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

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Abstract

In 2002, the SEC mandated that the CEOs of large, publicly traded firms certify the accuracy of their company financial statements. The SEC's certification order provides a natural experiment that gives insight into the question of whether banks are opaque. We find that the BHCs subject to the SEC's order experienced positive and significant average abnormal returns from certification. Characteristics associated with greater opaqueness –liquid asset holdings, information-intensive lending, and split credit ratings – are systematically associated with the size of abnormal returns.

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I. Introduction

In June 2002, the Securities and Exchange Commission (SEC) issued an order requiring the Chief Executive Officers (CEOs) and Chief Financial Officers (CFOs) of 950 large, publicly traded firms to certify the accuracy of their financial statements. 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.[1] 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.

The SEC's certification order applied to 44 commercial bank holding companies. The order provides an interesting natural experiment that can be used to shed light on the question of whether banks are opaque. The theoretical literature suggests two channels that could make commercial banks opaque – greater liquidity may make it difficult for organizations to commit credibly to a particular asset composition (Myers and Rajan 1998) and banks' role in solving asymmetric information problems (delegated monitoring) may mean that they hold informationally opaque assets that are difficult for outsiders to assess. Recent empirical work (Flannery et al. 2004, Iannotta 2004, Morgan 2002) finds conflicting evidence about whether banking companies are opaque, however, and the SEC's certification order provides another opportunity to address this question. In particular, we examine the stock price reaction of the bank holding companies (BHCs)

subject to the SEC's order to see whether they experienced a significant reaction to CEO certification and if that reaction is systematically related to BHC-specific measures of opaqueness.

Previous analysis of the SEC's certification order (Bhattacharya et al. 2002, Griffin and Lont 2005) found no significant abnormal stock price returns related to the SEC's order, either to the announcement of the order or to the act of certification or non-certification itself. In contrast to these results, which examined all firms subject to the SEC's order, the basic finding of our analysis is that the BHCs subject to the SEC's order experienced positive and statistically significant abnormal returns from certification. The CEOs of all 44 BHCs certified the accuracy of their financial statements during a two-week period leading up to the August 14, 2002 certification deadline established by the SEC. However, abnormal returns on certification day were statistically significant only for those BHCs that certified "early" (that is, five or more days ahead of the deadline). One explanation for this finding is that much of the market uncertainty addressed by certification was resolved when the first few BHCs certified. Taking this possibility into account, our estimates suggest that BHCs experienced all-in certification-related abnormal returns of 85 to 100 basis points.

Given the lack of market reaction for certifying firms in general, the positive and statistically significant abnormal returns experienced by BHCs upon financial statement certification seem consistent with the idea that bank holding companies are comparatively opaque to outsiders. We find evidence that abnormal returns are cross-sectionally related to BHC measures of opaqueness. Variables associated with both liquid asset holdings and "risky", informationally intensive lending, along with a general

market-related measure of opaqueness, are positively related to the size of abnormal returns. Thus, both the liquidity-related and information-related channels discussed in the theoretical literature on this topic appear to be at play. Finally, we find preliminary evidence that certification resulted in a lasting decline in uncertainty concerning these banks' future earnings streams, as the variance of analysts' earnings forecasts for certifying BHCs declined significantly in the year following certification.

The rest of this paper is organized as follows. The next section provides more detailed background on the SEC's certification order and the natural experiment it provides. 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 and Motivation

On June 27th 2002, the U.S. Securities and Exchange Commission issued an order requiring the Chief Executive Officers and Chief Financial Officers of large, publicly traded firms to certify the accuracy of their 2001 annual and 2002 quarterly financial statements.[2] Then-SEC chairman Harvey L. Pitt had announced that the SEC was considering a certification requirement in a May 24 speech before the Investment Company Institute (Pitt 2002), following earlier mention of the idea as part of a 10-point plan for corporate reform advocated by President Bush.[3]

The SEC's order required the CEOs and CFOs to attest under oath to the accuracy of their financial statements using specific wording mandated by the SEC, or to explain (again, under oath) why they were unable to certify. The order did not specify penalties for untruthful statements, but filers were presumably subject to standard criminal and civil penalties under the Securities Exchange Act.[4] The deadline for this certification was

August 14, 2002 for firms whose fiscal year matched the calendar year – 688 of the 947 firms subject to the order (Bhattacharya et al. 2002) – while the remaining firms were required to certify when they filed their 10-K reports at their fiscal year-ends (U.S. Securities and Exchange Commission 2002a). Mandatory CEO and CFO certification of financial statements was subsequently extended to cover all 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.[5]

The SEC's June 27 order applied to all publicly traded companies with 2001 annual revenues in excess of $1.2 billion (U.S. Securities and Exchange Commission 2002a). Nearly every firm subject to the order certified its financial statements by the deadline. Of the firms facing the August 14 deadline, more than 95 percent filed a certification with the SEC on or before the deadline date (Bhattacharya et al. 2002). All of those failing to certify were either in on-going bankruptcy proceedings or experiencing well-publicized accounting difficulties. These firms either filed statements indicating their inability to certify or, in one case, simply failed to respond to the SEC by the deadline (Bhattacharya et al. 2002 and U.S. Securities and Exchange Commission 2003).

The certification process was followed in the financial press and information about which firms had certified and when was publicly available. Starting on July 29, the SEC posted a daily update on certifications received on its website. The *Wall Street Journal*, for one, both reported on the SEC's plans for the website (Schmitt 2002) and ran periodic tallies of the firms that had certified (see, for instance, Schroeder 2002). Many firms also released press or newswire statements on the day they certified.

The 947 firms subject to the SEC's certification order included 44 commercial bank holding companies, a set comprising nearly all the largest U.S.-owned BHCs. For these firms, the $1.2 billion revenue threshold was based on the sum of interest income and non-interest income. The BHCs subject to the SEC's certification order included two large financial organizations – Metlife and Charles Schwab – whose activities are focused largely in non-commercial banking areas (insurance in the case of Metlife and retail brokerage in the case of Charles Schwab), as well as two smaller firms – Concord EFS and Franklin Resources – primarily engaged in non-banking financial activities. Given that these firms are not typical bank holding companies, we dropped them from our analysis, though the results are not sensitive to including them in the sample. The remaining 40 bank holding companies in our sample are listed in Table 1. The CEOs of all these BHCs (as well as the 4 excluded from the analysis) were able to certify that their financial statements were accurate by the August 14 deadline.

The fact that all BHCs, and nearly all firms overall, were able to comply with the SEC's certification order may suggest that certification conveyed little, if any, new information to the market. Previous research seems to confirm this assessment. Bhattacharya et al. (2002) examined the stock price reaction to CEO certification for the 688 financial and non-financial firms that were subject to the SEC's order and that 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. They also found no significant changes in trading volume or price volatility around certification/non-certification dates. Griffin and Lont (2005) do find a significant increase in volatility around certification dates, but similar to Bhattacharya et al. (2002),

they find no significant abnormal returns. 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.

In fact, there are good reasons 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 about the quality of the statements.

Despite the previous findings, the SEC's certification order provides an interesting natural experiment that sheds light on two related strands of banking research. First, the certification process can provide insight into the question of whether banks are opaque. Banks may be opaque in part because their core lending activities involve intermediation of credit to firms that themselves may be too small or opaque to tap into public debt markets, making it difficult to assess the underlying quality of banking organization assets. In addition, banks' holdings of liquid assets (such as cash, securities, saleable loans, and other trading assets) and off-balance sheet positions (especially derivatives) make it relatively easy to alter the composition of the balance sheet and to shift risk exposures over short time horizons. Myers and Rajan (1998) argue that large holdings of very liquid assets, especially trading assets and derivatives, make it difficult for a bank's management to commit credibly to a given asset portfolio and risk profile

over time. This difficulty is compounded by banks' ability to invest in a wide range of assets and derivatives positions and by their role in market-making and proprietary trading, where public disclosure of specific positions and strategies is limited. As a result, Myers and Rajan (1998) assert, bank portfolios are opaque, even compared to other highly liquid financial firms such as mutual funds, whose investment strategies are more narrowly circumscribed. An important implication of banks' ability to shift assets, off-balance sheet positions, and risk profiles rapidly is that it may be more difficult for outsiders to monitor the condition of banks based on periodic financial reports.

