC, 2011, pp. 116–117). There’s an important reason for this, of course—ILCs aren’t permitted to offer either checking or savings accounts, i.e., the most common types of core deposits. In addition to the concern over brokered deposits, the OIG has stated (as noted previously) that one of the common elements of the failure of 20 institutions it analyzed was “asset concentrations tied to commercial real estate (CRE) or construction, land, and land development (CLD) loans.”

In view of these statements, a closer look at the 25 ILCs operating in Q1 2017 is in order, in terms of their use of brokered deposits and involvement in CRE and CLD loans. Table 4 provides this information for each ILC, showing its ratio of brokered deposits-to-total assets and then to total deposits, and then its ratios of CRE and CLD loans to total assets. As seen in the table, the ratio of brokered deposits-to-total deposits ranges from a low of 0 up to 100%, while the range of brokered deposits-to-total assets ranges from 0 to 84%.

Table 4. Importance of branches, brokered deposits, CRE and CLD loans at ILCs, Q1 2017

Name	Type of ILC	Number of branches	BD/TD (%)	BD/TA (%)	CRE/TA (%)	CLD/TA (%)
Medallion Bank	Financial	0	99.95	84.09	0.00	0.00
USAA Savings Bank	Financial	0	99.85	29.50	0.00	0.00
LCA Bank Corporation	Financial	0	98.96	81.14	0.00	0.00
BMW Bank of North America	Commercial	0	92.25	53.39	0.00	0.00
American Express Centurion Bank	Financial	1	92.24	48.97	0.00	0.00
EnerBank USA	Commercial	0	90.79	78.18	0.00	0.00
Comenity Capital Bank	Financial	0	82.24	54.86	0.00	0.00
Rancho Santa Fe Thrift & Loan	Financial	0	79.51	49.80	0.00	0.00
WebBank	Financial	0	71.88	55.68	0.19	0.00
WEX Bank	Financial	0	65.29	48.30	0.00	0.00
Celtic Bank	Financial	0	59.83	41.66	35.02	4.58

Name	Type of ILC	Number of branches	BD/TD (%)	BD/TA (%)	CRE/TA (%)	CLD/TA (%)
Merrick Bank Corporation	Financial	0	55.55	42.95	0.00	0.00
Beal Bank USA	Financial	22	52.25	25.96	13.06	2.14
Sallie Mae Bank	Financial	0	47.87	34.93	0.00	0.00
Toyota Financial Savings Bank	Commercial	0	40.58	32.73	1.26	0.00
Minnesota First Credit And Savings	Financial	3	3.88	3.23	0.00	0.52
Balboa Thrift and Loan Association	Financial	3	2.70	2.28	14.71	0.06
Morris Plan Co-Terre Haute	Financial	0	1.33	0.96	0.35	0.00
UBS Bank USA	Financial	0	0.50	0.45	~ 0.00	~ 0.00
OptumHealth Bank Inc.	Financial	0	0.01	0.01	3.16	0.00
Community Commerce Bank	Financial	12	0.00	0.00	7.31	7.23
Finance Factors Ltd.	Financial	3	0.00	0.00	47.39	0.02
Eaglemark Savings Bank	Commercial	0	0.00	0.00	0.00	0.00
First Electronic Bank	Commercial	0	0.00	0.00	0.00	0.00
The Pitney Bowes Bank	Commercial	0	0.00	0.00	0.00	0.00

For six of the ILCs, the ratio of brokered deposits to total deposits is greater than 90%, while for ten of them, brokered deposits account for 4% or less of total deposits. For ratios of brokered deposits-to-total assets, the ratio is under 90% in all case; it exceeds 50% in just six of the ILCs. For nine of them, the ratios of brokered deposits-to-total assets are 3% or less.

Turning to CRE loans, in the case of eighteen of the twenty-five ILCs, the ratio to total assets is less than 1%. For the other seven ILCs, the ratios range from a low of 1.26% to a high of 47.39%. For CLD loans, twenty-one of the ILCs have almost no such loans. The ratios for the other four range from a low of 0.52% to a high of 7.23%. Furthermore, of the eleven institutions that hold any CRE or CLD loans, seven either have no brokered deposits or have ratios of brokered deposits-to- both total deposits and total assets of 4% or less.

In summary, Table 4 shows that not all ILCs have brokered deposits, and of those that do, the concentrations of assets in CRE and CLD loans is generally not high. The table indicates that misperceptions likely exist about both the extent to which ILCs use brokered deposits to fund assets and to fund “risky” CRE and CLD loans.²⁹

Finally, it is worth noting that nineteen of the twenty-five ILCs have no branches. Of the six remaining, one has a single branch, three have three branches, one has twelve, and the last one has twenty-two. Also, some ILCs with no branches also have few or no brokered deposits. None of the commercial ILCs have branches.

29. For more information on the performance of the ILC industry, see Barth and Sun (2017).

The important point here is that ILCs operate under a variety of business models; it may be less costly for some to use brokered deposits than to operate a branch network. It would seem that they should not be subject to regulatory penalties when they base their decisions on rational assessments of alternative business models and the associated costs of funding them.

VIII. CONCLUSION

Banks have used brokered deposits for more than fifty years. From a relatively modest beginning, they have become an important source of funding, especially with the development of electronic transfer technologies now in use by nearly half the banking industry today. Despite these advancements, brokered deposits play a minuscule role relative to other bank funding sources in the aggregate. Yet bank regulatory authorities remain concerned over their use, and have imposed tighter and costly restrictions on these deposits than all other bank deposits and, in fact, other purchased funds.

