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Pipat Luengnaruemitchai
Department of Economics
University of California, Berkeley
lpipat@econ.berkeley.edu

James A. Wilcox
Haas School of Business
University of California, Berkeley
jwilcox@haas.berkeley.edu

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Abstract

During recessions, either declines in actual capital or increases in required capital may intensify pressures on banks. One way for banks to boost their capital ratios is by reducing their lending. However, one effect of systematic reductions in the supply of bank loans during recessions would likely be to accentuate the magnitudes of macroeconomic fluctuations. To reduce this source of "procyclicality", it has been proposed that Basel II include "escape clauses". Such clauses might, for example, operate so as to raise required bank capital during macroeconomic expansions and reduce it during downturns.

Apart from formal escape clauses, procyclicality might be reduced or even reversed in practice if banks exercise sufficient discretion in reporting their charge-offs and loan loss provisions. We propose two hypotheses about the past cyclicality of such discretion. We hypothesize that individual banks tended to report fewer charge-offs and provisions when the banking system was troubled than when it was generally healthier. That suggested our second hypothesis: Banks tended to cluster more when the banking industry was troubled. Banks would maximize the value of their reporting discretion by clustering more then; being similar to other banks raised the likelihood that a bank would be able to exert reporting discretion when it encountered difficulties, because other, similar banks, and thus the banking system as a whole, would likely be troubled at the same time.

We found some support for our hypotheses at large U.S. banks. During the late 1980s, when banking was troubled and bank capital ratios were low, individual banks reported fewer charge-offs, ceteris paribus, when the capital ratios of their peers were lower. During the late 1990s, in contrast, when capital ratios were higher, charge-offs at individual banks were not systematically related to the capital ratios of peer banks. We also found that the equity and the asset betas of individual banks tended to cluster more when banking was more troubled than they did when banking was less troubled.

"We must all hang together, or assuredly we shall all hang separately."

Benjamin Franklin, July 4, 1776

I. Introduction

Banks may come under capital pressure either because of declines in their capital or because of increases in required capital. Pressures on bank capital may reduce lending and output. Basel reformers have become concerned that the constant application in practice of a fixed set of capital regulations over the business cycle could accentuate the magnitudes of macroeconomic fluctuations. That is, bank capital rules might then contribute to economies' "pro-cyclicality". If bank capital requirements are revised promptly on the basis of expected losses on bank assets, then increases in expected losses in and around recessions could raise banks' capital requirements and thereby make bank lending more pro-cyclical than otherwise. In order to ameliorate the procyclicality of bank capital rules, "escape clauses" of some sort might be included in the reform of the Basel Accord. These clauses might, for example, require banks to hold more capital during economic expansions so that they would have it available to be drawn down during economic downturns.

Determining whether bank supervision and regulation as a whole has been, or will be, pro-cyclical or countercyclical is problematic. Some elements of bank regulation, such as prompt revision of required capital in light of changed estimates of expected losses, may have pro-cyclical effects. Other elements may have countercyclical effects. For instance, "discretion" in the amounts of charge-offs and loan loss provisions reported by banks during troubled times might reduce, or even reverse, procyclicality attributable to increases in amounts of required capital and associated decreases in the supply of bank

loans. Banking supervision and regulations, either explicitly or implicitly, might allow banks to report fewer charge-offs and provisions for actual and expected loan losses when an entire banking system was under considerable stress than would otherwise be the case. Such discretion would prop up earnings, retained earnings, and reported capital ratios. Such discretion might have countercyclical effects, as opposed to the procyclical effects that might emanate from rigid application of banking supervision and regulation.

Bank supervisors might be skeptical of being asked to help manage, and be seen as helping to manage, macroeconomic outcomes. Discretion in banks' reporting of loan loss provisions and charge-offs might exacerbate losses to banks and deposit insurers and confound appropriate application of countercyclical monetary policy. Allowing banks discretion in their reporting might (1) reduce the discipline of banks' credit monitoring, (2) lead ultimately to larger amounts of problem loans, and (3) divert credit from its most efficient uses. In addition, monetary authorities may recognize that bank supervisors might respond to contractionary monetary policy by allowing banks to exercise more discretion, for example by permitting banks to avoid charging-off or "evergreening" loans. To the extent that the amounts and effects of such reporting discretion are hard to quantify, monetary policy would be that much harder to conduct.

Monetary authorities might compensate for the anticipated effects of increased reporting discretion by imposing stricter monetary policies than they would otherwise. The effects of the even-tighter monetary policy would be felt most keenly by borrowers whose loans would not benefit from the reporting discretion, such as variable-rate business borrowers with good credit ratings and borrowers at banks that do not engage in reporting discretion.

We seek empirical estimates of the extent to which the reported amounts of loan loss provisions and charge-offs at U.S. banks have varied, relative to the amounts that would have been expected in light of the conditions of their loan portfolios. More specifically, we seek estimates of the effects of the condition of banking generally on the amounts of charge-offs and provisions reported by individual banks. We use data for loan delinquencies, capital, earnings, and other bank variables for the 30 largest U.S. banks in each year from 1976 through 2001. We also examined the 1999 data for 9 large Japanese banks.

We examine two hypotheses. The first hypothesis relates to discretion in banks' reported amounts of loan charge-offs and loss provisions; the second relates to banks' "safety in similarity." Bank supervisors monitor and promote the safety and soundness of individual banks and thereby the banking industry. They may, however, apply different standards when problems are isolated in a few banks than when the banking industry generally is more troubled. When the banking industry generally is in good condition, bank supervisors might be more insistent that a troubled bank adhere to standard reporting requirements for loan charge-offs and provisions (and for other inputs to a bank's financial statements). If an individual bank had sufficiently poor management, low earnings (perhaps due to large expected future loan losses), or heavy loan losses (and as a result had low capital ratios), supervisory action might follow the established norms for severity and speed. If the condition of the bank were sufficiently dire, to preclude larger losses later, bank supervisors might close the bank.[1]

In contrast, when the banking industry was generally quite troubled, bank supervisors might be attuned to the (1) macroeconomic repercussions of widespread

reductions in bank lending, (2) stability of the financial system, and (3) repercussions of widespread bank failures on bank supervisors and their organizations. In light of these considerations, we hypothesized that bank supervisors might grant banks more discretion in reporting charge-offs and provisions when the banking system is generally troubled than when problems are confined to a few banks. We refer to this as our "reporting discretion hypothesis."

We also hypothesize that supervisors are more likely to close atypical banks than to close average banks. Individual banks may employ business strategies that profit from differentiation from the strategies and markets of their competitors. During relatively good times, the value to an individual bank of reporting discretion is reduced because of relatively large earnings and relatively small amounts of charge-offs and provisions. In contrast, when the banking industry is generally troubled, banks benefit from "safety in similarity." By being similar to each other, individual banks increase the odds that they are troubled at the same time as the industry generally. Since the likelihood of reporting discretion rises as the banking industry becomes more troubled, a similar bank would be able to exercise reporting discretion when that discretion is most valuable to the bank, which is when the bank itself is troubled. This is our "safety in similarity hypothesis."

