

The Market Reaction to the Disclosure of Supervisory Actions: Implications for Bank Transparency¹

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We examine the stock market reaction to announcements of formal supervisory actions. We find that the variation in the quality and timeliness of disclosure by U.S. banks explains much of the variation in the market's reactions. We also find that these announcements can cause spillover effects. However, rather than representing contagion, these spillover effects are consistent with enhanced transparency. Only banks in the same region as the announcing bank, with similar exposures, are affected. Thus, enhanced disclosure can improve the allocation of resources in the banking system. *Journal of Economic Literature* Classification Numbers: G21, G28. © 2000 Academic Press

International organizations routinely encourage countries to enhance bank disclosure in order to improve the transparency of their financial systems. However, many countries have been reluctant to adopt enhanced disclosure policies for fear

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that market reactions will prove to be destabilizing to specific banks and possibly to the financial system more broadly. Thus, given the current public policy debate regarding increasing bank disclosure, it is important to understand the relationship between bank disclosure and the market pricing of bank securities. In this paper, we use the announcement of formal supervisory enforcement actions by U.S. banks, which identifies those banks that supervisors believe require immediate remedial action in order to avoid failure, to provide empirical evidence on the relationship between bank disclosure and the market pricing of bank securities.

Specifically, we address three questions. First, how does the stock market react to announcements of formal supervisory actions? Second, is there significant cross-sectional variation in the quality and timeliness of disclosure by U.S. banks, and does the extent of disclosure prior to a formal action announcement affect the magnitude of the market reaction? Third, does the announcement of a formal enforcement action by one bank have spillover effects on other banks and, if so, what is the nature of that spillover?

The first part of our empirical analysis shows that stock market participants find the announcements of formal actions informative. On average, share prices decline 5% around these announcements, consistent with the findings of Slovin *et al.* (1999). Furthermore, we find considerable variation around this average, with one fourth of the banks announcing formal actions experiencing stock price declines in excess of 9% over a three-day window. For a country that is a leader in advocating enhanced transparency for banks and where banks have long been required to provide substantial detail on nonperforming loans, loan loss reserves, capital ratios, and on- and off-balance-sheet positions, it is surprising that formal action announcements would be viewed as being so informative that market participants would reduce the value of a bank by as much as 20%.

Our empirical analysis then examines the extent to which differences in bank disclosure policies can explain the variation across banks in the market reaction to formal action announcements. If banks disclose their financial condition in an accurate and timely manner, then a formal action announcement should result in little “news” and thus produce a minimal reaction by stock market participants. Alternatively, if banks have not continuously kept investors informed of their financial condition, one would expect a significant reaction to the announcement.

For the announcing bank, the market reaction to a formal action announcement, on average, could be negative for two reasons. First, the *information explanation* posits that the announcement of a formal action reveals new information about a bank’s financial condition that market participants were not able to ascertain from previous disclosures. An alternative (or additional) explanation, the *regulatory discipline explanation*, is that the negative response reflects the change in bank control associated with supervisory intervention that reduces the put option implicit in deposit insurance (Berger and Davies, 1998; Gilbert and Vaughan, 1998). In this paper, we are agnostic as to which of these two explanations causes the share price decline, but we argue that continuous, timely, and accurate disclosures by

banks would force the stock price reaction to formal action announcements toward zero.

If banks fully disclosed any material change in their financial condition as it became known to management, publicly available data would include all relevant information about the current financial condition of the bank, including the possibility of experiencing regulatory discipline. Despite the confidentiality of the supervisory process, it is no secret that supervisors have the authority to require remedial actions, such as those included in formal actions. If a bank has revealed to the market that it is severely financially distressed, the market should regard it as highly probable that the bank will undergo a supervisory intervention.² Thus, under either the information hypothesis or the regulatory discipline hypothesis, the formal action announcement would produce minimal, if any, stock price reaction.

Our empirical analysis shows that the variation in the quality and timeliness of disclosure by banks explains a significant portion of the variation in market reactions to formal action announcements. The magnitude of the three-day cumulative abnormal return is significantly related to the information regarding bank health that is publicly available at the time of the formal action announcement. In particular, market participants reacted most to announcements by those banks that failed to reveal the full extent of their problems prior to the announcement. That is, the differences across the set of banks receiving formal enforcement actions are greater with respect to the timing of the disclosure of their deteriorating health than to the extent of the deterioration itself. We find that those banks that appear to be relatively healthy, as of the formal action announcement date, appear to be much less healthy in subsequent disclosures. In fact, after these subsequent disclosures, the magnitude of the overall deterioration in the health of these banks over the two-year period surrounding the formal action announcement is quite similar to that for the relatively unhealthy banks in our sample that experienced minimal stock price reactions to their formal action announcements.

Finally, we also address the issue of whether these announcements cause spillover effects at nonannouncing banks. It is important to address this issue, since those who fear policies of enhanced disclosure cite contagion concerns as a reason for their failure to adopt such policies. Two types of spillover effects are possible. The first is blanket, indiscriminate contagion, where an announcement by one bank has widespread effects on other banks, regardless of the health or risk exposure of those banks. The second is an information-based spillover effect. In this case, to the extent that the announcing bank's problems may be reflective of the conditions of other banks that operate in the same environment, rather than being entirely

² Peek and Rosengren (1997) examine what factors trigger formal actions by supervisors. They find that the probability of receiving a formal action is strongly related to balance sheet variables that reflect bank health, such as capital ratios, past due loans, loan loss reserves, and other real estate owned (foreclosed property). These bank health variables do a good job of distinguishing between exam quarters that are associated with a bank receiving a formal action and exam quarters when the bank does not receive a formal action.

idiosyncratic, the announcement provides information to the market about other similarly-situated banks.