The justification for this is unclear when one looks at the empirical evidence and at numerous statements put out by the regulatory authorities themselves. But the fact is, the restrictions put banks that rely on brokered deposits at a competitive disadvantage in the financial marketplace. Costly restrictions are also proving to put such banks at a disadvantage to a growing number of financial firms that operate in the so-called shadow banking sector.

It should be clear, based on the evidence presented throughout this report, that these restrictions are unwarranted. The various research studies offer no consensus that brokered deposits either increase the likelihood of bank failures or the costs of resolving them. In fact, even some of the regulatory authorities cite examples of their benefits, without providing any direct evidence that the costs they mention exceed those benefits.

More fundamentally, the overwhelming information indicates that brokered deposits per se are not the problem. The problem is the use of *any* funds obtained by troubled banks to acquire too risky assets in an attempt to grow their way out of their troubles. In other words, the regulatory focus is misplaced. The problem is not in the funding source itself, but in the troubled bank using its funding sources irresponsibly.

There is likewise no convincing empirical evidence to show that brokered deposits increase the cost to the FDIC when resolving bank failures. In fact, the stigma now associated with these deposits, rather than the deposits themselves, may increase resolution costs. Because bank regulatory authorities want to treat these deposits differently, they impose additional costs and scrutiny on the banks that use them, and on the agencies themselves. The regulatory authorities may in fact be responsible for lowering the franchise value of those banks because of the stigma they have attached to these deposits; potential acquirers of failed banks may demand that discounts be applied to brokered deposits.

It is time to break with the past and re-examine brokered deposits in light of empirical analysis and against the backdrop of rapidly evolving technologies. Indeed, without sufficient evidence to the contrary, such deposits should be treated no differently than all other deposits and other purchased funds.

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Appendix: Selected studies on determinants of bank performance, bank failures and bank failure costs (1990 and later)

Author	Title	Source	Empirical analysis (statistical or econometric analysis)?	Are brokered deposits included or mentioned?	Are BDs a cause of bank failures/bank failure costs?	Conclusion (cause of bank failures or bank/financial crisis)
Yuliya Demyanyk and Iftekhar Hasan	Financial Crises and Bank Failures: A Review of Prediction Methods	<i>Omega</i> , 2010, 38, 315–324	No	No	No	“The large effect of the relatively small subprime component of the mortgage market and its collapse was most likely due to the complexity of the market for the securities that were created based on subprime mortgages.” “The mortgage securities were again split into various new tranches, repackaged, re-split and repackaged again many times over. Each stage of the securitization process introduced more leverage for financial institutions and made valuing the holdings of those financial instruments more difficult. All this ultimately resulted in uncertainty about the solvency of a number of large financial firms as over time the market value of the securities was heavily discounted in response to tremors in the housing market itself. Also, the securities were largely traded internationally, which led to spill-overs of the US subprime mortgage crisis and its consequences across the country borders.”
Thomas B. King, Daniel A. Nuxoll and Timothy J. Yeager	Are the Causes of Bank Distress Changing? Can Researchers Keep Up?	FDIC Center for Financial Research Working Paper No. 2005-03	No	Yes	Yes	“Banks that want to grow quickly but are unwilling or unable to pay the risk premia demanded by uninsured liability-holders may turn to noncore, non-risk-priced sources of funding, such as brokered deposits and FHLB advances. Brokered deposits funded much of the risky growth at thrifts during the savings and loan crisis of the late 1980s.”
Charles W. Calomiris	The Great Depression and other 'Contagious' Event	<i>The Oxford Handbook of Banking</i> , Edited by Allen N. Berger, Philip Molyneux and John O.S. Wilson, Oxford University Press 2010, 693–710	No	No	No	“Ironically, the government safety net, which was designed to forestall the (overestimated) risks of contagion seems to have become the primary source of systemic instability in banking.”
Hamid Mehran, Alan Morrison and Joel Shapiro	Corporate Governance and Banks: What have We Learned from the Financial Crisis?	Staff Report, Federal Reserve Bank of New York, No. 502, 2011	No	No	No	“We begin this paper by explaining why governance of banks differs from governance of nonfinancial firms. We then look at four areas of governance: executive compensation, boards, risk management, and market discipline [capital requirements and the size and scope of banks].”

Author	Title	Source	Empirical analysis (statistical or econometric analysis)?	Are brokered deposits included or mentioned?	Are BDs a cause of bank failures/bank failure costs?	Conclusion (cause of bank failures or bank/financial crisis)
Board of Governors of the Federal Reserve System	Summary Analysis of Failed Bank Reviews	Washington, DC. 2011	No	Yes	Yes	<p>“In addition to the economic decline that triggered asset quality deterioration and significant losses at each of the failed banks, the common themes included (1) management pursuing robust growth objectives and making strategic choices that proved to be poor decisions; (2) rapid loan portfolio growth exceeding the bank’s risk management capabilities and/or internal controls; (3) asset concentrations tied to commercial real estate or construction, land, and land development (CLD) loans, which increased the bank’s vulnerability to changes in the marketplace and compounded the risks inherent in individual loans; and (4) management failing to have sufficient capital to cushion mounting losses.”</p> <p>“Solutions [Bank] funded its loan growth primarily with high-rate certificates of deposit (CDs) over \$100,000, supplemented by Federal Home Loan Bank borrowings and brokered deposits. Reliance on non-core funding from the CDs and brokered deposits is considered a risky strategy that can have a significant negative effect on liquidity, since the associated customers may have no other relationship with the institution and merely seek the highest-yielding investment.”</p>
John B. Taylor	The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong	NBER Working Paper No. 14631, January 2009	No	No	No	<p>“In this paper I have provided empirical evidence that government actions and interventions caused, prolonged, and worsened the financial crisis. ... They prolonged it by misdiagnosing the problems in the bank credit markets and thereby responding inappropriately by focusing on liquidity rather than risk. They made it worse by providing support for certain financial institutions and their creditors but not others in an ad hoc way without a clear and understandable framework.”</p>
Peter J. Wallison	The Lost Cause: the Failure of the Financial Crisis Inquiry Commission	<i>Research Handbook on International Banking and Governance</i> , Edited by James R. Barth, Chen Lin, and Clas Wihlborg, Edward Elgar Publishing Limited 2012, 227–237	No	No	No	<p>“I believe that the sine qua non of the financial crisis was the US government’s housing policies. ... If the US government had not chosen this policy path ... I believe that the great financial crisis of 2008 would not have occurred.”</p>