A considerable body of empirical work suggests that banks are opaque to outsiders. Many of these papers assess this question through the lens of supervisory data, asking whether private supervisory data gathered during the examination process – including supervisory assessments of banks' health and performance – contain information over and above the publicly available information available to investors and creditors. For instance, Murphy (1979) finds a negative stock price reaction for banks on a supervisory "problem bank list" that was leaked to the press in 1976. More recently, several papers have examined the extent to which supervisory ratings assigned during the examination process affect market prices (see, for example, Berger and Davies 1998 and Berger et al. 2000). The findings generally support the idea that supervisors have valuable private information, consistent with the idea that banks are opaque. That said, these papers look within the banking industry and therefore do not address the question of whether banks are more opaque than firms in other industries.

Several recent papers have done direct empirical examinations of this question, with somewhat mixed results. Morgan (2002) finds that rating agencies are more likely

to disagree on debt ratings for commercial banks and insurance companies than for non-financial firms, and concludes that this difference stems from the greater opaqueness of these financial organizations. Looking within the set of commercial banks in his sample, he finds that the probability of receiving a split rating is positively related both to holdings of (presumably opaque) loans and, supporting Myers and Rajan (1998), to holdings of liquid assets, particularly assets held in the trading account. Iannotta (2004) performs similar analysis on European data and finds that controlling for risk, bank debt is more likely to receive a split rating and that, within the sample of banks, a higher level of fixed assets is associated with a lower probability of a split rating. In contrast, in an examination of the micro-market behavior of publicly traded BHC equity, Flannery et al. (2004) find no evidence that BHCs are unusually opaque or difficult to evaluate. They find that the trading characteristics of BHC equity (such as trade frequency and volume, spreads, and return volatility) are quite similar to those of non-financial firms, a result that is not consistent with the idea that BHCs are more opaque than non-financial firms. Like Morgan (2002) and Iannotta (2004), however, Flannery et al. (2004) find that within the set of BHCs, asset composition seems to matter; balance sheet composition helps explain trading characteristics in the cross section, though these effects tend to be economically small.

The SEC's certification order provides another opportunity to assess the extent of bank opaqueness. To the extent that BHCs are more opaque to outsiders than non-financial firms, it could be more difficult for investors and the public to monitor and to assess accurately 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 and thus results in a positive stock price reaction for these firms upon certification.

A key goal of certification was to increase public confidence in the accuracy and truthfulness of firms' financial statements. From a valuation perspective, lack of confidence in financial statements could cause market participants to discount their assessment of future earnings, given the uncertainty about the quality of past information about profits. Certification could resolve some of this uncertainty and cause market participants to place less weight on the possibility of negative earnings outcomes. For instance, in an environment in which corporate accounting and governance scandals were receiving significant publicity, certification could have lowered market participants' assessment of the probability that banking companies would be subject to fraud or other accounting irregularities, raising expectations of future earnings.

The certification requirement may also have affected governance procedures for financial statement production and validation in ways that enhanced market estimates of firm value. For instance, an improved internal control environment stemming from the need to validate financial statements could reduce incentives for firms to manage earnings, thus strengthening the relationship between reported earnings and underlying performance. The potential for earnings management could be a particular source of uncertainty in the banking industry, to the extent that hard-to-value assets make it difficult for outsiders to assess the accuracy of reported income (e.g., provisions and recoveries from banks' loan loss reserves).[6]

Finally, it is possible that the certification could reduce uncertainty about future earnings not just by improving the quality of information available about banking

companies' health and performance, but also by reducing actual future earnings volatility. It is possible, for instance, that the incentives to shift asset composition and change risk profiles inherent in BHCs' holdings of liquid assets could be reduced if rapid changes complicate the process of validating financial statements. Reducing these incentives could in turn cause market participants to reduce any discount they apply to expectations of future earnings due to concerns about future value-reducing shifts in portfolio composition or risk profiles.

In practice, it is difficult to separate the different ways in which the certification requirement might reduce uncertainty and thus affect BHCs' market valuations. One issue of particular interest is whether the impact of CEO certification was due to a one-time adjustment to future earnings expectations or whether it – and the subsequent codification of the requirement in the Sarbanes-Oxley Act – introduced more pervasive and long-lasting changes in banks' internal management procedures and/or income volatility.

Aside from questions of opaqueness, the market response to the SEC's certification order is relevant for a second, related strand of banking research. In particular, recent research has highlighted the role of market discipline in limiting bank risk-taking and as an complement to supervision (see, for instance, Bliss and Flannery 2002, Calomiris 1997, Estrella 2004, Flannery 2002). On the regulatory front, the recently proposed amendments to the Basel Accord establish market discipline and public disclosure as one of the three "pillars" of the new international regulatory capital regime (Basel Committee on Banking Supervision 2003). A key assumption of this work is that

market participants have access to sufficient information about banks' activities and risk exposures to exert meaningful discipline.

The SEC's certification order can provide insight into this assumption. A significant stock price reaction to financial statement certification could suggest that market participants had less than full confidence in the transparency of BHCs' financial statements. Such uncertainty about the financial disclosures made by BHCs could suggest the need for further study about the kind of information that market participants need to exert meaningful market discipline.

In the analysis that follows, we attempt to shed light on these issues by examining the stock price reaction of the 40 BHCs subject to the SEC's certification order. We will look to see whether these companies experienced significant abnormal returns on the day SEC chairman Pitt announced the SEC's intention to implement a certification order (May 24), on the day the SEC actually announced the order and the firms to which it applied (June 27), and on the actual certification days. 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. Finally, we will make a first attempt at addressing the question of whether any reduction in uncertainty resulting from the SEC's order and its subsequent codification in the Sarbanes-Oxley Act resulted from a one-time impact or whether the effects might be more long-lasting.

III. Data and Empirical Approach

The basic empirical approach used in this analysis is an event study that examines the stock price reaction of 40 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 (MacKinley 1997).

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, SEC Chairman Pitt's May 24 speech and the SEC's June 27 announcement of the certification order affected all 40 BHCs on the same day. Further, there was considerable clustering of the dates on which individual BHCs certified. The first two of the 40 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 1, 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"). For each BHC, the certification date is set as the date the SEC received the certification notice.[7]

We 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, using dummy variables for the event dates. In both approaches, average abnormal returns are calculated giving equal weight to each BHC in the sample.

Given our limited sample size, it is possible that the average abnormal returns calculated by the portfolio and SUR approaches could be driven by a small handful of outliers. Thus, we also calculate and report median abnormal returns across the BHCs in our sample. We use a bootstrap methodology to calculate p-values of the hypothesis that the medians are equal to zero, taking into account both the distribution of abnormal returns across BHCs in the sample and the estimation error surrounding each of the abnormal returns.

The data used in the analysis are daily stock returns as reported by the Center for Research in Securities Prices (CRSP). The return data span the period from January 3 to August 31, 2002, and are adjusted for factors such as stock splits and *ex dividend* dates. We use the SNL Bank Stock Index, a market-value weighted, sector-specific index, as our market return measure. The Bank Index controls for industry-specific factors and therefore should isolate 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 broader market index could result in more powerful statistical tests. The results described in the rest of the paper are not significantly affected if the S&P 500 or the NYSE Index is used in place of the bank-industry-specific measure, however. The results are also qualitatively similar if we include interest rate, yield curve, and credit quality factors in the market model.

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). The mid-May date reflects the point just before the possibility of enacting a CEO certification requirement was first publicly discussed by SEC officials. 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.

IV. Results

Basic Results: Market Reaction to CEO Certification

Table 2 reports the basic results of the event study analysis for three different certification-related events: SEC Chairman Pitt's May 24 announcement that the SEC would develop a certification requirement, 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 40 BHCs subject to the requirement.

As illustrated in the table, the BHCs experienced no significant abnormal returns in response to SEC Chairman Pitt's announcement that the SEC intended to develop a certification requirement or to the SEC's eventual promulgation of the requirement. 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 actions having been widely anticipated and already capitalized into share prices. For instance, given earlier mention of the certification requirement, 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, at least for the very largest firms. However, dropping the largest BHCs from the sample does not alter the basic result in Table 2: both May 24 and June 27 average abnormal returns are small and not significantly different from zero even for the "smaller" BHCs subject to the SEC's certification requirement. More generally, the results for the May 24 and June 27 abnormal returns are robust to different divisions of the sample by certification date and by size of institutions.