For each formal action announcement in our sample, we estimate cumulative abnormal returns for a sample of actively-traded banks operating in the same region as the announcing bank in order to examine spillover effects. We isolate surprise announcements (based on the magnitude of the abnormal return of the announcing bank) and announcements made in regions with a cluster of failures. We find that for most formal action announcements, no spillover effects occur. This is true even for those announcements that result in large share price declines for the announcing bank. However, contrary to Slovin *et al.* (1999), we find a case where an announcement causes a negative spillover effect. This spillover effect is associated with the first announcement in New England, a region in which a cluster of bank failures occurred. However, the evidence is not consistent with blanket, indiscriminate contagion; rather, it is consistent with information-based spillover. This type of spillover effect suggests that the announcement of formal actions enhanced transparency in the banking system.

I. BACKGROUND

Increased transparency, achieved through the disclosure of timely and accurate information, should enable a bank to access capital markets more efficiently. More broadly, market discipline based on this information should contribute to the efficient allocation of capital and provide incentives for banks to operate efficiently and to manage and control their risk exposures prudently (Flannery and Sorescu, 1996). In particular, increased transparency should reduce the magnitude and frequency of bank problems, insofar as enhanced disclosure allows market participants to impose market discipline earlier and more effectively.

These considerations encouraged the U.S. Congress to enact laws that require public announcements of formal enforcement actions.³ The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) required that the regulator publish and make available to the public any cease and desist orders signed after August 9, 1989. This was the first time that regulators systematically made available to the public enforcement actions against the most troubled banks.

A cease and desist order based on safety and soundness issues generally indicates a concern by supervisors that, unless actions are taken to correct serious problems related to unsafe and unsound practices, the bank will fail.⁴ Thus, these announcements reveal to the market an adverse supervisory evaluation of the bank.

³ Formal enforcement actions include cease and desist orders and written agreements. These are legally enforceable agreements between the bank regulator and bank management, with civil penalties for noncompliance.

⁴ Roughly one third of problem banks that receive a formal action from the FDIC fail (Curry *et al.*, 1997).

Furthermore, the conditions specified in cease and desist orders require banks to take certain actions that affect the values of variables such as earnings, provisions for loan loss reserves, and planned loan charge-offs that provide additional information to market participants.⁵

A potential loophole in FIRREA was that banks could negotiate for an alternative form of formal enforcement action, a written agreement, that was not included in the FIRREA disclosure requirements. This loophole was eliminated in an amendment to the Crime Control Act of 1990, which required that written agreements signed after November 29, 1990, also must be made publicly available. While these two laws require a public announcement by bank supervisors, some banks voluntarily announced their formal enforcement actions, as would be required by Securities and Exchange Commission regulations if a bank's legal staff judged the formal action to be material information. However, bank management had substantial latitude in determining what was material, so that some banks did try to avoid revealing publicly that they were subject to a formal action.⁶

The announcement of a formal action reveals to the public that bank supervisors believe that the financial institution is deeply troubled, requiring remedial action to deal with its financial problems. In addition, these announcements, in effect, reveal the likely confidential supervisory rating of the bank. Among the 2398 formal enforcement actions imposed by the FDIC for safety and soundness purposes from 1980 through 1995, 89% were imposed on banks with the two lowest supervisory ratings (Curry *et al.*, 1997).⁷ Prior to the public announcements of formal actions, market participants had to rely on publicly disclosed financials such as earnings, capital ratios, loan loss provisions, loan charge-offs, and classified problem loans, as well as statements by management and indicators of general

⁵ Cease and desist orders normally include specific recommendations for management actions to turn around the bank. They can include replacement of top management, approval of promotions and new hires for senior positions, greater oversight of management information systems, changes in reserving procedures, and greater control of credit risks. They often also include specific quantitative objectives to be met regarding capital ratios and nonperforming loans. The most common quantitative goal is for the bank to attain a specified capital ratio, which during the 1990s typically was a 6% leverage ratio (Peek and Rosengren, 1995).

⁶ For example, Bank of Boston announced in October 1989 that it was negotiating a written agreement, although the agreement had not yet been signed and the announcement was not required. In contrast, Bank of New England announced its written agreement only as a result of press inquiries following the Bank of Boston announcement. Bank of New England management defended their earlier actions by specifically stating that they did not view the written agreement as a material event.

⁷ Supervisory bank ratings (CAMELS) 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. The 89% figure is an understatement of the probability of a bank receiving a formal action based on safety and soundness considerations having one of the two lowest supervisory ratings, insofar as the formal actions at over one half of the banks with CAMEL 1 or 2 ratings dealt with the removal or suspension of officers and directors rather than with more general balance sheet problems (Curry *et al.*, 1997). Others were imposed on relatively healthy banks in an effort to prevent spillover effects from other unhealthy banks in the same holding company that received a formal action (Peek and Rosengren, 1995).

economic conditions, to assess both the financial condition of the bank and the likelihood that the bank had a low supervisory rating and thus faced supervisory intervention.

Now, however, by announcing formal actions, the bank is revealing to the public that remedial action has been required by supervisors and that the results of a confidential supervisory exam indicated a high potential of failure in the absence of substantial actions taken by bank management. The conditions imposed on banks by the formal action also are made public, highlighting both the specific problems that need to be addressed and the specific actions to be taken. This required announcement provides an opportunity to test whether disclosure policies of the announcing banks were adequate, so that market participants could assess the banks' financial condition and the probability of regulatory discipline, given the publicly available information prior to the formal action announcement.

II. THE EFFECTS OF FORMAL ACTION ANNOUNCEMENTS

To examine the effect of announcements of formal enforcement actions on the stock prices of banks, we created a file of all formal actions imposed on large banks (at least \$300 million in assets) during the 1989–94 period, based on information obtained from the Office of the Comptroller of the Currency, the Federal Reserve System, and the Federal Deposit Insurance Corporation. We used this size threshold because we are considering only banking organizations that are publicly traded, and banks in such organizations are generally much larger than \$300 million. We then identified the bank holding companies (BHCs) that own these banks, since it is the bank holding company that issues the stock. We used SNL Securities' *Quarterly Bank Digest* to reduce this set of bank holding companies to those that are publicly traded.