Author	Title	Source	Empirical analysis (statistical or econometric analysis)?	Are brokered deposits included or mentioned?	Are BDs a cause of bank failures/bank failure costs?	Conclusion (cause of bank failures or bank/financial crisis)
Richard J. Herring	Incentives to improve the corporate governance of risk in financial institutions	<i>Research Handbook on International Banking and Governance</i> , Edited by James R. Barth, Chen Lin and Clas Wihlborg, Edward Elgar Publishing Limited 2012, 296–318	No	No	No	“Although debates still rage over the cause of the financial crisis of 2007–2009, most analysts agree that faulty corporate governance of risk was a major contributing factor, if not the principal cause.”
Philip E. Strahan	Liquidity Production in Twenty-First Century Banking	<i>The Oxford Handbook of Banking</i> , Edited by Allen N. Berger, Philip Molyneux and John O.S. Wilson, Oxford University Press 2010, 112–146	No	No	No	“The financial crisis of 2007-8 is the biggest shock to the banking and financial system since the 1930s...The roots of the crisis lie in the overvaluation in housing prices and the subsequent crash in those prices beginning around 2007...Loutskina and Strahan (2008) argue that because banks moved en masse toward a diversified lending model-a model facilitated by securitization--investments in private information about local credit markets declined, thus setting the stage for over--expansion of credit.” “What are the lessons of the crisis of 2008 for liquidity risk management?...Depositories that did fail--Countrywide, IndyMac, Washington Mutual, and Wachovia--faced runs having to do with rational concerns about their solvency; these institutions were all heavily exposed to subprime mortgages...To the extent that depositors ran, they ran away from insolvent banks and toward solvent ones.”
Financial Crisis Inquiry Commission	The Financial Crisis Inquiry Report	Final report of the National Commission on the Causes of the Financial and Economic Crisis in the United States, <i>Public Affairs</i> , 2011, 1–545	No	No	No	“The commission concludes that there was untrammelled growth in risky mortgages. Unsustainable, toxic loans polluted the financial system and fueled the housing bubble...The Commission concludes that the collapse of the housing bubble began the chain of events that led to the financial crisis.”

Author	Title	Source	Empirical analysis (statistical or econometric analysis)?	Are brokered deposits included or mentioned?	Are BDs a cause of bank failures/bank failure costs?	Conclusion (cause of bank failures or bank/financial crisis)
Robert A. Eisenbeis and Richard J. Herring	Playing for Time: The Fed's Attempt to Manage the Crisis as a Liquidity Problem	<i>The First Great Financial Crisis of the 21st Century: A Retrospective</i> , Edited by James R. Barth and George G. Kaufman, World Scientific Publishing Co. Pte. Ltd., 2015, 101-145	No	No	No	"This paper focuses on one particular aspect of the recent financial crisis: how the Federal Reserve (Fed) responded to what it described to the public as a short-term liquidity problem during the period from 2007 through 2008 despite growing evidence of potential insolvencies among some of the largest banks and investment banks...We argue that hints of increasing financial fragility and potential insolvencies appeared much earlier than fall of 2007. If these had been recognized and acted upon by the regulatory authorities, then the most serious financial crisis since the Great Depression might have been substantially mitigated."
Peek Joe and Eric S. Rosengren	How well capitalized are well-capitalized banks?	<i>New England Economic Review</i> ; Sep/Oct 1997, pp. 41-550	No	No	No	"Capital ratios were not a leading indicator of potential problems, frequently changing only after bank examiners forced an increase in loan loss reserves following an examination or formal regulatory action." "Many of the institutions that either failed or required substantial supervisory intervention were well capitalized prior to the emergence of banking problems in New England." "The capital ratio threshold associated with the current definition of a well-capitalized bank may be set too low for effective early intervention."
Federal Deposit Insurance Corporation	Guidance On Identifying, Accepting, And Reporting Brokered Deposits Frequently Asked Questions	FDIC, 2016	No	Yes	Yes	"Brokered deposits can be a suitable funding source when properly managed as part of an overall, prudent funding strategy. However, some banks have used brokered deposits to fund unsound or rapid expansion of loan and investment portfolios, which has contributed to weakened financial and liquidity positions over successive economic cycles. The overuse of brokered deposits and the improper management of brokered deposits by problem institutions have contributed to bank failures and losses to the Deposit Insurance Fund."
James R. Barth and R. Dan Brumbaugh, Jr. and Daniel Sauerhaft	Failure Costs of Government-Regulated Financial Firms: The Case of Thrift Institutions	Federal Home Loan Bank Board, 1986.	Yes	Yes	No	"Our results indicate that both types of assets [acquisition and development loans and direct investments] do indeed significantly increase the cost to the FSLIC for resolving thrift failures." "Brokered deposits were found to have no adverse impact on thrift failure costs."

