



American Finance Association

Deposit Insurance and Wealth Effects: The Value of Being "Too Big to Fail"

Author(s): Maureen O'Hara and Wayne Shaw

Source: *The Journal of Finance*, Vol. 45, No. 5 (Dec., 1990), pp. 1587-1600

Published by: Blackwell Publishing for the American Finance Association

Stable URL: <http://www.jstor.org/stable/2328751>

Accessed: 26/11/2009 07:22

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=black>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Blackwell Publishing and American Finance Association are collaborating with JSTOR to digitize, preserve and extend access to *The Journal of Finance*.

<http://www.jstor.org>

Deposit Insurance and Wealth Effects: The Value of Being “Too Big to Fail”

MAUREEN O'HARA and WAYNE SHAW*

ABSTRACT

This paper investigates the effect on bank equity values of the Comptroller of the Currency's announcement that some banks were “too big to fail” and that for those banks total deposit insurance would be provided. Using an event study methodology, we find positive wealth effects accruing to TBTF banks, with corresponding negative effects accruing to non-included banks. We demonstrate that the magnitude of these effects differed with bank solvency and size. We also show that the policy to which the market reacted was that suggested by the *Wall Street Journal* and not that actually intended by the Comptroller.

THE ROLE OF DEPOSIT insurance has become a topic of increasing debate. Advocates argue that by removing the incentive to “run”, deposit insurance protects individual financial institutions from instability in the intermediation process, thereby providing stability to the financial system as a whole.¹ The recent rise in bank failures and the concomitant crises in the S&L industry, however, demonstrate that this stability is not guaranteed. Moreover, critics note that deposit insurance may introduce incentive problems and wealth effects into the financial system, both of which can impede the effective functioning of any deposit insurance system. These problems have prompted concern about the structure of the current deposit insurance system and have led to numerous proposals regarding its restructuring.²

This paper investigates one aspect of this debate by analyzing the effect on bank equity values of the policy decision to insure completely some banks but not others. Specifically, in September 1984 the Comptroller of the Currency testified before Congress that some banks were simply “too big to fail” (TBTF) and that for those banks total deposit insurance would be provided. While not explicitly naming the banks, the Comptroller admitted that this policy would apply to the eleven largest banks. Using an event study methodology, we analyze

* Both authors from Johnson Graduate School of Management, Cornell University. We would like to thank William Grant of the Office of the Comptroller of the Currency and Patrick Mahoney of the Federal Reserve System for their assistance. We also gratefully acknowledge the assistance of two anonymous referees.

¹ Diamond and Dybvig (1983) argue that the intermediation process necessitates that banks be illiquid, thus creating the potential for destabilizing bank runs. They show that deposit insurance can remove the incentive to run and thus make the system more stable. Kane (1985) and Scott (1987) argue, however, that deposit insurance itself may introduce instability by distorting incentives and by interfering with market discipline via the regulators' choice of failure rules.

² The incentive issues were noted by Merton (1977) and Buser, Chen, and Kane (1981). For proposals regarding the “too big to fail” policy and deposit insurance, see Sprague (1986).

the effects of this statement on the eleven included banks, as well as its impact on those banks implicitly considered “too small to save”. We find evidence consistent with a hypothesis of significant positive wealth effects accruing to the TBTF banks, with corresponding negative effects accruing to the non-included banks. We also demonstrate that the magnitude of these effects differed depending upon factors such as bank solvency and size.

That regulatory actions in banking can induce wealth effects has been demonstrated by several authors (see Dann and James (1982), James (1983), and Unal (1989)) in the case of deposit rate ceiling changes. Our work continues this line of research by identifying some of the wealth effects arising from switching from a partial to a total deposit insurance system.³ One area where our results may be immediately applicable is in assessing the impact of default prevention policies. While recent deposit insurance agency actions have increasingly involved bailing out failing institutions, the costs of such actions are generally calculated only as they apply to the failed institution. Our research suggests that such default prevention policies imply costs and benefits for continuing institutions as well.

