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The Benefits of Bank Deposit Rate Ceilings: New Evidence on Bank Rates and Risk in the 1920s

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For most of the last 50 years, to promote a safe banking system, the U.S. Congress has imposed interest rate ceilings on bank deposits. Federal legislation passed in the wake of the 1930s banking crisis prohibited banks from paying any interest on checking accounts and authorized the Federal Reserve Board of Governors to set upper limits on the rates banks could offer on time and savings accounts. The rationale for these ceilings appeared straightforward. If banks were not allowed to compete for deposits through interest rates, they would not be forced to invest in the high-yield, high-risk end of their portfolio opportunities. Limiting what banks could pay to their depositors, in other words, would limit the amount of yield they would need to earn and hence the amount of risk they would need to bear to be competitive. Without rate competition, that is, the chances of repeating the 1930s banking crisis would be reduced.

By 1980, however, the deposit rate ceilings had apparently become more costly than they were worth. The general rise in market rates in the 1970s made bank deposits subject to rate ceilings considerably less attractive than competing instruments offered at market rates by other financial institutions. Late in the 1970s, this competition began to raise concerns about the viability of the traditional bank deposit. Furthermore, the rationale for deposit ceilings had been attacked. Studies done in the 1960s found that before U.S. bank deposit rates were regulated there was little relationship between these rates and bank risk-taking; that is, contrary to what had been thought in the 1930s, there was no benefit to regulating deposit rates. Consequently, in 1980 Congress decided to eliminate most deposit rate ceilings, phasing them out over several years.

I am not questioning here whether Congress made the right decision. With market rates on the rise, existing deposit ceilings may very well have threatened the viability of bank deposits. I am questioning, though, the research result that unregulated deposit rates and bank risk are not related. The result is unexpected because it is inconsistent with modern finance theory's prediction that, in general, risk and return are positively correlated. The result is also suspect, and needs reexamination, because the studies which found it, while perhaps the best available in the 1960s, were limited in critical ways.

A not-so-limited reexamination became possible recently when I found new and better data on banking in the 1920s. Specifically, I found bank examination records dating back to the mid-1920s which give researchers better measures of deposit rates than they have had before. Studying the 1920s with these new data, I find the positive correlation between deposit rates and bank risk that modern finance theory predicts.

This new result, of course, does not necessarily imply

that deposit rate ceilings are the best or even a very effective way to control bank risk. Nevertheless, it does suggest that ceilings are, after all, potential tools to do that. And policymakers may want all the regulatory tools they can get to maintain safety in a banking system that in many other ways is being deregulated.

Successful Attacks on Deposit Rate Ceilings

In the 1960s, two major studies were published that seriously challenged the long-standing rationale for deposit rate ceilings. Again, the rationale was that, with rates unrestricted, bank risk and bank deposit rates are positively correlated, so bank risk can be regulated by regulating deposit rates. Thirty years after deposit ceilings were imposed, however, studies using the best available data on banking in the 1920s could not find the hypothesized correlation. And some 20 years later, based in part on this result, deposit ceilings began to be removed.

A Little History

The view that there is a correlation between how much risk a bank takes on and how much it has to pay for its deposits goes back almost 130 years, to a time well before rate ceilings were actually imposed. (See Cox 1966, chap. 1.) The essence of the argument is captured in a statement issued by the New York Clearinghouse in 1858, when it first proposed to regulate its members' deposit rates (quoted in Cox 1966, p.3):

> A bank, having committed this first error of paying interest on its deposits, is therefore compelled by the necessities of its position to take the second false step and expand its operations beyond all prudent bounds.

This view persisted throughout the 19th century and into the 20th, but didn't lead to nationwide mandatory ceilings until after the worst banking crisis in U.S. history. Between 1858 and 1933, clearinghouses tried several times to regulate bank deposits. In this period, the New York Clearinghouse adopted some voluntary ceilings, but they were short-lived. Regulatory bills were also discussed and introduced in Congress, but none were even voted on. After a series of massive bank failures and closings in the early 1930s, however, Congress felt it had to intervene directly to create a safer banking system. Among several safety features in the Banking Act of 1933 was an amendment to the Federal Reserve Act that prohibited banks from paying interest on checkable (demand) deposits and authorized the Federal Reserve to regulate rates on time and savings deposits (quoted in Cox 1966, p.24):

> No member bank shall directly or indirectly, by any device whatsoever, pay an interest on any deposit which is payable on demand .... The Federal Reserve Board shall from time to time limit by regulation the rate of interest which may be paid by member banks on time deposits.

Two Heavy Blows

Were these ceilings justified? Is there, in fact, a correlation between bank rates and bank risk? These were the questions asked by two separate studies in the 1960s. They both tried to measure the correlation for banking in the 1920s, the decade before the ceilings were imposed. And they both answered both questions no.

To estimate the correlation, Albert Cox (1966) used data available on a sample of national, or federally chartered, banks. Cox began with a sample of 285 national banks in the District of Columbia and in four states (Michigan, Missouri, Oregon, and Vermont) from a total population of roughly 8,000 national banks in 1929. He chose this year because not until then were detailed financial records of these banks available.

For this sample, Cox constructed a proxy for the deposit rate, because the rate was not listed on these records, and he considered a dozen different measures of asset quality, or risk. His deposit rate proxy was the ratio of the amount of interest paid on total deposits to the amount of total deposits. He found that this ratio ranged from zero to 5 percent, with the ratio of three-quarters of the banks falling between 1 and 3 percent. To measure asset quality, Cox settled on these four ratios:

- Gross losses on earning assets to earning assets.
- Real estate loans to earning assets.
- Securities other than those of the U.S. government to earning assets.
- Interest received to earning assets.

