

DETECTING EARNINGS MANAGEMENT IN BANK MERGER TARGETS USING THE MODIFIED JONES MODEL

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ABSTRACT

The purpose of this study is to examine whether merged banks are engaged in earnings management just prior to the merger. I use the Modified Jones model for the empirical tests. Other studies have used the Modified Jones model on multi-industry manufacturing samples. Two other studies (Key 1997; Cahan et al. 1997) used variations of the Modified Jones model on single industries such as Cable TV and Chemical industries, respectively. This study differs in that the exact Modified Jones model is used to examine earnings management in a single service industry, merged banks.

I find that merged banks manage earnings in the pre-merger year and the year prior to the pre-merger year. The magnitude of earnings management decreases in the two years prior to the merger in comparison to year-3 to year-5 indicating that controls have an effect on earnings management, but not enough to eliminate earnings management. A split sample test indicated that merged state banks and merged national banks were managing earnings. A signed test concludes that merged banks manage earnings higher in the two years just prior to the merger compared to other years.

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I. INTRODUCTION

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

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. Cahan et al. (1997) and Key (1997) tested their models on specific industry samples such as chemicals and cable TV, respectively. All these empirical studies reported the existence of earnings management using this discretionary accrual expectation model methodology.

This indicates that this approach may be more powerful than the early accrual approach, which showed mixed results. The samples selected for the empirical tests in several studies (Barth et al. 1990; Barth 1994; Scholes et al. 1990; Moyer 1990 Beatty et al. 1995; Collins et al. 1995; Chen and Daley 1996; Robb 1998; Warfield and Linsemier 1992; Ahmed et al. 1999) were non-merged banks. These studies tested a single explanatory variable's association with earnings management. In addition to the loan loss allowance, these studies found that security gains and losses, pension settlement gains, and miscellaneous gains and losses were used to manage earnings.

Methodology studies (Dechow et al. 1995; Guay et al. 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, evidence indicates that the Modified Jones model is still the best model available for the purpose of detecting earnings management.

The purpose of this study is to test whether merged¹ banks have previously been engaged in earnings management using the Modified Jones model. I use the model to empirically test for earnings management in the three years prior to the merger.² This research differs from prior research in that other earnings management studies used manufacturing samples or non-merged bank samples in their studies except Key (1997). Key (1997) tested a variation of the Modified Jones model on a service, Cable TV. I use the Modified Jones model to test for earnings management in a specific industry such as financial institutions.

I find that merged banks manage earnings in the pre-merger year and the year prior to the pre-merger year. The magnitude of earnings management decreases in the two years prior to the merger in comparison to year-3 to year-5 indicating that controls have an effect on earnings management, but not enough to eliminate earnings management. A signed test concludes that merged banks manage earnings higher in the two years just prior to the merger compared to other years.

Section II is the background. The research design is in section III. Results appear in IV and section V has conclusions.

II. BACKGROUND

Bank Regulation

Banks are regulated based on two groups: state and federal. The Comptroller of the Currency issues a federal charter (national bank). A bank that gets a state charter is referred to as a state bank. All national banks must belong to the Federal Reserve and be insured by the Federal Deposit Insurance Corporation.

¹ Merged is used in this paper to denote banks which 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.

Therefore, the Comptroller of the Currency, the Federal Reserve, and the Federal Deposit Insurance Corporation 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 Federal Deposit Insurance Corporation. The Federal Reserve, Federal Deposit Insurance Corporation and state agencies apply the same regulatory procedures.

The five categories used for regulation purposes include: capital adequacy, asset quality, management, earnings, and liquidity. 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 value up such that a purchasing bank does not have the resources to acquire them (Easterwood 1997)

On the other hand, as a bank approaches candidacy for merger, bank managers have an incentive to lower earnings. 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 is based on the “big bath” theory (Zucca and Campbell 1992; Porciau 1993). In addition, bank managers may want to make the bank unattractive

such that the purchasing bank would not be interested in the target bank.

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, earnings increases are caused by a reduction of the loan loss provision resulting in a greater reduction in regulatory capital. This implies that an increase in the loan loss provision reducing earnings increases regulatory capital. Therefore, managers of banks with low regulatory capital have incentives to increase the loan loss provision (Moyer 1990).