Another, perhaps more intriguing, result of our work is to demonstrate the influence that *perceived* regulator policy can have on firm values, even when those perceptions are not in fact correct. Specifically, we show that the policy the market reacted to was that suggested by the *Wall Street Journal* and not that actually intended by the Comptroller of the Currency. Hence, despite the seeming precision of the Comptroller’s statement, the market reacted to the “wrong” policy. This gap of perceptions and reality provides an intriguing example of how the market reacts to ambiguous information.

The paper is organized as follows. In the next section we discuss how the “too big to fail” policy could affect bank operations and examine the factors influencing the security market’s reaction to this policy. Section II then presents our empirical evidence and demonstrates the effects of bank size, solvency, and the sample selection criteria on our results. The final section discusses the implications of our research for deposit insurance policies.

I. Shareholder Wealth Effects and the TBTF Policy

Why should the market react to a “too big to fail” policy? One reason is that it could affect a bank’s cost of funds. Specifically, the interest rate a bank pays for its deposits, CDs, and other nondeposit borrowings should reflect the possibility of bankruptcy. With a partial deposit insurance system, deposits above \$100,000 and any nondeposit borrowings incur a risk premium. By removing any coverage limit, the TBTF policy removes any possibility of bankruptcy and thus allows included banks to avoid paying this premium. This results in a subsidy or wealth effect. To the extent that this subsidy is captured by the shareholders, this should

³ As numerous authors have shown, regulator actions can produce a wide variety of wealth transfers involving consumers, producers, competitors, and even the regulators themselves. In this paper, we focus only on the transfer involving bank equity values.

directly increase profits.⁴ A second, indirect effect is that, with its cost of funds no longer tied to its riskiness, the bank has an incentive to increase the risk of its operations. This, in turn, should also lead to a higher expected return.

How the market should react to this TBTF policy, however, is not immediately obvious. The wealth effects noted above suggest an upward revision in TBTF banks' stock prices, reflecting the value of this increased profitability. The size of this revision should be related to each bank's underlying risk, with riskier institutions benefiting most. Conversely, banks not covered by this policy receive no such subsidy, so their equity values would be expected to remain unchanged. This simple profit-based reaction hypothesis, however, ignores several factors that might be expected to affect market valuations. One such factor is the role of market expectations. While *de jure* deposit insurance is limited, in many instances the insurance agencies have *de facto* provided complete coverage. This *de facto* policy was particularly evident in May, 1984 when the regulatory agencies agreed to insure completely the deposit and nondeposit liabilities of the Continental Illinois Bank and its holding company. Since Continental was the eighth-largest bank at the time, the market may reasonably have expected that similar-sized institutions would be accorded similar treatment. What was not clear, however, was how far such complete coverage would extend. In particular, would the ninth, twelfth, or even twentieth-largest bank be included in this policy?

If expectations are considered, the market's reaction to the TBTF policy may differ considerably from the simple profit-based theory. If the market believed that complete coverage applied to a particular bank, its cost of funds would already reflect this revised bankruptcy risk. Consequently, with no additional subsidy resulting from this policy, there would be no market reaction. Alternatively, if the market expected the policy to apply but it did not, the bank would experience an upward revision in its bankruptcy risk, with a consequent negative market reaction.

A related issue is the extent to which the market believed that the Comptroller's statement was actually informative. Although the Comptroller does not directly insure deposits, he or she sits on the Board of the FDIC. Moreover, as the chartering agent for national banks, the Comptroller must revoke a charter before a bank can be closed. Consequently, the Comptroller does play a crucial role in the deposit insurance system. During the years immediately preceding this announcement, regulatory default prevention actions varied on a case-by-case basis, particularly with respect to uninsured deposits and liabilities. Since statements may be free but actions are not, the market might interpret the Comptroller's statement more as a noisy signal of future actions than as an ironclad commitment. This suggests that there might be no market reaction if the signal were viewed as unreliable. Alternatively, if the signal were viewed as reliable, we

⁴ As with any tax or subsidy, however, the incidence will depend on the characteristics of the banking market. It may be that the bank's customers (i.e., its borrowers and depositors) also capture some of the benefit. Our tests in the next section indicate whether shareholders receive any benefit, but they do not necessarily indicate the full size of the subsidy.

might expect positive effects for included banks as the market increased its prior belief on the likelihood of the bailout.