Normally, BHCs announce that one of their subsidiary banks will receive a formal action well before the regulator announces the formal action, since the regulator would announce the formal action only after it had been signed by all parties. To identify the first announcement date, we used the Dow Jones News Retrieval Service. This service includes articles from *The Wall Street Journal*, numerous regional newspapers, and several of the major wire services. After removing from our sample those BHCs for which the sum of the assets of the subsidiaries receiving a formal action accounts for less than 25% of the BHC's total assets (including nonbank subsidiaries), our sample included 49 BHCs for which we were able to identify announcement dates. Our sample was reduced to 41 when we eliminated those BHCs that had a contaminating event (for example, the disclosure of merger intentions) within the three-day window associated with the formal action announcement. Finally, we removed from our sample six of the remaining BHCs: four whose share prices had already fallen below \$2 per share by the event date,

and two that traded infrequently (trades occurring on less than half of the possible trading days).⁸ The remaining 35 BHCs were the focus of our empirical work.

To determine the impact of formal action announcements on the stock prices of disclosing BHCs, we consider the standard market model, as well as two versions of a two-factor model, when specifying a return-generating process for the BHCs. The first version of the two-factor model adds an equally weighted bank stock index to the standard market model. The second two-factor model specification replaces the bank stock index with a stock index for all banks operating in the same geographic region as the announcing BHC.⁹ These two-factor models are specified as:

$$r_{i,t} = \alpha + \beta_m r_{m,t} + \beta_{BI} r_{BI,t} + \varepsilon_{i,t}, \quad (1)$$

where $r_{i,t}$ is the simple with-dividend return to security i on day t , $r_{m,t}$ is the simple with-dividend return to the value-weighted portfolio of all New York Stock Exchange and American Stock Exchange stocks on day t , $r_{BI,t}$ is the simple with-dividend return to an equally weighted national portfolio of BHCs on day t or the simple with-dividend return to an equally weighted portfolio of BHCs in the event-BHC's region on day t , and $\varepsilon_{i,t}$ is the security-specific component of the return.

The two-factor model is estimated over one year of trading days, from 504 trading days before the announcement to 253 trading days before the announcement. We exclude the year prior to the announcement to avoid any contamination from the early disclosure of emerging problems by some of the banks. However, using a more traditional window of 262 trading days before the announcement to 11 trading days before the announcement does not qualitatively alter our results.¹⁰ We

⁸ These banks were deleted from our sample because the measured response to announcements might be misleading. With very low share prices, a movement between the bid and asked values alone could represent a substantial percentage change in the price, even if the event had little impact on the perceived fundamental value of the shares. Similarly, a change in the price of an infrequently traded stock in an event window might be contaminated by the response to other news that has accumulated since the last trade.

⁹ Both indices are constructed from SNLSecurities' listings of publicly traded BHCs. The daily bank stock index is constructed by averaging, using equal weighting, all individual BHC returns on a given day. The region-specific bank stock indexes are constructed similarly for each of the following census regions: New England, Middle Atlantic, South Atlantic, East North Central, East South Central, West North Central, West South Central, Mountain, and Pacific. A BHC's region is determined by the location of its headquarters at the time of the formal action announcement.

¹⁰ If the market model is estimated using data for the year immediately prior to the formal action announcement, it could be contaminated by the event we are investigating: whether the bank was disclosing its underlying problems prior to the formal action announcement. Thus, we exclude the year prior to the announcement for the same reason that one typically excludes a much shorter time period immediately prior to the event date, so that leakage of the event does not bias the estimates of the market model. To check the robustness of our results, we also estimate the market model using daily returns in the year prior to the formal action announcement (excluding the 10 days prior to the event). Using this alternative specification yields average CARs that are slightly less negative and standard errors that are slightly larger (t statistics are marginally less significant) than those presented in Table I. However, all average CARs remain statistically significant at the 1% level.

then calculate the cumulative abnormal return as the sum of the daily abnormal returns for the three-day event window from the day before (day = -1) to the day after (day = +1) the announcement, where the abnormal return is the estimated prediction error from the specified model. Specifically, the abnormal return (AR) and cumulative abnormal return (CAR) are calculated as follows:

$$AR_{i,\tau} = r_{i,\tau} - (\alpha + \beta_m r_{m,\tau} + \beta_{BI} r_{BI,\tau}) \quad (2)$$

$$CAR_i = \sum_{\tau=-1,0,1} AR_{i,\tau}. \quad (3)$$

Results

Panel A of Table I contains CARs for the 35 BHCs from the day before to the day after the announcement of a formal action. The table shows that equity market participants do react to the announcement that the bank has (or will soon have) a formal action imposed by regulators. Using the standard market model,

TABLE I
Stock Price Reaction to the Announcement of a Formal Action
Sample: 35 BHCs That Announce Receipt of a Formal Enforcement Action

	Mean (<i>t</i> statistic)	Median (Wilcoxon statistic)	25th percentile	75th percentile
Panel A: Three-day return, trading days -1 through +1				
Actual return	-0.0516	-0.0482	-0.0909	0.0000
Actual return—return on national bank index	-0.0527** (-6.14)	-0.0413** (-224.00)	-0.0926	-0.0066
Actual return—return on region- specific bank index	-0.0492** (-5.80)	-0.0420** (-223.00)	-0.0893	-0.0056
CAR from market model	-0.0497** (-5.74)	-0.0440** (-208.00)	-0.0862	0.0027
CAR from two-factor model (national bank index as the second factor)	-0.0495** (-5.86)	-0.0369** (-204.00)	-0.0873	-0.0012
CAR from two-factor model (region-specific bank index as the second factor)	-0.0452** (-5.39)	-0.0432** (-192.00)	-0.0870	-0.0028
Panel B: One-month holding period return, trading days -1 through +18				
Actual return	-0.0686	-0.0857	-0.1482	-0.0244
Actual return—market return	-0.0818** (-3.65)	-0.0868** (-210.00)	-0.1546	-0.0104
Actual return—return on national bank index	-0.0890** (-4.01)	-0.1055** (-212.00)	-0.1640	-0.0030
Actual return—return on region- specific bank index	-0.0877** (-4.00)	-0.0968** (-227.00)	-0.1529	-0.0118