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James. R. Barth, Philip F. Bartholomew, and Carol J. Labich	Moral Hazard and the Thrift Crisis: An Analysis of 1988 Resolution	<i>Consumer Finance Law Quarterly Report</i> , Winter 1990.	Yes	Yes	No	"[D]irect investment and acquisition and development loans have a positive and statistically significant effect on resolution costs." "Furthermore, the empirical results show that the less tangible capital a thrift had, the more costly was the resolution. At the same time, the longer the period of insolvency, the greater the resolution costs." "It is also seen that the presence of fraud significantly increased resolution costs." "[Thrifts] with higher levels of brokered deposits were, on average, less costly."
James R. Barth and R. Dan Brumbaugh, Jr.	Risk-Based Capital Requirements: Informational and Political Implications	<i>Global Risk Based Capital Regulations</i> , Vol. 1: Capital Adequacy, 1994, 363–399	Yes	Yes	No	Acquisition and development loans as well as direct investments were found to be significant variables in explaining FSLIC losses, while brokered deposits were not.
Marco Becht, Patrick Bolton and Ailsa Röell	Why Bank Governance is Different	<i>Oxford Review of Economic Policy</i> , 2011, 27, 437–463	No (has several summary statistics)	No	No	"The empirical evidence suggests that, on average, banks with stronger risk officers, less independent boards, and executives with less variable remuneration incurred fewer losses."
Rakesh Mohan	The Failure of Financial Regulation: Reflections from an Emerging Market Perspective	<i>Research Handbook on International Banking and Governance</i> , Edited by James R. Barth, Chen Lin and Clas Wihlborg, Edward Elgar Publishing Limited 2012, 378–392	No	No	No	"Financial and banking crises have a long history, which is as old as the existence of the financial sector itself...What is common to almost all crises is the build-up of excessive leverage in the system and the inevitable bursting of the financial bubble that results from such leverage."

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Alex J. Cullen	Why do Banks Fail? A Look at Characteristics of Failed Institutions from 2008 to 2010	SSRN, 2011	No (Some summary statistics and graphs)	Yes	Yes	<p>“High concentrations of brokered deposits are merely a symptom of the real cause of bank failures, which is excessive risk taking and asset growth.”</p> <p>“In the short-term, banks are seized due to undercapitalization as 91% of all failed banks were undercapitalized or worse the quarter before failure.”</p> <p>“The failed banks grew much quicker than the industry by sacrificing credit quality, purchasing risky loan participations without adequate underwriting and risk monitoring, and initiating out-of-territory real estate lending in markets that turned out to be the worst hit.”</p> <p>“Even though failed banks exhibited poorer earnings and larger losses in the quarters leading up to their seizures, fundamental “earnings failures” were few and far between for the failed 322 financial institutions.”</p>
David Martinez-Miera and Rafael Repullo	Does Competition Reduce the Risk of Bank Failure?	<i>The Review of Financial Studies</i> , 2010, 23 (10), 3638–3664	No (theoretical)	No	No	<p>“More competition leads to lower loan rates, and consequently lower revenues from performing loans, which provide a buffer against loan losses, so we have riskier banks. The results show that the risk shifting effect tends to dominate in monopolistic markets, whereas the margin effect dominates in competitive markets, so a U-shaped relationship between competition and the risk of bank failure generally obtains.”</p>
Wolf Wagner	The Homogenization of the Financial System and Financial Crises	<i>Journal of Finance Intermediation</i> , 2008, 17, 330–356	No (Theoretical)	No	No	<p>“The homogenization of financial institutions has complex implications for the stability and the efficiency of the financial system.... This is because resulting diversification may make institutions’ portfolios appear less risky, while from an aggregate perspective risks may only be shifted around....The reduced reliance on risk sharing also lowers externalities among institutions.”</p>
US Government Accountability Office	Causes and Consequences of Recent Bank Failures	Report to Congressional Committees, January 2013	Yes	Yes	Yes	<p>“The failures of the smaller banks (those with less than \$1 billion in assets) in these states were largely driven by credit losses on commercial real estate (CRE) loans. The failed banks also had often pursued aggressive growth strategies using nontraditional, riskier funding sources and exhibited weak underwriting and credit administration practices.”</p> <p>“GAO’s econometric model revealed that CRE concentrations and the use of brokered deposits, a funding source carrying higher risk than core deposits, were associated with an increased likelihood of failure for banks across all states during the period.”</p>
James McAndrews, Donald P. Morgan, Joao Santos, and Tanju Yorulmazer	What Makes Large Bank Failures So Messy and What to Do about It?	Federal Reserve Bank of New York, <i>Economic Policy Review</i> , 2014, 20 (2), 1–16	Yes	No	No	<p>“The reason for the messy failures, we have argued, is banks’ heavy reliance on uninsured, money-like financial liabilities, such as uninsured deposits, repos, trading liabilities, commercial paper, and the like.”</p>