Finally, another factor that might influence the market's reaction is the origin of the subsidy. Historically, the deposit insurance funds were self-financing, with fund outlays paid for by premiums charged to all insured banks. Hence, while the benefits of the TBTF subsidy would accrue only to included banks, the costs of the policy in the form of higher expected future insurance premiums would be borne by all banks. This is consistent with Kane's (1985) argument that the deposit insurance system induces a redistribution from well-capitalized, conservatively run banks to large and risky banks. If this hypothesis is correct, positive benefits to the included banks may be accompanied by negative benefits to the other banks.

In the next section we investigate these issues by examining the market reaction to the TBTF policy. The approach we use is that of an event study, allowing us to determine both the direction of any equity market reaction and the size of the reaction for individual financial institutions. We also address the factors influencing a particular bank's reaction. We discuss the implications of our results in the final section.

II. The Market Reaction to the "TBTF" Policy

A. Sample Selection Procedure

Although the banking industry is composed of over 14,000 banks, most are privately held institutions with no active equity trading. To examine the effect of the Comptroller of the Currency's statement, we collected data for those banks for which daily stock price data were publicly available and which actively traded during our estimation period. This resulted in a sample of 64 banks. Our sample includes all banks in the TBTF category as well as a sizeable number of excluded banks.⁵

B. Event Window Determination

The first problem to be resolved in any event study is determining when information is conveyed to the market. On September 19, 1984, the Comptroller first acknowledged the TBTF policy during testimony before the House Banking Committee concerning the bailout of Continental Illinois. However, the description of the hearings included on the Dow Jones Broad Tape at 1:58 p.m. on September 19 did not mention the TBTF policy. The *Wall Street Journal* did highlight the TBTF statement in its story on September 20. Consequently, we

⁵ Our sample differs from Swary (1986) only in our addition of First Interstate Bankcorp and the deletion of five banks for which daily stock prices were unavailable. One limitation of our study is the inability to examine stock price movements of the smaller regional and local banks for which daily stock prices were unavailable. We believe that these banks would have been affected by the Comptroller's announcement to the extent that the market believed each firm might need federal assistance and to the extent that future deposit insurance premium increases might affect income. This expectation is consistent with the results found for the non-money center banks.

defined September 20, 1984 as the event date on which we expect that any price adjustments would occur.⁶

C. Classification of Banks

A second problem is which banks to include in the category covered by the TBTF policy. While the Comptroller was specific that eleven banks were considered important enough to save, he did not name the individual banks. In reporting the story, however, the *Wall Street Journal* identified the eleven largest banks by name, indicating these to be the most likely institutions covered by the policy.⁷ We initially define these banks to be the included institutions and denote them as the *WSJ* sample. Since this policy was articulated by the Comptroller of the Currency, another natural categorization would be to distinguish between the national-chartered banks regulated by the Comptroller and the state-chartered banks not directly under his jurisdiction. We define the eleven largest *national* banks as the OCC sample. We return to this issue of which banks were actually included later in the paper.

D. Examination of Stock Price Changes for the Eleven *WSJ* Banks

The September 20 stock returns of the eleven *WSJ* banks support the argument that the Comptroller's statement had a large positive effect. As Table I shows, nine of the eleven banks had positive daily returns ranging from 0.29% to 5.65%, with only Security Pacific suffering a small negative return (−0.2%).⁸ Perhaps equally intriguing, Continental Illinois' stock price did not change. Since Continental had already been bailed out, one interpretation of this is that the market already knew it was "too big to fail" and therefore received no new information from the Comptroller's statement. For the other banks, the returns suggest that the policy may have caused significant revisions in value.

One problem with examining raw returns is that there may be other events occurring concurrently that are actually responsible for any observed market movements. Examination of the *WSJ* for the days surrounding September 20, however, revealed no evidence of confounding announcements. A second problem is that raw returns by definition do not separate individual firm effects from

⁶ We limit our examination of residual returns to a one-day window because we find no reason to believe that any market reaction to the announcement would extend beyond September 20. The use of a one-day window is supported by intraday information studies such as Patell and Wolfson (1982) when the event disclosure can be established to be after close of business on the prior day or early in the current day. Examination of the Dow Jones Broad Tape and the *WSJ* revealed no prior hint of such a policy. We expanded the window to two and three days, finding similar but weaker results. Correlations of returns with cross-sectional explanatory variables discussed later in Table IV were not significant on days −2, −1, +1, or +2 relative to the *Wall Street Journal* article.

