January 2013

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Detecting Earnings Management in Bank Merger Targets Using an Industry Specific Model

Scott I. Meisel

The removal of barriers to interstate expansion and the need for competitive size in banking have increased banks’ incentives to create banking institutions that stretch across multiple states through merger or acquisition. This merger and acquisition activity has increased the focus on bank valuation. Potential bank merger targets could strive to develop specific characteristics either to hold off acquiring banks or to command a good price from acquiring banks.

One way to either hold off mergers and acquisitions or command a good price from acquiring banks is by increasing size. Another way would be to increase profitability (Edwards, 1986). Size and profitability are the two most important variables in bank valuation models.

Financial Accounting Standards Board (FASB) standards are intended to minimize the ability of management to manipulate earnings. Despite these standards, the Security and Exchange Commission (SEC) questions whether the financial statements reflect the economics of the merger. Therefore, the SEC would be interested in whether merged banks manipulate earnings just before the merger. In addition, the Federal Deposit Insurance Corporation (FDIC) uses the Capital Adequacy Ratio (shareholders' equity plus loan loss reserves to total assets plus loan loss reserves) as one of its criteria for authorizing mergers. Generally, increasing earnings by a reduction of the loan loss provision results in a reduction in capital. This also implies that an increase in the loan loss provision increases regulatory capital.

Managers of banks with low regulatory capital have incentives to increase the loan loss provision (Moyer, 1990). In addition, Ahmed, Takeda, and Thomas (1999) found that capital management is an important determinant of the loan loss provision. Annual reports identify the loan loss reserve as a subjective determination of loan losses (Cortland Bancorp, 1999). Therefore, the FDIC would be interested in whether managers are manipulating the loan loss provision to manage regulatory capital.

The purpose of this study is to test whether merged banks have previously been engaged in earnings management using an Industry Specific Model. This article uses the model to empirically test for earnings management in the three years prior to the merger. In addition, the article compares the Industry Specific Model with the Modified Jones Model in its ability to detect earnings management. This research...
differs from prior research in that most other earnings management studies used manufacturing samples or non-merged bank samples in their studies (Key, 1997). Key (1997) tested a variation of the Modified Jones Model on a service, cable TV. The article uses the Industry Specific Model to test for earnings management in a specific industry such as financial institutions and found that merged banks overall manage earnings in all three years. The magnitude of earnings management increases in the two years prior to the merger in comparison to Year -3 indicating that controls do not have an effect on minimizing earnings management. The results show that the Industry Specific Model is the better model to detect earnings management. In addition, sensitivity tests conclude that merged national banks are driving the results of the full sample, i.e., merged national banks have an increasing magnitude of earnings management as the merger approaches while merged state banks have a decreasing magnitude of earnings management as the merger approaches.

**Literature Review**

In early accrual studies, several studies (Healy, 1985; DeAngelo, 1986; 1988; Liberty & Zimmerman, 1986) examined the effects of events on management’s manipulation of accounting accruals in multi-industry manufacturing. These studies provided mixed results for event studies indicating that accrual methodology may not have been powerful enough to detect earnings management.

The results of these methodology studies on multi-industry samples lead to testing of the Modified Jones Model on specific industry samples, such as Cahan, Chavis, and Elemendorf (1997) and Key (1997), who tested their models on specific industry samples such as chemicals and cable TV, respectively. These two empirical studies reported the existence of earnings management using the Modified Jones Model methodology. The results in these specific industry sample studies were stronger than results from early accrual studies and multi-industry sample studies.

Ten studies, Barth, Beaver, and Wolfson (1990); Barth (1994); Scholes, Wilson, and Wolfson (1990); Warfield and Linsmeier (1992); Collins, Shackelford, and Wahlen (1995); Beatty, Chamberlain, and Magliolo (1995); Moyer (1990); Chen and Daley (1996); Robb (1998); and Ahmed et al. (1999), used a sample of non-merged banks to test earnings management. These studies tested a single explanatory variable’s association with earnings management. Five studies examined the use of realized security gains and losses to manage earnings. Four of the studies, Barth et al.(1990); Barth (1994); Scholes et al. (1990); and Warfield and Linsmeier (1992), concluded that security gains and losses are used to manage earnings. Collins et al. (1995) found that security gains and losses were not used to manage earnings. Beatty et al. (1995) found that pension settlement gains and miscellaneous gains and losses from asset sales were used to manage earnings. Five studies (Moyer, 1990; Collins et al., 1995; Chen & Daley, 1996; Robb, 1998; Ahmed et al., 1999) tested the association between the loan loss provision and earnings management. All the studies except Chen and Daley (1996) and Ahmed et al. (1999) found evidence that the loan loss provision was used to manage earnings. Chen and Daley (1996) found no evidence of earnings management in the Canadian banking industry. Ahmed et al. (1999) found no evidence of earnings management after the 1990 capital regulatory rules change.

Most of the recent studies using samples of banks have used foreign samples of banks; however, four studies used the U.S. banking industry in their samples. In Beatty et al
(2002), samples of public and private holding companies were used to examine whether public bank small earnings increases relative to small earnings decreases was attributable to earnings management. Results show that public banks report fewer small earnings decreases in comparison to private banks. In addition, public banks are more likely to use the loan loss provision and security gain realizations to eliminate small earnings decreases. Kanagaretnam, Krishnan, and Lobo (2010) found that unexpected auditor fees are unrelated to earnings management for large banks. For small banks, they found greater earnings management via the loan loss provision by banks that pay higher unexpected total and non-audit fees to the auditor. Cheng (2011) found that bank managers with high equity incentives are more likely to manage earnings but only when capital ratios are closer to the minimums required by regulators. Interestingly, this finding indicates that potential regulatory intervention in the banking industry induces, rather than mitigates, earnings management arising from equity incentives. In Leventis and Dimitropoulos (2012), the findings suggest that efficient corporate governance mechanisms report small positive income to a lesser extent than banks with weak governance efficiency. The study also indicated that well-governed banks engage less in aggressive earnings management behavior through the use of discretionary loan loss provisions and realized security gains and losses.