To confront our hypotheses with data, we estimated bank charge-off and provision equations and computed measures of bank similarity. We also examined how each varied over time. Our econometric estimates are consistent with banks' exercising greater reporting discretion during troubled times. During the late 1980s, capital ratios at large U.S. banks were generally low and potentially over-stated due to reporting discretion. At that time, the lower were the capital ratios at peer banks, the smaller were

the reported charge-offs at individual banks. During the late 1990s, average bank capital ratios were higher. At that time, the capital ratios of peer banks had no detectable effects on the charge-offs reported by individual banks. Consistent with our hypothesis that banks seek safety in similarity, we found that banks chose market betas and asset betas that clustered together more when banking was troubled.

Section II presents a brief literature and historical review of related issues. Section III details the data and methodology that we use. Section IV presents statistical results that address (1) the cyclicality of bank capital regulation and (2) discretion (or management) in bank accounting based on data from the era of U.S. bank and thrift crises in the 1980s and early 1990s and from the Japanese banking crisis since the 1980s. Section V summarizes the paper and discusses some of its implications.

II. Literature and historical review

In this section, we provide (1) a brief review of literature that is closely related to our reporting discretion hypothesis and (2) some preliminary evidence that banks tend to cluster more when the banking industry is troubled.

The literature on the cyclicality and cyclical effects of bank capital requirements has sprung up and expanded considerably in recent years. Ranging from Bernanke and Lown (1991) through Van der Heuvel (2002), numerous studies have documented the effects in the U.S. on banks and on the economy of pressures on bank capital. Bliss et al. (2002) succinctly argue that the simple model of how expansionary monetary policy increases bank assets may be incomplete, because banks are subject both to reserve and to capital requirements. When capital requirements are binding, injection of reserves may not increase bank lending and may even reduce it.

Some accounting studies conclude that individual banks use loan loss provisions, charge-offs, and allowances to manage their reported amounts of regulatory and generally-accepted earnings and capital. For instance, Ahmed et al. (1999) use the 1990 change in capital adequacy regulation to construct tests of capital and earnings management on loan loss provisions. The authors find evidence that loan loss provisions are used for capital management, but they do not find evidence that banks use loan loss provisions to manage reported earnings or to signal future earnings to outsiders.

There is also literature on the laxity of bank supervisors in the U.S. and in Japan. For instance, Kane (1987, 1989) trumpets the dangers of capital forbearance at savings and loans. Hayakawa (2001) details the reticence of Japanese supervisors to close any banking institutions. Pilling (2002) notes that the reported amounts of nonperforming loans at Japanese banks are widely regarded as hugely underestimating the true amounts. Ioannidou (2002) finds that the Federal Reserve's simultaneous roles of being banking supervisor and central bank compromise the latter, in that indicators of monetary policy affect the Fed's actions as banking supervisor. Those same monetary policy indicators do not, however, affect the actions of the U.S. bank supervisors that are not responsible for monetary policy (the OCC and the FDIC).

Next, we present some evidence about reporting discretion at Japanese banks and about clustering by U.S. banks. To do so, we use two different measures: capital ratios for Japanese banks and the standard deviations of equity betas for U.S. banks. Figure 1 shows the ratio of total capital to risk-weighted assets for 9 large Japanese banks in 1999. The narrow range (between 10 and 13 percent) across these banks fits the hypothesis of reporting discretion. It may be that the conditions of these Japanese banks and the

Japanese banking system are sufficiently dire that they cannot attract private capital. As a result, it may be that individual banks are implicitly permitted to cap the amount of problem loans that they report so that they report having enough capital to satisfy Basel capital minimums.

*** Put Figure 1 about here. ***

*** Put Figure 2 about here. ***

Figure 2 shows the ratio of total capital to risk-weighted assets for 5 large Japanese banks in 2002. Several developments have taken place between 1999 and 2002. The number of large banks fell as some of the weak large banks merged. These mergers can be described either as the takeover of weak institutions by slightly stronger ones or as mergers among roughly similarly weak institutions. Ibison (2002) concludes that Japanese banking is now dominated by even larger institutions, each with unclear corporate histories and ethos and each with high levels of inherited nonperforming loans. The range across capital ratios for the 5 large Japanese banks is even narrower (between 10 and 11 percent) in 2002 than in 1999, which may suggest that even more reporting discretion has been exercised more recently. Not only does our hypothesis suggest that reported charge-offs and capital ratios may not be trustworthy, but it also suggests that until the backlog of unreported bad loans is cleared, lower reported charge-offs might indicate worsened, and not improving, banking conditions.

Figures 3 through 7 are based on data for the 30 largest U.S. banks in each year. Figure 3 presents average rates of return on assets (ROA) and average capital ratios for those banks for each year from 1976 through 2001. These data highlight that banking conditions were noticeably worse before the middle of the 1990s and have been markedly better since: Until the middle of the 1990s, banks' ROAs and capital ratios were lower than since. (Moreover, the evidence presented in section IV below suggests that the reported capital ratios in the late 1980s may have been overstated.) After the early 1990s, both ROAs and capital ratios rose markedly.

*** Put Figure 3 about here. ***

Figures 4 through 7 provide preliminary evidence that a generally weaker U.S. banking industry was associated with banks clustering more. Our data source did not have sufficient data to permit us to calculate capital ratios for individual banks before 1986. For each year from 1976 through 1985, we calculated capital ratios for the 30 largest U.S. banks as follows: We subtracted the difference between the national aggregate bank capital ratio for 1986 and the weighted average for the 30 largest U.S. banks for 1986 from the national aggregate bank capital ratio for each year from 1976 through 1985. We used the resulting data series as our measure of the weighted average capital ratio for the 30 largest U.S. banks.

*** Put Figure 4 about here. ***

Figure 4 compares (weighted by assets) average capital ratios with (weighted by assets) average equity betas. Lower average equity betas are associated with (1) lower volatility relative to the stock market and typically (2) less total risk taking. Figure 4 shows that when average capital ratios were relatively low (ranging from 4.7 to 6.0 percent between 1976 and 1991), average equity betas were also low (ranging from 0.70 to 1.32). In contrast, when average capital ratios were higher (ranging from 7.0 to 7.8 percent between 1992 and 2001), average equity betas were also higher (ranging from 1.01 to 1.55). Although estimates of the average equity betas are somewhat volatile, figure 4 generally does support the hypothesis that banks reduce their (systematic) risks during troubled times.

Banks' equity betas may reflect not only their assets, but also their leverage. Figure 5 compares average capital ratios and average asset betas, which measure the underlying volatility of the market values of banks' assets. Banks' leverage fell considerably over this period as their capital ratios rose. When average capital ratios were low, average asset betas were also low (ranging from 0.038 to 0.073 between 1976 and 1991). In contrast, when average capital ratios were higher, average asset betas were also higher (ranging from 0.079 to 0.116 between 1992 and 2001). Thus, figure 5 also supports the hypothesis that banks held less risky assets during troubled times.

*** Put Figure 5 about here. ***

*** Put Figure 6 about here. ***

*** Put Figure 7 about here. ***

Figures 6 and 7 compare average bank capital ratios with the standard deviations (across banks) of their equity betas and their asset betas, respectively. We calculated betas from banks' own total equity returns, total returns on a broad market index, and the banks' leverage ratios. Lower standard deviations of equity and asset betas imply that banks are more clustered. When average capital ratios were low, standard deviations of equity betas (ranging from 0.18 to 0.25 between 1976 and 1991) and standard deviations of asset betas (ranging from 0.011 to 0.019 between 1976 and 1991) were also low. When average capital ratios were higher, standard deviations of equity betas (ranging from 0.24 to 0.42 between 1992 and 2001) and standard deviations of asset betas (ranging from 0.020 to 0.038 between 1992 and 2001) were also higher. Thus, figures 6 and 7 support the hypothesis that banks more tightly mimicked each other when banking generally was more troubled.