⁷ The issue of which banks to include is even more complicated than this divergence suggests. While the *Wall Street Journal* claimed that its list was of the largest 11 banks (based on 12/31/83 asset figures), the *Business Week* ranking of bank assets as of that date provides a slightly different list of banks. Since using the *Business Week* rankings slightly strengthens the results in the paper, we use the *WSJ* list as the included banks.

⁸ This small movement in Security Pacific's share price may be due to Security Pacific being the least exposed of the 11 *WSJ* banks to third world debt and other potential loan loss problems.

Table I
Raw Returns on September 20,
1984 for *WSJ* Banks

This table reports raw returns for the eleven banks identified by the *Wall Street Journal* on September 20, 1984 as those included in the "too big to fail" policy.

Bank	Return
BankAmerica	0.013423
Bankers Trust	0.012315
Chase Manhattan	0.011494
Chemical Bank	0.056452
Citibank	0.033113
Continental Illinois	0.000000
First Chicago	0.004808
J. P. Morgan	0.022375
Manufacturers Hanover Trust	0.028689
Security Pacific	-0.002475
Wells Fargo	0.002857

overall market movements. To investigate this reaction, we need to specify a model of expected market returns.

E. Methodology

Following the standard event study approach, we calculated residual returns for each of the 64 sample banks for an eleven-day window centered on the date of the announcement. Daily expected firm returns are estimated using the standard market model (see Fama (1985)):⁹

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \epsilon_{jt}, \quad (1)$$

where α_j and β_j are a firm specific intercept and the covariance with the market, respectively. The error term, ϵ_{jt} , is assumed to have zero mean, be independent of R_{mt} , and be uncorrelated across firms. Rearranging the terms in (1), the estimated residual return for any security predicted from the model is equal to

$$\hat{\epsilon}_{jt} = R_{jt} - \hat{\alpha}_j - \hat{\beta}_j R_{mt}. \quad (2)$$

The OLS estimates, $\hat{\alpha}_j$ and $\hat{\beta}_j$, are estimated from returns for days -55 to -6 relative to September 10, 1984. We limited our estimation period to fifty days to avoid using data from the May 1984 period in which the Continental Illinois bailout occurred.¹⁰

⁹ Although the one-index model is the standard benchmark in event studies (including some prior studies in banking such as James (1983) and Swary (1986)), one potential problem is that the model may inadequately control for potentially relevant industry factors, such as interest rates. We replicated all tests using a two-factor model proposed by Kane and Unal (1988) but found virtually no difference in results.

¹⁰ We tested the sensitivity of our coefficient estimates by reestimating beta using the fifty days after the announcement period. Our results using these post-period estimates were virtually identical to those reported.

Since the announcement occurs on the same calendar date for all firms and all firms are in the same industry, we cannot assume that the residual returns are cross-sectionally independent. Therefore, we use a test statistic throughout the paper that is based on a standard deviation estimated for the portfolio of sample firms from residual returns in the estimation period. This test statistic developed by Jaffe (1974) is widely used in calendar time event studies in finance. (See Brown and Warner (1985, p. 7) for further discussion.) The statistic for any day t is

$$\bar{e}_t / \hat{S}(\bar{e}_t), \quad (3)$$

where

$$\bar{e}_t = \frac{1}{N} \sum_{i=1}^N e_{it}, \quad (4)$$

$$\hat{S}(\bar{e}_t) = \sqrt{\sum_{t=-55}^{-6} \frac{(\bar{e}_t - \bar{e})^2}{49}}, \quad (5)$$

$$\bar{e} = \frac{1}{50} \sum_{t=-55}^{-6} \bar{e}_t, \quad (6)$$

and where N equals the number of firms.

