

Pricing Bank Stocks: The Contribution of Bank Examinations

A growing number of commentators advocate enhancing the role of market discipline in the banking industry. They argue that if private sector stakeholders can discourage excessive risk-taking and encourage safe banking practices through the pricing of bank securities, then the extensive regulatory framework currently in place may be unnecessarily burdensome. In the wake of recent studies concluding that markets effectively demand risk premia on noninsured bank securities, the debate has intensified over whether we should place greater reliance on markets and less reliance on direct regulatory oversight. This study contributes to the debate by investigating the interaction between the market's pricing of bank equity securities and the regulatory examination process. It addresses the concern that reducing regulatory oversight may adversely affect the market's ability to price bank securities effectively.

Two recent papers provide evidence that market mechanisms can play a useful role in disciplining risk-taking by banks. Flannery and Sorescu (1996) show that prices of subordinated notes and debentures reflect specific risks of individual issuing banks, with asset quality and market leverage having significant effects on risk premia. Flannery, Kwan, and Nimalendran (1998) provide evidence suggesting that large banking firms are not overly difficult for market participants to value as compared with large nonbanking firms, and that market participants have rather good information about smaller banking firms in comparison to small nonbanking firms. Can we conclude from this evidence that market discipline could *substitute* for direct regulatory oversight?

The supervisory process now produces a generous amount of information that the market may use in its assessments of banking institutions. Studies have shown that bank examinations often uncover useful information that market participants value but discover for themselves only with a lag (Flannery and Houston 1999; Jordan, Peek, and Rosengren 1999; Berger, Davies, and Flannery 1998; and DeYoung,

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Flannery, Lang, and Sorescu 1998). Given the informationally opaque character of bank assets (Morgan 1998), supervisory oversight and the information it produces may be necessary for the accurate pricing of bank securities.

This study provides additional evidence on the issue by determining whether on-site bank exams produced valuable information during the early stages of New England's banking crisis in the late 1980s and early 1990s and whether stock market participants used this information. First, the study

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documents the value of the examination process during a crisis period. Given that the information obtained during on-site bank examinations may be particularly valuable during troubled times, when management may be reluctant to fully disclose bank problems, it will be useful to concentrate on a specific crisis episode. Second, the study also considers whether the bank examination process contributed to the market's ability to differentiate those New England banks that went on to fail from those that survived, a pattern documented in Jordan (1997).

This study finds that the supervisory process contributed to the market's assessment of New England banking institutions. Empirical evidence shows that the bank examination process often uncovered problems at New England banks. Financial performance measures for quarters when supervisors downgraded a bank depict a less healthy bank than performance measures associated with other quarters. Between 1988 and the first half of 1990, a total of 51 supervisory exams of 35 publicly traded New England banking institutions were undertaken, with 29 of the exams resulting in a downgrade in the supervisory rating of the examined institution.¹ For the 29 down-

¹ In this paper, a quarter in which a bank exam occurs is referred to as a "bank exam quarter." Similarly, a quarter in which a downgrade occurs is referred to as a "bank downgrade quarter."

grade quarters, reported financial performance measures were significantly different from the financial performance measures of non-downgrade quarters: Return on assets was significantly lower; the ratios of loan loss provisions and nonperforming loans to assets, and the change in the ratio of nonperforming loans to assets, were all significantly higher. These results hold even after controlling for the deterioration in the region's economic conditions during those quarters.

Moreover, empirical evidence shows that market participants find the financial disclosures associated with supervisory downgrades particularly useful for their pricing of bank equity securities. Since a firm's quarterly financial results generally are released to the public in the month following the end of a quarter, if exams produced useful information for market participants we would expect stock returns in quarters *after* supervisory downgrades to be significantly lower than those in other quarters. Conversely, if the poor performance measures associated with downgrades were due to a genuine deterioration of the bank's financial performance during the downgrade quarter, and if the market participants were simultaneously uncovering those problems, we would expect quarterly stock returns *during* exam quarters to be significantly lower than those in other quarters. The data support the first conjecture. Bank stock returns in the

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quarter *after* a downgrade were significantly more negative than in other quarters, whereas stock returns during the exam quarter when a downgrade occurred were not significantly different from those in other quarters. Thus, together the evidence suggests that the bank examination process contributed significantly to the market's understanding of financial problems at New England banks.

I. Supervisory Oversight and Market Discipline: A Brief Review of the Literature

Why do we rely so heavily on supervisory oversight of the banking industry? The rationale often cited for the extensive government oversight stems from the inherent instability of banking institutions, caused by the short-term nature of bank deposits and the informationally opaque character of bank assets.

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Deposit insurance helps alleviate the instability problem, but likely creates a moral hazard problem. With a system of deposit insurance, insured depositors lack the incentive to monitor and discipline managerial behavior. Such an environment provides management with the opportunity and the incentive to increase the risk profile of the bank.² In response, supervisory oversight tries to offset these adverse moral hazard problems. Supervisors may also have a role in monitoring systemic risk, in order to protect the smooth functioning of the financial system as a whole. The tendency of managers at any particular institution to ignore systemic concerns when making decisions for their firm provides further rationale for government oversight.

