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Stock Market Reaction to Financial Statement Certification by Bank
Holding Company CEOs

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Abstract

In 2002, the Securities and Exchange Commission mandated that the chief executive officers of large, publicly traded firms certify the accuracy of their company financial statements. In this paper, I investigate whether CEO certification has had a measurable effect on the stock market valuation of the forty-two bank holding companies subject to the SEC order. I find that these firms experienced a positive average abnormal return of 30 to 60 basis points on the day of certification—a result driven primarily by those BHCs that certified ahead of the SEC's deadline. Characteristics associated with greater opaqueness— BHC asset size, liquid asset holdings, and the extent of "risky" and information-intensive lending—are systematically associated with these certification day abnormal returns. In addition, average abnormal returns for not-yet-certifying BHCs were positive, though not statistically significant, on the day the first two BHCs certified, lending weak support to the idea that early certification by some BHCs may have signaled to investors that other BHCs were likely to certify. Overall, these results suggest that the certification requirement provided relevant information to investors and was thus an effective public policy tool, at least in the banking sector.

I. Introduction

In June 2002, the Securities and Exchange Commission issued an order requiring the Chief Executive Officers (CEOs) and Chief Financial Officers (CFOs) of large, publicly traded firms to certify the accuracy of their financial statements.[1] Most of the 950 firms subject to the order were required to certify by August 14, 2002. This order was part of a range of steps intended to increase public confidence in firms' financial statements and earnings reports in the wake of several highly publicized accounting scandals.[2] In theory, requiring the CEOs of major firms to formally certify the accuracy of their financial statements (or to attest that they could not certify as to the statements' accuracy) would both emphasize the personal accountability of senior officers for the accuracy of their firms' financial statements and provide a public and highly visible signal as to the statements' accuracy.

Given the attention that this order and the CEO certifications received, it seems important to ask whether the certification requirement was an effective public policy tool in practice. While there are a number of ways that this question could be addressed, one approach is to examine the stock price reaction of the firms subject to the order to see whether issuance of the order or the eventual certification (or non-certification) of financial statements had any measurable effect on valuation of the firms. A significant stock price reaction could indicate that certification provided information to the market that was helpful to investors in assessing firms' values and therefore was an effective public policy tool.

Previous analysis (Bhattacharya et. al., 2002) found no significant stock price reaction for the full range of financial and non-financial firms subject to the SEC's order, either to the announcement of the order or to the act of certification or non-certification itself. Bhattacharya et. al. (2002) argue that this lack of significant reaction is consistent with the idea that the market could already distinguish firms with good earnings transparency from those with bad transparency, and that CEO certification therefore provided little new information.

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[1] To simplify notation, we will refer to the certification of financial statements by CEOs and CFOs as "CEO certification". In the case of the 42 BHCs in our sample, the CFO certified financial statements on the same day as the CEO.
[2] See Patsuris (2002) for a summary of recent accounting difficulties at major U.S. corporations.

This paper complements the analysis in Bhattacharya et. al. (2002) by focusing on the stock price reaction to CEO certification by the 42 bank holding company (BHCs) subject to the SEC's order. Financial firms, and bank holding companies in particular, are a potentially interesting sub-set of companies to examine because evidence indicates that these institutions are relatively opaque as compared to non-financial firms.[3] This greater "opacity" suggests that there might be more scope for public policy actions to provide valuable market information about earnings and financial statement accuracy. In addition, trust plays an especially important role in the banking sector, enhancing the importance of outsider confidence in banking organizations' financial condition. Finally, banks play an important role in the financial system, so information concerning their health and performance carries broader public policy significance.

And in fact, the basic finding of our analysis is that the 42 BHCs subject to the SEC's order experienced a positive and statistically significant average abnormal stock price return of 30 to 60 basis points on the day of certification. The CEOs of all 42 BHCs certified the accuracy of their financial statements by the August 14 deadline. However, abnormal returns were largest and most significant for those BHCs that certified "early" (that is, ahead of the deadline).

We examine two possible explanations for these findings. First, the strong positive stock price reaction for the early certifiers and weaker reaction for later certifiers could reflect a signaling effect whereby initial certification by some BHCs resolved uncertainty about whether BHCs in general would certify. That is, all BHCs received a favorable stock market reaction as it became clear over time that most bank holding companies would, in fact, certify. We find weak evidence to support this signaling hypothesis. On the day the first BHCs certified, the average abnormal return was positive for the remaining (not-yet-certifying) BHCs subject to the SEC's order, but not statistically different from zero.

Alternatively, the stock price reaction could reflect differences in transparency across BHCs such that those with more opaque activities experienced a more pronounced stock price reaction to certification. We find stronger evidence in support of this second hypothesis. Variables associated with the degree of opaqueness of BHC activities – such as BHC assets

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[3] See, for instance, Morgan (2002).

size, holdings of liquid assets, and extent of "risky", informationally intensive lending – appear to explain some of the cross-sectional variation in certification day abnormal returns. However, to fully explain the results, there would also have to be a relationship between opaqueness and the timing of certification, with less transparent firms certifying earliest. We are not able to find evidence of such a relationship.

Taken together, the results of our analysis suggest that financial statement certification by BHC CEOs did provide useful information to market participants. There is evidence that the certification effect was driven mostly by firm-specific considerations, with weaker evidence of a general signaling component. These findings imply that the certification requirement was a useful public policy tool, at least in the banking sector. That said, a key question going forward is whether the positive stock price reaction to financial statement certification was a one-time effect or whether it will persist in the future, as CEOs are required to certify their firms' financial statements on an on-going basis.

The rest of this paper is organized as follows. The next section provides more detailed background on the SEC's certification order and on previous analysis of its impact. Section III describes the data and empirical approach used in this paper, while Section IV presents the results. Section V contains a summary and conclusions.

II. Background

On June 27th 2002, the U.S. Securities and Exchange Commission (SEC) issued an order requiring the Chief Executive Officers (CEOs) and Chief Financial Officers (CFOs) of large, publicly traded firms to certify the accuracy of these firms' 2001 annual and 2002 quarterly financial statements.[4] The deadline for this certification was, in most cases, August 14, 2002.[5] The SEC order applied to 947 companies with revenues in excess of $1.2 billion. Mandatory CEO and CFO certification of financial statements was subsequently extended to cover all

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[4] See U.S. Securities and Exchange Commission (2002a), available at
<http://www.sec.gov/spotlight/officerstatements.htm> for the full text of the order, as well as for a listing of the companies subject to the order and the dates on which they certified.
[5] This deadline applied to all firms whose fiscal year matched the calendar year. See U.S. Securities and Exchange Commission (2002a).

publicly listed firms as part of the Sarbanes-Oxley Act, with the SEC issuing a final rule putting this requirement into effect on August 29, 2002.[6]

Given the significant attention that the SEC's certification order generated, it seems reasonable to ask how effective it was in providing additional confidence to investors about the accuracy of firms' financial statements. Only one prior study has addressed this question. Bhattacharya et. al. (2002) examine the stock price reaction to CEO certification for the 688 financial and non-financial firms that were subject to the SEC's order and faced the August 14 deadline. They found no significant stock price reaction for either the firms that certified their financial statements, or for the firms that failed to certify.[7] They also found no significant changes in trading volume or price volatility around certification/non-certification dates. In fact, only a handful of firms failed to certify their earnings by the deadline, and most of these were firms already well-known to be in financial distress or to have unreliable financial statements. Bhattacharya et. al. (2002) conclude that certification was a "non-event" for the firms subject to the SEC's order, most likely because the market was already able to identify firms with good earnings transparency.