** Significant at the 1% level.

the mean three-day return is -4.97% , while the median is -4.40% , and each is highly significant.¹¹ These results are consistent with recent estimates by Slovin *et al.* (1999). Using a two-factor model, with either the national bank index or a region-specific bank index as the second factor, reduces the size of the estimated effect somewhat, although it remains highly significant in each case. Thus, the three-day CAR associated with a formal action announcement is negative and significant across a variety of return-generating processes, whether a t test or a Wilcoxon signed rank test is used.

The magnitude of the stock price reaction, when placed in the context of stock market reactions to other types of bank announcements, suggests that formal action announcements are significant informational events. For example, banks downgraded by Moody's experienced a three-day CAR of -1.14% (Billett *et al.*, 1998); banks that increased their loan-loss reserves experienced a -2.92% CAR (Docking *et al.*, 1997); the announcement of a debt moratorium by Mexico resulted in a CAR of -1.93% for highly exposed banks (Bruner and Simms, 1987); a debt moratorium by Brazil resulted in a -2.17% CAR for high-exposure banks (Karafiath *et al.*, 1991); and the announcement of a dividend reduction resulted in a CAR of -4.9% (Bessler and Nohel, 1996). Thus, the magnitude of the stock market reaction suggests that market participants were often surprised by formal action announcements.

To confirm that these are not temporary reactions that are quickly reversed, a longer time horizon is also examined. Because of the potential bias from summing daily abnormal returns over longer time periods, holding period returns are used. They are calculated as follows:

$$HPR_i = \left[\left[\prod_t (1 + r_{i,t}) - 1 \right] - \left[\prod_t (1 + r_{EP,t}) - 1 \right] \right], \quad (4)$$

where $r_{i,t}$ is the simple with-dividend return to security i , on day t , and $r_{EP,t}$ is the simple with-dividend return on one of three alternative equity portfolios: (1) all New York Stock Exchange and American Stock Exchange stocks on day t , (2) all BHC stocks on day t , (3) all BHC stocks in the event-BHC's census region on day t .

Panel B of Table I shows that the one-month holding period returns, measured from the day before to 18 trading days after the formal action announcement, are qualitatively similar to the results in Panel A. The mean actual one-month return is -6.86% and the median actual return is -8.57% . Measuring this holding period return net of the market return, net of the national bank index return, or net of the region-specific bank index return, we obtain even larger declines that are highly

¹¹ The t statistic for all CARs is calculated as the ratio of the mean CAR to its estimated standard deviation, where the standard deviation is estimated from the time series of mean abnormal returns (see Brown and Warner, 1985).

significant, with each of the estimated impacts indicating a negative excess return exceeding 8%.

The distribution of returns is also informative. Panel A shows the returns for the banks at the 25th and 75th percentiles. The actual return at the 75th percentile is 0.00%, with 74% of the sample having a negative three-day return associated with the announcement. The 25th percentile for the actual return is -9.09%, indicating that one quarter of the sample exhibits a price decline in excess of 9%.

III. BANK DISCLOSURE POLICIES AND MARKET REACTIONS

Timely, accurate disclosures are vital if market participants are to make appropriate assessments of a bank's financial condition. However, since banks often specialize in the collection and evaluation of private information, disclosure of proprietary information about their customers, as well as about their own risk management strategies, potentially can be detrimental to their future profitability. Market participants, therefore, may find it quite difficult to assess fully the health of a bank based on information that is publicly available (Morgan, 1998). The situation is further complicated insofar as many bank loans are made to small borrowers who are bank dependent and typically do not publicly disclose information about their financial condition (Petersen and Rajan, 1994). Without access to proprietary information and detailed information about loan customers, market participants must rely heavily on disclosures by bank management, with few means for verifying their accuracy.

Bank examiners, alone among outside monitors, have direct access to information about a bank's individual loans and risk management strategies through their authority to conduct confidential exams. Thus, they can play an important role by validating that the financial condition of the bank is as reported (Gilbert, 1993; Berger *et al.*, 2000; DeYoung *et al.*, 1998; Flannery and Houston, 1998). Market participants, on the other hand, may not be able to uncover the deteriorating health of a bank in a timely manner, instead discovering it only when bank management, possibly at the instigation of examiners, eventually makes financial disclosures that reveal the bank's problems (Gilbert, 1993). These could be announcements related to income and balance sheet statements, such as lower earnings or increased nonperforming loans. Similarly, an announcement that supervisors have imposed a formal action on the bank could reveal to market participants that a bank's problems are worse than they had previously assessed. For example, market participants may interpret a formal action announcement as indicating that the quality of the bank's loan portfolio is lower than previously reported or that bank supervisors are concerned that the ability of bank management to evaluate and monitor credit at the bank is inadequate.¹²

¹² Consistent with this interpretation, many formal actions devote much of the agreement to methods to improve management information systems, credit evaluation, and consistency in reporting problem loans.

Prior to congressional legislation mandating the public announcement of formal actions, supervisory-related information rarely was made public. Today, much of the information produced during bank exams remains confidential, such as CAMELS and BOPEC ratings. Nevertheless, this confidentiality does not stop market participants from assessing the likelihood that a bank has received a low supervisory rating or that the probability of supervisory intervention is high. In fact, some private analyst firms, using only publicly available information, provide predictions of individual bank CAMELS ratings. Thus, despite the confidentiality of supervisory information, market participants should be assessing the probability that supervisors will intervene at individual banks. The revelation that a bank has a formal action imposed upon it, and thus that bank management is now subject to much closer oversight by bank supervisors, possibly reducing its value to shareholders (Gilbert and Vaughan, 1998), should surprise market participants only for those banks whose publicly disclosed financials had suggested that the bank would not be under close regulatory scrutiny.