F. Residual Returns

In Table II, we provide average residual returns for an eleven-day window centered on September 20, 1984 for the 63 banks in our sample.¹¹ Examining this period also provides information about whether the market response around the event day is actually due to the TBTF policy.¹² On average, the residual returns on September 20 are not significantly different from zero for the 63 firms. However, significant positive residual returns are found for day -4 , a day on which Congress considered expanded securities powers for banks.

Segmenting the data into the TBTF banks and the other banks, however, reveals a different story on the event day. The TBTF banks experienced a significantly positive average residual return of approximately 1.3% on September 20. Conversely, the non-covered (other) banks displayed on average negative abnormal returns. As shown in Table III, while the mean return was not significant for this group, the median return was significantly negative at the 0.10 level, with only 37.7% of the other banks' residual returns positive. Moreover,

¹¹ Since Continental Illinois had previously been bailed out by the FDIC, there is no reason to expect that its security prices would be affected by the Comptroller's statement. Therefore, it is not included in the remaining statistical tests we report.

¹² In the following sections, we attempt to explain cross-sectional differences in residual returns around the event based on size and degree of solvency. This approach would be inappropriate if the firms' returns also differed on these dimensions in the estimation period. We tested for differences based on size and solvency in estimation period returns by introducing slope and intercept coefficients into the one-index model. No significant differences were found.

Table II

Residual Returns for Sample Banks

This table reports residual returns for an eleven-day period surrounding the announcement of the "too big to fail" policy on September 20, 1984. The total sample is composed of the ten banks listed in the *Wall Street Journal* as the "too big to fail" banks (excluding Continental Illinois) and 53 other banks.

Day Relative to the Announcement Day (Day 0 = September 20, 1984)			
	Total Sample (<i>N</i> = 63)	WSJ Sample (<i>N</i> = 10)	Other Banks (<i>N</i> = 53)
-5	0.0021 (0.49)†	0.0213* (2.97)†	-0.0016 (0.34)†
-4	0.0089* (2.10)	0.0115 (1.61)	0.0085** (1.82)
-3	0.0064 (1.51)	0.0007 (0.01)	0.0075 (1.60)
-2	0.0011 (0.12)	-0.0024 (0.34)	0.0017 (0.36)
-1	0.0005 (0.26)	-0.0025 (0.34)	0.0011 (0.21)
0	0.0007 (0.16)	0.0131** (1.83)	-0.0016 (0.34)
+1	0.0037 (0.87)	0.0008 (0.11)	0.0042 (0.90)
+2	-0.0030 (0.70)	-0.0161* (2.25)	-0.0005 (0.10)
+3	-0.0056 (1.32)	-0.0091 (1.27)	-0.0049 (1.04)
+4	0.0014 (0.33)	0.0011 (0.15)	0.0015 (0.32)
+5	-0.0011 (0.26)	0.0017 (0.24)	-0.0017 (0.36)

* Significant at the 5% level.

** Significant at the 10% level.

† *t*-Statistics given in parentheses.

a *t*-test of means demonstrates that the means of the two groups are significantly different from each other.

G. Residual Returns and Bank Characteristics

One question raised by these results is which particular banks benefited (or lost) the most from this policy? From our earlier discussion of the profit effects, it is likely that the riskiest banks had the most to gain (or lose) from the implicit subsidy conveyed by the Comptroller's policy. The expectations effect suggests that asset size may also be important. To measure for size effect, we use total assets as of December 31, 1983. The riskiness issue is more problematic since bank risk depends on myriad factors. From a deposit insurance perspective,

Table III
Residual Returns on September 20, 1984:
Separate Analysis by *WSJ* Listing and
Solvency Ratio

This table reports residual returns on September 20, 1984 for our total sample and for the samples separated by listing and solvency ratios. The *WSJ* banks are those listed by the *Wall Street Journal* as covered by the "too big to fail" policy. Banks are designated insolvent if nonperforming assets plus Latin American debt exceeded stockholders' equity on December 31, 1983.