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Allen N. Berger, Björn Imbierowicz, and Christian Rauch	The Roles of Corporate Governance in Bank Failures during the Recent Financial Crisis	<i>Journal of Money, Credit and Banking</i> , 2016, 48 (4), 729–770	Yes	Yes	Mixed	“Our descriptive statistics above also show that failed banks rely to a larger extent on wholesale funding in terms of brokered deposits. We also find this to be a significant influence for failure probability in our multivariate analyses.” But some results for BDs are insignificant, some are positive and significant.
Clifford V. Rossi	Decomposing the Impact of Brokered Deposits on Bank Failure: Theory and Practice	Anthony T. Cluff Fund, September 9, 2010	Yes	Yes	No	“A key finding from the analysis was that in situations where retail deposits are constrained, the percent allocated to brokered or wholesale deposits must rise in order to meet various growth targets.” “Based on this framework, brokered deposits do not drive risk-taking or asset growth. Instead, it was shown that greater risk-taking could promote increased usage of brokered deposits when faced with a constraint on retail deposits.” “Finally, brokered deposits were not a significant factor in explaining bank failure, although asset growth and risk profile were among the significant factors contributing to insolvency, again consistent with the theory. Taking into account the results from the other models, a picture emerges supporting the view that brokered deposits do not drive asset growth, risk-taking or insolvency. Such results have important implications for designing policies to mitigate bank failures going forward and for regulating the brokered deposit market.”
Klaus Schaeck	Bank Liability Structure, FDIC Loss, and Time to Failure: A Quantile Regression Approach	<i>Journal of Financial Services Research</i> , 2008, 33, 163–179	Yes	Yes	Mixed	“Use of brokered deposits, poor asset quality, uncollected income, and a weak macroeconomic environment increase losses for costly bank failures.” However, the results for banks in some quantile regressions indicate that brokered deposits are not a significant explanatory variable for losses on assets.
Sherrill Shaffer	Reciprocal Brokered Deposits and Bank Risk	<i>Economics Letter</i> , 2012, 117, 383–385	Yes	Yes	Yes	"In all periods, banks with more Reciprocal brokered deposits (RBDs) are less well-capitalized and have higher ratios of nonperforming loans and total and commercial loans to assets. ... all these effects are associated with higher risk of subsequent failure." These findings, taken at face value, are consistent with the moral hazard hypothesis that banks using relatively more RBDs face weaker market discipline and may take more risk or, equivalently, that banks with more risk find it advantageous on average to use more RBDs.

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Rebel A. Cole and Lawrence J. White	Déjà Vu All Over Again: The Causes of U.S. Commercial Bank Failures This Time Around	<i>Journal of Financial Services Research</i> , 2012, 42 (1), 5–29	Yes	Yes	Mixed	<p>"We also find that real-estate loans play an especially important role in determining which banks survive and which banks fail. Banks with higher loan allocations to construction-and-development loans, commercial mortgages, and multi-family mortgages are especially likely to fail, whereas higher loan allocations to residential single-family mortgages are either neutral or help banks to survive."</p> <p>"Lower capital as measured by equity to assets was associated with a higher probability of failure, as was worse asset quality as measured by NPAs to assets, lower earnings as measured by ROA, and worse liquidity as measured by Cash & Due to assets, Investment Securities to assets, and Brokered Deposits to assets."</p> <p>"Brokered deposits, as an indicator of rapid growth and likely a negative indicator of asset quality and of management quality, has a clear negative influence (high likelihood of failure). However, brokered Deposits do not show up as significant for FDIC closed banks. "</p>
Robert DeYoung, and Gokhan Torna	Nontraditional Banking Activities and Bank Failures during the Financial Crisis.	<i>Journal of Financial Intermediation</i> , 2013, 22, 397–421	Yes	Yes	Mixed	<p>"Among the bank financial ratios, Equity, Core Deposits and MBHC affiliation tend to be associated with a reduced probability of failure, while Loan Concentration, Cost Inefficiency, Nonperforming Loans, Brokered Deposits, Goodwill, Construction and Development Loans, Multifamily Mortgage Loans and Business Loans tend to be associated with an increased chance of failure."</p> <p>"... banks that sought out higher-than-average levels of risk engaged in riskier mixes of both traditional (e.g., C&D loans, Brokered Deposits) and nontraditional (e.g., Stakeholder) banking activities."</p>
Francisco Vazquez and Pablo Federico	Bank Funding Structures and Risk: Evidence from the Global Financial Crisis	<i>Journal of Banking & Finance</i> , 2015, 61, 1–14	Yes	No	No	<p>"The results show that banks with weaker structural liquidity and higher leverage in the pre-crisis period were more likely to fail afterward. The likelihood of bank failure also increases with pre-crisis bank risk-taking."</p> <p>"The smaller banks were more susceptible to failure on liquidity problems, while the large cross-border banking groups typically failed on insufficient capital buffers."</p> <p>"Country-specific macroeconomic conditions also played a role in the likelihood of subsequent bank failure, implying that banks failed to properly internalize the associated risks in their individual decision-making processes."</p>

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Raghuram Rajan and Rodney Ramcharan	Local Financial Capacity and Asset Values: Evidence from Bank Failures	<i>Journal of Financial Economics</i> , 2016, 120, 229–251	Yes	No	No	“We are, of course, not the first to suggest that financial liquidity matters. However, by tying the decline in recovery rates and asset prices to a loss in local financial intermediation capacity, this paper may provide tentative evidence in favor of theories that emphasize aggregate available liquidity, or equivalently, “cash in the market” pricing, as an important source of financial distress and crises (see Allen and Gale, 2000, for example). As banks fail, aggregate liquidity to fund asset purchases dries up, even while the assets sold by failing banks absorb residual liquidity (see Diamond and Rajan, 2005), precipitating further bank failures.”
Nils Herger	Explaining Bank Failures in The United States: The Role of Self-Fulfilling Prophecies, Systemic Risk, Banking Regulation, and Contagion	Working Paper, Study Center Gerzensee, No. 08.04-2008	Yes	No	No	“solvency regulation stipulating relatively low reserves and branching deregulation designed to lift the restrictions to establish, or invest, in new subsidiaries tend to undermine the stability of some banks in a statistically significant manner. ... The probability of bank failures appears to increase with inadequate regulation.” “Bank failures tend to occur in clusters. The present empirical results indeed provide compelling evidence for the relevance of contagion, e.g. the failure of in particular big banks can undermines the confidence in the banking system and put previously solvent banks into a situation of sudden financial distress.”
James Murtagh	Predicting US Bank Failures during 2009	67th annual meeting NYSEA Proceedings, 2014, 7, 1–191	Yes	Yes (but only in literature review part, has no content but this key word)	No	“Our analyses show statistically-significant differences between the performance ratios, loan concentration measures, and capital adequacy of banks that failed during 2009 compared to peers that survived. With sample financial data up to 4 quarters prior to failure, there seems to be a period of time where regulators could have noted the soon-to-be-failed banks entering the 'danger zone,' and stepped in to prevent their collapse.”
Adam B. Ashcraft	Are Banks Really Special? New Evidence from the FDIC-Induced Failure of Healthy Bank	<i>The American Economic Review</i> , 2005, 95(5), 1712–1730	Yes	No	No	“... since banks often fail because of poor underwriting standards, the contraction in credit following a traditional bank failure is likely to be much more severe since other banks in the market are likely unwilling to extend credit on the same terms. In addition, it is possible that liquidating bank assets has a larger effect when economic activity is depressed, and since bank failures typically reflect weakness in the local economy, healthy bank failures likely understate the effect of this liquidation on real activity.”

