Uninsured deposits as a source of market discipline: Some new evidence

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Money center banks typically place a heavy reliance on purchased funds, not explicitly insured by the FDIC. Suppliers of these funds will withdraw them from a bank if they believe that losses are imminent. Since the creation of the FDIC such deposit runs have been rare. But in the 1980s Continental Illinois National Bank experienced two deposit runs. The first occurred after the failure of Penn Square National Bank in July 1982 and the subsequent discovery that Continental had purchased more than a billion dollars of Penn Square energy loans. The second run occurred in spring 1984 and eventually forced the FDIC to guarantee all of Continental's creditors.

The experience with Continental has led many regulators to question the wisdom of a heavy bank reliance on purchased funds in general and uninsured deposits in particular. Others have argued that uninsured deposits are a source of market discipline, which means that when they are an important funding source, banks are likely to take less risk. This article examines the proposition that CD markets charge riskier banks higher rates. It begins by discussing recent trends in reliance on uninsured deposits, then summarizes previous evidence on their risk sensitivity, and ends by presenting the results of some of our own recently completed research.

Previous studies found little evidence that the market charges riskier banks more for deposits outside crisis situations. However, many of these studies employed inappropriate measures of bank risk. When we employ bank risk measures derived from stock price data, we find, among other things, that even when banks are solvent, the deposit market does charge riskier banks more for funds. The new evidence summarized here suggests that proposals to restrict bank reliance on uninsured, purchased deposits are not costless. While such proposals might reduce the likelihood of bank runs, they would at the same time reduce banks' incentives to control risk.

Trends in reliance on purchased funds

Purchased funds are generally defined as all uninsured liabilities with maturities of one year or less. Uninsured deposits make up the bulk of most banks' purchased funds. These deposits have come to make up a decreasing portion of deposits at domestic branches of U.S. banks (see Figure 1). However, from the point of view of bank safety and soundness, a more relevant figure is the ratio of uninsured deposits to total deposits, foreign and domestic. As Figure 1 illustrates, uninsured deposits' share of total deposits fell from 1964 to 1970, rose from 1970 to 1979 and fell again from 1979 to 1984. By 1984, uninsured deposits had returned to their 1970 share levels.

The data presented in Table 1 suggest that the recent decline in the relative importance of uninsured deposits is a result of two factors. First, there was a modest drop in reliance on uninsured deposits by banks in the largest size class. Second, and more importantly, the share of total deposits held by the largest banks fell from 31 percent in 1974 to 26 percent in 1984. These movements in the importance of uninsured deposits seem to have more to do with the elimination of Regulation Q than with any profound change in deposit insurance or bank supervision.

While there have been no long-term trends in the overall importance of uninsured deposits, Figure 1 shows that U.S. banks have experienced a steady shift from domestic uninsured deposits to foreign uninsured deposits. Unlike domestic uninsured deposits, foreign uninsured deposits are subject neither to reserve requirements nor to deposit insurance premiums. This suggests that the shift in uninsured deposits from domestic to foreign branches represents in part an attempt to avoid the re-

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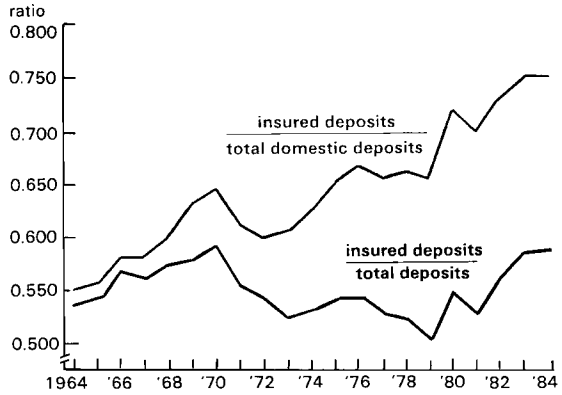
Figure 1
Insured deposit share of total deposits



serve requirement tax as well as deposit insurance assessments.