	Mean†	Median††	Percent of Returns Positive
A. Total Sample (<i>N</i> = 63)	0.0007 (0.16)	−0.0015 (0.5423)	42.9%
B. <i>WSJ</i> Sample (<i>N</i> = 10)	0.0131** (1.83)	0.0083* (0.041)	70%
Other Banks (<i>N</i> = 53)	−0.0016 (0.34)	−0.0022** (0.0688)	37.7%
<i>t</i> -Test for Difference in Means			2.550* (0.0278)
C. Insolvent Banks (<i>N</i> = 22)	0.0042 (0.78)	−0.0024 (0.516)	45.5%
Solvent Banks (<i>N</i> = 41)	−0.0011 (0.22)	−0.0007 (0.241)	41.5%
<i>t</i> -Test for Difference in Means			1.334 (0.1919)

† *t*-Statistic in parentheses.

†† Significance level in parentheses.

* Significant at the 5% level.

** Significant at the 10% level.

however, bank solvency is likely to be a crucial variable. Swary (1986) proposes a measure of bank solvency that captures the effects of both bad loans (from the Latin debt exposure) and the bank's capitalization, although it does not include all factors affecting solvency (for example, foreign exchange activities). Following Swary (1986), we define

$$\text{solvency ratio} = \frac{\text{nonperforming assets} + \text{Latin American debt}}{\text{book value of stockholders' equity}} \times 100, \quad (7)$$

where the equity value is measured as of December 31, 1983. With this measure, the higher the ratio, the more potentially insolvent is the bank. Since the exact cutoff level between a solvent and insolvent bank is arbitrary, we follow Swary and define any bank with a score above 100 as insolvent, and those below as solvent. Using this rating scheme, our sample has 22 insolvent banks and 41 solvent banks.

Panel C of Table III presents the residual return results for our sample segmented by solvency ratios. While the solvent banks have a small negative

average return and the insolvent banks a small positive return, neither average is significantly different from zero. Moreover, the means of the two groups are not significantly different from each other. This suggests that in the aggregate solvency was not important in affecting returns.

For individual banks in the included and non-included groups, however, this was not the case. In Table IV, we present the Pearson and Spearman correlation coefficients for residual returns for all firms and for firms separated by both size and solvency. The correlation coefficients reveal a number of intriguing effects of the TBTF policy statement. In particular, bank size affects returns. For the *WSJ* sample of included banks, the Spearman coefficient demonstrates that the bigger the bank, the higher the residual return. Conversely, for non-included banks both the Pearson and Spearman measures reveal that the larger the bank, the more negative the abnormal return. Thus, the effect of size switches depending upon whether a bank was deemed "too big." Perhaps not surprisingly, those hurt most by the policy were those banks falling just under the cutoff.

The results based on the solvency ratio reveal another interesting dichotomy. For large banks, both measures indicate that the greater the insolvency level, the higher the abnormal return. This is consistent with the hypothesis that the riskier the bank, the greater the subsidy conveyed by the Comptroller's policy. This effect is perhaps not unexpected given the high correlation between size and insolvency. For small banks, however, solvency appears to have no significant effect on returns.

These solvency results are also consistent with possible differential regulatory behavior with respect to closure rules. As Scott (1987) notes, regulatory forbearance with respect to closing insolvent banks provides a subsidy to those bank's owners. Since such forbearance is more likely the larger the bank, the positive reaction found here for insolvent banks provides some evidence that the market recognizes this closure effect.

H. Separation by OCC Categorization

The results indicate that the market did react to the TBTF policy as reported by the *Wall Street Journal*. As we demonstrate, this reaction resulted in either positive or negative returns to banks, depending on factors such as size and solvency. One issue we have not addressed, however, is the definitional problem noted earlier. Specifically, were the banks identified by the *WSJ* the banks the Comptroller actually meant to include in the TBTF policy? While the market seemed to believe so, the answer is no. According to the Comptroller's office, the intended policy was to insure completely the eleven largest *national* banks.¹³ As Table V indicates, this is not the same as the eleven largest banks because some large banks have state charters. This raises two interesting questions. First, did

¹³ The rationale for which banks to cover was twofold. First, the Comptroller is the primary regulator of national banks, with the regulation of state banks handled by the state banking commissioners and, to some extent, by the Federal Reserve and the FDIC. Consequently, the Comptroller's concern was only federally chartered banks. Second, the exact banks selected were large correspondent banks whose failure would affect hundreds of smaller banks and thereby disrupt the payments system.