As illustrated in the bottom panel of Table 2, the BHCs did experience a positive response to actual certification of their earnings statements, though the results are not statistically significant at conventional confidence levels. While the estimates vary with the empirical approach, the BHCs appear to have experienced a small, positive average abnormal return of between 20 and 30 basis points on the date of certification. Note that these results and the subsequent analysis in this section omit two BHCs that experienced non-certification-related events on the same day their CEOs certified their financial statements, though including or excluding these BHCs does not have a significant impact on the results.[8]

To gain more insight into the results, we break the sample of BHCs into sub-sets according to the timing of certification. 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 3.

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 80 to 100 basis points. The median abnormal returns are also positive and statistically significant only for the early certifiers group, though at somewhat lower confidence levels than the average abnormal returns. Eight of 10 abnormal returns for the earlier certify group were positive. In contrast, both median and average abnormal returns for BHCs that certified later were not consistently positive or significantly different from zero.

Further analysis reveals that within the "early certifier" group, the strongest positive abnormal returns were experienced by the two BHCs that certified first, on July 31 (North Fork and Hibernia). These BHCs experienced an average abnormal return of 220 to 245 basis points, depending on the estimation approach. There is also a positive and statistically significant average abnormal return for the BHCs that certified on August 8, but these average abnormal returns are somewhat smaller than those of the BHCs that certified on July 31. The remaining certification date groups did not experience positive or significant average abnormal returns.

The pattern of positive and significant abnormal returns for the early certifiers and smaller and insignificant 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. Malatesta and Thompson (1985) describe this

situation as one of a "partially anticipated event", where market participants place some positive *ex ante* probability on an event's occurring that is incorporated into market prices in the period leading up to the ultimate event. In our case, if market participants were able to (partially) anticipate that most BHCs would certify once the first BHCs certified, then we might expect to find positive average abnormal returns for all BHCs on the day the first BHCs certified, with only marginal additional valuation impact on the days these BHCs eventually certified.[9]

The results in Table 4 explore this possibility. In particular, the left-hand panels of the table present average and median abnormal returns for the not-yet-certifying BHCs on July 31, the day the first two BHCs certified. These results omit one BHC (Fleet BankBoston) that experienced a non-certification-related event on July 31 (a takeover rumor widely reported in the press), as well as the two BHCs (Citigroup and Bank of America) that experienced non-certification events on their eventual certification days. Average and median abnormal returns are consistently positive and generally statistically significant for the sample as a whole and across the three certification groups, with average abnormal returns ranging from 45 to 75 basis points, and median abnormal returns somewhat larger, at 70 to 113 basis points. Thus, the later-certifying BHCs appear to have experienced a positive stock price reaction on the day the first two BHCs certified, consistent with the idea that their eventual certification was anticipated by market participants.

This finding suggests that summing abnormal returns on July 31 and on each BHC's certification date would more fully capture the overall impact of CEO certification. These results are presented in the right-hand panels of Table 4. Average

and median abnormal returns are uniformly positive and nearly always statistically significant for the sample as a whole and for the early and deadline certifier groups. For the group as a whole, average and median abnormal returns ranged from 85 to 100 basis points across the various specifications, with higher returns for the early and deadline certifiers, in the range of 140 to 200 basis points and 100 to 150 basis points, respectively. While the mid-date certifiers experience positive and statistically significant abnormal returns on July 31, the combined abnormal returns are somewhat smaller than those for the other certification groups (in the range of 30 to 70 basis points) and are at best marginally statistically significant.[10]

Thus, bank holding companies appear to have experienced a small but positive all-in stock price reaction to CEO certification of their financial statements, consistent with the idea that certification provided useful information about these companies. One issue to consider in interpreting these results is the possibility that other value-relevant events may have taken place on the certification date. To address this possibility, we did a press citation and news and wire release search for each BHC in the sample spanning the period one business day before to one business day after certification date to identify any overlapping events that might have affected market prices on certification day. For instance, as discussed above, two of the BHCs certifying on August 8 were affected by the IMF Brazil rescue package announced that day and a third BHC has a confounding event on July 31, and therefore all 3 have been dropped from the analysis. Beyond these, 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. Twenty-two of the 37 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.

This timing issue presents potential 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. While there is a very significant body of literature addressing the impact of earnings announcements on stock prices, surprisingly few studies have looked at the impact of 10-K and 10-Q filings. Those that have studied this question find that 10-K and 10-Q filings can impact stock prices. For instance, Qi et al. (2000) find the 10-K filings contain incremental information relative to prior earnings announcements, while Griffin (2003) finds that 10-K and 10-Q filings result in higher stock price volatility on and immediately after filing day, though this reaction is weaker for 10-Q than for 10-K filings. Qi et al. (2000) attribute the market reaction to the greater volume of information contained in annual and quarterly SEC filings as compared to earnings announcements.

It seems unlikely that simultaneous certification and 10-Q filing would introduce directional bias into the abnormal return estimates, largely because the filing-based stock price reaction would depend on whether the additional information contained in the 10-Q statements was “good” or “bad”. As a check of this proposition, we compared key financial figures (e.g., earnings-per-share and net income and its major components) announced in the BHCs’ second quarter earnings announcements against the values contained in the 10-Q filings. In every case, the figures reported in the 10-Q filings matched those in the previous earnings announcements. However, as noted by previous

studies (Qi et al. 2000, Griffin 2003), the additional information contained in the 10-Q filing could introduce additional volatility on the filing date. Our test statistics would not take this additional volatility into account, meaning that the significance of our abnormal return estimates could be overstated.

We did several robustness exercises to test whether the abnormal returns results presented in Table 4 are significantly affected by event contamination from simultaneous 10-Q filings. The first test is to calculate all-in certification abnormal returns (the sum of the July 31 and certification day returns) for the 15 BHCs that did not file their 10-Q statements on the same day their CEOs certified their financial statements. These results are presented in Table 5. As the table illustrates, these results are very similar to the results using the overall sample, with positive and statistically significant average and median abnormal returns on the order of 100 to 150 basis points for the BHCs as a group and with abnormal returns being larger and more significant for the early and deadline certifiers than for the mid-date certifiers.

While these results provide considerable comfort about the likely impact of event contamination, as noted above, this test does not fully address the possibility that simultaneous certification and 10-Q filing could have increased volatility on certification day, resulting in understated standard errors for our overall sample. To address this possibility, we test for increases in volatility on 10-Q filing dates using a regression technique and a non-parametric method suggested by Corrado (1989). In the regression approach, we calculate the log of the ratio of the absolute daily abnormal return on 10-Q filing day to the average absolute daily abnormal return over our sample period:

$$Y_i = \log\left[\frac{\left|\, ar_{10\text{-Q Date}} \,\right|}{\frac{1}{T}\sum_{t=1}^{T}\left|\, ar_t \,\right|}\right],$$

where Y_i is the value of the ratio for BHC i, $ar_{10\text{-Q Date}}$ is the abnormal return on the date BHC i filed its 10-Q statement, and ar_t is the abnormal return for BHC i on day t. The estimation period (t = 1,T) runs from January 3 to August 30, 2002.

The test for an increase in volatility is performed by doing a cross-sectional regression of these ratios against a constant; a positive and statistically significant constant term would indicate an increase in volatility on 10-Q filing day (see Clayton et al. 2005). In a similar vein, the Corrado (1989) statistic tests whether the rank of the absolute stock return on 10-Q filing date is significantly above or below the mid-point (average rank) of the sample. A rank above the midpoint would indicate that volatility was higher on 10-Q filing date than on average across the sample period.

These results are reported in Table 6. The results provide no evidence in support of the idea that the volatility of abnormal returns was higher on 10-Q filing dates. The top panel of the table presents the results of the cross-sectional regressions of the log ratio of 10-Q filing date absolute abnormal returns to average absolute abnormal returns. These results consistently suggest a *decline* in volatility on 10-Q filing date, with negative coefficients that are often statistically significant. This decline is evident both for BHCs that certified their financial statements and filed their 10-Q forms on the same day and for those who filed on different days, as well as for BHCs that filed their 10-Qs ahead of the August 14 deadline and those who filed on the deadline. We get similar results for first quarter 2002 10-Q filing dates, suggesting that these results are not an aberration resulting from the certification requirement. In a similar vein, the Corrado

non-parametric test statistics reported in Panel B suggest no statistically significant change in volatility on 10-Q filing date. Taken together, these results suggest that the estimated standard deviations used in our tests for the statistical significance of the BHCs' certification-related abnormal returns do not have a downward bias, and that therefore the p-values reported in Tables 2 to 4 do not overstate the significance of the results.