Background

Bank Regulation

Banks are regulated based upon two groups: state and federal. The comptroller of the currency issues a federal charter (national bank). A bank with a state charter is referred to as a state bank. All national banks must belong to the Federal Reserve and be insured by the FDIC. Therefore, the comptroller of the currency, the Federal Reserve, and the FDIC regulate national banks. State banks can elect to be members of the Federal Reserve. Therefore, state banks are regulated by the appropriate state agency, Federal Reserve (if member), and FDIC. The Federal Reserve, FDIC, and state agencies apply the same regulatory procedures. A bank is rated one to five with one being outstanding and five very poor. A composite rating of the five characteristics is determined. Banks with a mean rating of 4.0 or higher are considered problem banks (Madura 1998).

Incentives to Manage Earnings

Two competing explanations can be provided for bank managers having an incentive to manage earnings. As a bank approaches candidacy for merger, bank managers have an incentive to increase earnings. Inflating earnings will bring higher returns to shareholders (Schipper, 1989), and a bank will become a more attractive merger target. In addition, a manager of a merger target may have an incentive to inflate earnings to convince shareholders of acquiring banks they are operating efficiently. It is also possible that managers have an incentive to increase earnings to prevent mergers. In other words, some target banks may drive their values up such that a purchasing bank does not have the resources to acquire them (Easterwood, 1997). Positive t-statistics and positive discretionary accruals would be evidence of this incentive.

On the other hand, as a bank approaches candidacy for merger, bank managers may wish to manipulate earnings by lowering accruals just prior to the merger to increase returns for the acquiring company in the year after the merger. This behavior is based upon the “big bath” theory (Zucca...
impose higher regulatory capital standards for banks that are actively involved in merger activity (Ahmed et al., 1999). Regulators can increase the regulatory costs incurred by a bank for not complying with the capital guidelines. For example, a noncomplying bank can be examined more often. Therefore, bank merger targets have an incentive to manage earnings lower through the manipulation of the loan loss reserve. Institutions undertaking merger transactions must file an application with the FDIC, which does not approve proposed mergers in which the resulting institution would fail to meet existing capital standards or whose earnings prospects, both in terms of quantity and quality, are weak, suspect, or doubtful. In assessing capital adequacy and earnings prospects, particular attention is paid to the adequacy of the allowance for loan losses (FDIC, 1998). Therefore, mergers in which the target bank(s) would cause the resulting institution to fail to meet capital standards or cause earnings prospects to be weak, suspect, or doubtful would not be approved. Incentives thus exist, at least theoretically, for bank managers to manipulate earnings prior to mergers. A priori, the direction of the manipulation depends upon which incentive predominates. Regardless, this research is seeking to determine if earnings management has occurred.

Research Design

Sample and Data Collection

A sample of merged or acquired banks was selected from a population of all banks listed in the 1995 and 1997 Compustat Merged Industrial Annual Data Files under Banking, Standard Industrial Classification (SIC) Code 602. The 602 SIC code includes three categories of banks: national commercial banks (6021), state commercial banks (6022), and commercial banks other (6029). Other studies (Key, 1997; Cahan et al., 1997) used various time periods in their research design. Key (1997) used 12 years to test earnings management in the cable television industry. Cahan et al. (1997) used 14 years to test a sample of chemical firms. The number of years of data in this study is limited to 13 to be consistent with these prior studies and to avoid losing additional banks. Two methodology papers (Jeter & Shivakumar, 1999; Dechow, Sloan, and Sweeney, 1995) on earnings management acknowledge reliable parameter estimates using periods of this length.

The Compustat Merged Industrial Annual Data Files	

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contain a population of 204 banks merged in the 1989-1997 time period. Data were collected on each variable for the most recent 13 years prior to the merger during the period 1975-1997. The population of 204 was reduced by excluding banks (153) with less than 13 years of data. This leaves 51 banks that meet data requirements in Compustat. *Moody’s Bank and Finance Manual* was used to search for data missing from Compustat. Of the 153 banks that had missing data in Compustat, 34 banks could be found in *Moody’s Bank and Finance Manual*. A search for data on these 34 banks in *Moody’s Bank and Finance Manual* uncovered 15 banks with missing data, resulting in an additional 19 banks meeting data requirements. Therefore, this study used 70 banks in the empirical tests. This information is presented in Table 1, Panel A. Table 1, Panel B, shows the number of mergers based upon years tested. The highest number of mergers, 38 (54%) occurred in 1991, 1992, and 1995. In 1995, 18 (26%) of the mergers occurred.

Some banks became targets earlier than the actual merger year as indicated in Compustat. Thus, banks with announcement years earlier than the merger year have incentives to manage earnings earlier than the merger year. The announcement year represents the date the bank first announced the possibility of a merger, which may be different than the actual merger year indicated in Compustat. The year used as the pre-merger year in the empirical tests is based upon the announcement date rather than the assumed merger year in Compustat if the announcement date indicates a different pre-merger year. In seven out of 70 banks, the announcement dates were different than the merger years indicated in Compustat. Therefore, seven banks had announcement dates that lead to different testing periods than a testing period based upon the actual merger year. In these seven cases, the announcement date was used to set the pre-merger year for empirical tests to allow for an earlier incentive to manage earnings were being compared. The fields in the Merged Industrial Annual Data file were converted to the Compustat Bank Annual File fields through the Compustat conversion feature. To be included in the sample, a bank must have the following characteristics:

1. Compustat information is available for the bank.
2. Compustat classifies the bank in the 602 standard industrial classification code.
3. Merger information is available.