Ahmed et al. (1999) found that capital management is an important determinant of the loan loss provision. Annual reports identify the loss reserve as a subjective determination of loan losses (Cortland Bancorp 1999). A bank can be denied a request to merge because of an inadequate capital adequacy ratio. Capital adequacy is an important consideration in the merger approval process and regulators are thought to 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 non-complying 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 Federal Deposit Insurance Corporation. The Federal Deposit Insurance Corporation 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.

When evaluating 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 cannot be specified for a bank since the direction of the manipulation depends upon which incentive predominates. Regardless, my research is seeking to determine if earnings management has occurred.

III. 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 years to be consistent with these prior studies and to avoid losing additional banks. Two methodology papers (Jeter and Shivakumar 1999; Dechow et al. 1995) on earnings management acknowledge reliable parameter estimates using periods of this length.

The Compustat Merged Industrial Annual Data Files contain a population of 204 banks merged in the 1989-1997 time period. Data was collected on each variable for the most recent 13 years prior to the merger during the period 1975-1997. The population 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. This resulted in an additional 19 banks meeting data requirements. Therefore, I use 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 on 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 indicated in Compustat. Thus, banks with announcement years earlier than the merger year indicated in Compustat 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 on the announcement year rather than the assumed merger year in Compustat if the announcement year indicates a different pre-merger year. In seven out of 70 banks, the announcement year was different than the merger year indicated in Compustat. Therefore, seven banks had announcement years that lead to different testing periods than a testing period based on the actual merger year. In these seven cases, the announcement year was used to set the pre-merger year for empirical tests to allow for an earlier incentive to manage earnings.

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.

4. Moody's Bank and Finance Manual contains needed information not in Compustat.

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 where 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.

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 are 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). 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 and Campbell 1992; Porciau 1993). This makes the bank look unattractive and signals that the bank is operating inefficiently. Generally, a greater reduction in capital is

caused by increasing earnings by 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, I test the following hypothesis stated in the null form:

H₁: Managers of bank merger targets do not manipulate reported earnings in the pre-merger year

Initially, stockholders of each company must approve the merger. After the stockholders approve the merger, the institutions must file an application with the Federal Deposit Insurance Corporation (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. There is a lag effect 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 was 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 was 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:

H₂: Managers of bank merger targets do not manipulate reported earnings in the year prior to the pre-merger year.

H₃: Managers of bank merger targets do not manipulate reported earnings in the third year prior to the merger.

Modified Jones Modified

The Modified Jones model is used to specify nondiscretionary accruals (NDA). The model separates total accruals into nondiscretionary and discretionary accrual components. Therefore, the economic model can be expressed as

$$(1) TA = NDA + DA \quad \text{where:}$$

TA = Total accruals

NDA = Nondiscretionary accruals

DA = Discretionary accruals

There are various methods used to manipulate earnings including the use of accruals, changes in accounting methods, and changes in capital structure. This study uses total accruals in its test for earnings management. Therefore, the following computation Jones (1991, 211) measured total accruals (TA):

$$(2) TA_{it} = [\Delta CA_{it} - \Delta CASH_{it}] - \Delta CL_{it} - DEP_{it} \quad \text{where:}$$

TA_{it} = total accruals for bank i.

ΔCA_{it} = the change in current assets for bank i.³

$\Delta CASH_{it}$ = the change in cash for bank i.⁴

³ Compustat data item 1 includes cash and due from banks + federal funds sold and securities purchased under agreement to resell. Compustat data item 2 includes loans (gross) - unearned income/discount + direct lease financing - reserve for bad debt losses on loans.

⁴ Compustat data item 162 includes cash and due from banks - due from banks (memorandum entry).

ΔCL_{it} = the change in current liabilities for bank i .⁵

DEP_{it} = occupancy expense for bank i .⁶

Property plant and equipment (PPE) and change in revenues (ΔREV) variables were used in the NDA specification to control for changing conditions. PPE was included to capture the portion of total accruals related to nondiscretionary occupancy expense. The change in revenues in the non-discretionary accrual serves as a control variable for economic and business cycle affects which otherwise might have been included in the error term. The nondiscretionary accrual (NDA) can be specified as

$$(3) NDA = (\Delta REV - \Delta REC) + PPE \quad \text{where:}$$

ΔREV = the change in revenues

ΔREC = the change in receivables

PPE = property, plant and equipment

Based on the use of lagged assets as a scalar to reduce heteroscedasticity, the following version of the Modified Jones model (Cahan 1992) was used to test earnings management in the Banking Industry:

$$(4) TA_{it}/A_{it-1} = \beta_{0i}(1/A_{it-1}) + \beta_{1i}[(\Delta REV_{it} - \Delta REC_{it})/A_{it-1}] \\ + \beta_{2i}(PPE_{it}/A_{it-1}) + \beta_{3i}PART_i + \epsilon_{it}$$

Where:

TA_{it} = total accruals for bank i .