III. Data and methodology

We use ordinary least squares (OLS) regressions to estimate equations that indicate reporting discretion at Japanese and U.S. banks. We use data on capital ratios, operating income, provisions for loan losses, and loan charge-offs for the 9 largest Japanese banks in 1999 from Morgan Stanley Dean Witter (1999). We also use panel data for the financial statements for the 30 largest U.S. banks for each year from 1976 through 2001, the period for which Reports of Condition and Income Reports (Call Reports) are publicly available from the Federal Reserve Bank of Chicago database.

Thus far, we have not analyzed the hypothesis of "safety in similarity" econometrically. The figures discussed in Section II use accounting data for the largest 30 U.S. banks for each year from 1976 through 2001 and data for the stock prices and returns for the 40 largest U.S. bank holding companies (BHCs) for the same period. We obtained stock price data from the Center for Research in Security Prices (CSRP). Our datasets for accounting data and stock prices do not overlap exactly. Using the S&P 500, we computed equity betas for each BHC over the time period and the mean and standard deviation across the 40 largest BHCs. We used the average capital ratios from our accounting data to impute the average asset beta for the 40 largest BHCs.

We hypothesize that banks have more reporting discretion when the banking industry is troubled. That implies that the amounts of charge-offs and provisions would be a function of the bank's own conditions regardless of industry conditions. It also implies that the impact of industry condition would rise as the condition of the banking industry deteriorated.

We tested our hypotheses with variations of equation (1) for Japanese and U.S. banks, for different time periods, and for sample periods of varying length:

$$(1) \qquad y_t^i = \sum_{j=1}^{2} \alpha_j \cdot y_{t-j}^i + \sum_k \sum_{j=0}^{2} \beta_{jk} \cdot x_{t-j}^k + \sum_{j=0}^{2} \gamma_j \cdot OK_{t-j}$$

We use two measures of y_t^i: loan loss provisions and charge-offs. We scale provisions by risk-weighted assets for Japanese banks and by gross loans for U.S. banks. We scale charge-offs by risk-weighted assets for Japanese banks and by gross loans for U.S. banks.

To allow for lags, we included y_t^i lagged by one year and lagged by two years as independent variables. The x_{t-j}^k variables control for various conditions at each bank. For each we included two annual lagged terms, as well the contemporaneous term.[2] As control variables we include operating income, nonaccrual loans, allowance for loan losses, and bank capital. For Japanese banks, we scale operating income by risk-weighted assets. For U.S. banks, we define operating income as earnings before income tax and provisions and scale by total assets. We scale nonaccrual loans by gross loans. We scale the allowance for loan losses by gross loans. For Japanese banks, we use (Basel) total capital and scale it by risk-weighted assets. Total capital includes subordinated debt and the allowance for loan losses. For U.S. banks, we use total equity capital and scale by total (unweighted) assets.

We also included the variable "Other banks – Capital to Assets Ratio" (OK_{t-j}) and its two annual lags. For each bank in each year, we calculate the values for this variable as the average of the capital to assets ratio across all other banks in the sample for that year (29 in the case of the U.S. data). Within any given year, the variation in this variable is minimal across banks. However, this variable captures the evolution of reported capital ratios for the banking industry across time.

Absent reporting discretion, once we control for a bank's own condition (capital, etc.), reported charge-offs and provisions would not rise with the average capital ratio at other banks. Absent reporting discretion, charge-offs and provisions might be negatively related to other banks' capital ratios: Troubles in other banks that are reflected in reduced capital ratios might be correlated with factors that would raise charge-offs and provisions for a bank. Obtaining positive coefficients on the variable that measures reported capital

at other banks then can be taken as support for the hypothesis that banks exercise more reporting discretion when other banks are in more trouble.

IV. Results

Tables 1 through 6 provide results for regressions of bank charge-offs and provisions for loan losses in Japan and in the U.S. Tables 1 and 2 provide the results for truncated versions of equation (1) for 9 large Japanese banks in 1999. Tables 3 and 4 provide the results for similar regressions for the 30 largest U.S. banks in each year for various sample periods from 1977 through 2001. Tables 5 and 6 provide the results of regressions that include larger numbers of control variables for the 30 largest U.S. banks in each year for sample periods from 1985 through 2001.

The regressions reported in tables 1 and 2 use as explanatory variables only a (Japanese) bank's operating income (divided by risk-weighted assets) and a bank's own total capital ratio. We do not find either charge-offs or provisions to be significantly affected by operating income. However, we do find that bank capital ratios significantly and positively affect reported charge-offs and provisions. This is consistent with banks acknowledging more bad loans not just when loans "sour," but when their own reported capital ratios are high enough to withstand sour loans.

*** Put Table 1 about here. ***

*** Put Table 2 about here. ***

Using specifications similar to those in Tables 1 and 2, Tables 3 and 4 provide results based on data for 30 large U.S. banks in each year during 1977-2001 and for three smaller subsamples (1978-1983, 1986-1991, and 1994-1999). Each of these three subsamples is associated with distinct conditions for the U.S. banking system generally. The 1978-1983 period includes high inflation, high unemployment, a double-dip recession, but relatively few bank loan charge-offs. The 1986-1991 subsample also includes a recession, but is distinguished by its severe banking crisis and historically high charge-offs. The 1994-1999 subsample includes a long and vigorous economic expansion, low inflation, and low charge-offs.

*** Put Table 3 about here. ***

*** Put Table 4 about here. ***

The dependent variables in Tables 3 and 4 are charge-offs and provisions. Each is scaled by gross loans (as opposed to risk-weighted assets). We scale the independent variables by total assets. Also, we include the capital to assets ratio for the other 29 banks, lagged one year, instead of the capital ratio for each bank, which we use in Tables 1 and 2. Looking across the columns of Tables 3 and 4, we see that the relations of reported charge-offs and provisions to earnings and capital vary across the subsamples. In particular, the larger coefficients in the earlier, more troubled period for banking supports the hypothesis that reporting discretion varies inversely with the overall condition of banking.[3] A larger positive relation between reported charge-offs and provisions and earnings is consistent with lower earnings "allowing" banks to

acknowledge fewer of its bad loans by reporting fewer charge-offs and provisions. Concomitantly, when their earnings are higher, banks may reduce any accumulated backlog of under-reported charge-offs or provisions.

The signs and significance of the coefficients on capital at other banks are not as stable across subsample periods as those for earnings. The estimated effects of other banks' capital were insignificant when industry-wide charge-offs were low (1978-1983 and 1994-1999). In contrast, during the 1986-1991 period, charge-offs and provisions were lower when other banks had lower capital ratios, which is consistent with our reporting discretion hypothesis.

Tables 5 and 6 provide the results of regressing the same dependent variables on more control variables for the 30 largest U.S. banks in each year during 1985-2001 and for two smaller subsamples (1986-1991 and 1994-1999). The regressions in tables 5 and 6 cover a shorter time period (1985-2001) than the regressions in tables 3 and 4 (1977-2001) because of data limitations. We allowed for, but do not report in Tables 5 and 6 Individual bank fixed effects.