There have also been clear trends within particular size classes. Table 1 shows how reliance on uninsured deposits has varied between 1974 and 1984 for banks in four size classes (as of 1984). As one would generally expect, banks in the largest size class placed significantly greater reliance on uninsured deposits than did banks in other size classes. Outside the largest size class, bank reliance on uninsured deposits has steadily increased. This increase has been greatest for banks in the smallest size class where the share of uninsured deposits increased by roughly 67 percent between 1974 and 1984.

The implications of these changes in the composition of total deposits for bank risk are complex. The recent decline in uninsured deposits relative to insured deposits has reduced bank vulnerability to funding risk. However, to the extent that market discipline exists, a decline in bank reliance on uninsured deposits also weakens market discipline.

Market discipline and purchased funds

In the aftermath of the Continental crisis, the importance of market discipline has been subject to sometimes heated debate. On the one hand it has been argued that, because the funds are not explicitly insured, purchasers of large CDs will demand higher rates from banks that are taking more risks. The risk-return trade-off set by the market will create incentives for bank managers to avoid unwarranted risk. On the other hand, de facto extension of deposit insurance to all depositors reduces the incentive of uninsured depositors to accurately evaluate bank risk. While the presence of uninsured depositors creates the potential for greater market discipline, particularly for money center and regional banks, realizing this potential depends on how these depositors permit analysis of available data to affect their decisions. This, in turn, depends on the capacity and willingness of these depositors to evaluate publicly available information on individual bank performance.

Do CD markets evaluate bank risk?

Since the Franklin National Bank failed in 1974, the FDIC has conducted various surveys of large depositors to determine how they evaluate their banking relationship, their sensitivity to their uninsured deposit status, and their reaction to adverse publicity (Eisenbeis and Gilbert, 1985). The results of these surveys suggest that if market discipline exists, it arises primarily from the actions of large institutional investors dealing with a few large banks. Past studies of the links between bank risks and rates

Table 1
Trends in reliance on uninsured deposits by size class of bank
(total deposits of size class as percent of total banking system deposits in parentheses)

	< 0.1 billion		0.1 billion to 1 billion		1 billion to 10 billion		>10 billion	
1974	7.9%	(16.0)	13.4%	(24.1)	21.7%	(27.6)	61.9%	(32.1)
1979	9.4%	(17.2)	14.9%	(24.1)	25.1%	(27.3)	63.3%	(31.2)
1984	13.2%	(18.6)	19.9%	(24.9)	33.3%	(30.3)	61.0%	(25.9)

on CDs suggest that the resulting market discipline is weak or nonexistent. There is some evidence that CD markets respond to crises after the fact, but little evidence that CD markets distinguish among banks on the basis of information regarding the relative soundness of banks.

Developments in the large CD market in the aftermath of the Franklin National Bank (1974) and Penn Square (1982) failures shed some light on the market's efficiency in responding to greater perceived banking risks. Evidence collected by Gary Gilbert (1983) subsequent to the Franklin failure indicated market "tiering," suggesting that size served as a proxy for lower risk. This tiering could be interpreted as evidence of the market's inability to isolate individual banking risks on the basis of differing performance characteristics. After Franklin National, tiering became somewhat more selective and the basis point spread between banks widened. Gilbert found that CD purchasers required a return from a regional bank that was 25 basis points higher than the return required from a large money center institution. This was double the normal spread prior to that period. It is not clear whether the tiering was a rational response to a situation in which regulators pursued a "too big to fail" policy, or simply reflected poor use of available data.

In contrast to these earlier findings, a preliminary FDIC analysis subsequent to the 1982 Penn Square failure did not reveal a short-term or a long-term effect on the general market for large bank CDs, or any tiering by size. However, for several months after Penn Square, the CD market penalized the Continental Illinois National Bank, which was linked most closely with Penn Square (Gilbert, 1983). A more recent study by Robert Cramer and Robert Rogowski (1985) indicates that Penn Square's failure did have an effect on the market for CDs. They found that CD risk premiums rose approximately 63 basis points after the announcement of problems at Penn Square and Continental.