This oversight includes on-site bank exams. In addition to financial reports and public disclosures that supervisors continuously evaluate, periodic on-site bank exams are undertaken to obtain information

² In the literature, researchers use option pricing models to show the risk-taking incentives of deposit insurance. The deposit guarantee is modeled as a put option, giving the bank the right to "sell" its assets at a fixed price regardless of the true underlying value of the assets. What makes this put option unique is that bank shareholders receive it for a fixed price. Here, "fixed price" refers to the fact that the premium paid does not change with the level of risk taken by the bank. The value of this implicit put option increases with risk. Thus, if shareholders were able to optimally set bank policy to coincide with their preferences, the current fixed-price deposit insurance system would provide risk-taking incentives for shareholders.

regarding banks' financial condition and risk profiles. During on-site exams, supervisors can confirm the accuracy of information in published financial reports as well as compel insiders to reveal private information. Supervisors' access to confidential loan files and other private information plays an important role in their assessment of a bank's financial condition. Exams also provide supervisors with the opportunity to assess the adequacy of internal controls and risk management procedures.³ Supervisors have decided that these types of analyses require on-site exams, apparently because of a perception that the nature of a bank's business, with its resulting informationally opaque assets, makes off-site monitoring difficult and unreliable. If this is true, on-site bank exams may put supervisors at a comparative advantage over outside stakeholders in evaluating banks.

Several recent studies have challenged the view that outside stakeholders have difficulty effectively evaluating banks, and they call for an increased role for market discipline in the banking industry. For example, Flannery and Sorescu (1996), investigating whether market prices for bank debt reflect the issuing bank's default risk, find that the markets do demand risk premia for banks with poor asset quality and high leverage. They also show that debt-holders demanded higher premia starting in 1989, a time coincident with a change in the government's policy toward absorbing private losses in the event of a bank failure. The authors conclude that their evidence "soundly rejects the hypothesis that investors cannot rationally differentiate among the risks undertaken by the major U.S. banking firms" (Flannery and Sorescu 1996, p. 1347).

In Flannery, Kwan, and Nimalendran (1998) the question pursued is whether banks are truly more opaque than other firms. The authors' empirical tests focus on the market microstructure of banks' equity, examining trading volume, volatility, and the portion of the bid-ask spreads on stocks that compensates market makers for the risk of trading with informed parties. Their conjecture is that if banks are truly more opaque than nonfinancial firms, their trading properties will be much different from those of nonfinancial firms. In fact, they find that for large banks, trading properties are very similar to those of large nonbanking firms with matched characteristics. From this they conclude that large banking firms are not overly difficult for investors to value. They also find that

³ See Hirtle and Lopez (1998) for more information on the examination process and on the value of information discovered during exams.

small banks have bid-ask spreads very similar to those of their size-matched nonfinancial firms, despite having their shares trade much less frequently. They conclude that market investors have rather good information about smaller banking firms.

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In contrast, Morgan (1998) finds evidence that banks may be more opaque than non-banking institutions. He tests for differences in the ability of outside monitors to judge risk at banks compared with other types of firms by examining how often a difference in opinion occurs between Moody's and Standard & Poor's rating agencies. He posits that if banks are inherently more opaque than other firms, a split in the agencies' ratings would be more likely. Morgan finds that the ratings of the two agencies have tended to differ more for bank holding companies than for other firms of comparable size and risk. He also finds that a split rating is more likely for banks that hold a higher proportion of their assets as loans. These findings suggest that the informationally opaque nature of banks' assets may inhibit the ability of outside monitors to assess banking firms effectively.

A related literature has compared market and supervisory assessments of bank performance. Berger, Davies, and Flannery (1998) employ Granger-causality tests to compare the relative timeliness of government supervisors' and market participants' assessments of banks, to see if either group uses some relevant information before the other. They find that bond rating agencies and supervisors each regularly discover relevant information that is only subsequently incorporated into the other group's assessments. The relationship between stock market participants' and supervisors' discovery of information is weak. However, in terms of predicting future performance, the authors find that supervisory assessments following recent bank exams contribute substantially to forecast-

ing future bank performance and often exceed the contribution of the market's assessment.⁴

A study by DeYoung, Flannery, Lang, and Sorescu (1998) examines whether private information uncovered in bank exams is incorporated in the pricing of bank subordinated debt. They find that examiner assessments contain relevant information about bank condition that is not fully incorporated in the pricing of subordinated debt at the time of the exam, but is incorporated in subsequent quarters. They also find that when examiners uncover "bad" information in an exam, the information generally does not become public until subsequent quarters, while "good" information generally finds its way to the market quickly. This evidence supports the hypothesis that managers tend to disclose good news but attempt to hide bad news, suggesting that the value of bank exams may be greatest in times of banking crises.⁵

The existing literature is helpful in documenting the average ability of market participants and supervisors to assess bank performance over several time periods, including periods of prosperity as well as those of crisis. Because supervisory exams may be most valuable in troubled times, this study contributes to the literature by documenting whether supervisors' assessments contributed to the market's understanding of banking problems during a specific crisis episode. New England's declining real estate market in the late 1980s and early 1990s, and differences in the timing of bank exams (documented below), together provide a valuable experience by which to evaluate the potential effect of the bank examination process on the market's assessment of banks.

II. The Data and Sample Selection

Data for a cross-section of publicly traded New England bank holding companies operating in 1988 were collected for the years 1988 through the first half of 1990. This time period was chosen because it isolates the "problem recognition" period of the New England banking crisis. By the second half of 1990,

⁴ Berger and Davies (1994) and Simons and Cross (1991) also provide supporting evidence that at times supervisors uncover valuable information on a more timely basis than market participants.

⁵ A case study by Peek and Rosengren (1997) examines the ability of outside monitors and bank examiners to uncover problems at Bank of New England Corp., a BHC that failed in early 1991. They conclude that bank examiners had much more timely information than outside monitors in uncovering problems at this bank.

stock prices and supervisory ratings had reached or were very near their lows, and the banks' problems were generally recognized. The data were obtained from three sources: the Center for Research in Security Prices (CRSP), the Consolidated Reports of Condition and Income for Banks (Call Reports), and the Board of Governors of the Federal Reserve System's Consolidated Financial Statements for Bank Holding Companies (Y9 Reports).