Since the banks in my sample are organizations, which cease to exist as separate entities, the resulting combination is defined as either a merger or consolidation. In a merger, only one of the affiliates remains in existence. A consolidation forms a new legal entity in which none of the predecessor affiliates remains in existence (Griffin, 1991). The sample includes banks that have ceased to exist. These banks had merger and consolidation activity before being merged or consolidated themselves. Therefore, the values in Compustat and *Moody’s Bank and Finance Manual* reflect the prior merger and consolidation activity of the merged or consolidated bank regardless of whether purchase or pooling was used.

<table>
<thead>
<tr>
<th>Panel A</th>
<th>Panel B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>Number of Mergers</td>
</tr>
<tr>
<td>1991</td>
<td>38 (54%)</td>
</tr>
<tr>
<td>1992</td>
<td>38 (54%)</td>
</tr>
<tr>
<td>1993</td>
<td>38 (54%)</td>
</tr>
<tr>
<td>1994</td>
<td>38 (54%)</td>
</tr>
<tr>
<td>1995</td>
<td>38 (54%)</td>
</tr>
</tbody>
</table>
Table 1
Sample of Banks

PANEL A: BANKS IN SAMPLE

<table>
<thead>
<tr>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Merged banks in 1989-1997 (Population)</td>
<td>204</td>
</tr>
<tr>
<td>Banks Omitted because of Missing data in Compustat</td>
<td>153</td>
</tr>
<tr>
<td>Banks with 13 years of data in Compustat</td>
<td>51</td>
</tr>
<tr>
<td><strong>MOODY’S BANK AND FINANCE MANUAL</strong></td>
<td></td>
</tr>
<tr>
<td>Banks omitted in Compustat, but listed in <em>Moody’s Bank and Finance Manual</em></td>
<td>34</td>
</tr>
<tr>
<td>Banks omitted from sample because of missing data</td>
<td>15</td>
</tr>
<tr>
<td>Additional banks with 13 years of data</td>
<td>19</td>
</tr>
<tr>
<td><strong>TOTAL BANKS IN SAMPLE</strong></td>
<td><strong>70</strong></td>
</tr>
</tbody>
</table>

PANEL B: MERGERS GROUPED BY YEARS TESTED

<table>
<thead>
<tr>
<th>Year</th>
<th>Mergers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>4</td>
</tr>
<tr>
<td>1990</td>
<td>0</td>
</tr>
<tr>
<td>1991</td>
<td>8</td>
</tr>
<tr>
<td>1992</td>
<td>12</td>
</tr>
<tr>
<td>1993</td>
<td>4</td>
</tr>
<tr>
<td>1994</td>
<td>8</td>
</tr>
<tr>
<td>1995</td>
<td>18</td>
</tr>
<tr>
<td>1996</td>
<td>7</td>
</tr>
<tr>
<td>1997</td>
<td>9</td>
</tr>
<tr>
<td><strong>TOTAL MERGED BANKS</strong></td>
<td><strong>70</strong></td>
</tr>
</tbody>
</table>

Hypotheses

Bank managers of merger targets can be motivated to manage earnings in either direction. As stated in the incentives, the higher the earnings of a merger target the higher the price paid to merge or acquire that target. The higher earnings is also a signal to acquiring banks that the bank is operating efficiently (Easterwood, 1997). In addition, inflating earnings will bring higher returns for shareholders (Schipper, 1989). Therefore, inflating earnings might be evidenced by positive t-statistics and positive discretionary accruals. Another possible explanation for earnings management in bank merger targets is the adjustment of assets (loans) through repackaging or less risky lending to lower the capital adequacy requirement. This has the effect of lowering the risk-weighted assets and the reserve, which raises earnings. Thus, bank managers may be motivated...
to apply income-increasing discretionary accruals to manage earnings.

On the other hand, bank managers may be motivated to report lower earnings just prior to the merger (big bath theory) to increase the likelihood of better returns for the acquiring company in the year after the merger (Zucca & Campbell, 1992; Porciau, 1993). This makes the bank look unattractive and signals that the bank is operating inefficiently. Generally, a greater reduction of capital increases earnings due to a reduction of the loan loss provision. This implies that an increase in the loan loss provision reduces earnings and increases a bank’s regulatory capital. Therefore, managers of banks with low regulatory capital have incentives to increase the loan loss provision lowering earnings (Moyer, 1990). Since earnings can be manipulated in either direction, a two-tailed test was used to test the hypotheses. Therefore, this study tested the following hypothesis stated in the null form:

H$_1$: Managers of bank merger targets do not manipulate reported earnings in the pre-merger year.

Initially, stock-holders of each company must approve the merger. After the stockholders approve the merger, the institutions must file an application with the FDIC. The FDIC does not approve proposed mergers where the resulting institution would fail to meet existing capital standards or whose earnings prospects, both in terms of quantity and quality, are weak, suspect, or doubtful (FDIC, 1998). Therefore, the FDIC’s approval process takes time, and a lag effect occurs between the time the bank initially becomes a merger target and when the merger is completed. This lag effect may actually mean that the merger is submitted for stockholder approval and/or regulatory approval in the pre-merger year or year prior to the pre-merger year (Year -2). In this event, any earnings management would have taken place before stockholder approval or regulatory approval. Therefore, if the merger were submitted for stockholder approval or regulatory approval in the pre-merger year, it is hypothesized that earnings management would have occurred in the year prior to the pre-merger year (Year -2). In addition, if the merger were submitted for stockholder approval or regulatory approval in the year prior to the pre-merger (Year -2), it is hypothesized that earnings management would have occurred in Year -3. This leads to the second and third hypotheses stated in the null form.

H$_2$: Managers of bank merger targets do not manipulate reported earnings in the year prior to the pre-merger year.