⁵ Compustat data item 70 includes total deposits – worldwide.

⁶ Compustat data item 189 includes salaries and wages of officers and employees plus pension and employee benefits plus occupancy expense of bank premises – net plus furniture and equipment depreciation, rental cost, servicing, etc. minus Compustat data item 42, which includes salaries and wages of officers plus pension and employee benefits.

A_{it-1} = assets for bank i at time $t-1$ ⁷

ΔREV_{it} = the change in revenues for bank i .⁸

ΔREC_{it} = the change in receivables for bank i .⁹

PPE_{it} = property, plant and equipment for bank i at time t .¹⁰

$PART_i = 1$ if observation is from the event period.¹¹

0 if observation is from the estimation period.¹²

ϵ_{it} = the error term for bank i .

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

⁷ Compustat data item 6 includes total assets (gross).

⁸ Compustat data item 12 includes interest income - total (financial services) + trust department income + service charges on deposit accounts + other service charges, collection and exchange charges, commissions and fees.

⁹ Compustat data item 2 includes loans (gross) - unearned discount/income + direct lease financing – reserve for bad debt losses on loans.

¹⁰ Compustat data item 8 includes bank premises, furniture, and fixtures.

¹¹ Event period is defined as the pre-merger year (year -1) or Year prior to the pre-merger year (year -2) or year-3 where year 0 is the merger year.

¹² Estimation period is defined as year -2 to year -12 when the event period is the pre-merger year (year -1). Estimation period is defined as year -1 and year -3 to year -12 when the event period is the year prior to the pre-merger year (year -2). Estimation period is defined as year-1, year-2 and year-4 to year-12 when the event period is year-3.

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 (β_{3i} does not =0) on PART indicates that a bank used discretionary accruals in the event year more than in the estimation period to engage in earnings management. I use the following Z-statistic (Dechow et al. 1995) to aggregate the t-statistics cross-sectionally:

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

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 Securities and Exchange Commission 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 from 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 being compared.

IV. RESULTS

Influential observations are those that appear to have a large influence on the parameter estimates (Belsley et al. 1980). According to Belsley (1980), 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 Modified Jones 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 H_1 (no earnings management in the pre-merger year), H_2 (no earnings management in the year prior to the pre-merger year) and H_3 (no earnings management in year -3).

Pre-merger Year

Sample statistics for the pre-merger year for the Modified Jones model are reported in Table 2. The sample results on t-statistics on the PART variable conclude that 35 (56%) banks are using higher discretionary accruals in the pre-merger year in comparison to other years. Table 2 indicates 33 (53%) banks used income-decreasing discretionary accruals in the pre-merger year while 30 banks used income-increasing discretionary accruals. Therefore, a majority of banks in the sample are selecting income-decreasing discretionary accruals in the pre-merger year. The mean Durbin-Watson statistic (2.12) is within reasonable limits.

The Z-statistic is 4.17 and significant. Therefore, the null hypothesis of no earnings management in the pre-merger year (H_1)

can be rejected leading to the conclusion that banks manage earnings in the pre-merger year.

Year Prior to the Pre-merger Year

The results for sample statistics for the year prior to the pre-merger year (year-2) appear in Table 2. The t-statistic results on PART suggest that 42 (67%) banks in the sample have higher discretionary accruals in the year prior to the pre-merger year (year -2) than in other years. The results seem to indicate that a majority of 40 (63%) banks are selecting income-decreasing discretionary accruals in the year prior to the pre-merger year. The mean Durbin-Watson statistic (2.01) is within reasonable limits.

The model generated a Z-statistic (4.29) that was significant. Therefore, the null hypothesis of no earnings management in the year prior to the pre-merger year (H_2) can be rejected leading to the conclusion that banks manage earnings in the year prior to the pre-merger year.