The analysis examines bank holding companies, not individual banks. A bank holding company (BHC) is a parent corporation that has controlling interest in one or more commercial banks and often has controlling interest in nonbank financial subsidiaries as well. It is the most common type of organizational structure in the industry; virtually all large banks have an affiliation with a BHC. The analysis focuses on the holding company because market data are available only at the holding company level for banks within a holding company structure. Sample selection was based on the following criteria. First, the BHC must have filed a Y9 Report in March 1988 (BHCs with total consolidated assets of \$150 million or more or with more than one subsidiary bank are required to file this report). Second, a BHC was included if CRSP data were available for 1988. Finally, the BHC headquarters must be located in the First Federal Reserve District.⁶

The final criterion for sample selection was based on the acquisition status of a BHC. A BHC was included only if it was not acquired by another institution in the sample period. The purpose of this study is to evaluate the market's ability to uncover problems at banking institutions and to incorporate this information into the pricing of their stocks. Including institutions that were acquired could yield misleading results, since the stock prices of acquisition targets may be reacting to factors other than the current financial standing of the firm. "Acquisitions" here do not include institutions that essentially fail but instead are acquired by another bank with the assistance of the FDIC. In this analysis, such assisted acquisitions are considered failures. The final sample

⁶ For expositional convenience, this study will often refer to bank holding companies as "banks," even though technically a distinct difference exists between the two.

⁷ One bank holding company, State Street Corporation, met all data requirements but was excluded from the sample. State Street's primary business is trust and custodial services and thus it had minimal exposure to New England's real estate market. Since the study is assessing supervisors' and market participants' ability to determine a bank's exposure to the region's real estate market, State Street is excluded.

selection yielded 35 bank holding companies.⁷ Of these 35 institutions, 15 had failed while 20 were still in operation.

III. Empirical Findings

Pricing New England Bank Stocks

Jordan (1997) documents the stock market pricing of these 35 New England BHCs between 1988 and 1994. All banks in the sample experienced large declines in their share price during this period. Fifteen banks failed, resulting in a share price return of -100 percent. Of the remaining 20 banks, 90 percent lost at least 50 percent of their value by 1991. The timing of the price decline varied considerably. About 60 percent of the banks began experiencing price declines by mid 1988; however, this number did not increase significantly until mid 1989. By September of 1989, the share prices of all banks were declining. Virtually all banks that went on to fail experienced price declines by mid 1988. The majority of institutions that survived did not experience price declines until mid 1989.

Figure 1 compares the market value of a portfolio of stocks of banks that went on to fail with that of a portfolio of stocks of banks that survived. The divergence in the value of the portfolio of banks that failed

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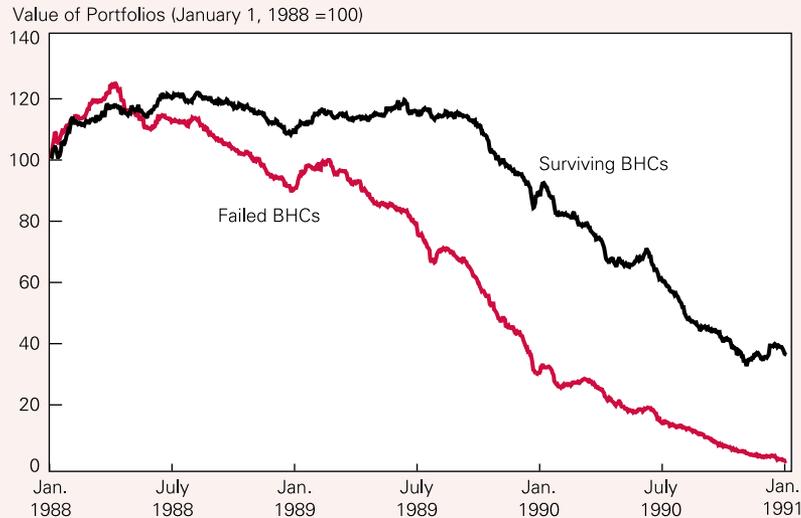
from the value of the portfolio of surviving banks suggests that market participants correctly assessed the relative exposures of New England banks to the region's deteriorating economy. The banks that later failed suffered share price declines well before the banks that went on to survive.

Supervisory Ratings of New England Banks

Supervisors were also evaluating the banks during this period. The supervisory rating system, then known as CAMEL, rates a bank's capital adequacy and the quality of its assets, management, earnings,

Figure 1

Market Value of New England BHCs

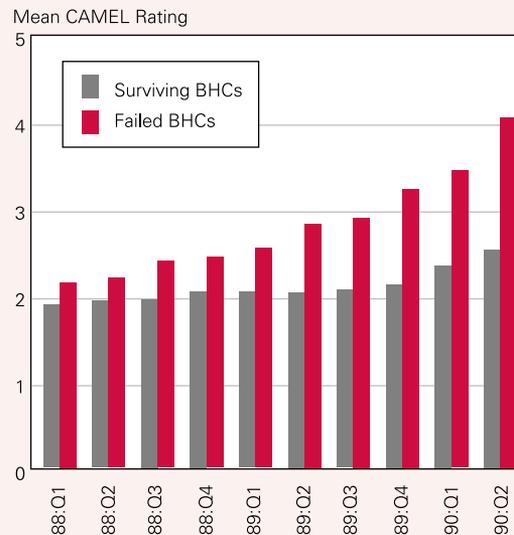


and liquidity. The ratings range from one, indicating that the bank is sound in every respect, to five, indicating that the bank's performance is critically deficient and that it has a very high probability of failure.⁸ Since the stock price analysis above focuses on the holding company, a consolidated BHC CAMEL rating was calculated for each bank holding company. This consolidated rating is the weighted average of CAMEL ratings for all banks within a holding company, with the weights determined by the proportion of total holding company bank assets held by each subsidiary bank. This calculation was made for each bank holding company from the first quarter of 1988 through the second quarter of 1990. Figure 2 shows the

⁸ Recently, supervisors started rating banks' sensitivity to market risk. The rating system has subsequently been referred to as CAMELS, the "S" standing for sensitivity. In addition to the CAMEL system, there is also a supervisory rating system for the holding company known as BOPEC. The BOPEC rating system is similar to the CAMEL system but also considers the financial condition of nonbank subsidiaries of the holding company. Unfortunately, BOPEC ratings were not available for this analysis. Given that the troubles at the BHCs in this sample came predominantly from the bank subsidiaries, concentrating on CAMELs rather than BOPECs is not likely to be a concern. The two ratings likely tracked each other closely over the sample period.