*** Put Table 5 about here. ***

*** Put Table 6 about here. ***

Tables 5 and 6 validate the earlier results. The (sums across rows within columns of the) estimated coefficients on the earnings variable are generally positive in each column of Table 5 and 6. Similar to the results in Tables 3 and 4, the earnings coefficients are least significant during 1986-1991 and are less significant in the

regression for charge-offs and more significant in the regression for provisions. The estimated coefficients on other banks' capital also generally follow the results for charge-offs in Tables 3 and 4. They do, however, less clearly validate the results for provisions. Mirroring the results in Tables 3 and 4, the estimated effects of other banks' capital (and its one-year lag) on charge-offs are both positive and significant during 1986-1991, but are insignificant during 1994-1999.

In contrast, the estimated effects of other banks' capital (summed over all lags) on provisions conflicted with the results shown in Tables 3 and 4. The signs and significance of coefficients on other banks' capital do not fit the pattern across time periods that is consistent with either reporting discretion or its absence. Visual examination of average charge-offs and provisions during 1986-1991 reveals that provisions are far more volatile during that period (and charge-offs far smoother) than during other periods. One possibility is that, during this period, bank supervisors exogenously imposed a more stringent set of standards for reporting charge-offs and provisions.

The remaining results in Tables 5 and 6 are mixed. Some do not have ready interpretations; some follow the predictions of economic theory; and some are just plain insignificant. For example, the estimated coefficients on nonaccruals and allowances comport with theory. The coefficients for nonaccruals are consistently positive and significant in both Tables 5 and 6. More non-accruals later lead to more provisions and more charge-offs. The estimated coefficients on loan loss allowances (lagged one-year) in the charge-off equations are consistently positive and significant, indicating that larger stocks of loss reserves imply that banks later will take larger charge-offs but can make smaller provisions.

The lagged own-capital coefficients are generally not statistically significant. On the other hand, Table 5 shows that banks tended to record higher charge offs, *ceteris paribus*, when other banks had more capital. During the troubled 1986-1991 period, then, individual banks tended to report fewer charge-offs as the capital ratio of their peer banks fell. During the less troubled period that followed, 1994-1999, individual banks showed no such tendency to reduce reported charge-offs as a function of the condition of peer banks.

V. Summary and implications

Banks typically come under capital pressure either because large loan losses reduce their capital or because changes in rules and regulations raise the amounts of capital that they are required to hold. In turn, capital pressures can lead to reductions in banks' supply of loans. The Basel Accord may be revised in such a way that required capital promptly rises as expected loan losses rise, for example during recessions. In that case, bank lending might become more procyclical than when required capital responds less to current conditions. To reduce the procyclicality of a revised Basel Accord, some argue for including "escape clauses." Such clauses might, for example, require bank capital to rise during expansions, but perhaps allow it to fall during downturns.

In a similar way, discretion in banks' reporting of charge-offs and provisions may reduce the procyclicality that some have warned about and might have countercyclical effects on the macroeconomy. Banks may be permitted to exercise more discretion in their reporting of charge-offs and provisions when the banking system is generally troubled than when problems are isolated in a few banks. Such discretion may encourage clustering by banks because of "safety in similarity".

Reforms in the U.S. such as the prompt corrective action (PCA) clauses of FDICIA seek to minimize future banking and deposit insurer crises and losses. PCA generally insists that restrictions on troubled banks become increasingly severe as the bank's capital declines below various trigger ratios. In part, PCA is designed to reduce both the need and opportunities for regulatory forbearance. However, PCA and similar triggered policies might be undermined by reporting discretion that allows banks to avoid PCA being triggered. The hypothesis of reporting discretion posits that underreporting of problems will occur when banks and their supervisors find it preferable to keep reported capital ratios above some target.

To test our hypotheses, we analyzed measures of bank similarity and loan provisions and charge-offs both for Japanese and U.S. banks. We found evidence of reporting discretion both for the U.S. in the late 1980s and for Japan in 1999. Thus, the evidence suggests reporting discretion did take place during troubled, pre-FFDICIA years. We also find that, during troubled times, banks tend to cluster more.

We found little evidence of reporting discretion in U.S. banks by the late 1990s. That does not mean that reporting discretion will not emerge during future banking crises. Since FDICIA was enacted, banking has been quite profitable and capital ratios rose to their highest levels in more than a generation.

Because of the macroeconomic repercussions of banking difficulties, it may, after all, be socially optimal that reporting discretion of the sort discussed here does emerge. If so, it may also be preferable that it be practiced consciously and consistently so that the policies of both private-sector banks and public-sector policymakers can better coordinate general policies and specific responses. Acknowledging and measuring the magnitudes of

reporting discretion in the past is a first step toward more coherent policies in both sectors.

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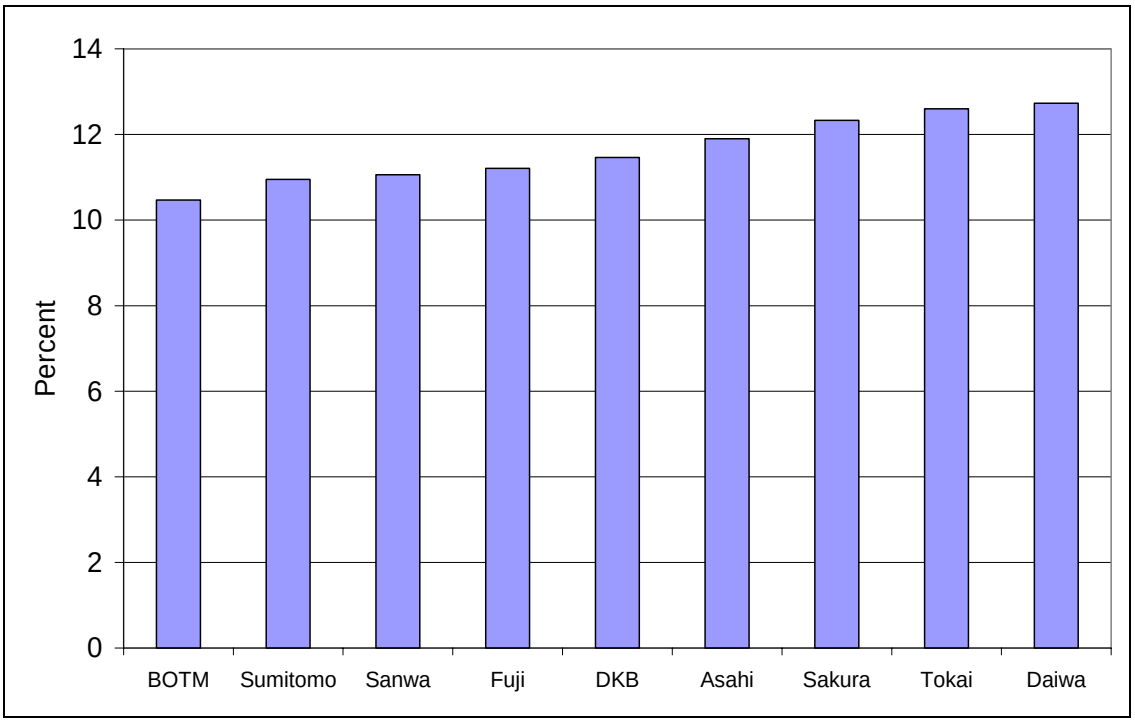
Figure 1