There are several statistical studies of the factors influencing bank CD rates. A 1974 study by Dwight Crane of the largest 30 banks revealed a high inverse relationship between CD rates and bank size. The study found no consistent relationship between CD rates and measures of financial condition, such as the return on equity or assets, or capital ratios among banks of comparable size. Crane did find, however, an apparent relationship between the profitability of a bank in a given quarter and its CD rate. It is uncertain whether lower profitability induced higher CD rates or vice versa. A 1979 study by Chayim Herzig-Marx and Anne Weaver found that risk premiums decreased with increases in total assets and decreases in bank liquidity. A recent study by Robert Cramer and Robert Rogowski (1985) failed to find any relationship between their measure of bank-specific default risk and CD risk premium.

In a recent article, Michael Goldberg and Peter Lloyd-Davies (1985) perform a time-series analysis in which dealer quotes on large CD rates and other variables are aggregated across the ten prime, top-tier banks included on the Federal Reserve System's so-called "No-name" list. Goldberg and Lloyd-Davies find that the risk premiums the financial markets assign to large bank CDs increase as the amount of risky assets increases relative to bank capital.

If these studies are to be taken at face value then we would be forced to conclude that there is only a tenuous link between bank risk and CD rates. There are two plausible explanations for such a conclusion. First, holders of uninsured CDs may believe that regulators will probably protect them from losses, either by disposing of the failed banks through purchase and assumption transactions or by funding deposit runs through the discount window. Second, regulators may do a fairly good job of detecting and closing troubled institutions before uninsured depositors have suffered serious losses.

Acceptance of either of these conclusions may not be warranted. Because these studies were conducted without much attention to possible sources of CD risk, there is no assurance that risk was properly measured. To properly measure risk, we must understand the exact nature of the risks borne by holders of uninsured CDs.

Sources of CD market risk

Bank debt, including uninsured deposits, can be viewed as an option contract (Merton, 1974). As long as the book value of the bank remains above a critical point, the bank is

considered solvent and shareholders maintain control of the firm. However, when the book value of the firm falls below that point, the creditors' option to acquire the bank's assets is exercised by having regulators close the bank. The bank's debtors receive the value of the underlying assets. The value of the debt contract increases and the interest rate demanded decreases when the market value of the firm's assets increases, because any such increase increases the cushion available to absorb future losses. The greater the cushion, the smaller the chance that depositors will suffer a loss.

The value of the debt contract also increases when the standard deviation of returns on the bank's assets declines. A decrease in the standard deviation of the return on assets means that there is less chance that the value of the bank's assets will fall below the level needed to fully pay back all depositors.

The impact of a change in book value is unclear. If book value is perfectly correlated with market value, then changes in book value would have no effect on debt values that was not already captured by changes in market value. However, book value may diverge from market value for long periods of time. This makes it legally possible for a bank to continue operating after the economic value of its assets is less than the present value of its liabilities. This can create incentives for the managers of the firm to take more risk, leading to a further decline in debt values. On the other hand such a policy lowers the probability that the bank will be closed in the near future. Whether higher book values result in higher or lower CD rates depends on whether the prospect of rising losses in the bank portfolio is offset by the reduced probability of default before the CD matures.

Risk premiums and the probability of runs can both be reduced if the regulator closes the bank as soon as its expected market value hits zero. But even if the regulator tries to use market value closure rules, the values of many assets are difficult to monitor. More accurate estimates of assets values require a greater expenditure of resources. Thus CD holders will charge a risk premium to cover both the cost of monitoring asset values and the possibility that their assessments will be incorrect. Balance sheet data may be useful in estimating this type of risk. In particular, publicly traded securities are easily valued using market data, while loans, for which secondary markets are often thin or nonexistent, are not. As a consequence, risk premiums will be lower, the lower a bank's holdings of loans.