Figure 2

CAMEL Ratings of New England BHCs



average CAMEL ratings over this period for the group of surviving BHCs and the group of BHCs that failed.

The results show that supervisors started differentiating those institutions that would go on to fail from those that would survive sometime in 1988, as did market participants. The mean CAMEL rating for BHCs that fail increases each quarter starting in early 1988 and exceeds a rating of three by the fourth quarter of 1989. In contrast, the mean CAMEL rating for banks that survive is similar at the beginning of 1988 and at the end of 1989. This suggests that supervisors were generally able to assess which banks had the greatest exposure to the region's deteriorating economy.

Bank Examinations

Since on-site bank exams are an integral part of the process through which supervisors assess bank health, the exam schedule for the 35 BHCs in the sample was examined. The analysis considers on-site exams of subsidiary banks of the holding company and not exams at the holding company itself, in a manner similar to the consolidated CAMEL rating constructed for each BHC. A BHC is considered examined in a quarter if at least one subsidiary bank is examined and the sum of the examined subsidiary banks' assets is at least 33 percent of the total banking assets for the BHC. Likewise, a BHC is considered to have been downgraded if the consolidated BHC CAMEL rating falls by at least 0.33 points. That is, a BHC downgrade corresponds to at least one-third of a BHC's banking assets being downgraded by one grade. Table 1 provides a summary of the examination schedule and shows the frequency of supervisory downgrades for the 35 BHCs in this sample.

Table 1 shows 51 on-site exams from the first quarter of 1988 through the second quarter of 1990.⁹ This translates into each BHC being examined, on average, about once every six quarters. The actual exam schedule reveals that all BHCs in the sample were examined at least once, with many examined twice during the sample period. Table 1 also shows

⁹ In the analysis below, exam-quarter financial statements and stock prices are compared with post-exam-quarter financial statements and stock prices. Because of this direct comparison of data in exam-quarters with data in post-exam-quarters, for BHCs that had exams in consecutive quarters and thus had a "mixing" of exam and post-exam-quarter data, those particular exams were dropped from the sample. Four exams were affected. Including these four exams did not materially change the results presented below, but they were excluded from the reported results so that there would be a "clean" comparison of exam and non-exam quarters.

Table 1
Frequency of Bank Examinations and Rating Downgrades at 35 New England BHCs, 1988:Q1 to 1990:Q2

Quarter	Number of Exams	Number of Downgrades
1988		
1st quarter	7	2
2nd quarter	3	2
3rd quarter	7	2
4th quarter	5	3
1989		
1st quarter	6	3
2nd quarter	6	4
3rd quarter	4	1
4th quarter	3	2
1990		
1st quarter	5	5
2nd quarter	5	5
Total	51	29

that 29 supervisory downgrades were associated with these exams. Because only a small percentage of BHCs underwent on-site exams in each quarter, because the typical BHC was examined only twice during the sample period, and because only about one-half of the exams resulted in supervisory downgrades, the New England banking crisis provides an ideal setting for an empirical test of whether bank exams contributed to the market's understanding of banking problems.

Bank Exams and Reported Financial Performance Measures

This part of the analysis compares the characteristics of reported financial performance measures (return on assets (ROA), loan loss provisioning, and nonperforming loans) during exam quarters with those in non-exam quarters. If managers tend to avoid disclosing adverse information about their bank, the examination process can contribute to the market's understanding of banking problems by requiring banks to file financial reports that better represent the firm's financial standing. Supervisory ratings are highly confidential, so if the examination process is to aid private sector assessments of banks, it must affect publicly disclosed financial reports.

Determining the reported quarterly value of each

of these performance measures involves some managerial discretion. Loan loss reserves should equal the present discounted value of expected future losses to the loan portfolio. A particular quarter's loan loss provision, therefore, should represent the change in management's expectations of future loan losses. Whether the reported loan loss provision fully reflects this change in expected loan losses is left to management's discretion. Likewise, to the extent that loan loss provisions affect net income, reported ROA also involves managerial discretion. The classification of loans as nonperforming (loans that are nonaccruing or those that are past due) can also involve managerial discretion. An example is the construction loan that requires no payments in the early part of the loan's life, a common type of loan in New England in the late 1980s. For these loans, even if management determined that a particular loan had little or no chance of being repaid, management still had discretion over when to classify the loan as nonperforming, since the loan was not technically in arrears until the first required payment was missed. Thus, if managers were reluctant to disclose the full extent of their bank's problems, their ability to manipulate accounting performance measures may have provided them with the means to hide such problems.

Supervisory ratings are highly confidential, so if the examination process is to aid private sector assessments of banks, it must affect publicly disclosed financial reports.

In contrast, if banks willingly disclosed their problems on a timely basis, one would *not* expect BHC performance measures to be systematically related to the examination process. That is, one would not expect to see discrete jumps in performance measures during exam quarters, since bank exams were not concentrated in any particular time period. (Table 1 showed that only about 15 percent of the sampled BHCs were examined in each quarter.) Rather, discrete jumps should occur in periods when the economy experienced significant deterioration, and these jumps

should be observed across many banks. Evidence in Tables 2, 3, and 4 below suggests otherwise.