The conclusions in Bhattacharya et. al. (2002) reflect the average experience of all firms subject to the SEC's certification order. One question is the extent to which this average experience masks differences across industries in the typical response to the act of CEO certification. The banking industry could be particularly relevant in this regard, since some have argued that banks are more "opaque" than non-financial firms (Morgan 2002). Under this theory, greater opaqueness in the banking industry stems from the core activities of banking institutions – which involve intermediation of credit to firms which themselves may be too small or opaque to tap into public debt markets[8] – and from the greater liquidity of their assets as compared to non-financial firms, which makes it comparatively easy to shift the composition of the balance sheet.

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[6] See U.S. Securities and Exchange Commission (2002b), available at <http://www.sec.gov/rules/final/33-8124.htm>.
[7] Bhattacharya et. al. (2002) used August 15 – the day following the certification deadline – as the event date for those firms that failed to certify.
[8] Though some have argued that there is no significant difference in opaqueness between the assets of banking companies and those of non-financial firms. See, for instance, Flannery et. al. (2002).

To the extent that these or other factors make BHCs more opaque to outsiders, it could be harder for investors and the public to monitor and to accurately assess these organizations. A greater degree of difficulty in monitoring could have in turn introduced a greater degree of uncertainty about whether BHCs' CEOs would certify their financial statements.

It is important to note that this discussion focuses on the possibly greater opaqueness in banking companies' activities and earnings streams, not on the accuracy of their financial statements *per se*. In fact, there is reason to believe that BHCs' financial statements could be viewed by market participants as being more reliable than those of non-financial firms. All BHCs are required to file quarterly balance sheet and income statements reports with the Federal Reserve (the Federal Reserve Y-9C reports). These reports, which are publicly available, are reviewed by the Federal Reserve and the accuracy of the underlying information is spot-checked as part of the examination process. This supervisory monitoring of BHC financial statements could significantly mitigate any uncertainty arising from the opaqueness BHCs' activities.

The 947 firms subject to the SEC's certification order included 42 commercial bank holding companies, a set comprising nearly all the largest U.S.-owned bank holding companies.[9] These bank holding companies are listed in Table 1. The CEOs of all 42 bank holding companies subject to the SEC order were able to certify that their financial statements were accurate by the August 14 deadline.

The fact that all bank holding companies, and nearly all firms overall, certified the accuracy of their earnings statements may suggest that the act of certification conveyed little new information to the market and, thus, would have no significant impact on stock prices. This finding would hold if it had been widely anticipated beforehand that most BHCs would indeed certify.[10] If, alternatively, there were some *ex ante* uncertainty about whether seemingly sound

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[9] Among the 50 largest U.S. bank holding companies, those not covered by SEC's certification requirement were owned by non-U.S. banking organizations.

[10] As discussed in Bhattacharya et. al. (2002), the failure to find a significant stock price reaction could also occur if the event in question – certification – is not "value-relevant" (that is, the event conveys information, but that information does not assist investors in valuing the stock), or for technical reasons having to do with sample size (too few observations for the tests to have statistical power) or market performance (e.g., inefficient markets).

and healthy BHCs would certify their earnings statements, then the act of certification might have conveyed some valuable information to the markets.

This uncertainty could have been fairly general in nature or could have been focused on specific BHCs whose activities, business focus, or other recognizable characteristics might cast their ability to certify into doubt. In the first case, we might expect to see a fairly widespread positive stock price reaction to the certification event. In this scenario, BHCs might experience a positive stock price reaction not only to their own certification, but also to other BHCs' certification, to the extent that a growing body of certifications lessened overall uncertainty about the likelihood of certification. Under this hypothesis, certification by one bank plays a signaling role about other BHCs that have not yet certified.

In the second case – specific uncertainty – we would expect to see a positive stock price reaction only to own-firm certification and then only for those BHCs where certification had been in doubt *ex ante.* For instance, BHCs whose activities and income streams are less transparent might have been subject to more *ex ante* uncertainty about certification. Such firms might be expected to experience a stronger and more positive stock price reaction to certification.

In the analysis that follows, we will test these hypotheses by examining the stock price reaction of the 42 BHCs subject to the SEC's certification order. We will look to see whether these companies experienced significant abnormal returns on the day the SEC announced the order (June 27) and on certification day. We will then do a cross-sectional analysis to see if the abnormal returns are systematically related to BHC-specific characteristics that reflect the relative transparency or opaqueness of the companies' activities and earnings streams.

III. Data and Empirical Approach

The basic empirical approach used in this analysis is an event study that examines the stock price reaction of the 42 BHCs subject to the SEC's certification order to the announcement of the order and to their eventual certification under the terms of the order. The standard event study technique involves estimating a market model relating individual firms' equity returns to the return on the market during a pre-event period. The coefficients from this model are then used to calculate "abnormal returns" during the event period, where abnormal returns are defined as the

difference between the actual return on the stock and the expected return based on the stock's historical relationship to market returns. Thus, abnormal returns capture the part of the return that is over and above general market price movements, presumably the component that is firm-specific and related to the event in question. These abnormal returns are averaged across firms to see whether the firms, on average, experienced a statistically significant price reaction to the event.[11]

The general assumption in event study analysis is that the abnormal returns are uncorrelated across firms. In our case, however, we have significant temporal clustering of events that makes this assumption inappropriate. Specifically, the SEC's June 27 announcement of the certification order affected all 42 BHCs on the same day. Further, there was considerable clustering of the dates on which the individual BHCs complied with the order. The first two of the 42 BHCs subject to the SEC order sent their certification notices to the SEC on July 31, with the remainder of the notifications arriving during the two-week window between July 31 and August 14. As illustrated in Table 2, twelve of the bank holding companies had filed their certifications by Friday, August 9 ("early certifiers"); another 18 filed on Monday and Tuesday, August 12-13 ("mid-date certifiers"); and the remaining 12 filed on the deadline of August 14 ("deadline certifiers").

We will use two different statistical approaches to address the impact of this temporal clustering. The first approach is based on the portfolio methodology developed by Jaffe (1974) and Brown and Warner (1980, 1985). The second approach involves estimating a system of equations using the Seemingly Unrelated Regression (SUR) methodology.

In the portfolio approach, all BHCs experiencing events on the same day in calendar time (e.g., June 27) are grouped together in a single portfolio and the average portfolio return is calculated:

$$r_{\tau,t} = \frac{1}{J} \sum_{j=1}^{J} r_{j,t},$$

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[11] See MacKinley (1997) for an overview of event study methodologies.

where τ refers to the event date (e.g., June 27), $r_{\tau,t}$ is the return on the event date τ portfolio on calendar date t, $r_{j,t}$ is the return on firm j's equity on calendar date t, and j = 1,J are the J firms experiencing an event on event date τ. A market model is then estimated for each portfolio over a period prior to the event date:

$$r_{\tau,t} = \alpha + \beta\, rm_t + \varepsilon_{\tau,t},$$

where rm_t is the return on the market, α and β are the market model parameters to be estimated, and $\varepsilon_{\tau,t}$ is the error term. The estimated parameters are then used to calculate the portfolio abnormal return on the event date τ, $AR_{\tau,\tau}$:

$$AR_{\tau,\tau} = r_{\tau,\tau} - \hat{\alpha} - \hat{\beta}\, rm_\tau.$$

The variance of the abnormal return is calculated as an out-of-sample projection error from the regression equation:

$$\sigma_\tau^2 = s_\tau^2\left[1 + \frac{1}{N} + \frac{(rm_\tau - \overline{rm})^2}{(N-1)\, VAR(rm)}\right],$$

where s_τ^2 is the estimated residual variance from the market model regression, N is the number of degrees of freedom in the market model regression, $VAR(rm)$ and $\overline{rm}$ are the estimated variance and mean of the market return calculated from the observations used in the regression, and rm_τ is the market return on event date τ.