Results

For the analysis in Tables II through V, banks' stock market returns are calculated net of movements in a region-specific bank index. This relative return isolates the idiosyncratic component of banks' returns by controlling for a general deterioration in economic conditions in a particular region that affects all of the region's banks. That is, a negative relative return indicates that the market has been able to distinguish the bank's performance from that of the typical bank in the region.

As a bank's financial problems become apparent to the market, market participants force share prices down. Depending on how well-informed the market is prior to the formal action announcement, both the information explanation and the regulatory discipline explanation predict that the three-day CAR will be inversely related to the stock return for the period prior to the formal action announcement. Table II provides evidence supporting this hypothesis. Panel A of Table II groups banks into quartiles based on the stock return in the year prior to the formal action announcement. Those banks whose share price fell the least in the year prior to the formal action announcement are also the banks that had the largest negative three-day CARs. In fact, the statistical significance of the average three-day CAR documented in Table I is driven by large negative three-day CARs at those banks whose share prices declined the least in the prior year, although each of the three highest return quartiles has a significant negative CAR over the three-day announcement window.

The regression results shown in Panel B of Table II also provide support for the hypothesis that the CARs associated with the formal action announcements are related to the extent to which market participants were able to ascertain, prior to the announcement, that the bank had severe problems. The return over the prior year (column 1) and the return over the prior six months (column 2), each measured net of a region-specific bank index, are significant determinants of the CAR. The

TABLE II
Three-day CARs and Returns Prior to Formal Action Announcements
Sample: 35 BHCs That Announce Receipt of a Formal Enforcement Action

Panel A: Mean three-day CAR			
Quartile ranking based on return in year prior to FA announcement ^a	Return in year prior to FA announcement ^a	Return in 6 months prior to FA announcement ^a	Three-day CAR ^b
Lowest quartile	-1.2010	-0.5819	0.0030 (0.15)
Second quartile	-0.6583	-0.3291	-0.0389* (-2.27)
Third quartile	-0.4398	-0.3422	-0.0547** (-3.94)
Highest quartile	-0.1908	-0.1286	-0.0848** (-6.22)
Panel B: Regression analysis			
Dependent variable: Three-day CAR ^b			
	(1)	(2)	
Constant	-0.0842** (-3.55)	-0.0884** (-3.71)	
Return in year prior to FA announcement ^a	-0.0645* (-2.02)		
Return in 6 months to FA announcement ^a		-0.1277* (-2.22)	
R ²	0.1107	0.1295	
F statistic	4.11	4.91	
Significance of F statistic	0.05	0.03	

Note. *t* statistics in parentheses.

^a Measured net of the return on a region-specific bank index.

^b The three-day CAR is calculated using the two-factor model with the region-specific bank index as the second factor.

* Significant at the 5% level.

** Significant at the 1% level.

negative estimated coefficients indicate that the higher the return over the previous period (either one year or six months), the lower the CAR associated with the formal action announcement.

We next examine the impact that specific bank disclosures prior to the formal action announcement have on the response of a bank's stock price to its formal action announcement. Table III considers quarterly earnings announcements. We group banks according to the number of quarters in the year prior to the formal action announcement that a bank reports negative quarterly earnings. The table also includes the return in the year prior to the formal action announcement. An interesting pattern emerges. The adverse effect of the formal action announcement on the bank's stock return tends to decline as the number of quarters with negative earnings increases. In general, the return in the prior year decreases as the number

TABLE III

Three-Day CARs and the Number of Quarters in the Prior Year with Negative Earnings
Sample: 35 BHCs That Announce Receipt of a Formal Enforcement Action

Number of quarters in prior year in which earnings were negative	Number of BHCs	Return in prior year ^a (mean)	Three-day CAR ^b (mean)
0	4	-0.2375	-0.0850** (-4.30)
1	7	-0.2882	-0.0790** (-6.72)
2	14	-0.7601	-0.0430** (-3.12)
3	9	-0.7259	-0.0139 (-0.74)
4	1	-1.069	0.0395 (0.93)

Note. *t* statistics are in parentheses.

^a Measured net of the return on a region-specific bank index.

^b The three-day CAR is calculated using the two-factor model with the region-specific bank index as the second factor.

* Significant at the 5% level.

** Significant at the 1% level.

of quarters with negative earnings increases. For example, the four banks that did not have a single quarter of negative earnings in the prior year had a mean stock return (net of a region-specific bank index) of -23.75% in the year. These same banks had a significant mean three-day CAR of -8.50% associated with their formal action announcements. In contrast, the nine banks with three quarters of negative earnings in the prior year had a mean stock return (net of a region-specific bank index) of -72.59% in the year, but a three-day CAR of only -1.39%.

Table IV provides further evidence on the impact of specific disclosures on the magnitude of the CARs associated with a bank announcing a formal action. We separate the banks into two groups: those banks whose return in the year prior to the formal action is below the median for announcing banks and those banks whose return is above the median. The types of disclosures examined include the standard earnings measures, ROE, and ROA. In addition, we include loan loss provisions, loan charge-offs, and the changes in the loan loss allowance, nonperforming loans, and capital, in each case scaled by beginning of period assets.¹³ We examine these disclosures at two different points in time. The first is the last report of these financials (covering the previous four quarters) prior to the formal action announcement. The second is the report coming four quarters after

¹³ The change in the loan loss allowance is measured as the loan loss provision less net loan charge-offs (net charge-offs are charge-offs less recoveries). For comparability and to prevent differences in the timing of asset shrinkage across banks from affecting our results, we measure assets as of four quarters before the formal action announcement in each case.