The maturity of the CD will also affect the risk premium demanded by depositors. How the risk premium changes with maturity depends on whether the bank is economically solvent—whether the market value of its assets exceeds that of its liabilities. If the bank is economically solvent and its deposits all mature on the same date, then the risk premium will decline with maturity. If the bank is economically insolvent and all deposits mature on the same date, then the risk premium will initially increase as the maturity of deposits increases (Merton, 1974). This suggests that for solvent institutions, average CD rates should decline as average maturity increases.

Two other factors may play an important role in determining CD risk premiums. There is a strong belief that the larger the bank, the more likely that any problems will be resolved in a way that does not penalize CD holders. This belief was given greater support in 1984 Congressional testimony by former Comptroller Todd Conover who stated that the nation's 12 largest bank holding companies were too important to be permitted to fail. Second, banks in unit banking states may have less funding flexibility due to their limited access to retail deposits. This lack of flexibility may also lead to an increase in the risks borne by the uninsured depositors.

Summarizing the preceding discussion, we would expect that the average rate on uninsured CDs would increase with increases in the riskless rate, the standard deviation of asset returns, and the size of the loan portfolio. Other things held equal, banks in unit banking states should pay more for uninsured CDs than banks in states which permit branching. On the other hand, increases in total assets and the ratio of market value of equity to total assets should cause rates on uninsured CDs to decline. The effect of changes in the average maturity of a bank's CDs or in the ratio of book value to assets cannot be predicted ex ante.

Data and estimation

We chose to test the preceding propositions by identifying those factors which affect the average rate paid on uninsured CDs. This

variable was estimated by dividing total interest paid on large domestic CDs over a quarter by the average value of large domestic CDs during the quarter. The average value of CDs was calculated by averaging weekly data. This measure of CD rates is less than perfect. In particular, it fails to account for differences in maturity. Nevertheless it does reflect the average cost of uninsured deposits and should adjust to changes in bank risk, albeit with a lag.

Because our measure of CD rate is an average across a number of maturities and origination dates, it was necessary to control for differences in CD rates which have nothing to do with differences in bank risk. We attempted to address this problem by developing a riskless rate which controls for the maturity date and age of each bank's portfolio.

At least one other macroeconomic factor is likely to affect the level of CD rates. Many researchers have found that the rate on a security is influenced by its supply relative to the supply of government securities (Cramer and Rogowski, 1985, for instance). An increase in the relative supply of CDs should cause their rate to rise relative to Treasury securities.

Table 2
Lead banks included in the study

Holding company name	1979 uninsured deposits as percentage of total deposits	1979 total assets *(billions of dollars)*
American Fletcher Corporation, Indianapolis	26	$2.620
American Security Corporation, Washington, D.C.	55	2.303
Bank of New York Company, New York	46	8.989
Bankers' Trust New York Corporation, New York	60	29.647
CBT Corporation, Hartford	19	2.592
Central National Chicago Corporation, Chicago	43	.669
Chase Manhattan Corporation, New York	65	64.129
Chemical New York Corporation, New York	58	38.777
Connecticut National Bank Corporation, Bridgeport	12	.753
Continental Illinois Corporation, Chicago	73	34.294
Crocker National Corporation, San Francisco	39	16.087
Fidelcor Inc., Philadelphia	30	2.728
First and Merchants, Richmond	19	2.235
First Chicago Corporation, Chicago	75	28.984
First Empire State, Buffalo	18	1.697
First Pennsylvania Corp. Philadelphia	60	8.406
Girard Company, Philadelphia	37	4.305
Harris Bankcorp, Chicago	53	7.104
Hartford National Corp, Hartford	22	2.555
Indiana National Corp., Indianapolis	14	2.080
Lincoln First Banks, Rochester	12	3.122
Manufacturers Hanover Corporation, New York	58	45.019
Marine Midlands, Buffalo	50	15.690
Maryland National Corporation, Baltimore	27	3.580
Mellon National Corporation, Pittsburgh	54	13.291
J.P. Morgan and Company, New York	67	42.435
Northern Trust, Chicago	49	5.326
Pittsburgh National Corporation, Pittsburgh	38	5.310
Provident National Corporation, Philadelphia	36	2.361
Riggs National Bank, Washington D.C.	33	2.686
Security Pacific Corporation, Los Angeles	41	23.537
State Street Boston Corporation, Boston	33	2.220
U.S. Bancorp., Portland	18	4.147
U.S. Trust Company, New York	42	1.976
Union Commerce, Cleveland	48	1.173
Union Planters Corporation, Georgia	08	1.127
Union Trust Bancorp., Baltimore	10	1.144
United Virginia Bancshares, Richmond	11	3.052
Virginia National Bancshares, Norfolk	14	2.470
Wells Fargo and Company, San Francisco	39	19.342