Total Risk-Weighted Capital Ratios at 9 Large Japanese Banks

1999

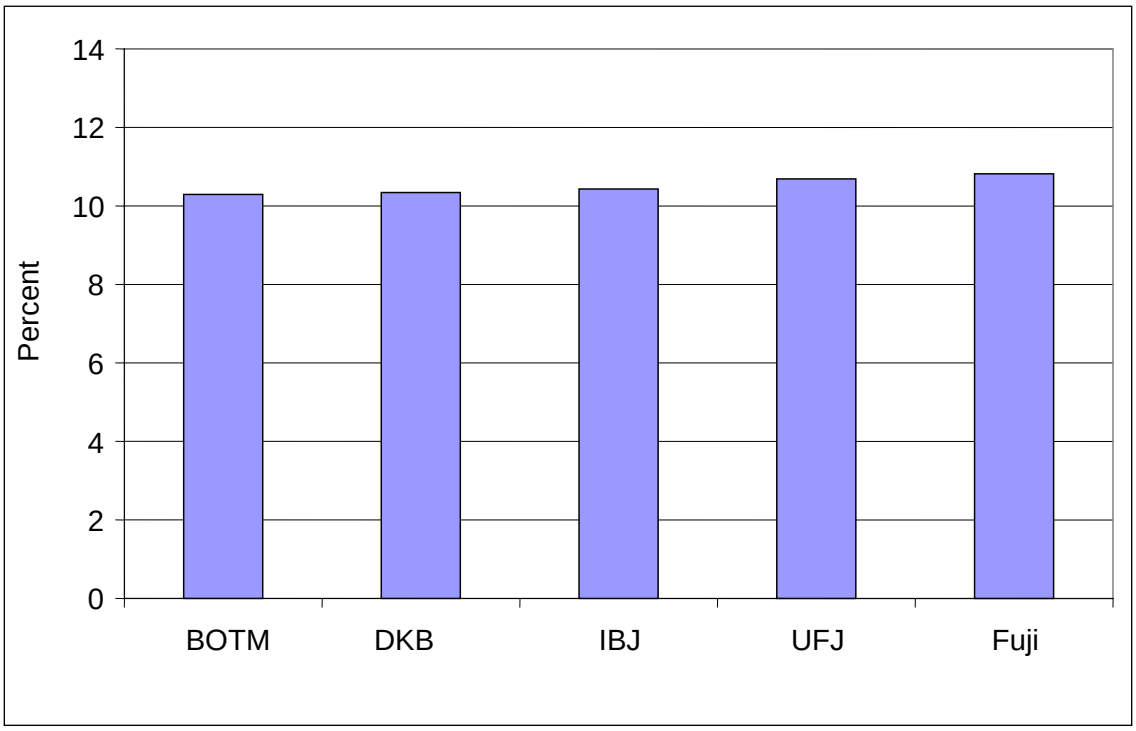


Source: Morgan Stanley Dean Witter (1999).

Figure 2

Total Risk-Weighted Capital Ratios at 5 Large Japanese Banks

2002

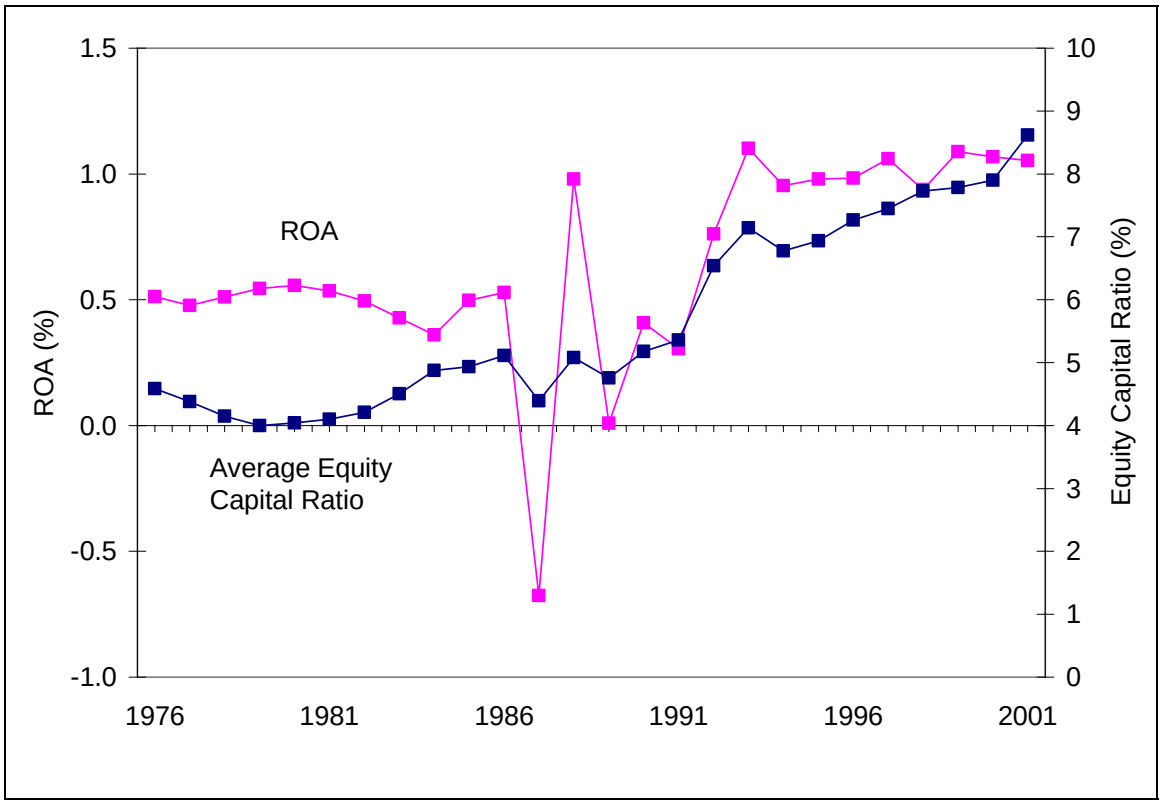


Source: Merrill Lynch (2002).