The presumption was—and still is—that the higher these ratios, the lower the quality of the bank's assets and so the higher its risk. Gross losses on earning assets are considered indicators of troubled assets. Real estate loans are viewed as riskier loans on average than short-term commercial loans. Securities other than those of the U.S. government are, of course, riskier than U.S. government securities. And interest received is generally higher the riskier the investment.

Cox also divided banks into four size classes based

on the amount of their time deposits. This was necessary because time deposit rates are higher than demand deposit rates. A bank's ratio of time deposits to total deposits will thus obviously affect the deposit rate proxy, the ratio of total interest to total deposits.

Within these four classifications, Cox estimated correlations between the deposit rate proxy and the four risk measures. He calculated 16 correlation coefficients for a subsample of 82 national banks for the year 1929. He found that only two of these coefficients were positive and statistically significant (different from zero). The group of banks with time deposits from 40 to 60 percent of their total deposits had significant positive coefficients between the deposit rate and gross losses and the deposit rate and real estate loans. None of the other 14 coefficients were significant. He thus concluded that no significant correlation between bank rates and bank risk existed.

George Benston (1964) addressed the same issue using an additional body of data and an improved deposit rate proxy—and got a similar result.

Benston first used data on 412 New York State banks (95 percent of all New York State banks outside of New York City) during the period 1923–34. The data (collected by the New York State banking department for selected years) included amounts of bank earnings, expenses, and losses as well as of their standard asset and liability accounts. Benston compared the percentage of gross earnings paid out as interest (his proxy for the deposit rate) to gross interest and other funds received per $100 of loans and securities (his measure of asset quality, or risk) for the years 1923, 1926, and 1929. He found little correlation. Thus, he concluded that this evidence is not consistent with the view that, before deposit ceilings were imposed, banks that paid high rates on deposits invested in riskier portfolios.

Benston recognized, however, a potential problem with this analysis. Like Cox's, his interest rate proxy was a proxy for the average rate paid on all deposits rather than a rate paid on a specific deposit. Averaging over different deposit types, Benston realized, could bias the estimates of the correlation between bank rates and bank risk. Consequently, he turned to a data base that did not go back as many years as the New York State banking data, but did contain interest paid on demand deposits separate from interest on other deposits. This was data published by the U.S. Comptroller of the Currency in its annual reports. These reports are available for all national banks and beginning in 1927 contain earning and expense reports that have interest paid on demand deposits separate from other interest payments. (Before 1927 only the total interest paid was reported.)

With this data Benston estimated the rate paid on demand deposits along with a dozen different measures of bank risk for the years 1928, 1931, and 1932. His interest rate proxy was the ratio of total interest paid on demand deposits to total demand deposits. His bank risk variables included four measures of gross earnings, two measures of investments as percentages of total assets, and six measures of losses and loans and securities. Benston grouped banks by location and examined banks located in reserve cities separately from banks located elsewhere. Consequently, cities, rather than banks, became his observations, and the question thus became, Do cities that have banks that on average offer the higher rates on demand deposits also have banks that are riskier?

Computing simple correlation coefficients between interest paid on deposits and bank risk variables, Benston found either a negative correlation or no correlation at all. For example, in all three years and for all four earnings variables, he found that the higher the earnings, the lower the rate paid on demand deposits.

Both Cox and Benston drew the obvious implication from their results: Since deposit rates are not correlated with bank risk, regulating them will not regulate bank risk.

Capitulation

By 1980 Congress apparently agreed with Cox and Benston. Over the years, the Federal Reserve had raised deposit rate ceilings on bank time and savings accounts several times to keep up with market rates, but by the mid-1970s those actions were clearly not enough. Market rates were rising so fast that nonbank financial institutions not covered by rate ceilings were bidding significant amounts of funds away from commercial banks. By the end of the 1970s Congress, concerned about the survival of the traditional bank deposit, began hearings on the possibility of eliminating deposit rate ceilings. The costs of these ceilings were well-documented during the hearings, and both the Cox and Benston studies were cited as evidence that the ceilings were not an effective way to control bank risk (U.S. Congress 1979, pp. 164, 201). Based on these hearings, Congress voted to phase out most deposit ceilings over a five-year period. Today banks are only prohibited from paying interest on the traditional type of demand deposit, which basically only includes deposits held by businesses.

A Counterattack

Again, Congress' decision to eliminate most deposit rate ceilings, because they jeopardized the competitive position of banking, is not in question here. What is in question is the result of studies that recommended removal of ceilings, the result that there was no correlation between bank rates and bank risk. The result is suspect for both methodological and theoretical reasons. A reexamination of banking in the 1920s made possible by some recently discovered historical data suggests that such skepticism is warranted.

Cause for Suspicion

The Cox and Benston studies are both open to criticism because of the limited way these researchers chose to use the data that were available in the 1960s. Cox, for example, began with a sample of 285 national banks. Yet when he estimated the correlations between his deposit rate proxy and various measures of risk, he only used 82 of those banks. Similarly, Benston effectively threw out some of his data when he chose to group banks by city. This averaging hides any correlation among banks within a city.

Both researchers also failed to consider multivariate correlations. Both implicitly assumed there was no covariance among the various risk measures. While that may or may not have been a good assumption (I doubt it was), it is a testable assumption and should have been tested.