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Federal Deposit Insurance Corporation	Study on Core Deposits and Brokered Deposits	Submitted to Congress pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act, July 8, 2011	Yes	Yes	Mixed	“To summarize, we find that the use of reciprocal and non-reciprocal brokered deposits is associated with a lower probability of a bank receiving a good CAMELS rating and a higher probability of a poor rating. In contrast, equity is associated with a higher probability of a bank receiving a good rating and a lower probability of a poor rating. These effects are both statistically and economically significant.”
Pierluigi Bologna	Is There a Role for Funding in Explaining Recent U.S. Banks’ Failures?	IMF Working Paper, Monetary and Capital Markets Department, July 2011	Yes	Yes	Yes	“Brokered deposits, despite the regulatory limitations introduced after the S&L crisis, are still a significant variable in explaining banks’ defaults. Higher levels of brokered deposits are in fact significantly associated with higher default probabilities. Such a relation appears to be stable and persistent, provided that the significance of this variable is observed from one to three periods before default.” “...a clear evidence of the relationship between probability of default and capital adequacy, profitability, and asset quality.” “It is found that both the extent to which a bank is funding its asset through deposits (rather than other forms of funding) and the intrinsic stability of such deposit base play a key role in explaining banks’ default.” “In particular, a higher level of loan-to-deposit ratio or, in other words, a heavier reliance of banks on forms of funding alternatives to deposits, significantly increases banks’ default probability.”
Björn Imbierowicz and Christian Rauch	The Relationship Between Liquidity Risk and Credit Risk in Banks	<i>Journal of Banking & Finance</i> , 2014, 40, 242–256	Yes	No	No	“Liquidity risk and credit risk are the two most important factors for bank survival. “
Jeffrey Ng and Sugata Roychowdhury	Do Loan Loss Reserves Behave Like Capital? Evidence from Recent Bank Failures	<i>Review of Accounting Studies</i> 2014, 19 (3), 1234–1279	Yes	No	No	“Our evidence suggests that the influence of loan loss reserves added back as regulatory capital (hereafter referred to as “add-backs”) on bank risk cannot be explained by either economic principles underlying the notion of capital or accounting principles underlying the recording of reserves. Specifically, we observe that, in sharp contrast to the economic notion of capital as a buffer against bank failure risk, add-backs are positively associated with the risk of bank failure during the recent economic crisis.”

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Shisheng Qu, Libo Sun and Garry Twite	Failed Bank Asset Recovery: The Influence of Deposits and Loan Exposure	SSRN, 2017	Yes	Yes	Mixed	<p>“Our key findings are first, funding through brokered deposits significantly affect bank asset recovery. Secondly, real estate loan exposure following a downturn in property values influences asset recovery rates.”</p> <p>“We find that banks relying on brokered deposit realize lower asset recovery rates. This suggests that these banks hold assets of poorer quality at the time of failure. In the lead up to failure, banks unable to attract new funds via brokered deposits will sell assets, typically the highest-quality, most-marketable assets, and the outcome is higher exposure to lower quality loans.”</p>
Wenling Lu and David A. Whidbee	Bank Structure and Failure during the Financial Crisis	<i>Journal of Financial Economic Policy</i> , 2013, 5 (3), 281–299	Yes	Yes	Mixed	<p>“Overall, established institutions were more likely to fail if they had relatively low capital ratios, were relatively large, had relatively low liquidity, relied on brokered deposits, held a large portfolio of real estate loans, had a relatively large proportion of nonperforming loans, and less income diversity.”</p>
Justin Yiqiang Jin, Kiridaran Kanagaretnam, and Gerald J. Lobo	Ability of Accounting and Audit Quality Variables to Predict Bank Failure during the Financial Crisis	<i>Journal of Banking & Finance</i> , 2011, 35 (11), 2811–2819	Yes	NO	No	<p>“Our results indicate that banks audited by reputable auditors have lower probability of failure.... Our results also confirm the general belief that the recent banking crisis in the US was primarily driven by credit problems. We document that lack of loan diversification (loan mix), problematic loans (higher nonperforming loans and higher loan loss provisions), and growth in real estate loans increased the probability of bank failure.”</p>
Sanjai Bhagat and Brian Bolton	Financial Crisis and Bank Executive Incentive Compensation	<i>Journal of Corporate Finance</i> , 2014, 25, 313–341	Yes	No	No	<p>“...managerial incentives matter — incentives generated by executive compensation programs are correlated with excessive risk-taking by banks...We recommend that bank executive incentive compensation should only consist of restricted stock and restricted stock options — restricted in the sense that the executive cannot sell the shares or exercise the options for two to four years after their last day in office.”</p>
Rebel A. Cole and Qiongbing Wu	Is Hazard or Probit More Accurate in Predicting Financial Distress? Evidence from U.S. Bank Failures	MPRA paper presented at the 22nd Australasian Finance and Banking Conference	Yes	No	No	<p>“Consistent with recent empirical research which suggests that firm-specific characteristics are the major determinant of bankruptcy or failure (Pesaran et al., 2006; Carling et al., 2007; Arena, 2008; Bonfim, 2009), we find that including macroeconomic variables into the bank failure model does not increase predictive accuracy.”</p> <p>“Declining economic growth contributes to the failure of banks with higher ratio of non-performing loans, while a shock of interest rates makes those banks heavily relying on long-term borrowing more susceptible to failure.”</p>