Table 2 presents accounting performance measures for the 35 New England BHCs for the 51 exam quarters listed in Table 1. It compares the means of the reported performance measures for these exam quarters to the means for the subsequent post-exam quarters and to the means of all remaining quarters. There are 51 exam quarters, 51 post-exam quarters, and 229

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remaining quarters.¹⁰ The analysis considers ROA and the change from the previous quarter in ROA; the ratio of loan loss provisions to assets and the change in this ratio from the previous quarter; the ratio of nonperforming loans to assets and the change in this ratio from the previous quarter.

Panel A of Table 2 shows that the average reported ROA for exam quarters is lower than the mean values reported by the 35 BHCs during the non-exam, non-post-exam quarters. The average reported ratios of loan loss provisions and nonperforming loans to assets, and the change in the ratio of nonperforming

¹⁰ This analysis focuses on on-site bank exams between 1988:Q1 and 1990:Q2. In order to compare all exam-quarter financial data with post-exam financial data, 1990:Q3 is also included. Therefore, with 35 BHCs over 11 quarters, 385 BHC quarterly observations are possible. However, the total sample size for this analysis is 331 observations (51 + 51 + 229). The difference between the two, 54 observations, is caused by the sample selection criteria. The criteria are as follows: First, because the analysis compares stock market participants' and supervisors' ability to "uncover" problems at these banks, once the data showed that it was obvious that both parties were well aware of a bank's problems (banks with a supervisory rating of 4 or 5 and a stock price below two dollars a share), the bank was dropped from the sample. Thus, some quarterly BHC observations were dropped from the sample starting in 1990. Second, because the analysis links each exam quarter with a post-exam quarter, BHCs that had exams in 1990:Q3 were dropped from the sample in that quarter, as were BHCs in 1988:Q1 that had exams in 1987:Q4. Finally, a few BHCs failed prior to 1990:Q3 and thus do not appear for the full 11 quarters.

Table 2

Accounting Performance Measures as They Relate to Bank Examinations and Rating Downgrades at 35 New England BHCs, 1988:Q1 to 1990:Q3

	Mean Ratios			Test Statistics	
	[A]	[B]	[C]	[D]	[E]
	Non-Exam, Non-Post-Exam Quarters	Exam Quarters	Post-Exam Quarters	t-statistics for difference between [A] and [B]	t-statistics for difference between [A] and [C]
Panel A: Exam, Post-Exam, and Remaining Quarters					
Return on Assets (%)	-.13	-.16	-.25	.21	.70
Change in Return on Assets (Δ in %)	-.12	.13	-.08	-1.14	-.20
Loan Loss Provisions/Assets (%)	.37	.44	.44	-.52	-.51
Change in Loan Loss Provisions/Assets (Δ in %)	.09	-.06	.00	.88	.56
Nonperforming Loans/Assets (%)	3.31	3.70	4.24	-.69	-1.58
Change in Nonperforming Loans/Assets (Δ in %)	.26	.70	.53	-1.63	-1.00
Number of Observations	229	51	51		
	Mean Ratios			Test Statistics	
	[A]	[B]	[C]	[D]	[E]
	Non-Downgrade, Non-Post- Downgrade Quarters	Downgrade Quarters	Post-Downgrade Quarters	t-statistics for difference between [A] and [B]	t-statistics for difference between [A] and [C]
Panel B: Downgrade, Post-Downgrade and Remaining Quarters					
Return on Assets (%)	-.09	-.46*	-.42	1.77	1.60
Change in Return on Assets (Δ in %)	-.12	.17	.04	-1.07	-.58
Loan Loss Provisions/Assets (%)	.36	.63*	.53	-1.79	-1.10
Change in Loan Loss Provisions/Assets (Δ in %)	.09	-.13	-.11	1.01	.97
Nonperforming Loans/Assets (%)	3.28	4.43	4.84**	-1.64	-2.16
Change in Nonperforming Loans/Assets (Δ in %)	.29	1.08**	.41	-2.44	-.36
Number of Observations	273	29	29		

*Significantly different from the mean in column [A], at the 10 percent level.

**Significantly different from the mean in column [A], at the 5 percent level.

loans to assets, are slightly higher than the mean values reported by the 35 BHCs during non-exam, non-post-exam quarters. However, these differences are not statistically significant. Similarly, post-exam financial performance variables are slightly below that of the non-exam, non-post-exam quarters, but these differences too are not statistically significant.

The results in Panel B of Table 2 are more striking. Instead of examining all 51 exam quarters, it focuses on those exams that resulted in a supervisory rating downgrade. That is, it isolates those exams where supervisors uncovered information that altered their assessment of the bank. For those exams, the average reported ROA (-0.46 percent) is significantly lower than the average value of -0.09 percent reported by the 35 BHCs during the remaining non-downgrade, non-post-downgrade quarters. The average ratio of loan loss provisions to assets is 0.63 percent in down-

grade quarters, while in other quarters it averages 0.36 percent. Finally, a stark difference can be seen between the change in the ratio of nonperforming loans to assets during downgrade quarters and the mean values reported for other quarters (1.08 percent versus 0.29 percent, significantly different at the 5 percent level). Post-downgrade financial performance variables were not significantly different than non-downgrade, non-post-downgrade quarters with the exception of the ratio of nonperforming loans to assets. This difference apparently stems from the large change in nonperforming loans that occurred when the bank was downgraded in the previous quarter.