Figure 3

Average Equity Capital Ratio and Average ROA for Large U.S. Banks

Annual, 1976-2001

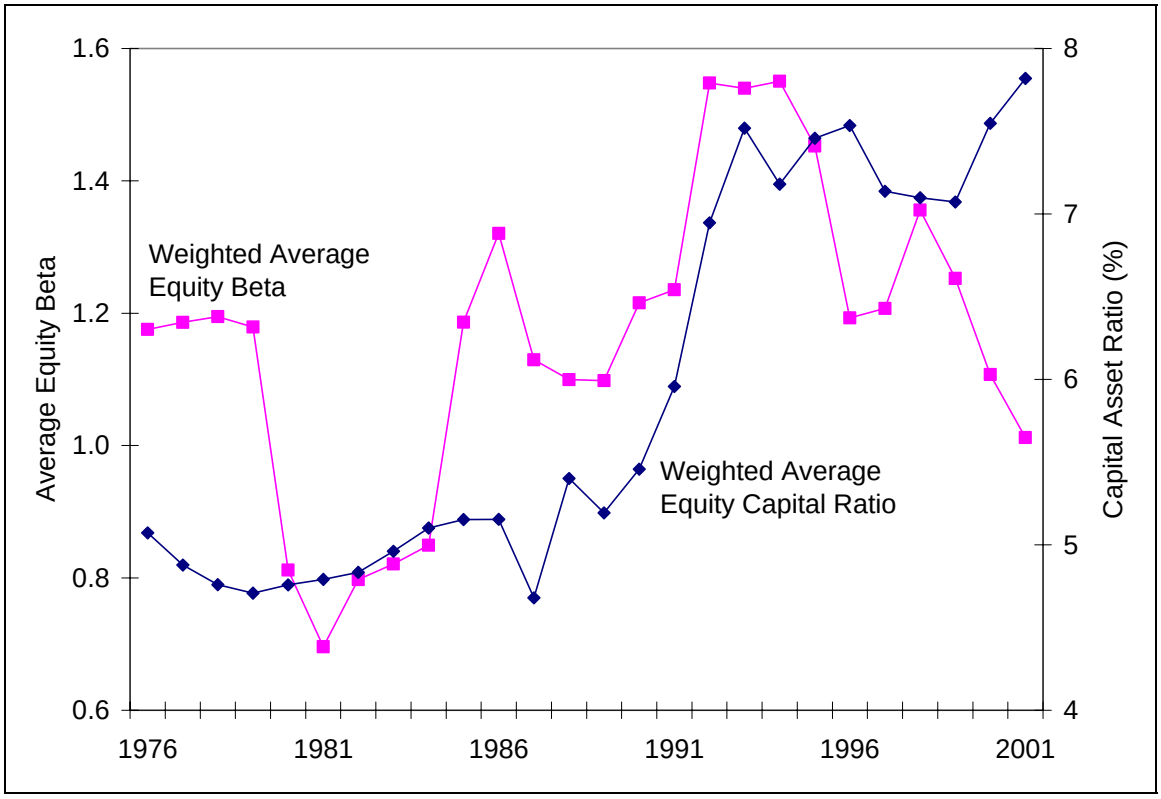


Source: Federal Reserve Bank of Chicago (2003).

Figure 4

Weighted Average Equity Capital Ratio and Weighted Average Equity Beta for Large U.S. Banks

Annual, 1976-2001

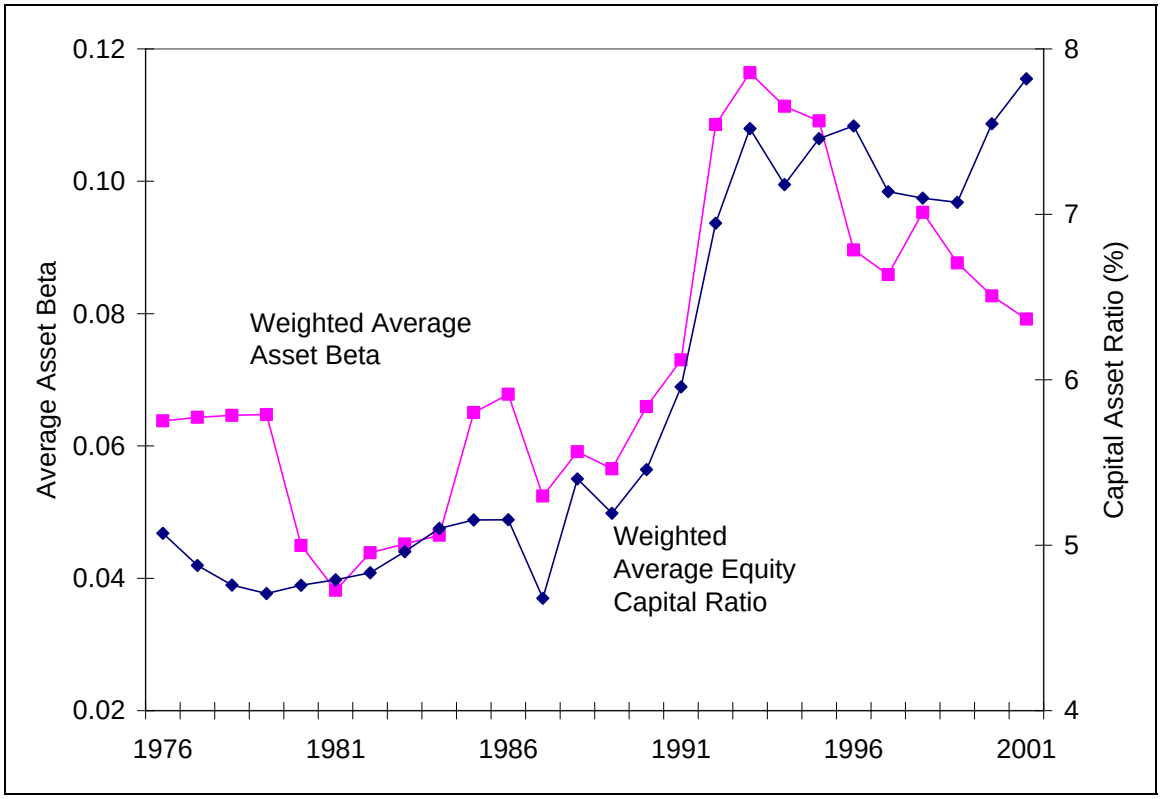


Source: Federal Reserve Bank of Chicago (2003) and Center for Research in Security Prices (2003).

Figure 5

Weighted Average Equity Capital Ratio and Weighted Average Asset Beta for Large U.S. Banks