TABLE IV
Excess Returns in Prior Year and Bank Disclosures
Sample: 35 BHCs That Announce Receipt of a Formal Enforcement Action

Stock return in the year prior to FA announcement ^a	Bank Disclosure (Group means)			
	Reported over the 4 quarters before FA	Reported over the 4 quarters after FA	Change between 4 quarters after and 4 quarters before	Reported over the entire 8 quarters (4 quarters before and 4 quarters after)
ROE				
Below median	-0.2426	-0.1945	0.0481	-0.4371
Above median	-0.0705	-0.2884	-0.2179	-0.3590
<i>t</i> statistic for difference in means	(-2.56)*	(0.90)	(2.12)*	(-0.63)
ROA				
Below median	-0.0157	-0.0131	0.0026	-0.0288
Above median	-0.0051	-0.0188	-0.0137	-0.0239
<i>t</i> statistic for difference in means	(-2.46)*	(0.81)	(2.02)*	(-0.59)
Loan loss provisions (% of assets)				
Below median	0.0265	0.0172	-0.0093	0.0437
Above median	0.0174	0.0247	0.0073	0.0421
<i>t</i> statistic for difference in means	(2.68)*	(-1.45)	(-2.53)*	(0.28)
Loan charge-offs (% of assets)				
Below median	0.0153	0.0165	0.0012	0.0318
Above median	0.0104	0.0162	0.0058	0.0266
<i>t</i> statistic for difference in means	(2.51)*	(0.49)	(-1.35)	(1.66)
Δ in loan loss allowance (% of assets)				
Below median	0.0112	0.0007	-0.0106	0.0119
Above median	0.0070	0.0085	0.0015	0.0155
<i>t</i> statistic for difference in means	(2.04)*	(-2.31)*	(-2.80)**	(-1.00)
Δ in nonperforming loans (% of assets)				
Below median	0.0232	-0.0006	-0.0238	0.0227
Above median	0.0142	0.0098	-0.0044	0.0240
<i>t</i> statistic for difference in means	(1.77)	(-1.44)	(-2.35)*	(-0.14)
Δ in capital (% of assets)				
Below median	-0.0099	-0.0121	-0.0022	0.0219
Above median	-0.0045	-0.0144	-0.0099	-0.0190
<i>t</i> statistic for difference in means	(-1.61)	(0.33)	(0.98)	(-0.38)

^a Measured net of the return on a region-specific bank index.

* Significant at the 5% level.

** Significant at the 1% level.

the formal action announcement (covering the previous four quarters). In addition to examining the reports at these two different times, we also calculate the change in the reported financials between the two one-year intervals, as well as the total change over the entire two-year period.

Two patterns emerge. First, banks whose share price had declined the most in the year prior to the formal action announcement tend to have financials for the four quarters prior to the announcement that are significantly worse than those of banks whose share prices had not fallen as much. Both measures of earnings and most measures of loan quality are significantly poorer for those banks whose share price had fallen the most. For example, average ROE for those banks whose share price decline is below the median is -24% , compared to only -7% for those above the median. This difference is significant at the 5% level. Reported ROA, loan loss provisions, loan charge-offs, and changes in the loan loss allowance also differ significantly between the two groupings of banks.

A second pattern also emerges in Table IV. Financials reported in the period after the formal action announcement generally are improving for those banks whose share price had fallen the most in the prior year (and whose three-day CARs were only modestly negative). In contrast, these same financials are getting worse for the set of banks whose share price had fallen in the prior year by less than the median (and which had sizable negative three-day CARs). For example, the third column shows that the average ROE for those banks whose share price declines were below the median increased by 4.8 percentage points after the formal action announcement relative to the four quarters before the formal action announcement. Those banks above the median saw their ROE decrease by 21.8 percentage points in the four quarters after the formal action announcement relative to the four quarters before the formal action announcement. This difference is significant at the 5% level. Similar patterns exist for ROA, loan loss provisions, the change in the loan loss allowances, and the change in nonperforming loans.

The differences in the patterns of financial characteristics are not the result of significant differences in the average degree of the deterioration in the health of the banks in the two groups, only in the timing of when the banks revealed the deterioration in their financial condition. This can be seen in the fourth column, which reports the financial information over the entire eight-quarter period. The financial characteristics of the below-median banks never differ significantly from those of the above-median banks over the eight quarters surrounding their formal action announcements. Thus, the banks with the least stock price reaction to their formal action announcement are those whose financial troubles were more fully revealed to the market prior to the formal action announcement. Those banks with large adverse stock price reactions to the formal action announcement tended to reveal most of the deterioration in their balance sheet and income statement items after the announcement.

Table V further amplifies the importance of disclosure by showing the relationship between the return in the prior year and the degree to which the bank has provisioned for loan losses. Loan loss provisions are the ideal performance measure

TABLE V
Excess Returns in Prior Year and Loan Loss Provisions
Sample: 35 BHCs That Announce Receipt of a Formal Enforcement Action

Return in year prior to FA announcement ^a	Group Means		
	Last report before FA announcement	Change between last report and the report 4 quarters after	Share of total coming before FA announcement
Panel A: Loan loss provisions (over 4 quarters) as a percent of assets			
Lowest quartile	0.0301	−0.0105	0.6209 ^b
Second quartile	0.0233	−0.0083	0.5981 ^b
Third quartile	0.0201	0.0062	0.4898 ^b
Highest quartile	0.0147	0.0083	0.4425 ^b
<i>t</i> statistic for difference in means between those below median and those above median	2.6886	−2.5278	
Significance level	0.0114	0.0166	
Panel B: Change in loan loss allowance (over 4 quarters) as a percent of assets			
Lowest quartile	0.0131	−0.0133	1.2262 ^c
Second quartile	0.0095	−0.0081	1.0789 ^c
Third quartile	0.0079	0.0014	0.8214 ^c
Highest quartile	0.0061	0.0016	0.7140 ^c
<i>t</i> statistic for difference in means between those below median and those above median	2.0364	−2.7963	
Significance level	0.0498	0.0091	

^a Measured net of the return on a region-specific bank index.