For a single event date, the test statistic for the significance of the average abnormal return, $AR_{\tau,\tau}$ is simply the ratio of the abnormal return to its standard deviation. For multiple event dates, the test statistic is:

$$\frac{\sum_{\tau = \text{event date 1}}^{\text{event date T}} AR_{\tau,\tau}}{\sqrt{\sum_{\tau = \text{event date 1}}^{\text{event date T}} \sigma_\tau^2}},$$

where T is the total number of separate event dates. This formula assumes that the events are independent across event dates. Under this assumption, the statistic has the t-distribution with degrees of freedom equal to T*N (see Jaffe 1974).

Under the SUR approach, we estimate a system of market model equations for each of the 42 BHCs in the sample. The market model is the same as that described above, with addition of a series of dummy variables that capture the abnormal return for each BHC for the event date in question (i.e., June 27 or the BHC's certification date). The significance of average abnormal returns on the event dates is assessed by testing the significance of the sum of the dummy variables using standard techniques.

The data used in the analysis are daily stock returns for the 42 BHCs subject to the SEC's certification order, as reported by Bloomberg. We collected these data for the period from January 3 to August 31, 2002, adjusting them for factors such as stock splits and *ex dividend* dates. We used two different variables to represent the market return: the return on the S&P 500 index, which is a general market return measure, and the return on the SNL Bank Stock Index, a market-value weighted, sector-specific index. Using the Bank Index is likely to do a better job of controlling for industry-specific factors and therefore of isolating the BHC-specific component of returns. That said, to the extent that certification-related events affected the entire banking industry – or had systematic effects across the large BHCs subject to the SEC's certification order that in turn influenced the Bank Index return – using a general market index such as the S&P 500 might result in more powerful statistical tests.

The market model regressions for the portfolio approach are estimated over a pre-event period that runs from January 3 to May 15, 2002 (a span of 92 trading days).[12] The mid-May date reflects the point just before the possibility of enacting a CEO certification requirement was first publicly discussed by SEC officials.[13] In contrast, the SUR regressions are estimated over the entire data window (that is, through August 31) in order to capture the mid-August certification deadline.

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[12] The results are qualitatively similar if the pre-event window runs through June 26, the day immediately prior to the SEC's announcement, suggesting that the results are not overly sensitive to the choice of window.

[13] In a speech before the Investment Company Institute on May 24, 2002, then-SEC Chairman Harvey L. Pitt announced that the SEC intended to do a rulemaking requiring CEOs to certify their firms' quarterly and annual financial reports (Pitt 2002). The idea had earlier been suggested by President Bush as part of a 10-point plan of corporate reforms.

IV. Results

Basic Results: Market Reaction to CEO Certification

Table 3 reports the basic results of the event study analysis for two different certification-related events: the SEC's June 27 announcement of which firms would be subject to the certification requirement, and the eventual certification of financial statements by the 42 BHCs subject to the requirement.

As illustrated in the top panel of the table, the BHCs experienced no significant abnormal returns in response to the SEC's announcement of the certification requirement.[14] This lack of response could be taken as evidence that investors viewed the certification requirement as having little potential to provide valuable information to the market. Alternatively, the lack of response could reflect the SEC's announcement having been widely anticipated and already capitalized into share prices. Given earlier discussion of the likelihood of a certification requirement (see, for instance, Pitt 2002), the real news component in the SEC's June 27 announcement may have been the identify of the firms that would be subject to the requirement. Even this may have been anticipated, however, at least for the very largest firms. However, dropping the largest BHCs from the sample does not alter the basic result in Table 3: June 27 average abnormal returns are small and not significant different from zero even for the "smaller" BHCs subject to the SEC's certification requirement.

In contrast, the BHCs did experience a positive and statistically significant response to actual certification of their earnings statements (see the bottom panel of Table 3). While the precise estimates vary with the empirical approach and with the choice of market index, the BHCs appear to have experienced an average abnormal return of between 30 and 60 basis points on the date of certification. This finding represents some initial evidence that investors regarded the actual event of CEO certification as providing useful information about firm value for these BHCs.

To gain more insight into the results, we break the sample of 42 BHCs into various sub-sets according to the timing of certification and according to asset size. Turning first to the timing results, recall that the 42 BHCs certified their financial statements at different points over a two-

week period leading up to the April 14 deadline (see Table 2). Grouping the BHCs into three categories according to certification date (early certifiers, mid-date certifiers, and deadline certifiers), we examine the relationship between the timing of certification and average abnormal returns. These results are reported in Table 4.

As the table makes clear, the overall positive average abnormal returns are driven by the BHCs in the "early certifiers" sub-set (those that certified by August 9). These BHCs experienced positive and statistically significant average abnormal returns of about 80 basis points in specifications using the Bank Index as the market index and of about 100 basis points using the S&P 500 as the market. Average abnormal returns for BHCs that certified later were not consistently positive or significantly different from zero in any of the specifications.

Table 5 breaks the BHCs down into even finer categories based on specific certification dates (eight in total). Within the "early certifier" group, the strongest positive abnormal returns were experienced by the two BHCs that certified first, on July 31: these BHCs experienced an average abnormal return of 200 to 250 basis points, depending on the precise empirical specification. There is also a positive and statistically significant average abnormal return for the BHCs that certified on August 8, although the size of the abnormal return is only about half that of the BHCs that certified on July 31. The remaining certification date groups did not experience consistently positive or significant average abnormal returns.

One issue to address in interpreting these results is the possibility that other value-relevant events may have taken place on the certification date. In particular, many of the BHCs in the sample filed their second quarter 2002 10-Q reports with the SEC on the same day that they filed their certification notices.[15] Twenty-six of the 42 BHCs filed second quarter 10-Q reports on the same day they sent certification notices to the SEC. BHCs that filed closer to the August 14 deadline were much more likely to simultaneously file certification notices and 10-Q reports, largely because August 14 was also the deadline for filing these quarterly financial statements.

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[14] This (lack of) result is robust to different divisions of the sample by certification date and by size of institution. In the interests of space, these results are not reported here.
[15] The certification statements submitted by CEOs cover the firms' most recent annual report (10-K) filings, as well as any subsequent filings up until the day of certification, including 10-Q reports.

This timing issue presents difficulties for the interpretation of the abnormal returns, because market reaction on the certification date could reflect new financial information as well as the impact of certification. At the least, this effect would introduce noise into the average abnormal return estimates, perhaps accounting for the lack of statistical significance in the two later certification groups. However, a large number of the BHCs in our sample issued second quarter earnings announcements (e.g., press releases reporting unaudited financial results) well ahead of certification, typically, in early to mid-July. These announcements may mean that the subsequent 10-Q reports contained little new information. According to 8-K filings and other sources, at least 33 of the BHCs issued second quarter earnings statements before their 10-Q reports were filed. These 33 BHCs were spread evenly across the three certification timing groups, so it seems unlikely that differences in the extent of simultaneous certification notice/10-Q filings account for the reported differences in abnormal returns across the groups.