H$_3$: Managers of bank merger targets do not manipulate reported earnings in the third year prior to the merger.

**Industry Specific Model**

One study (Bernard & Skinner, 1996) discussed the possibility that the Jones Model (Jones, 1991) and the Modified Jones Model (Dechow et al., 1995) are misspecified. In both the Jones and Modified Jones Models, success is based upon separating total accruals into nondiscretionary and discretionary components. Inaccurate measurement of discretionary accruals lowers the power of the research design and may lead the researcher to conclude that earnings management exists when it may not (Bernard & Skinner, 1996). They suggest testing earnings management in industry specific settings such as merged banks, the sample of this study. They also suggest reclassifying misclassified discretionary accruals as nondiscretionary and reclassifying misclassified nondiscretionary accruals as discretionary. Both suggestions are employed in developing an Industry
Specific Model to overcome mismeasurement error. By definition, discretionary accruals include all accruals not included in the nondiscretionary accrual measure. Therefore, some potential discretionary accruals should be nondiscretionary and potential nondiscretionary accruals should be discretionary. For example, the Modified Jones Model classifies the timing of payables and payroll factors as discretionary when they might be nondiscretionary.

Many bank studies (Moyer, 1990: Collins et al., 1995: Chen & Daley, 1996: Robb, 1998) have found that managers use the loan loss allowance to manipulate earnings. The loan loss allowance is increased by the provision for loan losses and decreased by charge-offs. In many cases, one of the banks’ largest expenses is the provision for loan losses. A model that is better specified might move the change in receivables from the nondiscretionary measure in the Modified Jones Model to discretionary accruals in the Industry Specific Model.

It is also known that personnel expenses are a major component of total costs in a service industry. One factor that a buyer may review is the seller’s future earnings stream. A number of steps can be taken to improve the target’s earnings stream. One of these steps is to reduce overhead expenses (Skaggs, 1988). In a bank, non-interest operating expenses represent overhead costs.

\[
\begin{align*}
\text{T}_{\text{Ait}}/\text{A}_{\text{i}t-1} &= \beta_0(1/\text{A}_{\text{i}t-1}) + \\
&+ \beta_1(\Delta\text{INTREV}_{\text{it}})/\text{A}_{\text{i}t-1} + \\
&+ \beta_2(\Delta\text{INTEXP}_{\text{i}t})/\text{A}_{\text{i}t-1} + \\
&+ \beta_3(\Delta\text{PERS}_{\text{i}t})/\text{A}_{\text{i}t-1} + \\
&+ \beta_4\text{PART}_{\text{i}} + \varepsilon_{\text{it}}
\end{align*}
\]

where:

\(\text{T}_{\text{Ait}}\) = total accruals for bank \(i\)

One of the major components of non-interest operating expenses is salaries and benefits. Generally, the labor market sets salaries and benefits implying that a bank’s labor requirements are less flexible. In addition, reduction of the non-interest operating expenses is based upon cost-cutting programs and industry consolidation (Davidson, 1995). Based upon these reasons, it appears that non-interest operating expenses are not a significant factor in the discretionary component of the model. In the Modified Jones Model, these costs are included in the discretionary accrual specification. It is possible that these costs are better specified as non-discretionary. The Modified Jones Model with the partitioning variable can be adjusted to reflect bank-specific conditions. Therefore, the current study used the following Bank Specific Model to test for earnings management in bank merger targets:

\[
\begin{align*}
\text{TA}_{\text{it}} = \beta_0(1/\text{A}_{\text{i}t-1}) + \\
&+ \beta_1(\Delta\text{INTREV}_{\text{it}})/\text{A}_{\text{i}t-1} + \\
&+ \beta_2(\Delta\text{INTEXP}_{\text{i}t})/\text{A}_{\text{i}t-1} + \\
&+ \beta_3(\Delta\text{PERS}_{\text{i}t})/\text{A}_{\text{i}t-1} + \\
&+ \beta_4\text{PART}_{\text{i}} + \varepsilon_{\text{it}}
\end{align*}
\]
\(A_{t-1}\) = assets for bank \(i\) at time \(t-1\).

\(\Delta\text{INTREV}_{it}\) = the change in interest revenues for bank \(i\).

\(\Delta\text{INTEXP}_{it}\) = the change in interest expenses for bank \(i\).

\(\text{PPE}_{it}\) = property, plant, and equipment for bank \(i\) at time \(t\).

\(\Delta\text{PERS}_{it}\) = the change in noninterest operating expenses for bank \(i\).

\(\text{PART}_i\) = 1 if observation is from the event period; 0 if the observation is from the estimation period.

\(\varepsilon_i\) = error term for bank \(i\).

Robb, 1998), security gains and losses (Barth et al., 1990; Scholes et al., 1990; Warfield & Linsemier, 1992), pension settlement gains (Beatty et al., 1995), and miscellaneous gains and losses from asset sales (Beatty et al., 1995).

**Partitioning Variable**

The discretionary accruals are embedded in the error term. The error term or residuals contain all other factors not included in the NDA. A partitioning variable (PART) is used to separate the event period from the estimation period. PART is an indicator variable equal to 1 in the year in which earnings management is hypothesized to occur in response to the stimulus identified by the researcher and 0 in the other years. The PART variable compares total accruals in the event year to total accruals in other years. Dechow et al. (1995) showed that total accruals measures discretionary accruals. Therefore, the PART variable measures discretionary accruals in the event year in comparison to discretionary accruals in the other years. Ordinary least squares regression is estimated on a firm-specific basis producing a t-statistic on the dummy variable (PART). According to two studies (Dechow et al., 1995; Key, 1997), earnings are managed when the estimated coefficient on PART from firm specific regressions is statistically significant.