Year-3

Results for the sample statistics for year-3 are contained in table 2. A majority of 40 (63%) banks have lower discretionary accruals in year-3 than in other years. It appears that discretionary accruals are virtually equal for year-3 indicating that the sample is neutral on the sign of discretionary accruals. The mean Durbin-Watson statistic (2.02) is within reasonable limits.

The Z-statistic (4.63) in year-3 is significant. Therefore, the null hypothesis of no earnings management in year-3 (H_3) can be rejected leading to the conclusion that banks manage earnings in year-3.

Sensitivity Analysis

A sensitivity test included regressions on year-4 and year-5 as event years. In year-4, the model generated a Z-statistic (4.44) that was significant. In addition, year-5 ($Z=5.02$) was also significant. This indicates that banks are manipulating earnings in year-4 and year-5, but the magnitude is higher than the pre-merger year or the

year prior to the pre-merger year. The fact that the results in year-3, year-4 and year-5 have higher magnitudes than the results in the year prior to the pre-merger year and pre-merger year indicate that merger controls have some effect on earnings management, but not enough of an effect to eliminate earnings management.

The full sample was divided into state banks and national banks. I performed Z-statistic tests on each group for three years to confirm the results of the full bank sample. In addition, conclusions were drawn concerning whether a particular group of banks was driving the results. Tests for both groups of banks were significant in the pre-merger year indicating that both state banks ($Z=2.52$) and national banks ($Z=3.34$) as a group were managing earnings. These results confirm the full bank sample evidence that banks do manage earnings in the pre-merger year.

The Z-statistic (2.94) for the state sample and Z-statistic (3.16) for the national sample in the year prior to the pre-merger year were significant indicating that both groups of banks individually are managing earnings. Therefore, the split sample results confirm the full bank sample results (significant) in the year prior to the pre-merger year. The Z-statistic (3.28) for state banks is significant in year-3. The Z-statistic (3.30) for the national bank sample in year-3 was also significant.

Therefore, it appears that the magnitude of earnings management for the national banks is higher than the state banks indicating that national banks have a stronger incidence of earnings management than state banks in all three years. Results for the split sample are in table 3.

A further review of the results indicates that the Z-statistics for the full sample and the state sub-sample decrease in magnitude from year-3 to the pre-merger year. This indicates that the magnitude of earnings management is decreasing as the merger year approaches with the pre-merger year having the lowest magnitude of earnings management. Therefore, this may indicate that controls may have an effect on earnings management, but not enough to completely eliminate earnings management.

The t-statistics on the PART variable can be negative or positive leading to a signed test. The results indicate that the majority of banks in year-3 have negative t-statistics indicating that banks are managing earnings lower in year-3 in comparison to other years. In the year prior to the pre-merger year and pre-merger year, the results indicate a majority of positive t-statistics indicating that banks are managing earnings higher in comparison to other years. This indicates that bank managers of merger targets are motivated to manage earnings higher in the two years just prior to the merger.

Durbin-Watson tests were done for each firm in each year to determine whether the residuals or discretionary accruals were correlated over time. The tests confirmed that the residuals were not correlated over time and did not affect the results.

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V. CONCLUSION

I extend earnings management research by empirically testing the Modified Jones 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 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.

I find that merged banks are managing earnings in the three event years. The results indicate that the z-statistic becomes smaller in magnitude as the merger gets closer indicating that controls have an effect on earnings management, but not completely eliminating the earnings management.

Sensitivity tests including tests for year-4, year-5, and split sample tests were performed. The tests for year-4 and year-5 showed that merged banks are managing earnings in both years. I find that the magnitude of earnings management is higher than the pre-merger year or the year prior to the pre-merger year. The split sample tests conclude that both merged state banks and merged national banks are managing earnings in the three event years. Therefore, the split sample results confirm the full bank sample results in the three event years.

The magnitude of earnings management for the merged state banks gets smaller in the two years just prior to the merger. Therefore, it would appear controls are having an effect on earnings management in merged state banks, but not eliminating earnings management. The results indicate that merged national banks have a higher magnitude of earnings management than merged state banks in the three event years. This appears to indicate that merged national banks engage in earnings management at a higher magnitude than merged state banks.

The number of positive t-statistics on the dummy variable PART is higher than the number of negative t-statistics in both the pre-merger year and the year prior to the pre-merger year. It appears that merged banks are managing earnings higher in comparison to other years just prior to the merger. Motives for managing earnings higher include: higher returns for shareholders of merged banks, the appearance of operating efficiently, the deterrence of a takeover, or lowering capital adequacy requirements.