Annual, 1976-2001

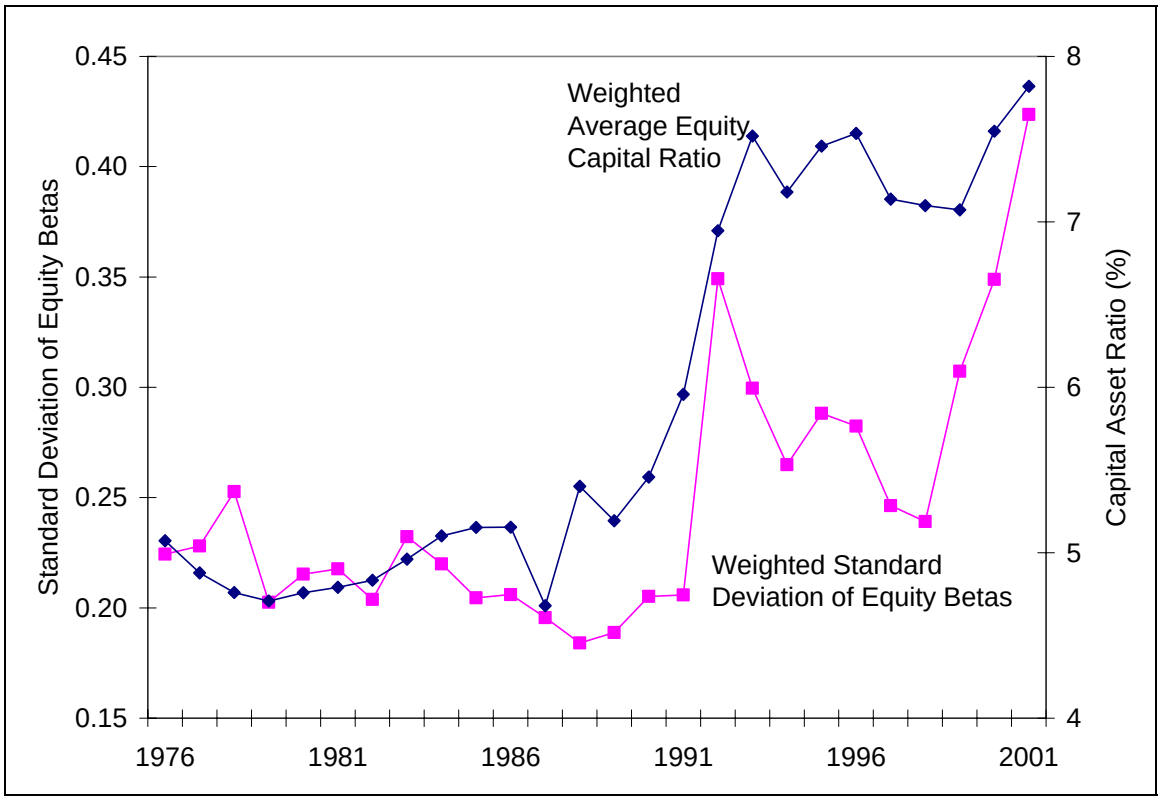


Source: Federal Reserve Bank of Chicago (2003) and Center for Research in Security Prices (2003).

Figure 6

Weighted Average Equity Capital Ratio and Weighted Standard Deviation of Equity Betas for Large U.S. Banks

Annual, 1976-2001

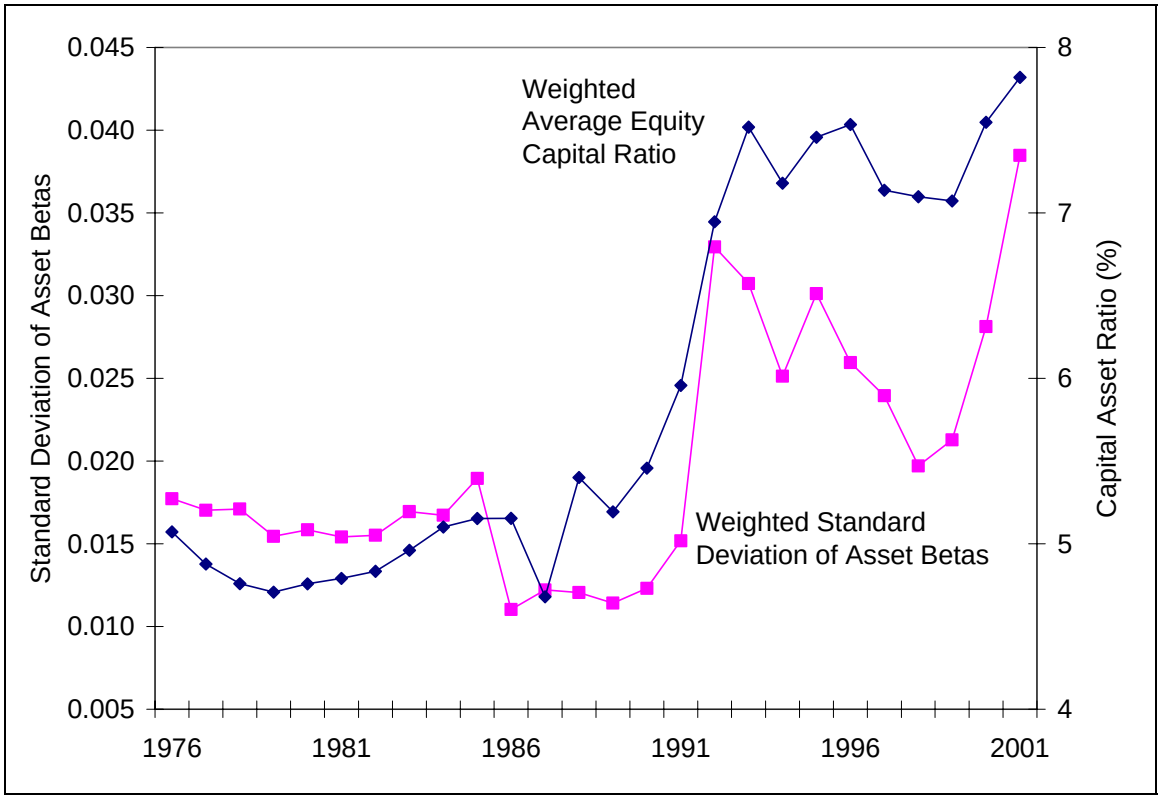


Source: Federal Reserve Bank of Chicago (2003) and Center for Research in Security Prices (2003).

Figure 7

Weighted Average Equity Capital Ratio and Weighted Standard Deviation of Asset Betas for Large U.S. Banks

Annual, 1976-2001



Source: Federal Reserve Bank of Chicago (2003) and Center for Research in Security Prices (2003).

Table 1

Relation of Charge-Offs to Operating Income and Capital

Dependent Variable: Charge-offs / Risk-Weighted Assets
Large Japanese Banks, 1999

		(1)
1.	Constant	-0.05*
		(2.29)
2.	Operating income / risk-weighted assets	0.13
		(0.19)
3.	Total capital ratio	0.60**
		(3.19)
	Number of observations	9
	R-squared	0.63
	F-statistic	5.10

Absolute value of t-statistics in parentheses.
** denotes significance at the 1 percent level.
* denotes significance at the 5 percent level.

Table 2

Relation of Loan Loss Provisions to Operating Income and Capital

Dependent Variable: Loan Loss Provisions / Risk-Weighted Assets
Large Japanese Banks, 1999

		(1)
1.	Constant	-0.01
		(0.85)
2.	Operating income / risk-weighted assets	-0.21
		(0.63)
3.	Total capital ratio	0.23*
		(2.47)
	Number of observations	9
	R-squared	0.54
	F-statistic	3.48

Absolute value of t-statistics in parentheses.
** denotes significance at the 1 percent level.
* denotes significance at the 5 percent level.

Table 3

Relation of Charge-Offs to Earnings and Other Banks' Capital

Dependent Variable: Charge-offs / Gross Loans
30 Largest U.S. banks each year, Annual, 1977-2001

		1978-1983 (1)	1986-1991 (2)	1994-1999 (3)	1977-2001 (4)
1.	Constant	-0.02	-0.02	0.00	0.01**
		(1.31)	(1.34)	(0.80)	(2.82)
2.	Earnings before income tax and provision / assets	1.29**	0.41	0.27**	0.67**
		(5.60)	(1.73)	(3.49)	(10.43)
3.	Other 29 banks' average equity capital / assets, lagged 1 year	0.29	0.55*	-0.00	-0.07*
		(0.91)	(2.09)	(0.02)	(2.52)
	Number of observations	180	180	180	750
	Number of banks	35	56	69	106
	R-squared	0.18	0.07	0.10	0.15
	F-statistic	16.04**	4.27*	6.16**	54.50**

Absolute value of t-statistics in parentheses.
** denotes significance at the 1 percent level.
* denotes significance at the 5 percent level.