Data on daily stock prices and returns were obtained from Chase Econometrics and the Center for Research in Security Prices (CRSP) data base. Thirty-seven bank holding companies were included in the study. Each holding company had an identifiable lead bank and in every case the lead bank accounted for at least 80 percent of total holding company assets. On average the lead bank accounted for 94 percent of holding company assets. Table 2 shows total assets and reliance on uninsured deposits for each lead bank as of December 1979. Balance sheet data and interest paid on large domestic CDs were obtained from the *Quarterly Reports of Income and Condition.* Total holding company assets and shares outstanding were obtained from Moody's. Average holdings of uninsured CDs were calculated using the Federal Reserve Board's Weekly Reporting Bank series.

The market value of each bank's asset portfolio and the variance in returns on that portfolio were proxied by the market value of equity and the standard deviation of the return on equity. For each month, estimates of the standard deviation of returns on a bank's stock were made using daily data. These monthly estimates were then averaged together to generate quarterly estimates of bank stock price volatility.

Twelve quarters of data beginning in the fourth quarter of 1979 and ending in the third

Table 3
Determinants of average CD rates 1979:IV to 1982:III
(t values in parentheses)

	Expected impact on CD rates	Ordinary least squares		Fuller-Battese	
		(1)	(2)	(1')	(2')
maturity weighted T-bill rate	+	.8538** (16.28)	.7721** (13.68)	.3728** (4.46)	.3154** (3.67)
relative supply of CDs	+		.6051** (2.95)		1.3739** (2.69)
average maturity of CDs	?	.00005 (1.44)	.00004 (1.12)	−.00006† (1.94)	−.00006† (1.88)
log ($\frac{\text{book value}}{\text{assets}}$)	?	.0065 (1.70)	.0313†† (4.28)	.0044 (.66)	.0068 (.71)
log ($\frac{\text{market value}}{\text{assets}}$)	−	−.0011 (.50)	−.0047* (1.90)	−.0086** (3.26)	.0089** (3.25)
standard deviation of daily stock returns	+	.1657 (1.97)	.1751* (2.14)	.1267* (2.31)	.1252* (2.29)
log (total assets)	−		.0108 (1.78)		−.0016 (1.22)
log (total assets) x branching dummy[1]	+		.0005** (3.73)		.0005 (1.16)
log (loans)	+		−.0064 (1.22)		.0023 (.38)
intercept		.0290 (2.40)	−.0150	.0615* (2.84)	−.0304 (.70)
degree of freedom		438	434	438	433
R^2		.3879	.4391		

[1]The branching dummy equals 1 in unit banking states and zero otherwise.
*Significant at the 5% level, one tailed test.
**Significant at the 1% level, one tailed test.
†Significant at the 5% level, two tailed test.
††Significant at the 1% level, two tailed test.

quarter of 1982 were pooled, yielding 444 observations. Using this pooled data, the equations were estimated using both ordinary least squares regression and the Fuller-Battese technique for estimating regression coefficients when dealing with cross-section time series data.