In fact, the results in Table 4 are fairly robust to limiting the sample to those BHCs that issued second quarter earnings announcements and/or filed second quarter 10-Q reports on a different day than their certification date. As with the overall results, these BHCs had positive average abnormal returns that are driven primarily by the "early certification" cohort.[16] Thus, the general findings reported above do not seem to be solely the result of market reaction to new financial information.

Aside from examining the timing of certification, we also look at the relationship between BHC asset size and average abnormal returns. In particular, we repeat the analysis described above dropping the top 20 percent of BHCs by asset size from the sample.[17] This partition of the sample is intended to provide a general sense of the impact asset size, rather than being a precise assessment of this relationship, which will be examined in greater detail below. In that sense, the 20 percent cutoff —which translates to the eight largest BHCs in the sample – is illustrative only.

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[16] These results are available from the author on request.
[17] These eight BHCs are Citigroup, J.P. Morgan Chase, Bank of America, Wachovia, Wells Fargo, Bank One, Metlife, and Fleet Boston. See Table 1.

These results are reported in Table 6. Comparison of the results in Table 6 with those in Table 4 illustrates that average abnormal returns are larger and more statistically significant when the largest 20 percent of BHCs are dropped from the sample. As the top panel of the table indicates, measured average abnormal returns range between 55 and 80 basis points for the sample as a whole, as compared to 30 to 60 basis points when the largest BHCs are included.

As with the entire sample, this overall positive value is driven primarily by the "early certifiers" (see the second panel of the table). In contrast to the overall results, however, average abnormal returns for the remaining certification groups are also consistently positive and sometimes statistically significant, especially for the specifications using the Bank Index as the market return. These results suggest that the smaller BHCs in the sample were more likely to have had a positive stock price reaction to CEO certification of financial statements, a result that will be explored more fully below.

To summarize, the 42 BHCs subject to the SEC's certification requirement experienced positive and significant average abnormal returns on the day of certification. These abnormal returns were larger and more significant for those BHCs that certified early and for smaller BHCs in the sample. These findings stand in contrast to earlier analysis of the impact of certification (Bhattacharya et. al. 2002), which found no significant stock price reaction to certification. Thus, a key question is why bank holding companies appear to have experienced a positive stock price reaction to CEO certification when other firms did not.

Cross-Sectional Analysis: Explaining the Pattern of Abnormal Returns

We will explore two potential explanations of the basic event study findings, the first having to do with the signaling role of the early certifiers and the second having to do with firm-specific factors relating to the opaqueness of the BHCs' activities. Turning first to the signaling explanation, the pattern of strong, positive abnormal returns for the early certifiers and weaker certification day abnormal returns for later certifiers could indicate that certification by the first BHCs resolved some general uncertainty about whether most BHCs would certify. If this were the case, then we would expect to find positive average abnormal returns for all BHCs on the day

the first BHCs certified, with little additional valuation impact on the days these BHCs eventually certified.

To test this hypothesis, we calculated average abnormal returns for the not-yet-certifying BHCs on July 31, the day the first two BHCs certified. These results are presented in Table 7.   At first glance, these results appear to provide some support for the signaling hypothesis. As shown in the top panel of the table, average abnormal returns for the 40 not-yet-certifying BHCs are positive, though statistically significant in just one of the four empirical specifications. Dividing the BHCs into groups according to when they eventually certified, we see that average abnormal returns are consistently positive, though statistically significant only for the "deadline certifiers."

Further analysis, however, reveals that the strong positive average abnormal returns for the deadline certifiers are driven primarily by the results for one BHC. This BHC had abnormal returns of more than 8 percent on July 31; a news search reveals that this BHC was the subject of takeover rumors that caused its stock price to jump sharply on that day. Omitting this outlier BHC from the sample reduces the size and statistical significance of average abnormal returns for the deadline certifiers group and for the overall sample (see the bottom panel of Table 7). Thus, the results in Table 7 provide weak support for the signaling hypothesis, in that average abnormal returns are consistently positive, though not precisely estimated.

Turning now to second hypothesis, we examine the extent to which firm-specific factors having to do with the relative opaqueness of the BHCs' activities and earnings streams appear to have influenced the stock market reaction to certification. Specifically, we might expect to see a more positive price reaction for those BHCs whose activities are more opaque since certification of financial statements by these firms might convey more information to investors.[18] To fully explain the results – that is, to explain the pattern of early certifiers having stronger average abnormal returns than later certifiers – we might also expect to see the degree of opaqueness affecting the timing of certification, with more opaque BHCs certifying earlier. We will test for both effects below.

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[18]Note that here we are only looking at differences in opaqueness within the BHC sample, not between BHCs and other (non-financial) firms subject to the SEC's certification order.

To capture the extent to which the activities and earnings streams of the 42 BHCs might be opaque to investors, and the firms consequently more difficult to monitor externally, we use data from the BHCs' regulatory reports.[19] In particular, we focus on variables that capture (1) holdings of liquid, and thus easily changeable, assets (trading account assets; loans and securities held for sale; and cash, deposits, and assets held under repurchase agreements); (2) the extent of non-traditional or non-banking activities (assets in securities underwriting and insurance underwriting subsidiaries; non-interest income as a share of total revenue; gross notional principal of derivatives held by the BHC); and "risky" assets (loans as a share of total assets; foreign loans as a share of total assets; and commercial and industrial and non-residential real estate loans as a share of total assets).

We also created variables intended to capture the financial and operating performance of the BHC in the period just before the SEC's announcement of its certification order (the cumulative market return on the BHC's stock between January 1 and May 15, 2002; return on equity (ROE) and return on assets (ROA) in the twelve months ending with the first quarter of 2002; and non-performing loans as a share of total assets), as well as the basic characteristics of each BHC (the log of asset size, total risk-based capital ratio). Precise variable definitions and basic statistics are reported in Table 8.

The financial statement variables were taken from the BHCs' March 31, 2002 regulatory reports, which contain balance sheet information as of the end of the first quarter. We use regulatory report data as of the first quarter in part because these data are from the pre-event period. The first quarter data also reflect the most recent audited financial statements that would have been publicly available for all BHCs prior to the event window. That said, as discussed above, many of the BHCs issued second quarter earnings announcements or filed second quarter 10-Q statements on or before their certification dates, implying that more up-to-date financial information may have been available for these firms. Since the content and level of detail of the earnings announcements varied across BHCs, trying to account for the precise

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[19] In particular, the data are drawn from the Federal Reserve Y-9C reports, which contain income statement and balance sheet data for all bank holding companies with assets exceeding $150 million. These data are available at <http://www.chicagofed.org/economicresearchanddata/data/bhcdatabase/index.cfm>.

information that was publicly available on a firm-by-firm basis would be a difficult task. Instead, we tested the robustness of the findings by repeating the estimates using second quarter regulatory report information and by limiting the sample to those BHCs that issued prior earnings announcements and/or had already filed second quarter 10-Q statements before certification date. The results reported below are not significantly affected by these alternative specifications.