These methodological criticisms, though, are not as serious as a data limitation that both Cox and Benston faced. Not having explicit data on rates paid by banks, they had to construct an interest rate proxy from data on bank income and earnings reports and balance sheets. In general, their common proxy was the ratio of the amount of interest paid to the amount of total deposits. Such a proxy effectively involves averaging deposit rates over time and maturities, a procedure that can easily bias an estimate of the true deposit rate and any correlation that might exist between bank rates and risk.

Cox used a proxy for interest paid on all deposits and so was averaging across different types of deposits as well as over time. To see how averaging across deposits can affect the estimate of the correlation between bank rates and risk, consider a very risky bank that can only sell short-term time certificates and a very safe bank that can sell much longer term certificates. With an upward-sloping yield curve—that is, with long rates higher than short rates (as was true for most of the 1920s)—Cox's rate proxy could easily be negatively correlated with bank risk even though the true correlation is positive.

Benston tried to improve on the rate proxy by constructing one related to interest paid on demand deposits only, thus avoiding averaging across different deposits. Nevertheless, like Cox, he still averaged over time, and this type of averaging can be misleading if deposits vary erratically between averaging dates. Benston's proxy is the ratio of interest paid on demand deposits to total demand deposits. It is calculated by dividing the total interest paid between reporting dates by the average level of deposits in that period (end total less beginning total divided by two). Suppose deposits were growing over most of the period and interest was being paid accordingly, but then deposits declined precipitously just before the reporting date. The rate of interest paid on demand deposits in this example would clearly be overstated by Benston's proxy and would affect any estimate of the deposit rate/risk correlation.

These limitations alone raise doubts about the Cox and Benston result of no correlation between bank rates and bank risk. But even if these limitations were not serious, economists should find the Cox and Benston result disturbing because it is inconsistent with modern finance theory. The traditional rationale for deposit rate ceilings can be viewed as part of a more general theory that says rates offered on an investment and the riskiness of that investment generally are positively correlated. Applied to banking, that means that, according to modern finance theory, banks in the 1920s that took on riskier assets should have had to pay depositors higher rates. That the Cox and Benston studies did not find this implies that either an otherwise well-supported theory is now in doubt or those studies are and banking in the 1920s needs to be reexamined.

Another Look

A better examination of this period is now possible because of my recent discovery of more complete bank records from the 1920s. Unlike previously available records, these explicitly list the rates banks paid on their deposits as well as the dollar amounts on which those rates were paid. Thus, proxies are no longer necessary: a much better measure of the unregulated rates banks paid on deposits is now available.

□ *The Data and the Sample*

My digging uncovered 1920s examination reports for some banks in the New York Federal Reserve District. These records have been stored at the Federal Reserve

Bank of New York in some old file cabinets that had been locked and apparently unopened since the mid-1930s.[1] Since its establishment in 1913, the Federal Reserve System has been responsible for examining all state-chartered banks that choose to become Fed members. (Federally chartered banks, which are required to join the System, are examined by the Comptroller of the Currency.) Fortunately, the original 1920s examination records—for the New York Federal Reserve District, at least—still exist in reasonably good condition.

For this study, I chose to limit the sample of banks to state-chartered banks located in New York City, for two reasons. One is that, in the 1920s, even more so than today, New York City was considered the financial center of the United States. Thus, if there are statistical regularities to uncover in banking, they should be reflected in the records of these banks. The other reason to focus on New York City banks is that confining the sample to a single market, where all sample banks are assumed to be competing for the same deposits, reduces the possibility of deposit rate variation being caused by differences in local economic conditions rather than differences in bank risk-taking.

The New York Fed examiner's old reports of condition (a sample of which is in Appendix A) include several tables relevant for this study. The first pages of each report list the standard balance sheet items for assets and liabilities, given at both book and allowed (market) value. The balance sheets are followed by a table of the collateral of secured loans and a table of doubtful investments in securities. The last formal page of the report includes a list of officer names, positions, and salaries; a table of earnings and charges since the last examination; a table of dividends declared over the year; and, finally, a table of the deposit rates and amounts paid at each rate. Again, it's this last table that has not previously been available to researchers. And I doubt anyone was aware that such data were collected by examiners during this period.[2]

My sample banks, then, are the state-chartered New York City member banks for which these examination reports are available for the years 1926–30. (For a list of the sample banks and the specific month and year each report was made, see Appendix B.) I limit the study to these five years partly to keep the study manageable and partly because the years just before the banking crisis of the 1930s would likely show a correlation if it existed. I divide bank reports into subperiods because the observations can be viewed as coming from both a time series population and a cross-section population. In other words, since most banks were examined more than once between 1926 and 1930, I can compare banks both across time and at a point in time. The dates of the subperiods are somewhat arbitrary because the examination process was ongoing; subperiods are defined so that no bank has two reports in any subperiod. I have three subperiods: from February 1926 to April 1928, from May 1928 to April 1929, and from May 1929 to November 1930. The total number of banks in the sample is 46, but since not all were examined in each subperiod, the subperiod totals are smaller: 39 for the first and 27 for the second and third.

Although the sample banks are from the same market, they are quite diverse, according to some standard measures. Bank size, as measured by total assets, varies from as small as $1.6 million to as large as $1.5 billion. The size distribution is quite skewed, though, with half the banks smaller than $40 million. Capital-to-asset ratios vary considerably, too: from 5.7 percent to over 50 percent. Here, again, the distribution is skewed to the small end, with half the banks having capital-to-asset ratios less than 14 percent. Loan-to-deposit ratios range from close to zero to over 200 percent, although most ratios are between 30 and 90 percent. Given the variability in loan-to-deposit ratios, it is not surprising that the liquid asset-to-deposit ratios are also variable; they range from 4.5 to 80 percent. (Here *liquid assets* are the sum of the first four items under assets in the report of condition: cash on hand, funds due from the Federal Reserve Bank, exchanges and demand cash items, and other items in cash.)