Results

The results of this exercise are shown in Table 3. Each variable's expected impact on CD rates is shown in the first column. A regression coefficient of .0001 indicates that a one unit increase in the variable causes the average rate paid on uninsured CDs to rise by one basis point. Changes in the maturity-weighted Treasury bill rate explain 37 percent of the variation in CD rates using ordinary least squares. Including all other risk measures raises the proportion explained by another 5 percent. The first set of equations, (1) and (1′), includes the weighted T-Bill rate, the relative supply of CDs, the average maturity of the bank's CDs, the book-to-asset ratio, the market-to-asset ratio, and the standard deviation of stock price returns. Using ordinary least squares, both the market-to-asset ratio and the standard deviation of returns have the hypothesized sign. However, only the standard deviation of returns is significantly different from zero. Equation (1′) presents alternative estimates of equation (1) using an estimation technique designed for cross-section time series data. In this regression, the market-to-asset ratio and the standard deviation of stock returns both have the expected sign and are statistically significant.

Equations (2) and (2′) present coefficient estimates of taking other possible factors into account. In both equations the market-to-asset ratio and the standard deviation of stock returns have the expected sign and are statistically significant. The effect of changes in the relative supply of bank CDs is as expected and is significant; however, in equation (2) neither total assets or total loans have the expected effect. In equation (2′) total assets and total loans have the expected sign but are not significantly different from zero. The branching variable has the expected sign in both cases but is only significantly different from zero in equation (2).

These results suggest that CD holders are sensitive to differences in bank risk. They demand higher rates when a bank's market-to-asset ratio is low or when the volatility of bank stock returns is high. The next question is whether or not the implied differences in CD rates are large. To answer this question we need to know what changes in variables are plausible. One way this can be established is by looking at the impact of a one-standard-deviation change in a variable. There is a 68 percent chance a variable will be within one standard deviation of its mean. Table 4 shows how a one-standard-deviation change in the market-to-asset ratio and the standard deviation of bank stock returns translate into changes in CD rates. Based on the results of equation (2), a one-standard-deviation increase in the market-to-asset variable causes CD rates to fall by 17 basis points. A one-standard-deviation increase in the standard deviation of stock returns causes CD rates to rise by 16 basis points. Equation (2′) yields even stronger results in these cases.

This sensitivity of CD rates to change in these risk variables suggests that the FDIC's recent proposal for risk-related insurance premiums ranging from 1 to 8 basis points is significantly less sensitive to risk than are the money markets. It also suggests that a strengthening of implicit guarantees for uninsured deposits could eliminate an important source of market discipline.

There is, however, one potential problem with the preceding results. Many researchers have found a negative relationship between bank size and CD rates. Our regression results do not indicate such a relationship.

Nonetheless, our results are consistent with the earlier findings. While equations (2) and (2′) fail to display a significant negative relationship between asset size and CD rates, the market-to-asset ratio and total assets are positively correlated. This suggests that large banks will be observed paying lower interest rates because they have a higher market-to-asset ratio.

Postscript

About the same time we completed our work, we obtained another newly completed study whose conclusions support our own (Gerald Hanweck and Timothy Hannon,

Equations (1) and (1′)

$$\text{CD rate} = a_1 + b_1^* \text{ maturity weighted T-bill rate} + c_1^* \text{ relative supply of CDs} + d_1^* \text{ average maturity of CDs} + e_1^* \log\left(\frac{\text{book value of capital}}{\text{total assets}}\right) + f_1^* \log\left(\frac{\text{market value of capital}}{\text{total assets}}\right) + g_1^* \text{ standard deviation of stock returns} + \text{error}$$

Equation (1) assumes that any errors are independently distributed. Equation (1′) assumes that there are three components to the error term: a bank-specific component, a time-specific component, and an observation-specific component.