The FDIC (Federal Deposit and Insurance Corporation) authorizes bank mergers. The Federal Deposit Insurance Corporation does not approve proposed mergers where 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. I find that merged banks are not managing earnings to meet capital standards, but may be managing earnings to improve earnings prospects for the acquiring bank just prior to the merger. In other words, a bank's earnings prospects appear good when in fact they are not. Therefore, bank mergers are being approved based on a misleading level of earnings. This finding suggests that merged banks are circumventing the FDIC's regulatory controls for bank mergers.

The FDIC should strengthen their review of the financial statements of merged banks in the years prior to the merger especially the loans. Therefore, the financial statements should be subjected to a thorough review for the three years prior to the merger before granting a merger request. An overworked Federal Deposit Insurance Corporation staff and/or policies and procedures that are not set-up to detect earnings management could be reasons that controls are not in place at this time.

The findings suggest that merged banks are circumventing

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 that the loan loss provision be reported at a 3-year average. I suggest that FASB consider reporting the loan loss provision on a 3-year average. This might eliminate one of the banks' options used to manage earnings.

Merger premiums paid by the acquiring banks will benefit the manager of the merged banks as well as the stockholders. Managing earnings higher drives merger premiums higher. Therefore, managers have motives to manage earnings higher just before the merger.

The limitations may include a self-selection bias because the sample contains only merged banks. In addition, banks in my 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 service industries could also be examined for earnings management

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TABLE 1
SAMPLE OF BANKS

PANEL A: BANKS IN SAMPLE

COMPUSTAT

Total Number of Merged Banks in 1989-1997 (Population)	204
Banks Omitted because of Missing Data in Compustat	153
Banks with 13 years of data in Compustat	51

MOODY'S BANK AND FINANCE MANUAL

Banks omitted in Compustat, but listed in Moody's Bank and Finance Manual	34
Banks omitted from sample because of missing data	15
Additional Banks with 13 years of data	19
TOTAL BANKS IN SAMPLE	70

PANEL B: MERGERS GROUPED BY YEARS TESTED

1989	4
1990	0
1991	8
1992	12
1993	4
1994	8
1995	18
1996	7
1997	9
TOTAL MERGED BANKS	70

TABLE 2
MODIFIED JONES MODEL^a
SAMPLE STATISTICS^b

	-1^c	-2^d	-3
t-STATISTICS^e (Positive:negative)	35:28	42:21	23:40
DISCRETIONARY ACCRUAL^f (Positive:negative)	30:33	23:40	31:32
Z-STATISTIC	4.17 ^g	4.29 ^g	4.63 ^g
DURBIN-WATSON STATISTIC(Mean)	2.12	2.01	2.02

a. $TA_{it} = \beta_{0i} + \beta_{1i}(\Delta REV_{it} - \Delta REC_{it}) + \beta_{2i}PPE_{it} + \beta_{3i}PART_i + \varepsilon_{it}$

Where

TA = total accruals; ΔREV = revenue in time period t minus revenue in time period t-1;

ΔREC = receivables in time period t minus receivables in period t-1;

PPE = property, plant, and equipment; PART = 1 if the year is the event year and 0 otherwise.

All variables except PART are scaled by lagged total assets.

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 1% level (2-tailed test)

f. N=12

TABLE 3
Z-STATISTICS^a FOR STATE^b AND NATIONAL^c BANKS
THE MODIFIED JONES MODEL^d

YEAR	STATE	NATIONAL
-1 ^e	2.52 ^g	3.34 ^g
-2 ^f	2.94 ^g	3.16 ^g
-3	3.28 ^g	3.30 ^g

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. $TA_{it} = \beta_{0i} + \beta_{1i} (\Delta REV_{it} - \Delta REC_{it}) + \beta_{2i} PPE_{it} + \beta_{3i} PART_i + \varepsilon_{it}$ where:

TA = total accruals; ΔREV = revenue in time period t minus revenue in time period t-1;

ΔREC = receivables in time period t minus receivables in time period t-1;

PPE = property, plant, and equipment; PART = 1 if the year is the event year and 0 otherwise,

All variables except PART are scaled by lagged total assets

e. Pre-merger year

f. Year prior to the pre-merger year

g. Significantly different from 0 at the 10% level (2-tailed test)