We conclude this section with one final test intended to identify the extent to which the measured certification-related abnormal returns in fact reflect certification effects. In this exercise, we examine the abnormal returns accruing to the 25 largest BHCs that were not subject to the SEC's certification order. To the extent that the act of certification conveyed value-relevant information about the individual BHCs that certified, we would not expect these BHCs to have positive abnormal returns on the dates the larger BHCs certified. In contrast, if the measured abnormal returns for the BHCs subject to the SEC's order reflect some broader banking-industry events that happened to coincide with certification, then we would expect to see positive abnormal returns for these BHCs as well.

The results for the next 25 largest BHCs are reported in Table 7. Because these BHCs, by definition, are significantly smaller than the typical BHC in the certification sample – the 25 next largest BHCs have average assets of just over $10 billion, as compared to $85 billion for the certification group – we also report average and median abnormal returns for the 16 BHCs in the certification group with assets less than or equal to $35 billion. The left-hand columns of the table report results for the sum of July 31 and certification day abnormal returns, while the right-hand columns of the table report

results for July 31 alone. As the results in the table make clear, the 25 next largest BHCs experienced no significant abnormal returns on the days the larger BHCs certified or on July 31, the day the first BHCs certified.[11] In contrast, the smaller BHCs subject to the SEC's certification order experienced positive and statistically significant average and median abnormal returns on these dates. Although not reported in the table, the next 25 largest BHCs also had small and statistically insignificant abnormal returns on the earlier certification-related event dates (May 24 and June 27).

These findings support the idea that certification conveyed information about the set of institutions subject to the SEC's order, but not about banking companies more generally. BHCs subject to the SEC's certification order experienced positive and significant all-in certification abnormal returns, while BHCs not subject to the order did not. To the extent that the 25 next largest BHCs were subject to the same industry or market events as their somewhat larger competitors, the results suggest that the abnormal returns experienced by the BHCs subject to the SEC's order reflected the impact of certification, rather than some broader event affecting the banking industry.

Cross-Sectional Analysis: Explaining the Pattern of Abnormal Returns

In this section, 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. To measure opaqueness, we use data from the BHCs' regulatory reports.[12] In particular, following the theoretical discussion in Section II, 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) and (2) the extent of

activities that are either information-intensive or particularly risky (loans as a share of total assets, commercial and industrial and non-residential real estate loans as a share of total assets, and nonperforming assets as a share of total assets). The financial statement variables are taken from the BHCs' March 31, 2002 regulatory reports, which were the most recent public financial statements that were available before the certification order.

We also created several opaqueness proxy variables based on market-related data. The first is intended to capture the likely extent of market scrutiny the BHC might experience (a dummy variable for whether the BHC was part of the S&P 500 Index at the time of certification). In the second, we use data from Thomson Financial/IBES to calculate the dispersion of second quarter 2002 earnings estimates. This measure is constructed as the standard deviation of analyst earnings estimates posted between 30 and 90 days before the end of the quarter, scaled by the median estimate.[13] Finally, following Morgan (2002) and Iannotta (2004), we also construct a measure of split credit ratings based on the most current debt ratings assigned by Moody's and Standard and Poor's as of June 30, 2002 on each BHC's outstanding debt. The measure equals the difference between the two ratings, where the ratings have been converted into a numerical scale such that each point represents a partial rating grade (e.g., the difference between AA2/AA and AA1/AA+).

To control for the impact of pre-event performance differences across BHCs, we 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 (return on assets – ROA – in the twelve months ending with the first quarter of 2002), as well as the

basic characteristics of each BHC (the log of asset size, total risk-based capital ratio). Variable definitions and basic statistics are reported in Table 8.

The basic empirical approach is 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 SNL Bank Index as the market index. Because of the relatively small sample size – 37 observations once the three BHCs subject to event day contamination are eliminated – 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, additional variables capturing risky or information-intensive assets or market-related opaqueness measures. We also include dummy variables for the certification timing groups (early, mid-date, and deadline certifiers), though the results are very similar if these dummies are omitted from the specification. [14]

The results of this estimation are reported in Table 9. The first column of the table presents the "base case" regression, while the remaining columns report alternative or augmented specifications. Turning first to the base case results, we can see that only the liquid assets measure – held-for-sale loans and securities – enters the equation with a statistically significant coefficient. The coefficient estimate suggests that higher levels of liquid assets are associated with higher certification-related returns. The coefficient estimate also suggests that the impact of increased liquid assets is economically

significant: an increase in from the 25th to the 75th percentile of the liquid asset share range is associated with an 86 basis point increase in abnormal returns, all else equal.

The results concerning liquid assets provide support for the idea that more opaque BHCs experienced larger abnormal returns following CEO certification of financial statements. As discussed above, 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. This finding is consistent with that in Morgan (2002), using a very different empirical approach.

However, closer examination of the liquidity result suggests that a somewhat more complex set of factors might be at play. The liquidity variable in the base case regression reflects each BHC's holdings of liquid loans and securities, those designated as being available-for-sale in secondary markets. When other liquid assets are added to the variable, the results weaken. In the second and third columns of the table, we first add trading assets (which Morgan (2002) found to be significantly associated with opaqueness) and then all other liquid assets (cash, deposits, and assets held under repurchase agreements) to our liquidity measure. When the liquidity measure includes trading assets, the coefficient estimate drops by about half and is just marginally statistically significant (at the 14.4 percent level), while when all liquid assets are included, the coefficient is very small and not statistically significant.

One interpretation of these findings is that concerns about asset shifting and resultant difficulties in monitoring might not be the only factor behind the relationship between liquid assets and certification-related abnormal returns. This is not to dismiss the possibility of liquidity-related monitoring difficulties as an underlying source of this

relationship, as indeed, held-for-sale loans and securities represent two-thirds of liquid assets on average and thus provide a significant share of the potentially "shiftable" assets at most BHCs in the sample. And it could certainly be the case that these liquid loans and securities are explicitly held by the BHCs for risk-altering, portfolio-management purposes, while other, more cash-like forms of liquid assets are held as traditional liquidity insurance (against market disruptions, for instance), making the results fully consistent with the Myers and Rajan (1998) theory. Nonetheless, the finding that the strongest relationship between certification-related abnormal returns and liquid asset holdings comes from the most informationally opaque liquid assets (loans and securities and, to a lesser extent, trading assets) suggests that this source of opaqueness may be playing a role in the liquidity results.

The results in the next columns of the table examine the information-based opaqueness hypothesis more directly. These specifications include a series of variables intended to capture the extent of each BHC's holdings of risky or informationally opaque assets. These variables include non-performing loans, all loans, and "risky", information-intensive loans (commercial and industrial plus non-residential real estate) as a share of total assets. All three variables enter the equation with positive and statistically significant coefficients that imply economically meaningful differences in certification-related abnormal returns across the BHCs in the sample. For instance, the coefficient on non-performing loans suggests that moving from the 25^{th} to the 75^{th} percentile of the distribution of non-performing loans within the sample is associated with a 66 basis point increase in certification-related abnormal returns.

Comparing the results from the next two columns in the table provides further insight into the role of information-intensive assets. While the coefficients on both all loans and "risky" loans are statistically significant, the coefficient on "risky" loans is larger and much more precisely estimated. This second 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 much stronger results for the "risky" loan variable suggest that only certain types of lending – in particular, the information-intensive loans that are likely to be the most difficult for outsiders to assess – were systematically associated with certification day abnormal returns. In fact, when the overall loan variable is split into "risky" and "non-risky" components and both are included in the regression, only the "risky" loan variable is statistically significant.

The final columns of the table present specifications that include market-related measures of BHC opaqueness. Note that in contrast to the results just discussed, these variables are external proxy measures of BHC opaqueness, rather than being variables that directly reflect the activities or earnings streams of the firms. These variables provide another window onto the question of whether the certification-related abnormal returns were driven by differences in opaqueness across BHCs. A finding that these independent measures of opaqueness are systematically associated with certification-related abnormal returns would provide some confirmation of the BHC-data-based results.