Therefore, in testing the hypotheses, a statistically significant coefficient (\(\beta\) does not = 0) on PART indicates that a bank used discretionary accruals more in the event year than in the estimation period to engage in earnings management. This study used the following Z-statistic (Dechow et al., 1995) to aggregate the t-statistics cross-sectionally:

\[
Z = \frac{1}{N^{1/2}} \sum_{j=1}^{N} \frac{t_j}{\sqrt{k_j/(k_j-2)}}^{1/2}
\]

where

- \(t_j\) = t-statistic for bank \(j\), and
- \(k_j\) = degrees of freedom for t-statistic of bank \(j\), and
- \(N\) = number of firms

Dechow et al. (1995) used a sample of 32 firms alleged by the SEC to have manipulated earnings over a period of 1982–1992. The 32 firms had varying event periods between 1982 and 1992. This study has 70 banks with varying event periods between 1989–1997. An aggregate Z-statistic was used to test the Modified Jones Model over varying event periods. Theoretically, this was possible because the exact same 70 firms were used.
Results
Influential observations are those that appear to have a large influence on the parameter estimates (Belsley, 1980). According to Belsley, influential observations can be determined through various diagnostic tests including tests of DFFITS and RSTUDENT (studentized residuals). These influential observation tests reduced the sample to 63 observations for the empirical tests.

Sample statistics for the Industry Specific Model are reported in Table 2. All event years tested in the study are presented. The number of positive and negative t-statistics for the dummy variable (PART), the number of positive and negative discretionary accruals, z-statistic for the full sample, and the mean Durbin-Watson statistic are reported.

In general, the error term, or residual, contains all accrual items not included in the non-discretionary accrual specification. Therefore, the error term or residual indicates the sign of the discretionary accrual in each year tested. A negative sign would show that banks are using income-decreasing discretionary accruals in the event year. A positive sign would show that banks are using income-increasing discretionary accruals in the event year. The number of positive and negative
dummy variable (PART) t-statistics indicates the number of banks using higher or lower discretionary accruals in the event years (pre-merger year, year prior to the pre-merger year or Year -3) in comparison to the other years. The Z-statistic measures the significance of H₁ (no earnings management in the pre-merger year), H₂ (no earnings management in the year prior to the pre-merger year) and H₃ (no earnings management in Year -3).

Pre-Merger Year
Thirty-six (56.4%) merged banks had positive discretionary accruals after the removal of outliers indicating that a majority of merged banks managed earnings higher in the pre-merger year. A majority (37, 57.8%) of merged banks had positive t-statistics on the PART variable indicating that a majority of merged banks managed earnings higher in the year prior to the pre-merger year compared to other years. The Z-statistic is 5.06 and significant at 1 percent. Therefore, the null hypothesis that merged banks do not manage earnings in the year prior to the pre-merger year is rejected indicating that merged banks manage earnings in the year prior to the pre-merger year.

Year Prior to the Pre-Merger Year (Year -2)
The 41 (64.1%) positive discretionary accruals indicate that merged banks managed earnings higher in the year prior to the pre-merger year. In addition, merged banks had more positive t-statistics (39, 60.1%) indicating that merged banks have managing earning higher in the year prior to the pre-merger year compared to other years. The Z-statistic is 5.21 and significant at 1 percent. Therefore, the null hypothesis that merged banks do not manage earnings in the year prior to the pre-merger year is rejected indicating that merged banks manage earnings in the year prior to the pre-merger year.

Year -3
The discretionary accrual in Year -3 are more positive (42, 68.9%) than negative. This indicates that merged banks managed earnings higher in Year -3. The t-statistics on the PART variable are slightly more negative (33, 54.1%) than positive indicating that merged banks managed earnings slightly lower in Year -3 compared to the other years. The Z-statistic is 4.66 and significant at 1 percent. Therefore, the
TABLE 2
Industry Specific Modela
Sample Statisticsb

<table>
<thead>
<tr>
<th>YEAR</th>
<th>-1c</th>
<th>-2d</th>
<th>-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-STATISTIC (Positive:negative)</td>
<td>37:27</td>
<td>39:25</td>
<td>34:36</td>
</tr>
<tr>
<td>DISCRETIONARY ACCRUALf (Positive:Negative)</td>
<td>36:28</td>
<td>41:23</td>
<td>42:19</td>
</tr>
<tr>
<td>z-STATISTIC</td>
<td>5.06g</td>
<td>5.21g</td>
<td>4.66g</td>
</tr>
<tr>
<td>DURBIN-WATSON STATISTIC (Mean)</td>
<td>2.15</td>
<td>2.07</td>
<td>2.10</td>
</tr>
</tbody>
</table>

a. $TA_i = \beta_{0i} + \beta_{1i}(\Delta INTREV_{it} - \Delta INTEXP_{it}) + \beta_{2i}PPE_{it} + \beta_{3i}\Delta PERS_{it} + \beta_{4i}PART_i + \epsilon_{it}$
where
- $TA =$ total accruals; $\Delta INTREV =$ interest revenue in time period $t$ minus interest revenue in time period $t-1$; $\Delta INTEXP =$ interest expense in time period $t$ minus interest expense in time period $t-1$; $PPE =$ property, plant, and equipment; $\Delta PERS =$ non-interest operating expenses in time period $t$ minus non-interest operating expenses in time period $t-1$; $PART=1$ in the event year, 0 otherwise. All variables except $PART$ are scaled by lagged assets.

b. $Z$-statistic $= 1/N^{1/2} \sum_{j=1}^{N} t_j / [|k_0| / (k_0 - 2)]^{1/2}$

c. 63 banks in sample

d. Pre-merger year

e. t-statistics on dummy variable PART

f. Error term or residual

g. Significantly different than 0 at the 1% level (2-tailed test)
h. $N=12$

Results indicate that the null hypothesis of no earnings management in Year -3 is negative. This leads to the conclusion that merged banks managed earnings in Year -3. Again, as in the other two years, the Durbin-Watson statistic (2.10) is within a reasonable range, indicating multicollinearity is not a factor. Results appear in Table 2.