The basic empirical approach is to do a cross-sectional regression of certification day abnormal returns on combinations of the variables described above. BHC-level abnormal returns are derived from individual market model regressions estimated over the period from January 3 to May 15, 2002, using the Bank Index as the market index. Because of the relatively small sample size – 42 observations – we adopt a fairly parsimonious specification, containing the two variables that control for basic BHC characteristics (log of asset size and total risk-based capital ratio), one variable intended to capture liquid asset holdings, one variable reflecting pre-event performance, and in some specifications, an additional variable controlling for the extent of non-traditional activities or "risky" assets. We also include "fixed effect" dummy variables for the three certification timing groups (early, mid-date, and deadline certifiers).[20]

The results of this estimation are reported in Table 9. Initial estimates of these equations (not reported here) revealed that the results were sensitive to one observation with both a large estimated abnormal return and a high total risk-based capital ratio. Table 9 presents estimates in which this outlier observation is omitted. As a robustness check, we also did estimates including the outlier observation but scaling the abnormal returns by their estimated standard errors. The results are qualitatively similar across the two specifications, suggesting that the findings are not overly sensitive to the precise method of controlling for the impact of the outlier.

The first six columns of Table 9 present the basic regression specification using alternative measures for the liquid assets variable (trading assets, trading and held-for-sale assets, and all liquid assets) and alternative measures of pre-event performance (cumulative stock returns, ROE, ROA, and non-performing loans). The remaining columns of the table

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[20] The estimation results are quite similar if these dummy variables are omitted from the specification.

present results including a series of additional variables to capture non-traditional activities and "risky" assets.

Some basic results stand out. First, there is a strong negative relationship between asset size and certification day abnormal returns. The coefficient on log asset size is negative and statistically significant in all specifications of the regression equation. The coefficient estimates imply that this size effect is economically important as well: based on the estimates in Table 9, moving from the 25th percentile of the asset size range to the 75th percentile (approximately an increase from $25 billion to $100 billion in assets) implies a decrease of 60 to 80 basis points in certification day abnormal returns, all else equal. This finding echoes that reported in Table 6, where average abnormal returns increased once the eight largest BHCs were omitted from the sample. [21]

The relationship between asset size and the idea that differences in opaqueness across BHCs can explain differences in the stock market reaction to certification is somewhat complex. On the one hand, smaller firms may be more opaque to investors to the extent that these companies receive less public scrutiny from independent analysts. In this light, the finding that smaller BHCs experienced higher certification day abnormal returns is consistent with the opaqueness hypothesis. On the other hand, smaller BHCs are more likely to be focused on traditional, core banking activities and less likely to be involved in complex financial transactions or corporate structures that can be difficult for investors to assess, suggesting that these institutions should be less opaque than their larger counterparts. That said, to the extent that we can measure such complex or non-traditional activities, we find no evidence that these are significantly correlated with certification day abnormal returns. The results concerning asset size are robust to the inclusion of these variables.

The second notable result concerns the measures of liquid assets. The coefficients on these variables are consistently positive and, for the trading plus held-for-sale assets measure, significantly different from zero. [22] The coefficient estimates on these variables also suggest that

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[21] Bhattacharya et. al. (2002) also find evidence that firm size – as measured by sales – is negatively associated with certification day abnormal returns.
[22] The coefficient on the broader "all liquid assets" measure is statistically significant at the 15 percent level.

the impact of increased liquid assets is economically significant. Moving from the 25th to the 75th

percentile of the distribution of the trading plus held-for-sale assets variable implies an increase of

50 to 80 basis points in certification day abnormal returns, based on the results in Table 9.

The results concerning liquid assets provide support for the idea more opaque BHCs

experienced larger abnormal returns following CEO certification of financial statements. Higher

shares of liquid assets – which can be shifted comparatively quickly – may make it more difficult

for outsiders to monitor the condition of firms based on periodic financial reports. At least one

other study (Morgan 2002) has also found evidence consistent with this view.

Finally, the variable capturing "risky" loans – commercial and industrial plus non-

residential real estate loans as a share of total assets – is positive and statistically significant.[23]

This variable reflects the extent of each BHC's lending activity to borrowers and for projects that

are the most information-intensive, and thus arguably the most opaque. The implied impact of

greater amounts of this type of lending is meaningful: moving from the 25th to the 75th percentile

of the distribution of the "risky" lending variable implies an increase of 50 basis points in

certification day abnormal returns. The finding for "risky" loans stands in contrast to the

coefficient on the variable for all types of lending ("loan share"), which is quite imprecisely

estimated. Thus, the results suggest that only certain types of lending – in particular, the "risky"

loans that are likely to be the most difficult for outsiders to assess – were systematically

associated with certification day abnormal returns.

The remaining results in Table 9 are less robust. There is some evidence that higher

ROE and ROA in the pre-event period were associated with higher certification day abnormal

returns, though only the coefficients on ROA is statistically significant at conventional confidence

levels.[24] The variables intended to capture non-traditional activities do not enter the equations

significantly, nor does the total capital ratio.

To fully explain the results in Tables 4 and 5 – in which the early certifiers experienced

strongly positive average abnormal returns and later certifiers experienced a less strongly positive

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[23] The coefficient is significant at the 5.1 percent level.

stock price reaction to certification – we might also expect to see a relationship between variables reflecting BHCs' opaqueness and the timing of certification. To test this idea, we estimated an ordered logit model based on the three broad certification timing groups – early, mid-date and deadline certifiers – using the same explanatory variables as in the abnormal returns equations. These results are reported in Table 10.

As is clear from the table, there does not appear to be a systematic relationship between the descriptive, pre-event performance, or opaqueness variables and the timing of certification. The coefficients estimates are generally not statistically significant, either in the specifications presented in the table or when they are included on a one-by-one basis in the equation (results not reported here).   Similarly, no systematic relationship emerges if we simplify the specification to examine the probability of a BHC's being either a early certifier or a deadline certifier (that is, use a logit specification on a binary dependent variable).

The one exception to this finding is the specification including the loan share variable (column 10 of Table 10). This specification suggests that BHCs with higher loan shares and higher levels of liquid assets tended to certify later. This result – that the variables indicating higher degrees of opaqueness are associated with later certification timing – is actually the opposite of what we would expect to find given the abnormal return results. The results in column 10 also suggest that BHCs with better pre-event performance (as measured by the Cumulative Return variable) tended to certify earlier. The results concerning pre-event performance are echoed in the specification including non-performing loans (column 6), which indicates that banks with lower shares of non-performing loans tended to certify earlier. The results for specifications including ROE and ROA, which do not enter the equations significantly, do not support this finding, however.

Taken together, the results in Tables 9 and 10 provide general support for the idea that the positive average abnormal returns experienced by the 42 BHCs subject to the SEC's certification order were driven by factors having to do with the relative opaqueness of these firms'

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[24] The coefficient on ROA is statistically significant at the 6.3 percent level, while the coefficient on ROE is significant at the 12 percent level. Bhattacharya et. al. (2002) also find evidence that certification day abnormal returns are positively associated with accounting earnings (ROA).

activities. More broadly, the results presented above provide at least some support for both this opaqueness hypothesis and the idea that certification by the first BHCs provided a signal to market participants that all BHCs would likely be able to certify. The level of abnormal returns is significantly related to variables that capture the opaqueness of BHCs to outside parties, although there is not a significant relationship between these variables and the timing of certification. Further, not-yet-certifying BHCs had positive, although imprecisely measured, average abnormal returns on the day the first BHCs certified, consistent with the idea that certification by these initial BHCs conveyed positive information to investors about all BHCs subject to the certification order.