As the final columns of Table 9 illustrate, the market-related opaqueness measures – an indicator for whether the BHC's equity is part of the S&P 500 Index, the dispersion of second quarter 2002 earnings estimates, and the extent to which the BHC's

bond ratings are "split" – provide at least partial confirmation of the earlier results. Of the three variables, the split bond rating measure enters the equation with a positive and statistically significant coefficient, suggesting that BHCs viewed as more difficult to assess by the public bond rating agencies also experienced higher certification-related abnormal returns. The estimate suggests that a one-point difference in ratings was associated with a 70 basis point higher abnormal returns as compared to a BHC whose credit ratings matched. The remaining market-related opaqueness measures do not enter the equation significantly, however.

Taken together, the results in Table 9 support the idea that the positive certification-related abnormal returns experienced by the BHCs subject to the SEC's certification order were driven, at least in part, by factors having to do with the relative opaqueness of these firms' activities. Both liquidity-related and information-related opaqueness factors appear to have been at play, with perhaps somewhat more influence coming from information-related concerns. However, the results do not indicate whether the positive market reaction was a one-time response or whether the certification requirement and its subsequent adoption as part of the Sarbanes-Oxley Act had a more permanent effect on the market perception of the quality of information about BHC earnings.

We can generate some preliminary insights into this question by comparing the dispersion of BHC earnings estimates in the periods before and after the SEC's certification order. As discussed above, the dispersion of analyst earnings estimates can be interpreted as a proxy for uncertainty about BHCs' future earning streams: the greater the dispersion of estimates across analysts, the greater the underlying uncertainty. A

reduction in dispersion after the SEC's certification order would be consistent with the idea that certification had a persistent impact on the quality of information about future BHC earnings.

To test this proposition, we use a difference-in-differences methodology that compares changes in earnings estimate dispersion for the 40 BHCs subject to the SEC's certification order with changes in dispersion for a control group consisting of the 25 next largest BHCs. It is important to include these additional firms as controls to help ensure that any measured changes in dispersion reflect the SEC's certification order and not other factors that may have affected all publicly traded BHCs. The dispersion measure used in these estimates is the standard deviation of analyst quarterly earnings estimates posted between 30 and 90 days before the end of each quarter, scaled by the median estimate.[15] The sample period is from first quarter 2001 to fourth quarter 2003, with Q1 2001 to Q2 2002 being the "before" period and Q4 2002 to Q4 2003 being the "after" period (the certification quarter – third quarter 2002 – is omitted from the analysis).

The results of this exercise are reported in Table 10. We provide two sets of estimates, one based on all 40 BHCs subject to the SEC's certification order and a second based on just those BHCs with assets less than $35 billion, to produce a "certification" sample that more closely matches the non-certifying control group. The regressions also include variables to control for asset size and for the number of individual analysts posting earnings estimates for each BHC, since differences in the number of analysts following a given firm could affect measured volatility. The regressions also include quarterly dummy variables, to control for any systematic differences in dispersion across quarters.

The key coefficients are those that capture the change in earnings estimate dispersion for certifying BHCs after the certification order relative to the change in dispersion for the control group firms (in the rows labeled "Certifying BHCs/Post Certification"). For both the full sample and for the sample of smaller BHCs, these coefficients are consistently negative and statistically significant, indicating that the dispersion of earnings estimates for BHCs subject to the SEC's certification order decreased significantly following certification as compared to the control group results. This finding holds controlling both for asset size and for the number of analysts posting estimates.

This difference-in-difference analysis thus provides support for the idea that the SEC's certification order resulted in a persistent reduction in uncertainty about these firms' future earnings streams. Of course, these findings have to be tempered by the fact that the post-certification sample period is relatively short – just five quarters – leaving open the question of whether these "persistent" effects will continue to persist over the long run. That said, the difference-in-difference results are at least consistent with the idea that the positive market reaction to CEO certification of BHC financial statements may reflect a longer-run reduction in uncertainty stemming from improved governance procedures and better information quality.

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 40 bank holding companies. We find a positive and statistically significant average abnormal return associated with certification by these BHCs. These results are robust to several tests aimed at identifying bias in the

calculated abnormal returns. The 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 price increase.

We examine several possible explanations of the findings for BHCs, all 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. We find support for this hypothesis in that characteristics that are arguably associated with greater opaqueness – holdings of liquid assets and "risky" and information-intensive lending – are systematically associated with certification-related abnormal returns.

Taken together, these results provide insight into two strands of banking research. The finding that BHCs experienced positive and statistically significant average abnormal returns and that these returns are cross-sectionally related to holdings of more liquid and information-intensive assets, as well as to at least one market-related measure of opaqueness, support the idea that bank holding companies are somewhat opaque to outsiders. Both channels discussed in the theoretical literature on this topic – greater liquidity making it difficult for organizations to commit credibly to a particular asset composition (Myers and Rajan 1998) and banks' key role in solving asymmetric information problems (delegated monitoring) and, as a result, holding informationally opaque assets that are difficult for outsiders to assess – seem to be at play. That said, the results suggest a possibly greater role for information-related factors.

These findings are particularly notable because there are good *a priori* reasons to believe that certification should have conveyed little new information to market participants. As noted in Section II, bank holding company financial statements form the basis of regulatory reports that are reviewed by bank supervisors, which should lend additional credibility to banks' public financial statements. Credible public information about the profitability, asset composition, business mix, and risk exposure is pivotal for market participants to be able to exercise meaningful discipline on bank risk taking. The significant stock price reaction to certification of BHCs' financial disclosures suggests the need for further study about the kind of information that market participants need to exert meaningful market discipline.

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Endnotes

[1] See Patsuris (2002) for a summary of recent accounting difficulties at major U.S. corporations.

[2] 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.

[3] Available at http://www.whitehouse.gov/infocus/corporateresponsibility/index2.html.

[4] Section 32(a) of the Act indicates that "any person who willfully and knowingly makes, or causes to be made, any statement in any application, report or document required to be filed under this Act or any rule or regulations thereunder. . . which statement was false or misleading with respect to any material fact" shall be subject to possible imposition of fines and/or imprisonment not in excess of specified terms.

[5] See U.S. Securities and Exchange Commission (2002b), available at <http://www.sec.gov/rules/final/33-8124.htm>.

[6] Much of the existing empirical analysis of earnings management in the banking industry suggests that investors and other market participants see through attempts to manage earnings through provisions to and recoveries from the loan loss reserve (Wall and Koch 2000). Healy and Wahlen (1999) reach a somewhat more mixed conclusion about the prevalence and impact of earnings management looking across industries, but still conclude that market participants generally regard published financial statements as reliable. These studies pre-date many of the corporate scandals that spurred the SEC's certification order, however.

[7] This date is the "statement receipt date" reported on the SEC's website <http://www.sec.gov/rules/extra/ceocfo.htm#c>.

[8] The two bank holding companies are Citigroup and Bank of America, both of which certified their financial statements on August 8. The International Monetary Fund announced a $30 billion rescue package for Brazil on that date, and bank stock prices generally rose as a result. Press reports specifically mention Citigroup and Bank of America (among other BHCs that did not certify on that date) as experiencing noticeable stock price increases as a result of the rescue package, as well as in response to financial statement certification (see, for instance, O'Brien 2002).

[9] The finding that the market reaction is strongest for the first firms to certify is also consistent with the findings in the literature examining the market price reaction to earnings announcements by firms in the same industry. This literature finds that market prices of "late announcing" firms within an industry react to the first quarterly earnings release in the industry, but not to subsequent earnings announcements (Ramnath 2002, Freeman and Tse 1992). More generally, there is a large literature documenting the stock price impact of "news" release by one firm on other firms in the same industry, including the impact of earnings announcement, stock splits, and dividend changes or omissions (see, for instance, Firth 1996, Tawatnuntachai and D'Mello 2002, and Caton et al. 2003). In the banking industry, intra-industry effects have been documented in response to a variety of specific events, including the 1987 Brazilian debt moratorium (Musumeci and Sinkey 1990) and LDC-related loan loss provisions during the same period (Grammatikos and Saunders 1990). These studies found that banks directly exposed to

the event in question – for instance, banks with significant LDC exposure – were affected, but that banks not directly exposed were not.