^b Share of total is calculated at follows: $\sum_{4 \text{ qtrs. prior}} \text{Provisions} / \sum_{4 \text{ qtrs. prior and 4 qtrs. after}} \text{Provisions}$.

^c Share of total is calculated the same as above, but the change in the loan loss allowance is substituted for loan loss provisions. The change in the loan loss allowance is equal to loan loss provisions less loan charge-offs (net of recoveries).

to use when comparing disclosure policies across banks, because managers have substantial discretion over the timing of a provision.¹⁴ Panel A examines the raw loan loss provision. Panel B examines the net increase in the loan loss allowance due to these provisions. That is, loan charge-offs (less recoveries) are subtracted from loan loss provisions. This second measure attempts to better capture the degree to which management has provisioned to bolster its loan loss allowance for expected future losses, rather than provisioning primarily to cover current period loan charge-offs (which would essentially keep the allowance unchanged). If banks wish to communicate a concern about impending loan problems, increases in the loan loss allowance can serve as a means to disclose this information on a timely basis.

¹⁴ See Koch and Wall (1999) for a discussion of the flexibility–constraints banks have in setting their loan loss provisions. Koch and Wall also present a review of the literature on loan loss provisioning.

The first pattern that emerges in Table V is that the return in the prior year is inversely related to loan loss provisions in the prior year. Banks whose stock returns in the prior year place them in the lowest quartile of banks have provisions equal to 3.0% of their assets, whereas those banks whose returns place them in the highest quartile of banks have provisions equal to 1.5% of assets (Panel A). This relationship persists after taking into account loan charge-offs during the period (Panel B).

A second pattern that emerges in Table V provides strong support for significant differences in banks' willingness to signal that they have impending loan problems. Banks in the lowest stock return quartiles were more aggressive in provisioning for loan losses prior to their announcement of a formal action. When total loan loss provisioning is measured over the two-year period (starting one year before the announcement of a formal action through one year after the announcement), banks in the lowest return quartile had disclosed 62% of their total two-year provisions as of the time of their formal action announcement (Panel A). Conversely, banks in the highest quartile of stock returns had disclosed only 44% of their total two-year provisions as of their formal action announcement. Again, accounting for loan charge-offs, the results persist for the change in the loan loss allowance (Panel B). Since all the banks were likely to have been aware of the severity of their loan problems at the time of the formal action announcement, the significant differences in the timing of their loan loss provisions suggest that some banks chose not to reveal the full extent of the problems known to management prior to the formal action announcement.

Together, Tables II through V indicate that if the market has already ascertained that a bank had severe problems, a bank's stock return reacted relatively little to a formal action announcement. These tables also suggest that banks' own disclosures (earnings, nonperforming loans, and loan loss provisioning) play an important role in the market's ability to ascertain problems at these banks. When sufficient information had already been disclosed to enable market participants to deduce that the bank was significantly more troubled than its peers, the information gained from the announcement of the formal action was modest. On the other hand, for those banks where the market was unable to differentiate it from its peers, or had perceived the bank to have fewer problems than its peers, the reaction to the formal action announcement was more substantial. Thus, banks that keep the market informed of problems incur little stock price reaction when a formal action is announced, while banks that are disclosing serious problems for the first time with the announcement of a formal action are subjected to a much larger market response.

IV. FORMAL ACTION ANNOUNCEMENTS AND SPILLOVER EFFECTS

Market participants also may interpret a formal action announcement as revealing information that is not idiosyncratic to the announcing bank, for example, indicating that the local economy has deteriorated more than analysts had expected.

In that instance, the bank's problems may be less related to the particular practices of the bank and more reflective of the conditions of the financial markets in which the bank operates. If so, the information associated with a formal action announcement would be applicable to similarly situated institutions. Conversely, if the problems were bank specific, the information resulting from the formal action announcement should provide little useful information about rivals of the bank. For example, if examiners evaluating a bank's loan files had found serious problems emerging from its real estate loan portfolio, stock prices of other banks with similar portfolios should also be affected by the information contained in the formal action announcement. However, banks primarily engaged in non-real-estate activities should be little affected.

Another possible spillover effect would occur if the imposition of a formal action, by restricting the behavior of the bank, provided a competitive advantage to its rivals. If so, one would expect rivals not under a formal action to benefit and have a positive stock price response to the announcement of a competitor's formal action.

Results

Table VI examines the market reaction to rival banks at the time of a formal action announcement.¹⁵ Panel A shows the average three-day CAR associated with the announcement of a formal action for banks operating in the same census region as the announcing bank. The average three-day CAR, when considering all events, is negative, but very small and statistically insignificant. The average three-day CAR for surprise announcements, those announcements that generated three-day CARs in the lowest quartile (largest negative values) for announcing banks, is also negative, but small and statistically insignificant. We also investigate whether spillover effects from formal action announcements are present in individual census regions by considering separately the New England, Middle Atlantic, Pacific, and "other" regions ("other" includes all census regions except the New England, Middle Atlantic, and Pacific regions). We isolate the New England, Middle Atlantic, and Pacific regions because these three regions each had a cluster of failures and each experienced substantial declines in real estate prices. For events in the Middle Atlantic, Pacific, and "other" regions, on average, three-day CARs are small and statistically insignificant.