The weakness of some of these results may reflect the fairly small sample size, which provides only limited power to the statistical tests and enhances the influence of outlier observations. That said, the general pattern of the findings is robust to, and sometimes strengthened by, excluding or controlling for the outliers, which suggests that the influence of outliers alone does not explain the findings.

V. Summary and Conclusions

This paper has examined the stock price reaction to SEC-mandated certification of financial statement by the CEOs and CFOs of 42 bank holding companies. We find a positive and statistically significant average abnormal return on the day of certification for these BHCs. This result is driven primarily by BHCs that certified ahead of the August 14, 2002 deadline. These findings stand in contrast to earlier results for the full range of financial and non-financial firms subject to the SEC's certification order, which showed no significant market reaction.

We examine two possible explanations of the findings for BHCs, both related to the idea that these companies may be more opaque to outside observers than non-financial firms. Greater opaqueness of activities, particularly as regards lending, and greater asset flexibility could make it more difficult for investors and others to monitor bank holding companies and thus have led to greater *ex ante* uncertainty about whether these firms would be able to certify their financial statements.

The first explanation is that certification by the first BHCs may have served as a positive signal to investors about the likelihood that other BHCs would certify. Average abnormal returns for not-yet-certifying BHCs were in fact positive on the day the first two BHCs certified, though not statistically significant, lending weak support to this hypothesis. The second explanation is that differences in opaqueness across BHCs may have resulted in the differences in investor reaction to BHC certification. We find support for this hypothesis in that characteristics that are arguably associated with greater opaqueness – BHC asset size, holdings of liquid assets, and the extent of "risky" and information-intensive lending – are systematically associated with certification day abnormal returns. These factors do not explain the timing of certification, however.

Taken together, these findings provide support for the idea that certification of earnings statements by the CEOs and CFOs of bank holding companies provided information to investors that was value-relevant. In that sense, the certification requirement was an effective public policy tool, at least in the banking sector. Since, under the Sarbanes-Oxley Act, CEO certification will be an on-going requirement, one key question is the extent to which it will continue to provide information that investors find useful. To the extent that the initial round of certification has allayed uncertainty about whether seemingly healthy firms would certify their financial statements, future certification may not result in significant market price reaction. Future event studies might not, therefore, replicate these results.

The failure to find significant market price reaction to CEO certification does not necessarily mean, however, that the requirement is not effective on-going public policy. For instance, an unanticipated failure to certify would of course provide valuable information to investors, though based on the Bhattacharya et. al. (2002) results, one can question how often it seems likely that such an event would occur. More broadly, the very public nature of the certification requirement may affect governance procedures within firms concerning financial statement production and validation by enhancing the "penalty" associated with having to re-state or otherwise acknowledge financial statement inaccuracies.

This suggests that one potentially interesting future line of research would be to examine the market price reaction to re-statement of financial reports to see whether it has changed as a

result of the recent wave of corporate accounting difficulties and the regulatory response to those events. Following on the findings of this paper, it might also be interesting to assess whether the market reaction bears any relationship to the opaqueness of the firms in question or varies significantly across industries. Such a line of research could provide insights into the role that public policy can play in helping to ensure that the information available to market participants is accurate and meaningful.

Table 1
Bank Holding Companies Subject to SEC Certification Order
Assets and Asset Size Rank as of June 30, 2002

Bank Holding Company	Asset Size Rank	Asset Size ($ Billion)
Citigroup	1	1083.3
JP Morgan Chase	2	740.5
Bank of America Corporation	3	638.4
Wachovia Corp	4	324.7
Wells Fargo	5	314.8
Bank One Corporation	6	270.3
Metlife Inc	7	261.2
FleetBoston Financial	9	191.2
US BanCorp	11	173.0
SunTrust Banks	13	108.0
National City Corp	14	99.2
KeyCorp	15	82.2
Bank of New York	16	80.9
State Street Corp	17	79.3
BB&T Corp	18	76.3
Fifth Third BanCorp	19	74.9
PNC Financial Services Group Inc	20	66.9
Comerica	22	50.7
SouthTrust Corp	23	48.6
MBNA Corp	24	47.2
Regions Financial Corp	25	46.6
Countrywide Credit Industries	26	41.9
Charter One Financial	27	39.8
AmSouth Bancorp	28	38.5
Northern Trust Corporation	29	37.8
Charles Schwab Corp	30	37.6
Mellon Financial Corp	33	34.2
Popular Inc	34	32.7
Union Planters Corp	35	32.4
M&T Bank	36	31.7
Marshall & Ilsley Corp	37	29.2
Zions Bancorporation	38	25.7
Huntington Bancshares Inc	39	25.4
Compass Bancshares	40	23.6
Banknorth Group	41	21.3
National Commerce Financial Corp	42	20.8
GreenPoint Financial	43	20.1
First Tennessee National Corp	44	19.8
North Fork Bancorporation	45	19.2
Synovus Financial Corp	47	17.3
Hibernia	48	16.3
Provident Financial Group	49	15.8

Sources: U.S. Securities and Exchange Commission and Federal Reserve Y-9C Reports.

Table 2
Bank Holding Company Certification Dates

Early Certifiers	
Hibernia	July 31
North Fork Bancorporation	July 31
M&T Bank	August 2
State Street Corp	August 2
AmSouth Bancorp	August 7
US BanCorp	August 7
Bank of America Corporation	August 8
Citigroup	August 8
Mellon Financial Corp	August 8
Synovus Financial Corp	August 8
GreenPoint Financial	August 9
Provident Financial Group	August 9

Mid-Date Certifiers	
Bank One Corporation	August 12
Compass Bancshares	August 12
First Tennessee National Corp	August 12
JP Morgan Chase	August 12
Regions Financial Corp	August 12
SouthTrust Corp	August 12
Wells Fargo	August 12
Banknorth Group	August 13
BB&T Corp	August 13
Charles Schwab Corp	August 13
Comerica	August 13
KeyCorp	August 13
National City Corp	August 13
National Commerce Financial Corp	August 13
Northern Trust Corporation	August 13
SunTrust Banks	August 13
Union Planters Corp	August 13
Wachovia Corp	August 13

Deadline Certifiers	
Bank of New York	August 14
Charter One Financial	August 14
Countrywide Credit Industries	August 14
Fifth Third BanCorp	August 14
FleetBoston Financial	August 14
Huntington Bancshares Inc	August 14
Marshall & Ilsley Corp	August 14
MBNA Corp	August 14
Metlife Inc	August 14
PNC Financial Services Group Inc	August 14
Popular Inc	August 14
Zions Bancorporation	August 14

Source: U.S. Securities and Exchange Commission.