□ *Deposit Rates and Risk*

The critical variables for this study are deposit rates. But for which deposits are the rates on these reports? The old table of rates paid identifies only the amount

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[1] I found these New York bank examination reports in a sub-basement of the New York Fed. A sample report is in Appendix A. At the request of the New York Fed, I have kept the bank examination ratings confidential, so the bank's name and other identifying characteristics do not appear on this report.

[2] After the formal report, which also includes a complete list of the bank's security holdings (not shown in Appendix A), are two pages of notes written by the examiner. The first of these contains the initial estimates of assets and liabilities, a breakdown of capital and surplus, and a summary of criticized assets. The second, more interesting page contains the examiner's remarks on the well-being of the bank. This page contains information analogous to the more formal CAMEL rating the examiners construct today. (*CAMEL* stands for capital, assets, management, earnings, and liquidity—the five broad areas on which bank examiners formally grade banks and determine an overall quantitative ranking.) This information was not used in this study because these reports were confidential when they were made, so the examiner's remarks should not have affected the public's assessment of the riskiness of banks.

Table 1
Evidence of Public Concern About Bank Safety in 1926–30:
A Bank Deposit Rate vs. A Safe Rate

Sample Period	No. of Sample Banks* With Passbook Accounts	Average Rate on		Rate Difference (Bank less U.S.)
		Sample Bank* Passbook Accounts	3–6 Month U.S. Govt. Securities	
Feb. 1926–Apr. 1928	28	3.7%	3.2%	.5% pts.
May 1928–Apr. 1929	18	3.8	4.3	–.5
May 1929–Nov. 1930	20	4.0	3.3	.7
Feb. 1926–Nov. 1930	66	3.8%	3.5%	.3% pts.

*The sample banks are state-chartered Federal Reserve member banks in New York City in 1926–30
Sources: Federal Reserve Bank of New York, U.S. Treasury Department

paid, not the type of deposit. Nevertheless, for one rate, I can identify the type of deposit with a high degree of confidence. Turn to the examiner's report of condition in Appendix A. On line 14 of its page 2 appears the item "deposits withdrawable only on presentation of passbooks." The amount on this line virtually matches the amount corresponding to the 4 percent deposit rate in the interest rate table on page 4 of the report.[3]

The passbook rate varies across the sample banks, so there is something to explain. Among these banks, the passbook rate ranges from 2.5 percent to 5 percent. The coefficient of dispersion (the standard deviation of the passbook rate divided by its mean) is 13 percent for the entire sample period and about the same for each subperiod. The key question, then, is this: Can the variation in the passbook rate be explained by variation in the risk characteristics of banks?

Before this question is addressed, however, another should be: Were banks that were members of the Federal Reserve System in the 1920s perceived to be risky? Some economists have asserted that during this time the public thought that the safety of member bank deposits was guaranteed by the Federal Reserve.[4] If this is true, then looking for a correlation between bank rates and risk is a waste of time. If bank deposits were considered safe, as most are today, then any rate variance would have nothing to do with banks' risk characteristics—indeed, it would explain why Cox and Benston couldn't find such a correlation.

To look for evidence of public concern about bank safety, I compare the average sample bank passbook rate to a safe rate in the same period. To represent the safe rate, I choose the average short-term (three-to-six month) U.S. government security rate. Table 1 shows this comparison for the total 1926–30 period and for each subperiod identified above. The table also shows the number of banks that offered a passbook account during these years. Notice that over the total period the passbook rate was 30 basis points higher than the safe rate. Although it was 50 basis points lower than the safe rate in the second subperiod, it was 50 basis points

[3]I could also have identified rates on deposits subject to check. The checking account, though, does not appear to have been as uniform as the passbook account. In the examiner's report in Appendix A, 2 percent looks like the rate paid on a checking account. However, the amount of deposits subject to check (on line 10 of the report's page 2) was more than 65 percent greater than the amount of deposits on which 2 percent interest was paid. I suspect that many checking accounts had better terms than the 2 percent account, but paid no interest. This makes estimating a demand deposit rate much harder than estimating a passbook rate. The latter isn't exactly easy, though. While passbook accounts may not have varied within a bank, the way interest was computed on these accounts did vary considerably across banks. According to a study by the American Bankers Association (1929), in the 1920s banks had at least 52 different methods of computing interest on passbook accounts.

[4]John Kareken and Neil Wallace (1978, p. 414), for example, make this claim:

> In the years to 1934 [prior to FDIC insurance] there were several banking panics. But the last of those panics, that of 1930–33, causes us no difficulty. For the Federal Reserve was intended to be the lender of last resort—in effect, the insurer of bank liabilities.... With the Federal Reserve having been created, bank creditors thought—as it happens, mistakenly—that bank liabilities had been made safe.

higher in the first subperiod and 70 basis points higher in the third.

The passbook rate being higher on average than the government rate suggests that the public were concerned about bank safety in the 1920s.[5] Whether riskier banks paid higher rates of return than safer banks in the 1920s, therefore, is a meaningful question to ask.