[10] The results are qualitatively similar if we include abnormal returns from the earlier event dates – May 24 and June 27 – in the all-in returns. However, since abnormal returns on these dates are not themselves statistically significant (see Table 2) and are uncorrelated with certification day abnormal returns, the resulting all-in returns are somewhat smaller and less statistically significant.

[11] The results for the 25 next largest BHCs are based on the sum of abnormal returns on the 8 days the BHCs in the certification sample certified their financial statements (July 31 and the seven subsequent certification dates). Average all-in abnormal returns for each individual certification date (the sum of July 31 and each subsequent certification date) are statistically insignificant for all but one of these dates (August 9). For that date, all-in abnormal returns calculated using the portfolio approach are statistically different from zero, though abnormal returns calculated using the SUR approach are not.

[12] 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>.

[13] We use the 30-to-90 day window to try to limit the impact of information arrival on the dispersion estimates. In other words, our measure attempts to capture the extent of earnings estimate dispersion given a common information set, rather than capturing the arrival rate of new information that might cause analysts to update their estimates over time. Even so, detailed examination of the data suggests a few instances in which there

was a significant change in the range of analysts estimates over the 30-to-90 day window. To control for these events and to reduce the impact of "outlier" estimates more generally, we drop both the highest and lowest estimate from the calculation as well as a small number of additional outlier observations.

[14] We also created a series of variables intended to capture 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) or activities or corporate structures that might make the institution more difficult to understand (number of bank and non-bank subsidiaries in the holding company and foreign loans as a share of assets). None of these variables entered the equations significantly, except for the extent of derivatives activities. However, closer inspection of these results indicate that they are driven by one observation with very large holdings of derivatives. In addition, we tried specifications with alternative measures of pre-event performance, including return on equity (ROE) and cumulative stock returns from January through May 2002. Using these variables in place of ROA did not affect the results. Finally, we also included a dummy variable for those BHCs that filed their 10-Q statements with the SEC on the same day they certified their earnings statements. The coefficient on this dummy variable was not statistically significant in any specification, nor did including it change the results. All these results are available from the author upon request.

[15] The results are similar if we use the difference between the largest and the smallest earnings estimate as the measure of dispersion and if we scale by the average, rather than the median, earnings estimate.

Table 1
Bank Holding Companies Subject to SEC Certification Order:
June 2002 Asset Size and Rank, Exchange, and Certification Date

Bank Holding Company	Asset Size ($ Billion)	Asset Size Rank	Exchange	Certification Date
Citigroup	1083.3	1	NYSE	August 8
JP Morgan Chase	740.5	2	NYSE	August 12
Bank of America Corporation	638.4	3	NYSE	August 8
Wachovia Corp	324.7	4	NYSE	August 13
Wells Fargo	314.8	5	NYSE	August 12
Bank One Corporation	270.3	6	NYSE	August 12
FleetBoston Financial	191.2	9	NYSE	August 14
US BanCorp	173.0	11	NYSE	August 7
SunTrust Banks	108.0	13	NYSE	August 13
National City Corp	99.2	14	NYSE	August 13
KeyCorp	82.2	15	NYSE	August 13
Bank of New York	80.9	16	NYSE	August 14
State Street Corp	79.3	17	NYSE	August 2
BB&T Corp	76.3	18	NYSE	August 13
Fifth Third BanCorp	74.9	19	NASDAQ	August 14
PNC Financial Services Group	66.9	20	NYSE	August 14
Comerica	50.7	22	NYSE	August 13
SouthTrust Corp	48.6	23	NASDAQ	August 12
MBNA Corp	47.2	24	NYSE	August 14
Regions Financial Corp	46.6	25	NYSE	August 12
Countrywide Credit Industries	41.9	26	NYSE	August 14
Charter One Financial	39.8	27	NYSE	August 14
AmSouth Bancorp	38.5	28	NYSE	August 7
Northern Trust Corporation	37.8	29	NASDAQ	August 13
Mellon Financial Corp	34.2	33	NYSE	August 8
Popular Inc	32.7	34	NASDAQ	August 14
Union Planters Corp	32.4	35	NYSE	August 13
M&T Bank	31.7	36	NYSE	August 2
Marshall & Ilsley Corp	29.2	37	NYSE	August 14
Zions Bancorporation	25.7	38	NASDAQ	August 14
Huntington Bancshares	25.4	39	NASDAQ	August 14
Compass Bancshares	23.6	40	NASDAQ	August 12
Banknorth Group	21.3	41	NASDAQ	August 13
National Commerce Financial Corp	20.8	42	NYSE	August 13
GreenPoint Financial	20.1	43	NYSE	August 9
First Tennessee National Corp	19.8	44	NYSE	August 12
North Fork Bancorporation	19.2	45	NYSE	July 31
Synovus Financial Corp	17.3	47	NYSE	August 8
Hibernia	16.3	48	NYSE	July 31
Provident Financial Group	15.8	49	NASDAQ	August 9

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

Table 2
Average and Median Abnormal Returns for BHCs Subject to CEO Certification Requirement

Event Date	Average Abnormal Returns	Median Abnormal Returns	Number Positive ARs/ Number of Observations
May 24			
Portfolio Approach	-0.0024 (0.353)	-0.0017 (0.203)	15/40
SUR	-0.0018 (0.621)	-0.0013 (0.347)	17/40
June 27			
Portfolio Approach	-0.0005 (0.849)	0.00001 (0.677)	20/40
SUR	-0.0023 (0.533)	-0.0001 (0.343)	19/40
Certification Date			
Portfolio Approach	0.0029 (0.137)	0.0023 (0.245)	24/38
SUR	0.0022 (0.146)	0.0029 (0.138)	25/38

Notes: This table reports average and median abnormal returns on May 24 (the day SEC Chairman Pitt announced that the SEC would develop the certification requirement), June 27 (the day the SEC issued its order and listed the firms subject to the order), and certification date (the day that each BHC certified its financial statements) for 40 bank holding companies subject to the SEC's certification order. The certification day abnormal returns omit two BHCs that experienced other significant events on certification day. Abnormal returns are calculated using a portfolio approach and seemingly unrelated regressions (SUR) to control for temporal clustering and using the SNL bank stock index as the measure of market returns. The figures in parentheses are p-values of a test of the hypothesis that the average or median abnormal returns are equal to zero. The symbols **, *, and + indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 3
Certification Date Average and Median Abnormal Returns for BHCs Subject to CEO Certification Requirement: Portfolios by Certification Group

Group	Average Abnormal Returns	Median Abnormal Returns	Number Positive ARs/ Number of Observations
Early Certifiers			
Portfolio Approach	0.0102** (0.002)	0.0084* (0.029)	8/10
SUR	0.0083** (0.005)	0.0082+ (0.060)	8/10
Mid-Date Certifiers			
Portfolio Approach	-0.0023 (0.401)	-0.0019 (0.490)	8/17
SUR	0.0001 (0.975)	0.0003 (0.904)	9/17
Deadline Certifiers			
Portfolio Approach	0.0041 (0.327)	0.0072 (0.141)	8/11
SUR	0.0001 (0.977)	0.0048 (0.336)	8/11

Notes: This table reports average and median certification day abnormal returns for 38 bank holding companies subject to the SEC's certification order. Two additional BHCs subject to the SEC's order but that experienced other significant events on certification day are omitted. Abnormal returns are calculated using a portfolio approach and seemingly unrelated regressions (SUR) to control for temporal clustering and using the SNL bank stock index as the measure of market returns. The early, mid-date and deadline certifiers are BHCs that certified between July 31 and August 9, on August 12 or 13, or on August 14, respectively. The figures in parentheses are p-values of a test of the hypothesis that the average or median abnormal returns are equal to zero. The symbols **, *, and + indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 4
July 31 and Certification Date Average and Median Abnormal Returns for BHCs Subject to CEO Certification Requirement