Table IV
Firm Size, Solvency, and Residual Returns

This table reports correlations of firm size and solvency ratios with the residual returns on September 20, 1984. Firm size is given by total assets as of December 31, 1983. The solvency ratio is defined as (nonperforming assets and Latin American debt)/stockholders' equity $\times$ 100. Banks designated insolvent had a solvency ratio of at least 100. Solvent banks had a solvency ratio below 100.

	Pearson Correlation Coefficient		Spearman Correlation Coefficient	
	Residual Return	Log Size	Residual Return	Log Size
Total Sample ($N = 63$)				
Log Size	-0.15062 (0.2387) [†]		0.01752 (0.8916) [†]	
Solvency Ratio	0.29470* (0.0190)	0.77617* (0.0001)	0.06140 (0.6326)	0.73406* (0.0001)
WSJ Sample ($N = 10$)				
Log Size	0.41073 (0.2384)		0.64848* (0.0415)	
Solvency Ratio	0.46948 (0.1710)	0.4083 (0.2408)	0.73330* (0.0158)	0.79394* (0.0061)
Other Banks ($N = 53$)				
Log Size	-0.31794* (0.0203)		-0.29245* (0.0336)	
Solvency Ratio	-0.10912 (0.4367)	0.56674* (0.0001)	-0.24133** (0.0817)	0.57571* (0.0001)
Insolvent Banks ($N = 22$)				
Log Size	0.35198 (0.1082)		0.51327* (0.0146)	
Solvency Ratio	0.56053* (0.0067)	0.50275* (0.0171)	0.56409* (0.0062)	0.63298* (0.0016)
Solvent Banks ($N = 41$)				
Log Size	-0.33170* (0.0344)		-0.24721 (0.1192)	
Solvency Ratio	-0.24577 (0.1214)	0.48199* (0.0014)	-0.23240 (0.1427)	0.47178* (0.0018)

[†] Significance level in parentheses.

* Significant at the 5% level.

** Significant at the 10% level.

the market recognize this charter-based distinction and react to the Comptroller's intended list? Second, since some state-chartered banks were larger than the included national banks, did the market react to the combined group of both large national and state banks?

Table VI gives the residual return results for our data segmented into OCC sample banks and non-included banks. The data clearly indicate that as before there is no overall market reaction to the TBTF policy. Now, however, the data show that there is also no between-group reaction. Hence, the market did not realize the intent of the Comptroller's policy and so did not accurately revise its risk estimates of the covered and non-covered banks. This same non-reaction

Table V
**Comptroller of Currency TBTF National Banks and
 Larger State Banks**

This table reports the eleven nationally chartered banks to which the Comptroller of the Currency intended the "too big to fail" policy to apply. The table also indicates the state chartered banks that were larger than some of the national banks included in the TBTF policy. Four of these banks were listed in the *WSJ* as being among the eleven that were TBTF. The asterisk denotes those banks in the *WSJ* sample.

National Banks

- | | |
|---------------------|---------------------------|
| 1. Citibank* | 7. Continental Illinois* |
| 2. Chase Manhattan* | 8. Security Pacific* |
| 3. Marine Midland | 9. Bank of America* |
| 4. Bank of Boston | 10. Wells Fargo* |
| 5. Mellon Bank | 11. Crocker National Bank |
| 6. First Chicago* | |
-

Larger State Banks

- | | |
|---------------------------------|---------------------|
| 1. Manufacturers Hanover Trust* | 4. Irving Trust |
| 2. J. P. Morgan* | 5. Chemical Bank* |
| 3. Bankers Trust* | 6. First Interstate |
-

Table VI
**Residual Returns for Comptroller of the
 Currency (OCC) Banks**

This table reports residual returns on September 20, 1984 for our total sample and for our sample separated into OCC banks and other banks. OCC banks include the ten national banks, other than Continental Illinois, listed in Table V which were the actual subjects of the Comptroller's "too big to fail" policy.