¹⁵ In this part of the analysis, we calculated CARs using the two-factor model that specifies a national bank index as the second factor. We do not use the region-specific bank index as the second factor here, since we are trying to identify spillover effects within the announcing banks' regions. We also calculated CARs using the standard one-factor market model to test whether there were widespread spillover effects. For most events, no spillover effects are found using this alternative specification. For a few events occurring during the last half of 1990, the one-factor market model CARs were, on average, negative and significant. However, these negative CARs were due to contaminating information from events associated with the U.S. involvement in the Gulf War. Bank stock prices were falling consistently through that period (by more than the overall market) due to the impact the Gulf War would have on economic activity. Announcements regarding the war and its impact on the economy coincided with the three-day windows associated with these formal action announcements.

TABLE VI

Impact of Formal Action Announcements on Rivals

Sample: Publicly Traded BHCs, Operating in the Same Region as the Announcing Bank,
Meeting Minimum Data Requirements on 33 Unique Event Dates^a

Event group	Number of observations	Three-day CAR ^b
Panel A		
All events	991	−0.0016 (−1.05)
Surprise events	248	−0.0022 (−0.87)
Events in the New England region	197	−0.0065* (−2.05)
Events in the Middle Atlantic region	341	−0.0005 (−0.24)
Events in the Pacific region	151	−0.0016 (−0.34)
Events in all other regions	302	0.0004 (0.16)
Panel B: Bank of Boston–Bank of New England event		
Other New England banks	22	−0.0296** (−2.79)
New England banks in lower third of commercial real estate exposure	7	−0.0034 (−0.20)
New England banks in middle third of commercial real estate exposure	8	−0.0224 (−1.46)
New England banks in top third of commercial real estate exposure	7	−0.0641** (−2.89)

Note. *t* statistics are in parentheses.

^a Since the formal action announcements of the Bank of Boston and Bank of New England come one day apart, these two events are treated as a single event in this part of the analysis. Similarly, Citizens First Bancorp and Multibank Financial Corp announce their formal actions on the same day and thus are treated as a single event.

^b The three-day CAR is calculated using the two-factor model with the national bank index as the second factor.

* Significant at the 5% level.

** Significant at the 1% level.

The only region with significant spillover effects is New England. Panel A of Table VI shows that announcements in New England yield an average three-day CAR of −0.65% that is statistically significant at the 5% level. Upon further examination, omitting one specific event, the Bank of Boston–Bank of New England announcement, the first in New England, produces an average three-day CAR that is smaller and insignificant.

We then specifically consider the spillover effect of the Bank of Boston–Bank of New England announcement (Panel B). The effect on rival banks is sizable, producing a three-day CAR of −2.96%, which is highly significant. To better distinguish rival banks within the New England region, we investigated the pattern of

CARs for rival banks based on the extent of their commercial real estate exposure, since many have attributed a large part of the banking problems in New England to the decline in commercial real estate prices (Rajan, 1994). In fact, the spillover effects are more dramatic for New England banks with high commercial real estate exposures. For the third of the banks with the highest commercial real estate exposure, the spillover effect is -6.41% and is statistically significant. For the third of New England banks with the lowest commercial real estate exposure, the effect is insignificant and only -0.34% , a small fraction of the estimated impact on rivals with the largest exposures.

The evidence of spillover effects is not consistent with blanket, indiscriminate contagion; rather, it is consistent with information-based spillover. This supports the hypothesis that the release of supervisory information can reveal valuable information to market participants. Rival banks can be affected by the announcement of a formal action, but only if they are similar. Thus, not only does supervisory disclosure provide valuable information about the financial condition of the bank making the announcement, it can also provide information about economic conditions and problems in bank portfolios of similarly situated banks. This type of spillover effect suggests that formal action announcements can enhance transparency in the banking system.

Finally, we found no evidence that the stock market views the announcement of a formal action as benefiting rivals. It has been hypothesized that if the market believes that increased supervisory oversight hurts rather than improves the chances that the troubled institution will recover, rivals would benefit from such an event and have a positive stock price response to the announcement of a competitor's formal action. In such an environment, one would expect banks in close proximity to the announcing bank to be the most likely to benefit. However, the results presented in Table VI suggest the opposite: in-region banks, on average, have a small negative stock price reaction.

V. CONCLUSIONS

We examined the impact on bank stock returns of publicly announcing formerly confidential supervisory information. If U.S. banks were completely transparent, there should be no market reaction to the announcement of a supervisory action. However, consistent with Slovin *et al.* (1999), we found that the release of the supervisory information provided significant new information to financial markets, resulting in a 5% decline in stock prices, on average. Yet, there is substantial variation in the stock price reactions to the announcements of formal actions, depending on the degree of previous disclosure by the bank of impending financial difficulties. Share prices of banks for which the market has already uncovered much of the banks' problems reacted little to announcements of formal enforcement actions. Banks whose earnings, capital position, and loan loss provisioning had

yet to fully reveal the extent of the banks' problems had a much more substantial share price reaction.

Formal action announcements, at times, can also have an impact on the valuations of other banks. In one case, banks in the same geographical region with similar portfolio exposures have lower valuations after the formal action announcement of a rival. This evidence suggests that formal action announcements, in addition to giving idiosyncratic information about the announcing bank, can provide more generalized information about peer banks with portfolios similar to that of the announcing bank.

These results have several policy implications. First, despite efforts made by U.S. regulators to require disclosures that result in transparent banking entities, our findings suggest that a further enhancement of disclosure policies is warranted. The evidence shows that market participants find supervisory information important in the pricing of bank securities, especially for banks that were not forthcoming in their prior disclosures. Thus, markets likely would value disclosure of supervisory ratings. Second, for countries that fear the potential destabilizing effects of enhanced disclosure, our evidence suggests that markets react severely only to disclosures that reveal a discrete change in bank health. Since the underlying causes of banking problems rarely develop overnight, enhancing disclosure so that banks reveal their true health in a continuous, timely manner will avoid severe revisions in the market's assessment of banks. Finally, requiring timely and accurate disclosure will allow markets to discipline banks earlier, resulting in improved accuracy in the pricing of banks' securities, exactly the desired impact if enhanced disclosure is to reduce the likelihood of banking crises.

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