Table 4

Relation of Loan Loss Provisions to Earnings and Other Banks' Capital

Dependent Variable: Loan Loss Provisions / Gross Loans
30 Largest U.S. Banks each year, Annual, 1977-2001

		1978-1983 (1)	1986-1991 (2)	1994-1999 (3)	1977-2001 (4)
1.	Constant	-0.03	-0.09**	-0.00	0.01*
		(1.33)	(4.53)	(0.45)	(2.31)
2.	Earnings before income tax and provision / assets	1.71**	0.75*	0.52**	0.93**
		(5.37)	(2.13)	(5.97)	(10.49)
3.	Other 29 banks' average equity capital / assets, lagged 1 year	0.39	1.91**	-0.00	-0.15**
		(0.87)	(4.86)	(0.01)	(4.06)
	Number of observations	180	180	180	750
	Number of banks	35	56	69	106
	R-squared	0.17	0.21	0.25	0.15
	F-statistic	14.77**	15.79**	18.04**	56.91**

Absolute value of t-statistics in parentheses.
** denotes significance at the 1 percent level.
* denotes significance at the 5 percent level.

Table 5

Relation of Charge-Offs to Banks' Own Conditions and Other Banks' Capital

Dependent Variable: Charge-offs / Gross Loans
30 Largest U.S. Banks each year, Annual, 1985-2001

	1986-1991 (1)	1994-1999 (2)	1985-2001 (3)
1. Constant	-0.06*	0.00	0.00
	(2.00)	(0.35)	(1.58)
2. Charge-offs / gross loans, lagged 1 year	0.05	0.00	0.21**
	(0.52)	(0.02)	(4.58)
3. Charge-offs / gross loans, lagged 2 years	-0.27**	0.00	-0.18**
	(2.85)	(0.00)	(4.08)
4. Earnings before income tax and provision / assets	0.00	0.42**	0.32**
	(0.00)	(6.24)	(5.19)
5. Earnings before income tax and provision / assets, lagged 1 year	-0.16	-0.14	-0.06
	(0.71)	(1.51)	(0.82)
6. Earnings before income tax and provision / assets, lagged 2 years	0.18	-0.20**	-0.09
	(1.02)	(3.06)	(1.69)
7. Nonaccrual loans / gross loans	0.13**	0.43**	0.13**
	(2.68)	(5.83)	(5.44)
8. Nonaccrual loans / gross loans, lagged 1 year	0.12	0.00	0.07
	(1.67)	(0.02)	(1.95)
9. Nonaccrual loans / gross loans, lagged 2 years	0.07	0.05	-0.03
	(1.05)	(0.86)	(1.11)
10. Allowance for loan and lease losses / gross loans, lagged 1 year	0.19*	0.21**	0.15**
	(2.54)	(2.76)	(4.12)
11. Allowance for loan and lease losses / gross loans, lagged 2 years	0.00	-0.22**	0.09*
	(0.05)	(3.35)	(2.38)
12. Equity capital / assets, lagged 1 year	-0.05	-0.02	-0.05
	(0.42)	(0.63)	(1.74)
13. Equity capital / assets, lagged 2 years	-0.23	0.01	0.01
	(1.78)	(0.31)	(0.42)
14. Other 29 banks' average equity capital / assets	0.55*	0.06	0.03
	(2.62)	(0.91)	(0.57)
15. Other 29 banks' average equity capital / assets, lagged 1 year	0.83**	-0.01	0.05
	(2.81)	(0.19)	(0.91)
16. Other 29 banks' average equity capital / assets, lagged 2 years	0.12	-0.03	-0.11
	(0.36)	(0.24)	(1.88)
Number of observations	178	179	504
Number of banks	55	69	101
R-squared	0.63	0.53	0.59
F-statistic	12.13**	7.12**	37.98**

Absolute value of t-statistics in parentheses.
** denotes significance at the 1 percent level; * denotes significance at the 5 percent level.

Table 6

Relation of Loan Loss Provisions to Banks' Own Conditions and Other Banks' Capital

Dependent Variable: Loan Loss Provisions / Gross Loans 30 Largest U.S. Banks each year, Annual, 1985-2001

	1986-1991 (1)	1994-1999 (2)	1985-2001 (3)
1. Constant	0.08	0.02*	0.01
	(1.66)	(2.06)	(1.29)
2. Loan loss provisions / gross loans, lagged 1 year	-0.10	0.59**	-0.12
	(0.47)	(4.71)	(1.62)
3. Loan loss provisions / gross loans, lagged 2 years	-0.12	0.01	0.09
	(0.83)	(0.12)	(1.71)
4. Earnings before income tax and provision / assets	0.53	0.42**	0.56**
	(1.79)	(5.72)	(5.67)
5. Earnings before income tax and provision / assets, lagged 1 year	0.36	-0.29**	0.17
	(0.97)	(2.77)	(1.47)
6. Earnings before income tax and provision / assets, lagged 2 years	-0.02	0.11	0.09
	(0.07)	(1.37)	(1.01)
7. Nonaccrual loans / gross loans	0.53**	0.20*	0.51**
	(6.62)	(2.53)	(12.63)
8. Nonaccrual loans / gross loans, lagged 1 year	0.24	-0.13	-0.110
	(1.95)	(1.36)	(1.86)
9. Nonaccrual loans / gross loans, lagged 2 years	0.06	0.07	0.00
	(0.50)	(1.22)	(0.09)
10. Allowance for loan and lease losses / gross loans, lagged 1 year	-0.45*	-0.18*	-0.18*
	(2.27)	(2.14)	(2.13)
11. Allowance for loan and lease losses / gross loans, lagged 2 years	0.15	-0.18*	-0.05
	(0.81)	(2.33)	(0.65)
12. Equity capital / assets, lagged 1 year	0.23	-0.01	-0.04
	(1.08)	(0.21)	(0.81)
13. Equity capital / assets, lagged 2 years	0.23	0.02	0.02
	(1.10)	(0.57)	(0.43)
14. Other 29 banks' average equity capital / assets	-1.29**	0.01	-0.30**
	(3.86)	(0.21)	(3.29)
15. Other 29 banks' average equity capital / assets, lagged 1 year	-0.06	-0.16*	0.28**
	(0.14)	(2.23)	(3.01)
16. Other 29 banks' average equity capital / assets, lagged 2 years	-0.88	-0.14	-0.11
	(1.58)	(1.15)	(1.10)
Number of observations	178	179	504
Number of banks	55	69	101
R-squared	0.62	0.62	0.53
F-statistic	11.66**	10.49**	28.92**

Absolute value of t-statistics in parentheses.
** denotes significance at the 1 percent level; * denotes significance at the 5 percent level.

[1] If an individual bank is large enough ("too big to fail," TBTF), regulators may relax standards in order to increase the chances of the bank's survival, to minimize disruptions to the bank's continuing deposit and credit operations, and to avoid closing a large bank during the regulators' tenure. TBTF may have applied during the 1980s in the U.S. to about a dozen banks. It is not clear how many (if any) banks TBTF applied to since then. TBTG may mean too big to cease operations or be liquidated. It need not preclude formal insolvency or a shotgun marriage to another institution. The 10th largest U.S. bank in 2001 was Sun Trust Bank (Atlanta, GA), which had about $100 billion in assets and 1.6% of all U.S. commercial bank assets.

[2] For allowances for loan losses and total equity capital, we included only the two lagged variables and not the unlagged variable.

[3] The results for charge-offs and provisions for loan losses are broadly similar across tables 3 and 4. Thus, we do not discuss them separately and refer to both as "reported bad loans."