□ *The Correlation*

To test the 1920s relationship between the passbook rate and some measures of bank risk (similar to Cox's and Benston's), I use my sample data to estimate the unknowns (the a's and the error term) in this regression model:

$$\begin{aligned}\text{Passbook Rate} = {} & a_0 + a_1\,(\text{Capital/Total Assets}) \\ & + a_2\,(\text{Liquid Assets/Total Deposits}) \\ & + a_3\,(\text{Loans/Total Deposits}) \\ & + a_4\,(\text{Log of Total Assets}) \\ & + a_5\,(\text{Short-Term U.S. Rate}) + \text{error}.\end{aligned}$$

Table 2 first lists the model's independent variables and the expected sign of each coefficient in the regression on the passbook rate under the hypothesis that riskier banks pay higher deposit rates.[6] Under this hypothesis, I expect that the higher the capital-to-asset ratio, the less risk for a depositor and, other things unchanged, the lower the deposit rate. That reasoning holds as well for the liquid asset-to-total deposit ratio (where *liquid assets* are reserves at the Federal Reserve, vault cash, and all other cash items). If loans are considered the riskiest assets a bank can hold, then the higher the loan-to-deposit ratio, the higher the deposit rate. The larger the bank, as measured by (the log of) total assets, the more it can diversify and hold a safer portfolio; thus, the greater the assets, the lower should be the deposit rate. Finally, other things unchanged, all banks will have to pay higher rates the higher the safe rate.

I estimate this model using two techniques. One, ordinary least squares, assumes the error term is independently distributed. That is, it does not take into account that these data are both a time series and a cross section. Nevertheless, if the errors are close to being independent, estimates made by this technique may be a good approximation of the true estimates. To take account of the expected dependence of the errors, though, I also use the Fuller-Battese (1974) technique. This is a generalized least squares estimator designed for data that are generated across time and space.

As Table 2 shows, the results based on the ordinary least squares estimator suggest a fairly strong correlation between the passbook rate and the risk variables. Three of the four risk measure coefficients are statistically significant, and all three have their expected signs. Only the loan-to-deposit ratio has the wrong sign, and it is not statistically significant. At 0.49, the R^2, the proportion of the passbook rate variation explained by the independent variables, is generally considered acceptable for regressions using cross-section data. And the F-value, the result of a test of the significance of the risk variables only, is impressive. (Note that the safe rate coefficient is not statistically significant in this equation. Presumably, this reflects the fact that the rate did not change enough over the sample period to affect the supply of or demand for passbook accounts.)

The results based on the Fuller-Battese estimator also show a strong correlation between the passbook rate and the risk variables. In this regression, the coefficients of all four risk variables are appropriately signed, and two of the coefficients—those for the capital-to-asset ratio and total assets—are significant. (Again, that for the safe rate is not.)

In summary, contrary to past research, statistical tests using better bank deposit rate data do find a

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[5]The difference between these rates probably underestimates that concern. For consider passbook accounts today. Thanks to deposit insurance, these are perfectly safe accounts, up to $100,000, and they pay rates significantly below the government rate. Since March 1986, the rate ceiling on savings accounts has been eliminated and the Federal Reserve Board has been surveying a sample of U.S. banks on the rates paid on such accounts. These data show that from April 1986 through April 1987 the average savings account rate paid by all insured commercial banks was 5.29 percent (FR Board 1986–87). Over the same period, the three-month Treasury bill rate averaged 5.64 percent, or 35 basis points higher than the passbook rate. Since both investments are safe, the 35 basis point difference is a measure of the liquidity value of a passbook account. Treasury bills are only available today in $10,000 denominations, while passbook accounts are available in any amount up to $100,000 for insured accounts. The extra 35 basis points are what investors require to take on equally safe but less liquid assets.

The 1980s liquidity value of a passbook account can be used to estimate how concerned the 1920s public were about bank safety. In the 1920s, like today, Treasury bills were issued in large denominations (approximately $10,000–$15,000 in today's dollars). If passbook accounts were also considered safe then and the cost of providing such an account has not changed, the average passbook rate in the 1920s should have been roughly 35 basis points lower than the short-term government rate. That the average passbook rate was instead 30 basis points higher implies that the public needed to be compensated for bank risk by roughly 65 basis points.

[6]The theory that risk and rate of return are correlated applies to rates promised or expected, whereas my data are rates actually paid. To the extent that rates promised and paid are different, my regressions are subject to measurement error. However, since none of my sample banks failed before 1930, the rates they paid are likely the rates they promised.

Table 2
Evidence of a Correlation Between Bank Deposit Rates and Risk in 1926–30†

Independent Variables of Regression Model and Summary Statistics	Expected Signs of Coefficients	Coefficients (and *t*-values) Estimated by: Ordinary Least Squares	Coefficients (and *t*-values) Estimated by: Fuller-Battese Technique
Risk Measures			
Capital-to-Asset Ratio (a_1)	−	-.0098 (-1.7)**	-.0125 (-2.0)*
Liquid Asset-to-Deposit Ratio (a_2)	−	-.0207 (-2.5)*	-.0119 (-1.34)
Loan-to-Deposit Ratio (a_3)	+	-.0030 (-1.5)	.0003 (.7)
Log of Total Assets (a_4)	−	-.0015 (-3.4)*	-.0016 (-3.2)*
A Safe Rate			
3–6 Month U.S. Security Rate (a_5)	+	-.0187 (-.31)	-.0135 (-.58)
Constant (a_0)	+	.0675 (9.4)*	.0692 (8.3)*
Degrees of Freedom		60	60
R^2		.49	n.a.
F-Value (from joint test of risk measures)		12.7*	n.a.

†The sample is state-chartered Federal Reserve member banks in New York City in 1926–30.
*Significant at the 5% level
**Significant at the 10% level
n.a. = not available
Sources of basic data: Federal Reserve Bank of New York, U.S. Treasury Department

significant correlation between unregulated bank rates and bank risk, as modern finance theory predicts.