	July 31 Abnormal Returns			*Certification Date plus July 31 ARs*		
Group	Average Abnormal Returns	Median Abnormal Returns	Number Positive / Number of Obs.	Average Abnormal Returns	Median Abnormal Returns	Number Positive / Number of Obs.
All BHCs						
Portfolio Approach	0.0064* (0.035)	0.0096** (0.000)	24/35	0.0100** (0.005)	0.0098** (0.002)	26/37
SUR	0.0054 (0.192)	0.0084** (0.004)	24/35	0.0086* (0.050)	0.0103** (0.001)	26/37
Early Certifiers						
Portfolio Approach	0.0070+ (0.090)	0.0093+ (0.079)	5/8	0.0159** (0.001)	0.0207** (0.001)	8/10
SUR	0.0067 (0.212)	0.0080 (0.128)	5/8	0.0136* (0.019)	0.0194** (0.003)	8/10
Mid-Date Certifiers						
Portfolio Approach	0.0056+ (0.076)	0.0076* (0.023)	12/17	0.0033 (0.426)	0.0038 (0.233)	12/17
SUR	0.0045 (0.235)	0.0067* (0.050)	12/17	0.0046 (0.275)	0.0070 (0.105)	12/17
Deadline Certifiers						
Portfolio Approach	0.0072+ (0.092)	0.0113* (0.015)	7/10	0.0154* (0.012)	0.0157* (0.011)	6/10
SUR	0.0058 (0.325)	0.0102+ (0.072)	7/10	0.0105 (0.140)	0.0103+ (0.093)	6/10

Notes: This table reports average and median certification day and July 31 abnormal returns for 37 bank holding companies subject to the SEC's certification order. Two additional BHCs subject to the SEC's order but that experienced other significant events on certification day are omitted, as is one BHC that experienced a significant event on July 31. The July 31 results also omit the two BHCs that certified on July 31, though these firms are included in the results summing the July 31 and certification date abnormal returns. Abnormal returns are calculated using a portfolio approach and seemingly unrelated regressions (SUR) to control for temporal clustering and using the SNL bank stock index as the measure of market returns. The early, mid-date and deadline certifiers are BHCs that certified between July 31 and August 9, on August 12 or 13, or on August 14, respectively. The figures in parentheses are p-values of a test of the hypothesis that the average or median abnormal returns are equal to zero. The symbols **, *, and + indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 5
Average and Median Abnormal Returns for BHCs Subject to CEO Certification Requirement Whose 10-Q Filing Date Differs from Certification Date: Sum of Certification Date and July 31 ARs

Group	Average Abnormal Returns	Median Abnormal Returns	Number Positive ARs/ Number of Observations
All BHCs			
Portfolio Approach	0.0124** (0.003)	0.0144** (0.001)	12/15
SUR	0.0109* (0.037)	0.0148** (0.003)	11/15
Early Certifiers			
Portfolio Approach	0.0156** (0.003)	0.0204** (0.006)	6/7
SUR	0.0159* (0.014)	0.0203** (0.003)	6/7
Mid-Date Certifiers			
Portfolio Approach	0.0054 (0.277)	0.0029 (0.289)	4/5
SUR	0.0063 (0.250)	0.0054 (0.243)	3/5
Deadline Certifiers			
Portfolio Approach	0.0165+ (0.057)	0.0208* (0.050)	2/3
SUR	0.0067 (0.470)	0.0140 (0.266)	2/3

Notes: This table reports average and median all-in certification abnormal returns (the sum of abnormal returns on July 31 and certification date) for the 15 bank holding companies subject to the SEC's certification order that did not file their Q2 2002 10-Q reports on the same day they certified their financial statements. Abnormal returns are calculated using a portfolio approach and seemingly unrelated regressions (SUR) to control for temporal clustering and using the SNL bank stock index as the measure of market returns. The early, mid-date and deadline certifiers are BHCs that certified between July 31 and August 9, on August 12 or 13, or on August 14, respectively. The figures in parentheses are p-values of a test of the hypothesis that the average or median abnormal returns are equal to zero. The symbols **, *, and + indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 6
Tests for Increases in Volatility on 10-Q Filing Dates

Panel A: Ratio Regression Results

Group	Abnormal Return – Market Difference			Abnormal Return – Market Model		
All BHCs [37]	-0.575** (.001)			-0.781** (0.000)		
Not Certification Date [15]		-0.615+ (0.056)			-0.333 (0.198)	
Certification Date [22]		-0.547** (0.002)			-1.087** (0.000)	
Early 10-Q Filers [26]			-0.706** (0.001)			-0.813** (0.003)
Deadline 10-Q Filers [11]			-0.263 (0.226)			-0.705+ (0.056)

Panel B: Corrado (1989) Test Results

Group	Abnormal Return – Market Difference	Abnormal Return – Market Model
All BHCs [37]	-0.462 (.321)	-0.874 (.191)
Not Certification Date [15]	-0.154 (.439)	0.241 (0.405)
Certification Date [22]	-0.626 (0.266)	-1.532+ (0.063)
Early 10-Q Filers [26]	-0.848 (0.198)	-0.867 (0.193)
Deadline 10-Q Filers [11]	0.362 (0.359)	-0.576 (0.282)

Notes: This table presents the results of two tests for an increase in the volatility of abnormal returns on 10-Q filing dates. Panel A reports the results of a regression of the log ratio of the absolute value of the abnormal return on 10-Q filing date to the average absolute abnormal return from January 3 to August 30, 2002 against a constant or pair of constants for different sub-sets of the sample. Panel B reports the non-parametric test statistics developed in Corrado (1989), based on the rank of the mean absolute stock return on 10-Q filing days for the BHCs in the sample. Abnormal returns are calculated both as the simple difference between the return on each BHC's stock and the market return (Abnormal Return – Market Difference) and based on a market model (Abnormal Return – Market Model). The SNL bank stock index is used as the measure of market returns. "Certification Date" and "Not Certification Date" are dummy variables for whether the 10-Q filing date was the same as the certification date. "Early 10-Q Filers" and "Deadline 10-Q Filers" are dummy variables for whether the BHC filed its Q2 2002 10-Q before or on the deadline (August 14, 2002). In both panels, the numbers in square brackets in the first column are the number of BHCs in each category, while the numbers in parentheses in the body of the table are p-values of the test that the coefficient (in Panel A) or test statistic (in Panel B) are equal to zero. The symbols **, *, and + indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 7
Comparison of Average and Median Abnormal Returns for "Smaller" BHCs Subject to CEO Certification Requirement and for 25 Largest BHCs Not Subject to CEO Certification Requirement: Sum of Certification Dates and July 31

	Sum of Certification Dates and July 31 Abnormal Returns			*July 31 Abnormal Returns*		
Group	Average Abnormal Returns	Median Abnormal Returns	Number Positive / Number of Obs.	Average Abnormal Returns	Median Abnormal Returns	Number Positive / Number of Obs.
BHCs Subject to Certification Order with Assets <= $35 Billion						
Portfolio Approach	0.0171** (0.000)	0.0206** (0.000)	13/16	0.0084* (0.037)	0.0103** (0.002)	10/14
SUR	0.144** (0.009)	0.0158** (0.000)	13/16	0.0067 (0.194)	0.0085* (0.017)	10/14
25 Next Largest BHCs						
Portfolio Approach	0.0127 (0.330)	0.0087 (0.101)	21/25	0.0034 (0.455)	0.0075 (0.103)	16/25
SUR	0.0089 (0.559)	0.0104 (0.398)	16/25	0.0022 (0.675)	0.0054 (0.273)	16/25

Notes: This table reports average and median all-in certification abnormal returns (the sum of abnormal returns on July 31 and certification date) and July 31 abnormal returns for the "smaller" bank holding companies subject to the SEC's certification order (the 16 BHCs with assets less than or equal to $35 billion) and for the next 25 bank holding companies by asset size that were not subject to the SEC's order. Abnormal returns are calculated using a portfolio approach and seemingly unrelated regressions (SUR) to control for temporal clustering and using the SNL bank stock index as the measure of market returns. For the next 25 BHCs, the all-in abnormal return figures reported are the sum of abnormal returns across the 8 dates on which BHCs subject to the SEC's order certified. The figures in parentheses are p-values of a test of the hypothesis that the average or median abnormal returns are equal to zero. The symbols **, *, and + indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 8
Descriptive Statistics for 37 BHCs Subject to the SEC's Certification Order