Table 3
Average Abnormal Returns for BHCs
Subject to CEO Certification Requirement

(T-statistics in parentheses)

Event Date: June 27			
Bank Index as Market		S&P 500 as Market	
Portfolio Approach	SUR	Portfolio Approach	SUR
-0.0003 (-0.11)	-0.0018 (-0.51)	0.0061 (1.09)	0.0053 (0.80)

Event Date: Certification Date			
Bank Index as Market		S&P 500 as Market	
Portfolio Approach	SUR	Portfolio Approach	SUR
0.0056** (2.66)	0.0033* (2.16)	0.0062* (2.19)	0.0029+ (1.82)

** significant at 1%
* significant at 5%
+ significant at 10%

Table 4
Certification Date Average Abnormal Returns
for BHCs Subject to CEO Certification Requirement

(T-statistics in parentheses)

Group	Bank Index as Market		S&P 500 as Market	
	Portfolio Approach	SUR	Portfolio Approach	SUR
All BHCs	0.0056** (2.66)	0.0033* (2.16)	0.0062* (2.19)	0.0029+ (1.82)
Early Certifiers	0.0082** (2.71)	0.0077** (3.33)	0.0109** (2.77)	0.0096** (3.69)
Mid-Date Certifiers	-0.00003 (-0.01)	0.0032 (1.47)	-0.0015 (-0.34)	0.0030 (1.29)
Deadline Certifiers	0.0036 (0.91)	-0.0010 (-0.29)	-0.0019 (-0.30	-0.0040 (-1.18)

** significant at 1%
* significant at 5%
+ significant at 10%

Table 5
Certification Date Average Abnormal Returns
For BHCs Subject to CEO Certification Requirement
Portfolios by Certification Date

(T-statistics in parentheses)

Certification Date	Bank Index as Market		S&P 500 as Market	
	Portfolio Approach	SUR	Portfolio Approach	SUR
Early Certifiers				
July 31	0.0239** (3.55)	0.0213** (4.02)	0.0261** (3.48)	0.0228** (4.28)
August 2	0.0012 (0.22)	-0.0057 (-1.28)	0.0016 (0.24)	-0.0065 (-1.45)
August 7	-0.0044 (-0.66)	0.0018 (0.34)	-0.0082 (-0.93)	-0.0010 (-0.19)
August 8	0.0119** (2.95)	0.0095** (2.93)	0.0253** (3.03)	0.0153** (3.14)
August 9	0.0084 (0.91)	0.0098 (1.14)	0.0090 (0.86)	0.0118 (1.38)
Mid-Date Certifiers				
August 12	-0.0052 (-1.16)	-0.0037 (-1.23)	-0.0082 (-1.16)	-0.0060 (-1.60)
August 13	0.0051 (1.34)	0.0076* (2.54)	0.0051 (0.91)	0.0087** (2.91)
Deadline Certifiers				
August 14	0.0036 (0.91)	-0.0010 (-0.29)	-0.0019 (-.30)	-0.0040 (-1.18)

** significant at 1%
 * significant at 5%
 + significant at 10%

Table 6
Certification Date Average Abnormal Returns
for BHCs Subject to CEO Certification Requirement
Excluding 8 Largest BHCs

(T-statistics in parentheses)

Group	Bank Index as Market		S&P 500 as Market	
	Portfolio Approach	SUR	Portfolio Approach	SUR
All BHCs	0.0075**	0.0055**	0.0080**	0.0053**
	(3.27)	(3.06)	(2.79)	(3.02)
Early Certifiers	0.0097**	0.0078**	0.0120**	0.0091**
	(2.98)	(2.77)	(2.99)	(3.22)
Mid-Date Certifiers	0.0018	0.0060*	0.0008	0.0067*
	(0.51)	(2.22)	(0.18)	(2.54)
Deadline Certifiers	0.0075+	0.0025	0.0026	-0.0004
	(1.78)	(0.64)	(0.38)	(-0.10)

** significant at 1%
* significant at 5%
+ significant at 10%

Table 7
July 31 Average Abnormal Returns
for BHCs Subject to CEO Certification Requirement
Excluding July 31 Certifiers

(T-statistics in parentheses)

Group	Bank Index as Market		S&P 500 as Market	
	Portfolio Approach	SUR	Portfolio Approach	SUR
All BHCs	0.0055*	0.0045	0.0088	0.0082
	(2.17)	(1.38)	(1.57)	(1.31)
Early Certifiers	0.0040	0.0037	0.0079	0.0067
	(1.31)	(1.02)	(1.16)	(1.08)
Mid-Date Certifiers	0.0018	0.0012	0.0051	0.0051
	(0.58)	(0.32)	(0.89)	(0.75)
Deadline Certifiers	0.0122**	0.0109*	0.0153*	0.0145*
	(3.09)	(2.03)	(2.46)	(2.02)
	Omitting "Outlier BHC"			
All BHCs	0.0035	0.0028	0.0069	0.0066
	(1.35)	(0.79)	(1.22)	(1.01)
Deadline Certifiers	0.0059	0.0046	0.0089	0.0079
	(1.43)	(0.80)	(1.43)	(1.09)

** significant at 1%
* significant at 5%
+ significant at 10%

Table 8
BHC Descriptive Statistics

Balance Sheet data as of March 31, 2002
Income Statement data April 1, 2001 to March 31, 2002

Variable definitions: ABNORMAL RETURNS are calculated from BHC-specific market model regressions estimated on daily stock return data from January 3 to May 15, 2002, using the SNL Bank Index as the market return; ASSETS equal total assets in billions of dollars; TOTAL CAPITAL RATIO is the total risk-based capital ratio; TRADING ASSETS equal trading account assets as a share of total assets; TRADING AND HELD-FOR-SALE ASSETS equal trading account assets plus loans and securities held for sale as a share of total assets; ALL LIQUID ASSETS equal trading account assets plus loans and securities held for sale plus cash and balances due from depository institutions plus assets held under repurchase agreements as a share of total assets; CUMULATIVE RETURN is the cumulative market return on the BHC's stock from January 1 to May 15, 2002; ROE equals net income divided by equity capital; ROA equals net income divided by total assets; NON-PERFORMING LOANS equals non-accrual loans and loans 90 or more days past due as a share of total assets; NON-BANK ASSETS equal net assets of broker-dealer subsidiaries plus net assets of insurance underwriting subsidiaries as a share of total assets; NON-INTEREST INCOME equals non-interest income as a share of non-interest income plus net interest income; DERIVATIVES equals the gross notional principal of derivatives contracts as a share of total assets; LOAN SHARE equals loans as a share of total assets; NON-U.S. LOAN SHARE equals loans held in offices outside the United States as a share of total assets; AND RISKY LOAN SHARE equals Commercial and Industrial and non-residential Real Estate loans as a share of total assets.