Now What?

What does this new finding on banking in the 1920s mean for banking in the 1980s? Clearly, much has changed in banking over those 60-odd years. Most deposits, for example, are now safe. Congress introduced deposit insurance in 1933, which today extends to individual deposits up to $100,000. So even if deposit rate ceilings would have been effective in the 1920s, would they be today? Insured depositors do not monitor bank risk or require a deposit rate that reflects it. So there should be no correlation between the rate on insured deposits and bank risk for regulators to exploit. Further, to the extent that uninsured depositors expect the government to rescue a troubled bank, even rates on uninsured deposits may not reflect bank risk.

Still, a case for deposit rate ceilings can be made today. First, some evidence exists that uninsured depositors do require higher deposit rates from riskier banks (Baer and Brewer 1986). Second, even if all deposits were insured, deposit rate ceilings can at least limit the size of banks and hence limit the amount of insured funds that can be invested in risky assets. A deposit rate ceiling tied to the government rate, for

example, can prevent insured banks from offering above-market rates to attract funds to invest in highly risky assets.

However, while I can make a case for deposit rate ceilings, I am not necessarily advocating that they be reimposed. Like any attempt to regulate a price, this regulation can be at least partially avoided by buyers and sellers; the prizes, gifts, and free financial services that banks used to offer depositors demonstrate this. Also, the costs of monitoring rate ceilings could easily swamp their benefits. And there may be more efficient ways to limit bank risk.

Nevertheless, since Congress and bank regulators are currently considering expanding bank powers, with no intention of reducing deposit insurance, they must continue to regulate bank risk. The modest implication of this study is that, contrary to what they may believe, regulating deposit rates is one way that can be done.

Appendix A
Sample 1929 Examination Report on a New York City Bank

ANALYSIS SENT [redacted] 1929 TO F. R. BOARD

Examiner's Report of the Condition

of the [redacted]

at the close of business on the [redacted] *day of* [redacted] *1929 as found upon examination made by the direction and authority of the Superintendent of Banks of the State of New York*

Location [redacted]

By whom examined F.W.Pidcrit

Number of assistants if any 8

ASSETS	BOOK VALUE	DEDUCTIONS	ALLOWED
1. Cash on hand	$ 41 728 46	$	$ 41 728 46
2. Due from Federal Reserve Bank (Reserve Acct.)	651 592 47		651 592 47
3. Exchanges and demand cash items	200 356		200 356
4. Other items in cash			
5. Due from Banks & Trust Cos. (Res. Depositories)			
6. Due from other Banks, Trust Cos., etc.	844 486 50		844 486 50
7. Due from Banks (Foreign)			
8. Foreign Currency on hand			
9. Stock and bond investments	618 225 44	13 417 94	604 807 50
10. Loans and discounts	6 086 847 55		6 086 847 55
11. Overdrafts (Domestic)	1 506		1 506
12. Overdrafts (Foreign Banks, etc.)			
13. Bonds and mortgages			
14. Banking house			
15. Other real estate			
16. Furniture, fixtures and vaults	19 699 14		19 699 14
17. Accrued interest entered on books	5 545 61		5 545 61
18. Accrued interest not entered on books			
19. Customers liability on acceptances	83 106 41		83 106 41
20. Customers liability on unused balances L/C	147 018 80		147 018 80
21. Other Assets:			
22. Suspense account	7		7
23. Organization expenses	9 871 11	9 871 11	0
24. Prepaid expense	3 180 07	3 180 07	0
25. do insurance	2 540 58		2 540 58
26.			
27.			
28.			
29.			
30.			
31.			
32.			
33.			
Total	8 982 908 84		8 960 186 [illegible]

		BOOK	AS FOUND BY EXAMINER
1.	Capital Stock	$ 1 000 000	$ 1 000 000
	Deposits:		
2.	Due New York State Savings Banks		
3.	Due New York State Savings and Loan Associations, Credit Unions and Land Bank		
4.	Deposits of the State of New York	50 000	
5.	Deposits of the Superintendent of Banks of the State of New York		
6.	Deposits due as executor, administrator, guardian, receiver, trustee, committee or depositary — Time		
7.	Deposits due as executor, administrator, guardian, receiver, trustee, committee, or depositary — Demand		
8.	Deposits secured by pledge of assets Postal Savings System	10 647 62	
9.	Deposits otherwise preferred, if any		
	Total amount of preferred and secured deposits (Entered in second column)		60 647 62
10.	Deposits subject to check	4 559 305 60	
11.	Due trust companies, banks and bankers		
12.	Time deposits, certificates and other deposits, the payment of which cannot legally be required within thirty days	87 686 47	
13.	Other certificates of deposit	2 000	
14.	Deposits withdrawable only on presentation of pass-books — Time	1 086 858 50	
15.	Deposits withdrawable only on presentation of pass-books — Demand		
16.	Cashier's checks outstanding, including similar checks of other officers	46 609 06	
17.	Certified checks	25 765 91	
18.	Unpaid dividends		
19.	Deposits in foreign currency — Time		
20.	~~Deposits in foreign currency — Demand~~		
	Total Deposits $ 5,036,868.16		$ 5 778 220 86
21.	Bills payable, bills rediscounted or sold with agreement to repurchase	625 000	625 000
22.	Acceptances outstanding	85 106 41	85 106 41
23.	Unused balances on letter of credit	147 018 20	147 018 20
24.	Mortgages on real estate owned		
25.	Reserve for taxes and expenses	845 39	845 39
26.	Accrued interest entered on books	10 267 09	10 267 09
27.	Accrued interest not entered on books		
28.	Unearned discount	39 560 06	39 560 06
29.	Accrued taxes and expenses		
30.	Reserve for contingencies	132 90	132 90
31.	Other Liabilities:		
32.	Suspense account	20 798 86	20 798 86
33.	Reserve for gift account	7 618	7 618
34.			
35.			
36.			
37.			
38.			
	Totals	7 788 205 89	7 785 805 68
	Surplus	$ 300 402 45	$ 274 923 59