A concern may arise that the findings in Table 2 are simply capturing deterioration in the region's economy. The poorer performance measures associated with downgrades versus the remaining quarters could be a reflection of downgrades coming when the

region's economy is in worse shape. However, there is evidence suggesting that the general deterioration of New England's economy is not driving the patterns observed in Table 2. First, Table 1 shows that downgrades occur continuously through the sample period, with at least one BHC receiving a downgrade in every quarter. Nine downgrades occurred in 1988, 10 in 1989, and 10 in the first half of 1990. Thus, downgrades generally are not concentrated in any particular period, so poor economic conditions in any one period are not driving the results in Table 2.

Second, regression analysis presented in Table 3 provides additional evidence against "deterioration of the region's economy" as the sole explanation for accounting performance measures being significantly different in downgrade quarters than in other quarters. This analysis attempts to separate the "exam" effect from the "deteriorating economy" effect. To do so, quarterly performance measures are regressed on two sets of dummy variables. The first set of dummy variables identifies exam quarters, those with downgrades as well as those without downgrades. The second set of dummy variables includes quarterly time-period dummies. The time-period dummies attempt to control for economic conditions in each quarter, leaving the coefficient on the exam dummy variables as an estimate of the "exam effect." Three different accounting performance measures are used as dependent variables: ROA, the ratio of loan loss provisions to assets, and the change in the ratio of nonperforming loans to assets. These three measures

Table 3
Regression Analysis
The Effect of Bank Examinations on Accounting Performance Measures, Controlling for Time-Period Effects at 35 New England BHCs, 1988:Q1 to 1990:Q3

Independent Variables:	Dependent Variables		
	Return on Assets	Loan Loss Provisions/Assets	Change in Nonperforming Loans/Assets
Exam-Quarter Dummies			
Exams without rating downgrade	.18 (.83)	-.09 (-.54)	-.37 (-1.18)
Exams with rating downgrade	-.31 (-1.60)	.26* (1.77)	.63** (2.32)
Time-Period Dummies			
1988:Q1	.33 (1.75)	.05 (.32)	-.01 (-.05)
1988:Q2	.26 (1.56)	.09 (.67)	.41* (1.74)
1988:Q3	.24 (1.44)	.15 (1.16)	.47** (1.97)
1988:Q4	.07 (.42)	.28** (2.22)	.49** (2.11)
1989:Q1	.13 (.78)	.23* (1.78)	-.04 (-.16)
1989:Q2	-.54** (-3.18)	.71** (5.39)	1.40** (5.85)
1989:Q3	-.27 (-1.58)	.43** (3.28)	1.18** (4.95)
1989:Q4	-1.05** (-6.00)	1.09** (8.12)	1.24** (5.08)
1990:Q1	-.14 (-.77)	.32** (2.20)	-.07 (-.26)
1990:Q2	-.27 (-1.37)	.34** (2.21)	.25 (.88)
1990:Q3	-.57** (-2.41)	.56** (3.11)	-3.69** (-11.21)
Number of Observations	331	331	331
Adjusted R ²	.15	.29	.41
F-value	5.62	11.49	18.19
Significance of F-value	.00	.00	.00

t-statistics in parentheses.

*Significantly different from zero at the 10 percent level.

**Significantly different from zero at the 5 percent level.

were shown in Table 2 to be significantly different in downgrade quarters than in other quarters.

Table 3 shows that for each of these regressions, coefficients on several of the time-period dummies are significant. The second and fourth quarters of 1989 stand out as particularly difficult quarters for New England banks; the coefficients on these time-period

dummies are significantly negative in the ROA regression, and significantly positive in the loan loss provision regression as well as the change in nonperforming loans regression. These results imply that during certain quarters, the deterioration in economic conditions affected performance measures across many banks. However, even after controlling for these time period effects, the coefficient on the dummy variable for exams with a supervisory downgrade is significant in both the loan loss provision regression (at the 10 percent level) and the change in nonperforming loans regression (at the 5 percent level). These results suggest that the deteriorating regional economy was not the sole explanation for significantly worse performance measures during a downgrade quarter.

Another possible explanation for the patterns shown in Table 2 is that the banks that received downgrades during the sample period were the most troubled banks, and thus their performance measures should generally be worse than those for the relatively healthy firms that were not downgraded.

Comparing performance measures of troubled institutions in their downgrade quarter with performance measures of both troubled and relatively healthy banks in non-downgrade quarters might result in patterns similar to those in Table 2, even if examiners were not requiring management to disclose a more accurate representation of the banks' financial standing. To address this concern, a "within-bank" analysis is used instead of a cross-sectional analysis like the one presented in Table 2. A "within-bank" analysis compares the performance measure of a particular bank in a particular quarter with the average perfor-

Table 4
"Within-Bank" Adjusted^a Accounting Performance Measures for 51 Exam Quarters and 51 Post-Exam Quarters at 35 New England BHCs, 1988:Q1 to 1990:Q3

Panel A: Exam and Post-Exam Quarters (N = 51) "Within-Bank" Adjusted Ratios	Mean Ratios (t-statistics in parentheses)	
	Exam Quarters	Post-Exam Quarters
Return on Assets	.26** (2.83)	.19** (2.02)
Change in Return on Assets	.23 (1.51)	.02 (.16)
Provisions/Assets	-.07 (-.97)	-.07 (-1.09)
Change in Provisions/Assets	-.10 (-1.78)	-.04 (-.40)
Nonperforming Loans/Assets	.59 (1.74)	1.13** (3.06)
Change in Nonperforming Loans/Assets	.53** (2.82)	.37 (1.59)

Panel B: Downgrade and Post-Downgrade Quarters (N = 29) "Within-Bank" Adjusted Ratios	Mean Ratios (t-statistics in parentheses)	
	Downgrade Quarters	Post-Downgrade Quarters
Return on Assets	.05 (.42)	.09 (.68)
Change in Return on Assets	.28 (1.13)	.14 (.70)
Provisions/Assets	.09 (.87)	-.02 (-.21)
Change in Provisions/Assets	-.17 (-1.77)	-.15 (-1.96)
Nonperforming Loans/Assets	1.20** (2.39)	1.61** (3.01)
Change in Nonperforming Loans/Assets	.92** (3.31)	.24 (.64)

^a"Within-bank" adjusted ratios are calculated as a particular bank's quarterly ratio less the mean ratio for that bank over the entire sample period.