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Abdus Samad	Is Capital Inadequacy a Factor for Bank Failure? Evidence from US Banking	<i>Journal of Accounting and Finance</i> , 2011, 11 (4), 105–110.	Yes	No	No	“If capital adequacy is an important determinant for bank failure, the natural hypothesis is that there exists a significant difference in capitalization between failed banks and non-failed banks. The paper tests this hypothesis by using the ANOVA and the Kruskal-Wallis K tests t on four measures of capital adequacy: Tier 1 risk based capital to average total assets (T1RBCATA), Total risk based capital to risk weighted assets (TRBCRWA), equity capital to assets (EQCTA), and Tier 1 capital to risk weighted assets (T1RWA). The paper finds significant differences in capital adequacy between the failed and survived banks in all four measures.”
Kevin J. Stiroh	New Evidence on the Determinants of Bank Risk	<i>Journal of Financial Services Research</i> , 2006, 30, 237–263	Yes	No	No	“This paper uses equity returns for publicly traded US bank holding companies (BHCs) from 1997 to 2004 to identify the determinants of risk, measured by equity market volatility, and examine how they have evolved. The results indicate that balance sheet items such as commercial and industrial loans and consumer lending and income statement items such as other noninterest income drive the cross-sectional differences in BHC risk. Newly mandated regulatory data on the components of other noninterest income show that investment banking, servicing, securitization income, gains from loan sales, gains other asset sales, and other noninterest income are particularly volatile activities.”
Jeffrey Ng, Sugata Roychowdhury	Loan Loss Reserves, Regulatory Capital, and Bank Failures: Evidence from the 2008–2009 Economic Crisis	March 2011	Yes	No	No	“The evidence in this paper indicates that bank failure risk during 2008-2010 is associated negatively with Tier 1 capital, but positively with Tier 2 capital. Further, Tier 2 capital is more highly associated with failure risk when banks report unusually large increases in loan loss reserves.”
J.B. Cooke, Christoffer Koch and Anthony Murphy	Liquidity Mismatch Helps Predict Bank Failure and Distress	Federal Reserve Bank of Dallas <i>Economic Letter</i> , 2015, 10 (6), 1–4	Yes	Yes	Yes	“Liquidity mismatch—the risk of a bank being unable to fund increases in assets or meet its obligations as they come due—increased in the U.S. banking sector during the run-up to the financial crisis, especially at the largest institutions, contributing to bank failure and distress.” “Higher levels of liquidity mismatch may be correlated with lower levels of equity capital and higher proportions of brokered deposits and construction and land development loans as well as with nonperforming assets or lower returns on assets—all well-known predictors of failure or distress.”

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David C. Wheelock	Deposit Insurance and Bank Failures: New Evidence from the 1920s	<i>Economic Inquiry</i> , 1992, 30 (3), 530–543	Yes	No	No	<p>“Theoretical analysis of deposit insurance predicts that insured banks will choose to hold less capital and more risky asset portfolios than non-insured banks. Indeed, for a sample of Kansas state banks operating in 1920, I found that insured banks had significantly lower ratios of both total capital to total assets and surplus and undivided profits to total loans. The average insured bank had more total assets and deposits than the average noninsured bank, but no more capital.”</p> <p>“This study indicates that less well capitalized banks had a higher probability of failure than did other banks. Moreover, it finds that banks with higher ratios of loans to assets and bills payable and other liabilities to assets were more likely to fail. Banks with higher cash-to-deposit and deposit-to-asset ratios were less likely to fail. I also found evidence that, irrespective of balance sheet ratios, insured banks had a higher probability of failure.”</p> <p>“Insured banks took greater risks than non-insured banks, and thus it appears likely that bank failures were higher in Kansas because of the state’s deposit insurance system.”</p>
David C. Wheelock	Regulation and Bank Failures: New Evidence from the Agricultural Collapse of the 1920s	<i>The Journal of Economic History</i> , 1992, 52 (4), 806–825	Yes	Yes (But not in empirical, just mention)	No	<p>“In the state of Kansas, which had a system of voluntary deposit insurance and where branch banking was strictly prohibited, bank failure rates were highest in counties suffering the greatest agricultural distress and where deposit insurance system membership was highest. The evidence for Kansas illustrates how prohibitions on branch banking caused unit banks to be especially vulnerable to local economic shocks and suggests that deposit insurance caused more bank failures than would have occurred otherwise.”</p> <p>“Holding constant the level of agricultural distress, counties with a relatively high proportion of insured banks tended to have higher bank failure rates than did other counties.”</p>
Raymond A.K. Cox and Grace W.Y. Wang	Predicting The US Bank Failure: A Discriminant Analysis	<i>Economic Analysis and Policy</i> , 2014, 44, 202–211	Yes	Yes (Mentioned as an example for “hot money”)	No	<p>“Specifically, we find that the proportion of illiquid loans in their books and the exposure to the interbank funding markets are the main predictors of bank failures. There are indicators that distinguish surviving banks from their failed peers, and these indicators serve as the early warning signals that predict banking failures.”</p> <p>“That is, during this period the cause of failed banks was their high proportion of real estate loans and other uncollectible owned debt. Furthermore, the poor investment (loan) decision of the failed banks greatly contributed to income losses and was exacerbated by a low equity capital base ill equipped to absorb the write-offs and losses.”</p>