The results in all three years support the incentives that drive earnings higher in merged banks. Some of these incentives include increasing returns to shareholders, making the bank look attractive to potential buyers in terms of operating efficiency, and pricing the bank too high to avoid a takeover. Another possible explanation for the earnings management is capital ratio manipulation. The capital adequacy ratio is an important ratio reviewed by regulators in a banks request to merge. An inadequate capital adequacy ratio will likely cause the merger to be denied and bring a higher number of bank examinations. Therefore, a target bank may be repackaging the assets to effect a more favorable capital adequacy ratio once the merger is announced. In other words, repackaging the loans to lower the loan loss provision but increase the capital ratio.

The FDIC authorizes bank mergers, but does not approve proposed mergers in which the resulting
institution fails to meet capital standards or the earnings prospects become weak, suspect, or doubtful (FDIC, 1998). Therefore, if the target bank would cause the acquiring bank to fail to meet capital standards or earnings prospects, the merger would not be approved. Regulators can increase the regulatory costs for a bank not complying with capital guidelines. Thus, a bank can be examined more often for noncompliance. This study found merged banks, overall, (see Table 2) managed earnings higher as the merger year approaches to meet capital standards, or managed earnings to improve earnings prospects for the acquiring bank just prior to the merger. In other words, a bank’s earnings prospects appeared better than they, in fact, actually were.

**Sensitivity Analysis**

Two sets of sensitivity tests were applied to the data. In the first one, Z-statistics were computed on Year -4 and Year -5 for comparison purposes. The second set of sensitivity tests included separating the full sample into state and national bank components. This study computed separate Z-statistics for the state and national banks in each of the three years tested in the full sample. The Z-statistic computed in Year -4 was 4.46. This was slightly lower than Year -3 indicating that a higher level of earnings management was prevalent in Year -3. Year -5 generated the highest Z-statistic (5.83) in comparison to the other years tested; however, it was also the furthest year from the merger year. Z-statistics for the split sample are presented in Table 3.

The state and national samples had Z-statistics in the pre-merger year of 2.69 and 4.39, respectively, indicating that the national sample had a higher level of earnings management than the state sample in the pre-merger year. In the year prior to the pre-merger year, the difference in the level of earnings management was not significantly different between state and national banks. However, the results from Year -3 indicate that the state banks (Z = 4.17) depict a significantly higher level of earnings management than national banks (Z = 2.58).

In the split sample, the results are mixed. The results for national banks have increasing z-statistics from Year -3 to Year -1. In fact, the Z-statistic (4.39) for merged national banks for the pre-merger year (Year -1) is higher than either of the other two years. The results indicate that merged national banks trend toward a higher magnitude of earnings management as the merger approaches. The merged state sample has the opposite trend. In fact, the Z-statistic in Year -3 is 4.17 and decreases to 2.69 in the pre-merger year. Thus, the trend in merged state banks is to reduce the magnitude of earnings management as the merger approaches.

It appears that merged national banks manipulated earnings as the merger approaches to look attractive such that the acquiring bank or resulting institution could meet existing capital standards and earnings prospects after the merger. In other words, a national bank’s capital standards and earnings prospects appear good when in fact they were not. Therefore, mergers involving national banks may have been approved based upon a misleading level of earnings. The result that merged national banks managed earnings higher as the merger approaches could possibly be due to either an overworked FDIC staff and/or policies and procedures that are not detecting earnings management.

On the other hand, regulatory controls regarding merged state banks appears to be deterring earnings management as the bank gets closer to the merger. Since merged state banks are smaller and have more difficulty meeting regulatory costs including more examinations for noncompliance, it appears that controls are preventing
Table 3
Z-Statistics* For Stateb And Nationalc Banks
The Industry Specific Modeld

<table>
<thead>
<tr>
<th>YEAR</th>
<th>STATE</th>
<th>NATIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1e</td>
<td>2.69g</td>
<td>4.39g</td>
</tr>
<tr>
<td>-2f</td>
<td>3.68g</td>
<td>3.71g</td>
</tr>
<tr>
<td>-3</td>
<td>4.17g</td>
<td>2.58g</td>
</tr>
</tbody>
</table>

a. Z-statistic = $1/N^{1/2} \sum_{j=1}^{N} t_j / [k_j / (k_j-2)]^{1/2}$
b. There are 30 State banks in the sample
c. There are 40 National banks in the sample
d. $TA_i = \beta_{0i} + \beta_{1i}(\Delta INTREV_{it} - \Delta INTEXP_{it}) + \beta_{2i}PPE_{it} + \beta_{3i}\Delta PERS_{it} + \beta_{4i}PART_i + \varepsilon_{it}$

where
$TA =$ total accruals; $\Delta INTREV =$ interest revenue in time period $t$ minus interest revenue in time period $t-1$; $\Delta INTEXP =$ interest expense in time period $t$ minus interest expense in time period $t-1$; $PPE =$ property, plant, and equipment; $\Delta PERS =$ non-interest operating expenses in time period $t$ minus non-interest operating expenses in time period $t-1$; $PART=1$ in the event year, 0 otherwise. All variables except PART are scaled by lagged assets.

e. Pre-merger year
f. Year prior to the pre-merger year
g. Significantly different from 0 at the 1% level (2-tailed test)

an increase in earnings management as the merged state bank approaches the merger.