Call or demand loans	1	011	849	28	Secured by collateral readily marketable	678	455	28
					Secured by real estate mortgages or other liens on realty	74	800	
Time loans	4	973	815	05	Secured by stocks and bonds of realty companies	3	400	
					Secured by other collateral	228	498	40
Past due paper		65	660	24	Loans to holding companies for real estate			
Advances		5	325		Purchased paper			
					Paper with one or more names without collateral	4	384	808	18
					Secured by bank stocks		502	183	63
					do by bills receivable		10	525	11
					do by assigned accounts		168	337	
					Advances against foreign bills		5	325	
TOTAL	6	056	347	55	TOTAL	6	056	347	55

INVESTMENTS IN SECURITIES OF DOUBTFUL VALUE OR NOT READILY MARKETABLE

No. of shares or par value of bonds		Par value	BOOK VALUE	MARKET VALUE	REMARKS
	None				

Where less than $100 per share.

NAMES		ANNUAL SALARY	DESCRIPTION OF BOND
Chairman of the Board			
President	[redacted]	15 000	
Vice-President		15 000	
Vice-President		0	
Vice-President			Bankers' blanket surety bond
Vice-President	[redacted]		of Fid. & Deposit Co., Md. for
Treasurer			50M, also excess policy of 50M.
~~Secretary~~ Cashier		6 500	
Trust Officer			
Assistant Cashier		5 600	
Assistant			
Assistant			
Assistant			
Assistant			
Assistant			
Assistant			
Assistant			
Number of clerks 40	Their total compensation	75 950	
	Total salaries	116 250	

RESERVES

Reserves on hand { Cash; Deposits with F. R. B. } With reserve agents	651 392 47	
Total reserves		651 392 47
Reserves on hand required { Time ~~xxx~~; Demand ~~xxxxxx~~ }	34 655 68 599 469 72	
Reserves permitted with agents		
Total reserves required		634 125 40
Total reserves short		0
Reserves on hand short		

DEPOSITS ON WHICH INTEREST IS PAID

2 % is paid on		2 750 000
2½ %		300 000
3 %		50 000
4 %		1 085 600
4½ %		50 000
%		
%		
%		
%		
%		
Total deposits on which interest is paid		4 135 600

DIVIDENDS DECLARED DURING PRECEDING TWELVE MONTHS

RATE	DATE	REMARKS	AMOUNT
		None	

EARNINGS AND CHARGES SINCE LAST EXAMINATION AS SHOWN BY THE BOOKS

(Give date of last examination) [redacted] 19[illegible]

Earnings:		
Discounts received	94 412 06	
Interest received	45 564 65	
Rents received from real estate		
Rents received from safe deposit boxes		
Commissions received	3 068 49	
Recoveries		
Exchange received	172 52	
Foreign departmental profits	14 57	
Profit on securities sold	96 15	
Miscellaneous	485 16	
Trans. from res.	8 000	
Total earnings		148,279.80
Charges:		
Salaries paid	40 326 06	
Interest paid to depositors	26 107 25	
Other interest paid	9 933 37	
Rent paid	7 504	
Chg. off Organiz. exp.	2 000	
Loss on securities sold		
Charged off on securities		
do do F & F	2 023	
Charged off for other losses	15 741 87	
Taxes paid & res.	1 600	
Foreign department losses		
Legal	2 183 48	
Dividends		
Miscellaneous	4 546 75	
Stats. & Pig.	8 181 67	
Insurance	806 96	
Res. for cont.	7 7..	
Total charges		131,986.16
Gain ~~xxxx~~		17,483.64
Book surplus this examination	300 402 45	
Book surplus last examination	282 778 81	
Gain ~~xxxx~~		17,623.64

(000 omitted)

Name: [redacted]

Date of Examination: [redacted] 1939

Dist. No. 2

Resources		Liabilities	
Loans and Discounts - - - -	$ 6056	Capital - - - - - - - - - -	$ 1000
Overdrafts - - - - - - - -	1	Surplus - - - - - - - - - -	250
F. R. Bank Stock - - - - -	37	Undivided Profits - - - - -	50
Investments - - - - - - - -	581	Reserves for D. & L. - - -	0
Furniture and Fixtures - -	20	Due to Banks - - - - - - -	0
Banking House - - - - - - -	0	Demand Deposits - - - - - -	4684
Other Real Estate Owned - -	0	Time Deposits - - - - - - -	1155
Due from F. R. Bank - - - -	830	Borrowed Money:	
Due from Banks, Cash and Exchanges - - - - - - - -	308	Bills Payable (Fed.) 625	
Other Assets		Rediscounts (Fed.) 0	
~~Organiz. Expense~~	~~[illegible]~~	Other - - - 0	625
~~[illegible]~~ Miscell Expenses	15	Other Liabilities	
Customers liability on acceptance	85	Reserve for interest taxes etc	58
Accrued Interest	5	Suspense %	31
		Acceptances outstanding	85
Total Resources - - - - - -	$ 7938	Total Liabilities - - - - -	$ 7938

CAPITAL AND SURPLUS

Total Surplus, Profits and Reserves for L. & D.	300	
Add - Estimated appreciation	0	
Market value of assets not shown on books	0	300
Deduct - Losses and depreciation		25
Adjusted net undivided profits		25
Surplus impairment - deficit		None
Capital impairment - deficit		None

RECAPITULATION OF ALL CRITICISED ASSETS

Slow	(Per cent to Capital and Surplus — %)	1
Doubtful	(Per cent to Capital and Surplus 2.1 %)	27
Losses	(Per cent to Capital and Surplus 2 %)	25
		53

Abstracted Freeland
Checked Kearns [redacted] 29.