	Mean†	Median††	Percent of Returns Positive
Total Sample (<i>N</i> = 63)	0.0007 (0.16)	-0.0015 (0.542)	42.9%
OCC Sample (<i>N</i> = 10)	0.0008 (0.12)	-0.0006 (1.000)	50.0%
Other Banks (<i>N</i> = 53)	0.0007 (0.16)	-0.0016 (0.465)	41.5%
<i>t</i> -Test for difference in means			0.0235 (0.9813)

† *t*-Statistics in parentheses.

†† Significance level in parentheses.

result occurs if the covered group is expanded to include those state-chartered banks larger than the smallest included national bank. These results provide intriguing evidence that the market reacted to the reported policy and not to the actual policy.

III. Conclusions

Were it simply the case that the Comptroller's TBTF policy statement reflected an isolated (and perhaps ill-considered) event, our results could be viewed as interesting but of limited usefulness. Recent developments in the deposit insurance area, however, dictate otherwise. In particular, the pervasive bailouts and subsidies being used to resolve the S&L crises introduce similar wealth effects into the financial markets. Our results demonstrate that these wealth effects may arise because regulatory policies affect the profitability of both included and non-included financial institutions. Consequently, the impact of regulator default prevention actions extends beyond the particular institutions involved.

One result of our research is to highlight the inequities of the "too big to fail" policy. While the rationale for preventing large bank failures is understandable, the selective policy of charging all institutions the same insurance premium but providing some with greater coverage imposes unnecessary costs on the financial markets. A more consistent policy of complete insurance for all institutions could accomplish the same stability goals without distorting the risk perceptions of individual financial institutions. Since such a policy may in fact be the current policy, removing the uncertainty would allow the market to value firms on their intrinsic worth and not as a function of arbitrary regulator actions.

A second result is the illustration of how the lack of clarity in regulatory policy may cause the market to react negatively to some intended benefactors of a policy change. In this case, while the Comptroller only intended to extend additional coverage to some national banks, the *Wall Street Journal* report apparently persuaded the market that some intended banks were not included in the extended coverage but that some larger state banks were. This misguided interpretation caused the market to react negatively to some of the very banks meant to benefit from the policy change.

REFERENCES

- Brown, S. and J. Warner, 1985, Using daily stock returns: The case of event studies, *Journal of Financial Economics* 14, 3-31.
- Buser, S., A. Chen, and E. Kane, 1981, Federal deposit insurance, regulatory policy and optimal bank capital, *Journal of Finance* 36, 51-60.
- Dann, L. Y. and C. James, 1982, An analysis of the impact of deposit rate ceilings on the market value of thrift institutions, *Journal of Finance* 37, 1259-1275.
- Diamond, D. W. and P. Dybvig, 1983, Bank runs, deposit insurance and liquidity, *Journal of Political Economy* 91, 401-419.
- Fama, E. 1985, *Foundations of Finance* (Basic Books, New York).
- Jaffe, J. F., 1974, Special information and insider trading, *Journal of Business* 47, 410-428.
- James, C., 1983, An analysis of intra-industry differences in the effect of regulation: The care of deposit rate ceilings, *Journal of Monetary Economics* 12, 417-432.
- Kane, E., 1985, *The Gathering Crises in Federal Deposit Insurance* (MIT Press, Cambridge, MA).
- and H. Unal, 1988, Change in market assessments of deposit-institution riskiness, *Journal of Financial Services Research* 1, 207-229.
- Merton, R., 1977, An analytic derivation of the cost of deposit insurance and loan guarantees: An application of modern option pricing theory, *Journal of Banking and Finance* 1, 3-11.
- Patell, J. M. and M. A. Wolfson, 1982, Good news, bad news, and the intraday timing of corporate disclosures, *Accounting Review* 57, 509-527.

- Scott, K. E., 1987, The defective design of federal deposit insurance, *Contemporary Policy Issues* 5, 92-99.
- Sprague, I., 1986, Silent partners: Uncle Sam's compact with the big banks, *Bankers Monthly* 103 (November), 28-30.
- Swary, I., 1986, Stock market reaction to regulatory action in the Continental Illinois Crises, *Journal of Business* 59, 451-473.
- Unal, H., 1989, Impact of deposit-rate ceiling changes on bank stock returns, *Journal of Money, Credit, and Banking* 21, 206-220.