**Significantly different from zero, at the 5 percent level.

mance measure reported by that bank during the entire sample period. This analysis allows us to determine whether the reported performance measures of a particular BHC that was just examined differ significantly from the average reported performance measures for that BHC during the sample period.

The results of this "within-bank" analysis are presented in Table 4. For exam quarters, the ratio of nonperforming loans to assets was 0.59 percentage points higher than the average level for these banks. The change in this ratio shows a similar pattern, with banks experiencing a large and statistically significant

jump during their exam quarter. If we isolate those exams where a supervisory downgrade was issued, the reported ratio of nonperforming loans to assets in the downgrade quarters was 1.20 percentage points higher than the bank average for the sample period, and the change in this ratio was 0.92 percentage points higher. Both measures are significantly different from zero at the 5 percent level. Looking at the post-exam and post-downgrade quarters, only the ratio of nonperforming loans to assets is significantly different

Bank holding company performance measures were significantly worse during quarters when an exam was in progress that resulted in a supervisory downgrade, in comparison to all other quarters.

from zero; but as was the case in Table 2, much of this difference apparently stems from the large change in nonperforming loans that occurred when the bank was downgraded in the previous quarter.

Together, Tables 2, 3, and 4 provide evidence that reported BHC performance measures were significantly worse during quarters when an exam was in progress that resulted in a supervisory downgrade, in comparison to all other quarters. This evidence strongly suggests that banks deferred the realization of problems until bank examiners pressured management to disclose them in their financial reports.¹¹ The only other explanation for the patterns shown in these tables, given that the supervisory exams were *not* concentrated in any particular time period, would be that the deteriorating New England real estate market

¹¹ Another interpretation could be that examiners uncovered problems management itself did not know existed. However, evidence by Jordan (1998) suggests *ex ante* managerial policies regarding the riskiness of their loan portfolios were a significant determinant of loan problems during the crisis. Evidence by Jordan (1997) also shows that insiders at surviving banks tended to purchase shares in their own firms in the midst of this crisis when their share prices were very low, whereas insiders at failing banks generally abstained from such purchases, suggesting that bank managers were likely aware of their financial standing during the crisis.

affected BHCs at different times during the sample period, and that the time when a particular BHC was affected by the deteriorating economy coincided with the periods when that BHC was examined—an unlikely scenario.

Bank Exams and the Pricing of Bank Stocks

Determining whether a significant deterioration in stock market valuations occurred during the downgrade quarters will provide an additional check on whether the poor performance measures associated with downgrade quarters is the result of an actual deterioration of financial health during that specific exam quarter. If market participants can accurately identify problems independent of disclosed performance measures, we would expect the market to simultaneously uncover problems at the BHCs that supervisors downgraded. Thus, under such a scenario, we would expect abnormal stock price reactions in the quarters when there were downgrades.

If banks' financial statements are an important source of the information that market participants use when evaluating banks, the reported performance measures coming out of an exam should have a major impact on market valuations. One would expect stock returns in the quarter *after* a supervisory downgrade to be significantly lower than in other quarters, since a firm's quarterly financial results generally are released to the public in the month following the end of a quarter. Alternatively, if market participants are able to identify a BHC's problems independent of the BHC's reported financial data, the financial performance data released after a supervisory downgrade would not be expected to result in abnormal stock price performance.

To examine these hypotheses, quarterly stock returns are examined for exam quarters, post-exam quarters, and the remaining quarters, similar to the analysis reported in Table 2 for accounting performance measures. In addition to the raw return, an excess return is also calculated, the return on a firm's shares relative to some benchmark return. For this analysis, the benchmark is the return on a New England BHC index, which consists of an equal weighting of the returns of the 35 BHCs in this study's sample. This excess return, calculated as the raw return less the benchmark, isolates the idiosyncratic component of banks' returns by controlling for a general deterioration in economic conditions in New England that affects all of the region's banks. That is, an excess return indicates that the market has been

Table 5

Quarterly Stock Returns as They Relate to Bank Examinations and Ratings Downgrades at 35 New England BHCs, 1988:Q1 to 1990:Q3

	Mean Returns			Test Statistics	
	[A] Non-Exam, Non-Post-Exam Quarters	[B] Exam Quarter	[C] Post-Exam Quarter	[D] t-statistics for difference between [A] and [B]	[E] t-statistics for difference between [A] and [C]
Panel A: Exam, Post-Exam, and Remaining Quarters					
Actual Return (%)	-7.51	-6.31	-15.15**	-.37	2.43
Excess Return (%)	.04	-1.40	-3.58	.76	1.66
Number of Observations	229	51	51		

	Mean Returns			Test Statistics	
	[A] Non-Downgrade, Non-Post- Downgrade Quarters	[B] Downgrade Quarter	[C] Post-Downgrade Quarter	[D] t-statistics for difference between [A] and [B]	[E] t-statistics for difference between [A] and [C]
Panel B: Downgrade, Post-Downgrade, and Remaining Quarters					
Actual Return (%)	-6.83	-10.75	-22.01**	.99	3.90
Excess Return (%)	.48	-1.99	-8.42**	.85	3.05
Number of Observations	273	29	29		

**Significantly different from the mean in column [A], at the 5 percent level.

able to distinguish the bank's performance from that of the typical bank in the region.