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
ABNORMAL RETURN	0.010	0.010	0.019	-0.042	0.054
ASSETS	84.9	38.3	130.7	16.4	712.5
TOTAL CAPITAL RATIO	12.7	12.4	1.57	10.3	18.5
HELD-FOR-SALE ASSETS	0.213	0.214	0.079	0.094	0.447
TRADING ASSETS	0.024	0.0042	0.055	0.000	0.292
ALL LIQUID ASSETS	0.312	0.276	0.153	0.140	0.859
ROA	0.013	0.013	0.008	-0.012	0.038
NON-PERFORMING LOANS	0.017	0.015	0.011	0.000	0.059
LOAN SHARE	0.616	0.657	0.164	0.075	0.814
RISKY LOAN SHARE	0.293	0.295	0.151	0.005	0.688
MAJOR MARKET INDEX	0.784	1	0.417	0	1
EARNINGS ESTIMATES DISPERSION	0.0134	0.0121	0.0097	0.0000	0.0395
SPLIT RATINGS	0.971	1.000	0.706	0.000	3.000

Notes: ABNORMAL RETURNS are the sum of certification day and July 31 abnormal returns 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; HELD-FOR-SALE ASSETS equal loans and securities held-for-sale as a share of total assets; TRADING ASSETS equal trading account assets 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; 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; LOAN SHARE equals loans as a share of total assets; RISKY LOAN SHARE equals Commercial and Industrial and non-residential Real Estate loans as a share of total assets; MAJOR MARKET INDEX takes the value 1.0 if the BHC is a member of the S&P 500 index and 0.0 otherwise; EARNINGS ESTIMATES DISPERSION equals the standard deviation of analysts' estimates of Q2 2002 earnings posted between 30 and 90 days before the end of the quarter scaled by the median estimate; and SPLIT RATINGS equals the difference between the senior debt ratings assigned by Moody's and Standard & Poor's as of June 30, where each point equals a partial ratings grade. Balance sheet data are as of March 31, 2002, while income statement data are from April 1, 2001 to March 31, 2002. Sources are Federal Reserve Y-9C Reports, Thomson Financial/IBES, Moody's, Standard & Poor's, and author's calculations

Table 9
Certification-Related Abnormal Returns and BHC Characteristics

	Base Case Regression	Alternative Liquid Asset Measures		Risk and Information-Intensity Measures			Market-Related Opaqueness Measures		
		Trading and Held-for-Sale Assets	All Liquid Assets	Non-Performing Loans	Loan Share	Risky Loan Share	Major Index	Earnings Estimates Dispersion	Split Ratings
LOG ASSET SIZE	-0.0044 (0.0035)	-0.0067 (0.0044)	-0.0062 (0.0043)	-0.0046 (0.0033)	-0.0018 (0.0034)	-0.0014 (0.0034)	-0.0059 (0.0037)	-0.0044 (0.0034)	-0.0039 (0.0034)
TOTAL CAPITAL RATIO	-0.0026 (0.0019)	-0.0018 (0.0019)	-0.0013 (0.0024)	-0.0020 (0.0018)	-0.0019 (0.0022)	-0.0017 (0.0016)	-0.0029 (0.0020)	-0.0024 (0.0020)	-0.0039* (0.0016)
ROA	0.3635 (0.2754)	0.2941 (0.2808)	0.1902 (0.3475)	0.4296 (0.2666)	0.4390 (0.2749)	0.2722 (0.2501)	0.2682 (0.2889)	0.3355 (0.3528)	0.5825 (0.4444)
HELD-FOR-SALE ASSETS	0.0968* (0.0357)			0.0798** (0.0269)	0.1241** (0.0377)	0.1430** (0.0431)	0.1071** (0.0367)	0.0950* (0.0356)	0.0922* (0.0444)
ADDITIONAL/ALTERNATIVE VARIABLE		0.0516 (0.0344)	0.0090 (0.0270)	0.6379* (0.2500)	0.0344+ (0.0184)	0.0462* (0.0219)	0.0072 (0.0107)	-0.0588 (0.3387)	0.0070+ (0.0036)
R-SQUARED	0.333	0.244	0.192	0.439	0.391	0.406	0.346	0.333	0.422

Notes: This table reports the results of cross-sectional regressions of certification-related abnormal returns for 37 BHCs subject to the SEC's certification order against a series of BHC-specific measures. ABNORMAL RETURNS are the sum of certification day and July 31 abnormal returns 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; HELD-FOR-SALE ASSETS equal loans and securities held-for-sale as a share of total assets; TRADING ASSETS equal trading account assets 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; 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; 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; RISKY LOAN SHARE equals Commercial and Industrial and non-residential Real Estate loans as a share of total assets; MAJOR MARKET INDEX takes the value 1.0 if the BHC is a member of the S&P 500 index and 0.0 otherwise; EARNINGS ESTIMATES DISPERSION equals the standard deviation of analysts' estimates of Q2 2002 earnings posted between 30 and 90 days before the end of the quarter, scaled by the median estimate; and SPLIT RATINGS equals the difference between the senior debt ratings assigned by Moody's and Standard & Poor's as of June 30, where each point equals a partial ratings grade. The regressions also include dummy variables for the certification groups (early, mid-date, and deadline) and are estimated with robust standard errors. Standard errors of the parameter estimates are reported in parentheses. The symbols **, *, and + indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

Table 10
Impact of CEO Certification on Dispersion of Earnings Estimates: Difference-in-Difference Regressions

	All BHCs			
Constant	0.0170** (0.0021)	0.0115** (0.0032)	0.0107** (0.0027)	0.0083* (0.0034)
Post Certification	0.0078** (0.0024)	0.0074** (0.0025)	0.0073** (0.0024)	0.0071** (0.0024)
Certifying BHCs	0.0049* (0.0022)	0.0003 (0.0033)	0.0016 (0.0025)	-0.0008 (0.0033)
Certifying BHCs/Post Certification	-0.0096** (0.0032)	-0.0096** (0.0033)	-0.0096** (0.0032)	-0.0095** (0.0032)
Log Asset Size		0.0025+ (0.0014)		0.0017 (0.0014)
Log Number of Analysts			0.0043** (0.0014)	0.0033* (0.0015)
R-Squared	0.0175	0.0283	0.0315	0.0357
Number of Observations	665	665	665	665
	BHCs with Assets Less Than $35 Billion			
Constant	0.0169** (0.0023)	0.0373** (0.0089)	0.0097** (0.0028)	0.0325** (0.0091)
Post Certification	0.0078** (0.0025)	0.0093** (0.0026)	0.0070** (0.0025)	0.0088** (0.0026)
Certifying BHCs	0.0048 (0.0029)	0.0132* (0.0056)	0.0029 (0.0032)	0.0125* (0.0056)
Certifying BHCs/Post Certification	-0.0111** (0.0039)	-0.0114** (0.0039)	-0.0113** (0.0038)	-0.0117** (0.0039)
Log Asset Size		-0.0092* (0.0039)		-0.0106** (0.0037)
Log Number of Analysts			0.0050** (0.0014)	0.0055** (0.0014)
R-Squared	0.0286	0.0432	0.0536	0.0727
Number of Observations	402	402	402	402

Notes: This table reports the results of difference-in-difference regressions of the dispersion of quarterly earnings estimates before and after the SEC's certification requirement. The dispersion of quarterly earnings estimates equals the standard deviation of analysts' estimates of quarterly earnings posted between 30 and 90 days before the end of the quarter scaled by the median estimate, all as reported by Thomson Financial/IBES. Asset size is total BHC assets at the end of each quarter. Number of Analysts is the number of individual analysts posting an earnings estimate during the 30-to-90 day observation window. The regressions also include quarterly dummy variables (coefficients not reported). The sample consists of the 40 bank holding companies subject to the SEC's certification order ("Certifying BHCs") and the 25 next largest BHCs (the control group). The sample period is from Q1 2001 to Q4 2003, with Q1 2001 to Q2 2002 being the "before" period and Q4 2002 to Q4 2003 being the "after" period. Dispersion estimates from Q3 2002 – the quarter during which the BHCs certified – are omitted. The regressions are run on the full sample of BHCs and limiting the Certifying BHCs to just those with assets less than or equal to $35 billion in Q2 2002. Standard errors are reported in parentheses. The symbols **, *, and + indicate statistical significance at the 1, 5 and 10 percent levels, respectively.