Modified Jones Model
Dechow et al. (1995) used a Z-statistic to compare the ability of five different models to detect earnings management. The five models were compared on a sample of the exact same thirty-two firms allowing use of the Z-statistic to determine the better model to detect earnings management. The coefficient on PART, the partitioning variable, represents an estimate of earnings management. The Z-statistic is computed by aggregating the t-statistics used in a t-test testing the significance of the coefficient on PART. In their study, the higher the Z-statistic the better the model’s capability to detect earnings management. Therefore, the Z-statistic will be used to compare the Modified Jones Model and the Industry Specific Model in their abilities to detect earnings management. In years in which banks are detected managing earnings, the higher the Z-statistic the higher the magnitude of earnings management. Therefore, the model with the higher Z-statistic would be the better model for detecting earnings management in merged banks.

A comparison of the Z-statistics between the two models indicates that the Z-statistics on the Industry Specific Model are higher than the Z-statistics on the Modified Jones Model (see Table 4) in all three of the years tested, indicating that the Industry Specific Model appears to detect earnings management better than the Modified Jones Model. In the split sample, the Z-statistics for the Industry Specific Model are all higher than the Z-statistics for the Jones Model (see Table 5).
except for national banks in Year -3. Thus, the magnitude of earnings management is higher based upon the Industry Specific Model than the Modified Jones Model in eight of the nine comparisons. This appears to indicate that the Industry Specific Model detects earnings management better than the Modified Jones Model. One major difference between models is that earnings management trends lower as the merger approaches based upon the modified Jones Model, and earnings management trends higher as the merger approaches based upon the Industry Specific Model. Since this study has concluded that the Industry Specific Model is the better model to detect earnings management based upon the higher Z-statistics, it also concludes that earnings management trends higher as the merger approaches.

One explanation for this result may be that banks are using different types of accruals to manage earnings in Year -3 than in Year -2. For example, the loan loss provision and gains and losses are a part of the discretionary accrual in the Industry Specific Model while gains and losses and the loan loss provision are not a part of the discretionary accrual in the Modified Jones Model. Non-interest operating expenses also are in the discretionary accruals in the Modified Jones Model, but not in the Industry Specific Model. Therefore, it is plausible that banks managing earnings based upon the Industry Specific Model are using the loan loss provision and gains and losses to manage earnings higher in comparison to the Modified Jones Model.

**Public Policy**

The data in this study suggest bank mergers have been approved based upon misleading levels of earnings. This finding implies that merged banks may have circumvented the FDIC’s regulatory controls for bank mergers. The FDIC may be interested in strengthening its review of the financial statements of merged banks in general and specifically merged national banks in the years prior to the merger, especially loans. The financial statements could be subjected to a thorough review for the three years prior to the merger before granting a merger request. An overworked FDIC staff and/or policies and procedures that are not set-up to detect earnings management could be reasons that controls are not presently in place. The findings suggest that merged banks may have circumvented accounting controls. The SEC might want to review FAS 72 (Accounting for Certain Acquisitions of Banking and Thrift Institutions) and FAS 114 (Accounting by Creditors for Impairment of Loans) to strengthen accounting standards, especially in terms of assets and loans, in particular. Chen and Daley (1996) found that the loan loss provision was not used to manage earnings in Canada. The Canadian accounting rules require the loan loss provision be reported on a 3-year average. FASB should consider reporting the loan loss provision on a 3-year average, possibly eliminating one of the banks options for managing earnings.

**New Developments**

Since this study, efforts have been made to increase regulations to ensure that future crises in the financial environment are avoided. The first comes in the form of a new financial accounting standard that measures all financial instruments at fair value (FASB, 2010). The development of this financial accounting standard is in the comments phase for the standards ended in May 2013.

The other regulation, in the form of Basel III, increases the capital requirement to strengthen the overall financial health of banks. In 2007, the FASB issued FAS 159, which
Table 4*  
Modified Jones Model\(^a\) Sample Statistics\(^b\)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>-1(^c)</th>
<th>-2(^d)</th>
<th>-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-STATISTICS(^e) (Positive:Negative)</td>
<td>35:28</td>
<td>42:21</td>
<td>23:40</td>
</tr>
<tr>
<td>DISCRETIONARY ACCRUAL(^f) (Positive:Negative)</td>
<td>30:33</td>
<td>23:40</td>
<td>31:32</td>
</tr>
<tr>
<td>z-STATISTIC</td>
<td>4.17(^g)</td>
<td>4.29(^g)</td>
<td>4.63(^g)</td>
</tr>
<tr>
<td>DURBIN-WATSON STATISTIC (Mean)</td>
<td>2.12</td>
<td>2.01</td>
<td>2.02</td>
</tr>
</tbody>
</table>

\(^a\)From Table 2 (Meisel, 2007)

\(^b\)63 banks in sample
\(^c\)Pre-merger year
\(^d\)Year prior to pre-merger year.
\(^e\)t-statistics on dummy variable PART
\(^f\)Error term or residual
\(^g\)Significantly different than 0 at the the 1% level (2-tailed test)
\(^h\)N = 12

Table 5*  
Z-statistics\(^a\) for State\(^b\) and National\(^c\) Banks (The Modified Jones Model\(^d\))

<table>
<thead>
<tr>
<th>YEAR</th>
<th>STATE</th>
<th>NATIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1(^e)</td>
<td>2.52(^g)</td>
<td>3.34(^g)</td>
</tr>
<tr>
<td>-2(^f)</td>
<td>2.94(^g)</td>
<td>3.16(^g)</td>
</tr>
<tr>
<td>-3</td>
<td>3.28(^g)</td>
<td>3.30(^g)</td>
</tr>
</tbody>
</table>

\(^a\)From Table 3 (Meisel, 2007)

\(^b\)There are 30 State banks in the sample
\(^c\)There are 40 National banks in the sample
\(^d\)TA\(_{it}\) = \(\beta_0 + \beta_1(\Delta REV_{it} - \Delta REC_{it}) + \beta_2 PPE_{it} + \beta_3 PART_i + \epsilon_{it}\)
\(^e\)Pre-merger year
\(^f\)Year prior to the pre-merger year
\(^g\)Significantly different from 0 at the the 10% level (2-tailed tests)
required the use of the fair value option for some financial instruments including derivatives and marketable securities; however, loans and some debt security instruments were not included in this requirement (Linsmeir, 2011). FASB (2010) proposes that all financial instruments be stated at fair value. Basically, the fair value approach calls for reporting of unrealized gains and losses in reported earnings. (Linsmeier, 2011).