As shown in panel A of Table 5, the mean stock return in exam quarters was similar to that of the remaining quarters. The mean exam-quarter return was -6.31 percent while non-exam, non-post-exam quarters had a mean of -7.51 percent. In contrast, post-exam-quarter stock returns were significantly below those of all other quarters. The mean return was -15.15 percent, significantly different from the mean for non-exam, non-post-exam quarters. Excess returns show a similar pattern; however, the mean post-exam return of -3.58 is only marginally significantly different from the mean excess return for non-exam, non-post-exam quarters of 0.04 percent.

Panel B of Table 5 isolates exams that resulted in downgrades. As was the case for accounting performance measures, the stock return results are much more striking for downgrades. Still, the mean downgrade-quarter return was not significantly lower than the return for non-downgrade, non-post-downgrade quarters, whether raw returns or excess returns are considered. Post-downgrade-quarter stock returns, however, were significantly lower (-22.01 percent vs.

-6.83 percent), as were excess returns (-8.42 percent vs. 0.48 percent).

A "within-bank" analysis was also done for stock returns, the concern being that the patterns shown in Table 5 might be the result of downgraded banks being significantly different from other banks throughout the sample period. Comparing stock returns between downgrade quarters and non-downgrade quarters then might reveal only that the most troubled institutions had lower stock returns over the entire sample period. To address this concern, a "within-bank" analysis compares the stock returns of a particular bank in a particular quarter with the average stock return for that bank during the entire sample period.

Were stock returns for BHCs that were examined significantly different from their average stock returns for the sample period? The results presented in Table 6 suggest that they were. Post-exam-quarter returns are 3.49 percentage points below the banks' average return over the entire sample period. When exams with downgrades are isolated, the post-downgrade-quarter returns are 9.42 percentage points below the average return for each bank, and excess returns are

4.81 percentage points below. Interestingly, exam-quarter stock returns and downgrade-quarter stock returns are actually higher than the average return for the BHCs over the sample period.

The evidence in Tables 5 and 6 suggests that banks' financial statements are an important source of the information that market participants use when evaluating banks. The reported performance measures coming out of an exam associated with a supervisory downgrade are particularly informative, with stock prices falling significantly in the quarter *after* a supervisory downgrade.

Bank examiners appear to have uncovered problems at banks that management was unwilling to disclose publicly, and market participants appear to have found this information useful, driving down stock prices in the quarter after the exam.

IV. Conclusions

Two findings in this paper provide strong evidence that the bank examination process contributed to the market's understanding of banking problems in New England in the late 1980s and early 1990s. First, bank examiners appear to have uncovered problems at banks that management was unwilling to disclose publicly, since accounting performance measures are significantly different in exam quarters that resulted in supervisory downgrades than they are in all other quarters. Second, market participants appear to find this information useful, driving down stock prices in the quarter *after* the exam, the period when the poor performance measures associated with the exam are generally disclosed. Interestingly, stock market participants are *not* simultaneously uncovering the specific problems discovered in the bank exam; no evidence was found of abnormal stock returns during the exam quarters.

These findings, however, should not be interpreted as a vote against an enhanced role for market

Table 6
"Within-Bank" Adjusted^a Stock Returns for 51 Exam Quarters and 51 Post-Exam Quarters at 35 New England BHCs, 1988:Q1 to 1990:Q3

	Mean Returns (t-statistics in parentheses)	
	Exam Quarter	Post-Exam Quarter
Panel A: Exam and Post- Exam Quarters (N = 51)		
Adjusted Return (%)	5.35* (1.84)	-3.49 (-1.33)
Adjusted Excess Return (%)	1.29 (.69)	-.89 (-.41)
	Mean Returns (t-statistics in parentheses)	
	Downgrade Quarter	Post-Downgrade Quarter
Panel B: Downgrade and Post-Downgrade Quarters (N = 29)		
Adjusted Return (%)	1.84 (1.51)	-9.42** (-2.77)
Adjusted Excess Return (%)	1.61 (.55)	-4.81* (-1.84)

^a"Within-bank" adjusted returns are calculated as a particular bank's quarterly return less the mean return for that bank over the entire sample period.

*Significantly different from zero, at the 10 percent level.

**Significantly different from zero, at the 5 percent level.

discipline in the banking industry. The findings of this paper support the conclusion that the supervisory examination process *contributes* to the market's valuations. However, firm-specific disclosures associated with bank exams are just one part of the valuation process. Market participants also monitor disclosures by competing firms, monitor the markets in which banks have significant exposure, and track macroeconomic conditions. Together, all of these sources of information can influence a bank's funding costs, credit lines, and share prices so that they reflect the bank's activities and prospects, providing a market mechanism through which excessive risk-taking and poor managerial decisions can be disciplined.

The results of this paper have several policy implications. In the absence of frequent bank exams, published financial statements may lack transparency, making it difficult for outside monitors to differentiate between healthy and troubled banks. Thus, it is im-

portant that policymakers understand the importance of the examination process and support a policy of routine bank examinations for all banks. A second implication is that disclosing the fact that a bank had been examined would likely be a useful piece of information for market participants. Currently this information is kept confidential. Publicly disclosing when a bank is examined, and thus when its financial statements were verified by an unbiased third party, would reduce uncertainty surrounding these pub-

lished reports. This would likely benefit relatively healthy banks, while encouraging enhanced discipline for the truly troubled institutions. Such a change in disclosure policy could lead to more accurate market valuations of banks and allow for a more efficient allocation of resources throughout the banking system. Finally, we should be cautious in considering market discipline as a *substitute* for regulatory oversight; the results of this paper suggest it should more appropriately be considered as a *complement*.

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