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Han Hong and Deming Wu	Systemic Funding Liquidity Risk and Bank Failures	SSRN, 2013	Yes	Yes	Yes	“We find that systemic funding liquidity risk, as measured by the interbank interest rate spread, was a major predictor of bank failures in 2008 and 2009.” “The coefficient on the brokered deposits ratio is significantly positive (3.155), suggesting that banks with higher dependence on unstable funding are more likely to fail.”
Vincent Bouvatier, Michael Brei, and Xi Yang	Bank Failures and the Source of Strength Doctrine	Economix Working Paper, No. 2014-15	Yes	Yes	Yes	“The econometric evidence suggests that failed banks have been characterized by significantly higher loan growth rates, well ahead of the financial crisis, coupled with higher exposures to the mortgage market segment and to funding in the form of brokered deposits. We also find evidence that commercial banks have been less likely to fail, when they belonged to well-capitalized and profitable bank holding companies with lower exposures to short-term funding.”
Grace W.Y. Wang and Raymond A.K. Cox	Risk Taking By US Banks Led to Their Failures	<i>International Journal of Financial Services Management</i> , 2013, 6 (1), 39–59	Yes	Yes	Yes	“Other activities and investments positively correlated with failed banks included the sale of loans, hot money (brokered deposits) and interbank deposits.” “Lower profitability and liquidity, higher financial leverage as well as riskier loans coupled with bad loans contributed to the demise of the (failed) banks. Specifically, failed banks were more heavily invested in riskier real estate and construction loans and not so much in less risky loans like multifamily residential and government securities.”
Wenling Lu and David A. Whidbee	U.S. Bank Structure, Fragility, Bailout, and Failure during the U.S. Financial Crisis	SSRN, 2016	Yes	Yes	Yes	“Overall, established institutions were more likely to fail if they had relatively low capital ratios, were relatively large, had relatively low liquidity, relied on brokered deposits or volatile funding, held a large portfolio of real estate loans, had a relatively large proportion of nonperforming loans, and less income diversity. De novo banks and banks that are part of a single-bank holding company are more likely to fail while banks that are part of a multibank holding company are less likely to fail. However, charter type and being publicly traded seem to have had little direct impact on the likelihood of bank failure.”
Gary S. Fissel, Gerald A. Hanweck Sr., and Anthony B. Sanders	Residential House Prices, Commercial Real Estate and Bank Failures	SSRN, 2017	Yes	Yes	Mixed	“We show that construction and development loans are significant in explaining bank failures through 2011 but regional residential house price movements have been significant through 2015.... The discovery that lower or higher residential house prices explain a higher or lower likelihood of bank failures, respectively.”

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Deming Wu and Xinlei Zhao	Systemic Risk and Bank Failure	SSRN	Yes	Yes	No	“All systemic risk measures investigated in this paper are significantly related to the probability of bank failure during the latest financial crisis.... Further, systemic risk is not a new phenomenon during the latest banking crisis, as it also contributes to bank failures before 2005; but the influence of systemic risk is much stronger after 2005. Finally, we find that the local housing market conditions are a major determinant of bank failure.”
Carlos Serrano-Cinca, Yolanda Fuertes-Callén, Begoña Gutiérrez-Nieto and Beatriz Cuellar-Fernández	Path Modelling to Bankruptcy: Causes and Symptoms of the Banking Crisis	<i>Applied Economics</i> , 2014, 46 (31), 3798–3811	Yes	No	No	“Results show that, 5 years before the crisis, failed banks had, compared to solvent banks, the following: higher loan growth, higher concentration on real estate loans, higher risk ratios, higher turnover, but lower margins. A relationship is found between symptoms and causes. Failed banks present a significant relationship between the percentage of real estate loans and risk. This relationship is negative in excellent banks, confirming that they allocated less real estate loans with a high quality. Nonfailed banks compensated increases in risk by strengthening their core capital.”
Rajkamal Iyer, Manju Puri, and Nicholas Ryan	A Tale of Two Runs: Depositor Responses to Bank Solvency Risk	2016, <i>The Journal of Finance</i> , 71 (6), 2687–2726	Yes	No	No	“We find that there is substantial heterogeneity in depositor responses to the true solvency risk facing a bank. Depositors with loan linkages or who are staff of the bank display different behavior across types of shocks. In particular, they are more likely to run when the true solvency risk of the bank is high, and less likely to run when the true solvency risk is low. Uninsured depositors are more likely to run under both shocks, but again are relatively more likely to do so when the true solvency risk is high. We also find that depositors with more transaction activity and younger accounts are more likely to run regardless of the solvency risk of the bank. The results support the idea that some types of depositors are, at least partly, informed about solvency risk. Our results speak to the fragility of banks, suggesting that banks with otherwise identical balance sheets can be differently fragile depending on their relationships with depositors.”
Craig P. Aubuchon and David C. Wheelock	The Geographic Distribution and Characteristics of US Bank Failures, 2007–2010: Do Bank Failures Still Reflect Local Economic Conditions?	<i>Federal Reserve Bank of St. Louis Review</i> , 2010, 92, 395–415	Yes	No	No	“As during the 1987-92 and prior episodes, bank failures during 2007-10 were concentrated in regions of the country that experienced the most serious distress in real estate markets and the largest declines in economic activity. Although most legal restrictions on branch banking were eliminated in the 1990s, the authors find that many banks continue to operate in a small number of markets and are vulnerable to localized economic shocks.” “Although banks can achieve geographic diversification through loan participations, brokered deposits, and other techniques, most banks served mainly a local loan and deposit market before branching restrictions were relaxed.”