Equations (2) and (2′)

$$\text{CD rate} = a_2 + b_2^* \text{ maturity weighted T-bill rate} + c_2^* \text{ relative supply of CDs} + d_2^* \text{ average maturity of CDs} + e_2^* \log\left(\frac{\text{book value of capital}}{\text{total assets}}\right) + f_2^* \log\left(\frac{\text{market value capital}}{\text{total assets}}\right) + g_2^* \text{ standard deviation of stock returns} + h_2^* \log(\text{total assets}) + i_2^* \log(\text{total assets}) \times \text{branching dummy} + j_2^* \log(\text{loans}) + \text{error}$$

Equation (2) assumes that any errors are independently distributed. Equation (2′) assumes that there are three components to the error term: a bank-specific component, a time-specific component, and an observation-specific component.

1985). This study, which employed survey data on large CD rates for each of five different maturities, found that the CD risk premiums increase with both the ratio of risky assets to capital and uncertainty regarding bank returns on assets. These effects, in turn, tend to be more important in the case of the longer CD maturities, where insolvency risk is presumably more of an issue. As with our study, the implication is that the market for large CDs helps to discipline bank risk-taking. The study also suggests that bank CD rates are strongly affected by accounting-based measures of bank risk-taking. This latter point is in contrast to the findings of previous research regarding the effects of accounting-based measures of risk.

Summary and policy recommendations

The Continental experience indicates that uninsured depositors will run when they perceive that losses are possible. Many observers view these runs as potentially dangerous. However the same factor that generates runs would also be expected to generate market incentives for banks to take less risk. While earlier work using accounting measures of risk suggests little market discipline, our research suggests that holders of uninsured CDs set risk premiums as if they are at least partially at risk. This leads to the imposition of market discipline, in a nondisruptive fashion, on large institutions that are most dependent on the money market for funding.

Policies that cause banks to reduce reliance on purchased funds by increasing their reliance on insured deposits will reduce the likelihood of runs. However, our results suggest that an important source of discipline will be lost. This loss will certainly create further incentives for banks to take risks and would reduce funding flexibility. Purchased funding became popular precisely because it provides flexibility.

However, our findings are not yet complete enough to pass judgment on supervisory policies designed to link capital requirements to dependence on purchased funds. It is not enough to show that the purchased funds market provides market discipline. We also need to evaluate the cost and likelihood of runs on banks which rely on purchased funds. In particular, we need to show that the costs of bank runs are or can be made small (George Kaufman, 1985).

While we cannot presently recommend acceptance or rejection of proposals to limit reliance on purchased funds, our findings do suggest several actions that would improve market discipline. Our results suggest that CD

Table 4
The impact of bank characteristics on the average cost of uninsured CDs

	Sample average	Sample standard deviation	Change in CD rate due to a one standard deviation increase in variable based on (2)	based on (2')
Standard deviation of daily stock returns	.0168	.009	16 basis points	11 basis points
$\log\left(\frac{\text{market value}}{\text{assets}}\right)$	−3.53	.367	17 basis points	32 basis points

markets are trying to evaluate risk. Proposals that improve the quality of information will improve the quality of the market discipline.

First, shortcomings of the marketplace in restraining bank risk-taking could be corrected to some degree by broadening disclosure. In particular, the disclosure of bank examination data could help bank-funding markets to identify an institution's weakness while remedial action is still possible. The impact of such disclosure on stock price and deposit flows may not be as disruptive as some expect. The recently required bank disclosure of past-due and other nonperforming loans should greatly help the market assess bank risk-taking.

Second, as demonstrated by the Continental experience, it is important to accurately value and close troubled banks of all sizes. Better monitoring of asset values by regulators would reduce the likelihood of runs.

Third, our results point out the need for risk-based premiums. If our results are correct, the FDIC is dramatically underpricing many of its deposit insurance policies. If the FDIC were to adopt the CD market's attitudes towards risk, then market discipline and the FDIC's revenues would both be increased.

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