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
ABNORMAL RETURN	0.004	0.002	0.015	-0.036	0.062
ASSETS	126.4	43.5	210.6	16.4	1057.7
TOTAL CAPITAL RATIO	12.80	12.42	2.17	9.72	22.31
TRADING ASSETS	0.029	0.005	0.056	0.000	0.292
TRADING AND HELD-FOR-SALE ASSETS	0.239	0.230	0.099	0.054	0.525
ALL LIQUID ASSETS	0.326	0.287	0.153	0.140	0.859
CUMULATIVE RETURN	0.100	0.120	0.122	-0.277	0.294
ROE	0.136	0.144	0.079	-0.143	0.372
ROA	0.012	0.012	0.008	-0.012	0.038
NON-PERFORMING LOANS	0.016	0.014	0.011	0.000	0.059
NON-BANK ASSETS	0.070	0.001	0.198	0.000	0.963
NON-INTEREST INCOME	0.446	0.403	0.170	0.118	0.809
DERIVATIVES	2.348	0.277	5.765	0.005	33.331
LOAN SHARE	0.592	0.635	0.179	0.075	0.815
NON-U.S. LOAN SHARE	0.027	0.000	0.066	0.000	0.336
RISKY LOAN SHARE	0.278	0.282	0.154	0.003	0.688

Source: Federal Reserve Y-9C Reports and author's calculations

Table 9
Certification Day Abnormal Returns and BHC-Specific Characteristics
(Standard Errors in Parentheses)

Variables are as defined in Table 8

	(1)	(2)	(3)	(4)	(5)	(6)
LOG ASSET SIZE	-0.0050* (0.0021)	-0.0054** (0.0016)	-0.0050** (0.0017)	-0.0052** (0.0015)	-0.0051** (0.0015)	-0.0056** (0.0016)
TOTAL CAPITAL RATIO	0.0009 (0.0011)	0.0007 (0.0011)	0.0005 (0.0012)	0.0003 (0.0010)	-0.0002 (0.0011)	0.0008 (0.0011)
TRADING	0.0257 (0.0384)					
TRADING AND HELD-FOR-SALE ASSETS		0.0458* (0.0175)		0.0509** (0.0172)	0.0525** (0.0170)	0.0461* (0.0182)
ALL LIQUID ASSETS			0.0195 (0.0134)			
CUMULATIVE RETURN	-0.0015 (0.0180)	-0.0050 (0.0165)	0.0049 (0.0183)			
ROE				0.0342 (0.0210)		
ROA					0.4145+ (0.2156)	
NON-PERFORMING LOAN SHARE						0.0579 (0.1609)
NON-BANK ASSET SHARE						
NON-INTEREST INCOME SHARE						
DERIVATIVES						
LOAN SHARE						
NON-US LOAN SHARE						
RISKY LOAN SHARE						
R-Squared (Within)	0.2124	0.3358	0.2489	0.3822	0.3993	0.3431

Note: The regressions include fixed effects for the early, mid-date, and deadline certification groups (see Table 2) and omit one "outlier" BHC. The symbols **, *, and + indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9 (continued)
Certification Day Abnormal Returns and BHC-Specific Characteristics
(Standard Errors in Parentheses)

Variables are as defined in Table 8

	(7)	(8)	(9)	(10)	(11)	(12)
LOG ASSET SIZE	-0.0058** (0.0017)	-0.0053** (0.0016)	-0.0043* (0.0020)	-0.0053** (0.0017)	-0.0056** (0.0016)	-0.0047** (0.0016)
TOTAL CAPITAL RATIO	0.0012 (0.0012)	0.0009 (0.0011)	0.0008 (0.0011)	0.0007 (0.0011)	0.0007 (0.0011)	0.0012 (0.0010)
TRADING						
TRADING AND HELD-FOR-SALE ASSETS	0.0335 (0.0213)	0.0493* (0.0184)	0.0506** (0.0181)	0.0539+ (0.0271)	0.0443* (0.0176)	0.0785** (0.0233)
ALL LIQUID ASSETS						
CUMULATIVE RETURN	-0.0021 (0.0168)	-0.0145 (0.0220)	-0.0055 (0.0165)	-0.0092 (0.0197)	-0.0007 (0.0172)	-0.0075 (0.0158)
ROE						
ROA						
NON-PERFORMING LOAN SHARE						
NON-BANK ASSET SHARE	0.0146 (0.0145)					
NON-INTEREST INCOME SHARE		-0.0100 (0.0152)				
DERIVATIVES			-0.0004 (0.0004)			
LOAN SHARE				0.0066 (0.0169)		
NON-US LOAN SHARE					0.0252 (0.0277)	
RISKY LOAN SHARE						0.0319+ (0.0158)
R-Squared (Within)	0.3557	0.3444	0.3564	0.3390	0.3521	0.4093

Note: The regressions include fixed effects for the early, mid-date, and deadline certification groups (see Table 2) and omit one "outlier" BHC. The symbols **, *, and + indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 10
Ordered Logit Estimates of Certification Day Timing
(Standard Errors in Parentheses)

Variables are as defined in Table 8

	(1)	(2)	(3)	(4)	(5)	(6)
LOG ASSET SIZE	-0.0460 (0.3514)	-0.1670 (0.2977)	-0.0183 (0.3061)	-0.0832 (0.2930)	-0.0387 (0.2885)	-0.0470 (0.2884)
TOTAL CAPITAL RATIO	-0.1193 (0.1645)	-0.0936 (0.1658)	-0.0894 (0.1702)	0.0300 (0.1335)	0.0297 (0.1334)	0.0868 (0.1389)
TRADING	-1.4600 (6.2353)					
TRADING AND HELD-FOR-SALE ASSETS		3.2014 (3.3295)		3.0178 (3.3976)	2.9406 (3.3321)	2.8563 (3.7456)
ALL LIQUID ASSETS			-1.8393 (2.5987)			
CUMULATIVE RETURN	-3.7809 (3.0161)	-3.9142 (3.0310)	-4.4295 (3.1846)			
ROE				-2.2428 (4.4759)		
ROA					5.3918 (42.471)	
NON-PERFORMING LOAN SHARE						61.654+ (35.057)
NON-BANK ASSET SHARE						
NON-INTEREST INCOME SHARE						
DERIVATIVES						
LOAN SHARE						
NON-US LOAN SHARE						
RISKY LOAN SHARE						
Pseudo R-Squared	0.0177	0.0273	0.0227	0.0115	0.0089	0.0499

Note: The estimates include all 42 BHCs. The symbols **, *, and + indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 10 (continued)
Ordered Logit Estimates of Certification Day Timing
(Standard Errors in Parentheses)

Variables are as defined in Table 8

	(7)	(8)	(9)	(10)	(11)	(12)
LOG ASSET SIZE	-0.1947 (0.3020)	-0.1511 (0.2987)	0.0562 (0.3679)	-0.1206 (0.3036)	-0.1916 (0.3077)	-0.1396 (0.3016)
TOTAL CAPITAL RATIO	-0.1219 (0.1781)	-0.0740 (0.1715)	-0.0816 (0.1661)	-0.0035 (0.1757)	-0.0629 (0.1658)	-0.0473 (0.1884)
TRADING						
TRADING AND HELD-FOR-SALE ASSETS	2.6726 (3.4529)	3.9150 (3.5288)	4.4017 (3.5781)	10.358+ (5.4857)	2.3806 (3.4007)	4.8026 (4.5234)
ALL LIQUID ASSETS						
CUMULATIVE RETURN	-3.3370 (3.1891)	-5.5662 (4.0898)	-4.1234 (3.0762)	-7.6380* (3.7695)	-2.6041 (3.2081)	-4.3517 (3.1650)
ROE						
ROA						
NON-PERFORMING LOAN SHARE						
NON-BANK ASSET SHARE	1.0569 (1.9128)					
NON-INTEREST INCOME SHARE		-1.7860 (2.8978)				
DERIVATIVES			-0.0662 (0.0643)			
LOAN SHARE				5.6734+ (3.2374)		
NON-US LOAN SHARE					8.9566 (7.2472)	
RISKY LOAN SHARE						1.6159 (3.0841)
Pseudo R-Squared	0.0309	0.0316	0.0395	0.0623	0.0513	0.0304

Note: The estimates include all 42 BHCs. The symbols **, *, and + indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

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