REMARKS

CHARACTER OF MANAGEMENT

Good

VIOLATIONS OF FEDERAL RESERVE ACT, REGULATIONS OR CONDITIONS OF MEMBERSHIP

One loan exceeding ~~limit~~ prescribed limit by state law

SUMMARY OF EXAMINER'S CRITICISMS AND REMARKS

~~Institution does not hesitate to charge what it~~

No adverse criticisms

DOES THE EXAMINATION REVEAL A CONDITION THAT WOULD WARRANT THE FEDERAL RESERVE BOARD TAKING ACTION TO DISCONTINUE THE MEMBERSHIP OF THIS BANK?

No.

PLEASE STATE WHETHER THE CONCLUSION IS CONCURRED IN BY ANY OR ALL OF THE FOLLOWING:

(a) Federal Reserve Agent and Governor.

(b) Executive Committee.

(c) Board of Directors.

Abstracted by H. Trubody

Federal Reserve Agent.

NOTE: When a report of examination indicates a bank to be in an unsatisfactory condition please furnish in detail such additional information as will permit the Board to intelligently consider the recommendations submitted.

Appendix B
Sample Banks: State-Chartered Federal Reserve Member Banks in New York City Examined in 1926–30

Name of Bank	Month and Year of Examination Report		
	Feb. 1926 – Apr. 1928	May 1928 – Apr. 1929	May 1929 – Nov. 1930
Amalgamated Bank	Jan. 1928	Feb. 1929	July 1930
American Exchange Irving Trust Company	Nov. 1927	Sept. 1928	—
American Trust Company	Oct. 1927	Oct. 1928	May 1929
American Union Bank (0.835)*	Nov. 1926	Aug. 1928	July 1930
Bank of America	Sept. 1927	—	—
Bank of Europe (0.808)*	Aug. 1927	Feb. 1929	Oct. 1929
Bank of New York and Trust Company	July 1926	Dec. 1928	Dec. 1929
Bank of the Manhattan Company	Feb. 1926	—	July 1929
Bank of United States (0.791)*	Nov. 1927	Nov. 1928	June 1929
Bank of Yorktown	Aug. 1927	Jan. 1929	Oct. 1929
Bankers Trust Company	Aug. 1927	—	—
Central Hanover Bank and Trust Company**	—	—	Sept. 1929
Central Mercantile Bank	May 1926	—	—
Central Union Trust Company**	Feb. 1927	Jan. 1929	—
Chemical National Bank	—	—	May 1930
Commonwealth Bank	May 1927	—	—
Continental Bank of New York	July 1927	Jan. 1929	Dec. 1929
Corn Exchange Bank	Nov. 1926	Nov. 1928	Nov. 1929
Farmers Loan and Trust Company	Feb. 1928	Feb. 1929	—
Federation Bank of New York	Feb. 1927	Mar. 1929	Mar. 1930
Fidelity Trust Company of New York	Mar. 1927	Nov. 1928	Dec. 1929
Fifth Avenue Bank	July 1927	Nov. 1928	Apr. 1930
Fulton Trust Company	Mar. 1927	Mar. 1929	Mar. 1930
Guaranty Trust Company of New York	Oct. 1926	—	Apr. 1930
Harbor State Bank	—	—	Oct. 1930
International Acceptance Securities and Trust Company	Sept. 1926	Nov. 1928	—
International Germanic Trust Company	Apr. 1928	Sept. 1928	Jan. 1930
International-Madison and Trust Company (0.834)*	—	—	Aug. 1930
International Union Bank	Mar. 1927	—	—
International Union Bank and Trust Company	July 1926	June 1928	—
Interstate Trust Company	Apr. 1927	Dec. 1928	—
Longacre Bank	Feb. 1927	—	—
Manufacturers Trust Company	Dec. 1926	—	Mar. 1930
Merchants Bank	—	Aug. 1928	July 1930
Murray Hill Trust Company of New York	Aug. 1927	Aug. 1928	—
Mutual Bank	Jan. 1927	—	—
New Netherlands Bank	Dec. 1926	—	—
New York Trust Company	Aug. 1926	—	—
Pacific Coast Trust Company	Sept. 1927	Aug. 1928	—
Park Row Trust Company	—	—	July 1930
Plaza Trust Company	—	—	July 1930
Standard Bank	Apr. 1927	—	—
Times Square Trust Company (0.921)*	Sept. 1927	July 1928	Mar. 1930
Trade Bank of New York	Mar. 1927	Aug. 1928	July 1930
United States Mortgage and Trust Company	July 1927	May 1928	—
United States Trust Company of New York	Apr. 1927	Dec. 1928	Sept. 1930
Number of banks examined	39	27	27

*This bank eventually failed (with the indicated rate of return to creditors as of 1937).
**On May 15, 1929, the Central Union Trust Company became the Central Hanover Bank and Trust Company.
Source: *Polk's Bankers Encyclopedia* (selected issues), Federal Deposit Insurance Corporation, Federal Reserve Bank of New York

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