Basel III is an extension of Basel I and II. The new Basel III framework establishes higher capital and liquidity regulations to ensure that banks are better equipped to absorb losses. Specifically, the Tier 1 capital requirement incorporating common equity and other financial instruments increases from 4 to 6 percent. (Delimatsis, 2012).

The FASB tried to address the problem with FAS 159; however, it did not include loans, thus, allowing managers to continue managing earnings higher. The financial accounting board subtopic 825-10 is proposing to include all financial instruments in the fair value approach.

The results in this study were compiled with use of an amortized cost, historical cost, model. This model allows manager judgment in the determination of credit losses and asset impairment. Thus, managers had the latitude to underestimate credit losses and asset impairments just prior to the merger to influence the merger process. In fact, evidence in this study (Table 2) shows through the t-statistics and discretionary accruals that a majority of merged banks were managing earnings higher just prior to the merger. It appears that the fair value approach that requires fair value accounting in all financial instruments could lower the magnitude of earnings management in merged banks just prior to the merger; however, the motivation to manage earnings to meet higher capital ratio benchmarks and present higher earnings prospects would still be prevalent.

**Conclusion**

This study extends earnings management research by empirically testing an Industry Specific Model’s ability to detect earnings management in a financial institution environment, specifically merged banks. Other studies examined the model in multi-industry manufacturing samples. Two studies (Key, 1997; Cahan et al., 1997) examined variations of the Modified Jones Model in specific industries such as the cable TV (a service industry) and chemical industries, respectively. The specific industry models used in these studies detected earnings management in those industries; however, neither of these specific industry studies tested the exact Modified Jones specification on those industries. Previous research tested the exact Modified Jones Model adapted to banks on its ability to detect earnings management in a financial environment specifically merged banks (Meisel, 2007).

The results on the full sample show that merged banks had managed earnings in all three years tested. That is, banks managed earnings in the pre-merger year (Year -1), year prior to the pre-merger year (Year -2), and Year -3. The Z-statistic (4.66) in Year -3 is lower than the Z-statistic (5.21) in the year prior to the pre-merger year (Year -2) and the Z-statistic (5.06) in the pre-merger year (Year -1). This indicates that the magnitude of earnings management is higher in the two years closest to the merger year. The results appear to show that merged banks have managing earnings higher as the merger approaches.

The results indicate that the discretionary accruals are mostly positive in all
three years. This indicates that merged banks have managing earnings higher in all three years; however, the number of discretionary accruals in each year is decreasing as the merger approaches. The number of t-statistics on the PART variable are higher in the pre-merger year (37) and the year prior to the pre-merger year (39) than Year -3, however. In fact, the number of negative t-statistics is higher than positive t-statistics in Year -3, indicating that merged banks have managing earnings higher in the two years closest to the merger than in Year -3.

The limitations may include a self-selection bias because the sample contains only merged banks. In addition, banks in the current sample engaged in merger activity before they themselves were acquired or merged. The numbers collected from Compustat and Moody’s Bank and Finance Manual contained accumulated data including prior merger and acquisition activity. Since earnings management is difficult to measure exactly using publicly available data, measurement error is unavoidable (Barton, 2001). Even though the Modified Jones Model is considered a crude proxy for earnings management (Healy, 1996), the use of a one-industry sample, restricted to merged banks, mitigates most of the deficiencies of the model.

Future research might test other models that adjust the nondiscretionary accruals with different combinations of variables. In addition, the sample could be extended beyond state and national commercial banks to include thrifts. Other industries such as airlines and utilities could be examined for earnings management.

In summary, the results show that merged banks overall are increasing earnings to reflect higher returns to shareholders. It also appears that merged banks are adjusting assets (loans) to lower capital requirements and increase reported performance. Regulatory controls of managed earnings are working in regards to merged state banks but not as well in regards to merged national banks. Finally, the Industry Specific Model appears to be a better model to detect earnings management than the Modified Jones Model.

Endnotes
1. Merged is used in this article to denote banks that are no longer independent regardless of the legal form (merger or consolidation) or accounting method (purchase or pooling) at the time of loss of independence.
2. The merger year is the year that the bank ceased being an independent entity or the year before the bank became a target in discretionary accrual methodology studies. Jones (1991) used a manufacturing sample to develop what has been widely known as the Jones Earnings Management Model. Other studies (Cahan, 1992; Dechow et al., 1996; Wu, 1997) used discretionary accrual models such as the Jones methodology or variations of the Jones Model to test the association between earnings management and event issues on multi-industry manufacturing samples. Methodology studies (Dechow et al., 1995; Guay, Kolari, & Watts, 1996; Young, 1999) evaluated the ability of discretionary models (Healy, DeAngelo, Industry, Jones and Modified Jones) to detect earnings management. All three studies confirmed that existing models of discretionary accruals generate relatively poor measures of managerial accounting choice; however, of the models tested, the Modified Jones Model performed the best.
3. Total accrual = [change in current assets - change in cash] - change

Endnotes
in current liabilities - depreciation.

4. Compustat data item 321, includes revenue received from all earning assets.

5. Compustat data item 339, includes interest on deposits, long-term debt, and all other borrowings.

6. Compustat Data Item 42, includes salaries and wages plus pension and employee benefits.

References


