

# **DID U.S. BANKS MANAGE THEIR EARNINGS IN THE AFTERMATH OF THE 2007-2009 FINANCIAL CRISIS? EVIDENCE FROM THE POST-CRISIS HOUSING MARKET**

Burak Dolar, Western Washington University

## **ABSTRACT**

*Building on and extending our prior work, this paper studies earnings management practices of banks in the aftermath of the Financial Crisis of 2007-2009. We focus our attention on two distinct groups of institutions; banks headquartered in states that were most impacted by the housing market crisis and those in least impacted states. Our dataset is generated using the Reports of Condition and Income and covers the periods before and after the 2007-2009 Financial Crisis. We divide our balanced panel dataset into two equal subsets and analyze pre- and post-crisis periods separately. Each subset covers a four-year period and consists of 7,560 observations gathered from the same 1,890 banking institutions that had been continuously active from 2003 to 2010. Our empirical evidence lends support to the earnings management hypothesis, suggesting that banks (both low- and high-profit ones) headquartered in states where the housing market crash was most pronounced used loan loss provisions to manage reported earnings in the post-crisis period.*

**JEL:** G21, M41

**KEYWORDS:** Financial Crisis, Earnings Management, Provision for Loan Losses, Commercial Banks, Thrifts

## **INTRODUCTION**

The Financial Crisis of 2007-2009 and the ensuing Great Recession were unprecedented in their scope and severity in the post-World War II U.S. economic history. Two major and interrelated sections of the U.S. economy, namely housing and financial services, were at the epicenter of seismic economic shifts taking place in the pre- and post-crisis periods. Fueled by cheap credit and lax lending standards, the real estate boom of the early 2000s gradually grew into an asset bubble of dangerous proportions. When the bubble eventually burst in 2007, the long-lasting effects of the turmoil were felt most strongly in real estate and financial services industries, which played an important role in exacerbating both the boom and bust phases of the business cycle. This paper investigates the practice of earnings management in the banking industry in the form of provision for loan losses in the aftermath of the Financial Crisis of 2007-2009. We hypothesize that banks in U.S. states where house prices fell more sharply had stronger incentives and, hence, were more likely to manage their earnings than institutions in states where the housing market was more resilient in the period following the crisis. In order to do so, we compare the loan loss provisioning behavior of banking institutions operating in top five states which experienced the greatest decline in the House Price Index (HPI) published by the Federal Housing Finance Agency (FHFA), with those in bottom five states for the same index in the post-crisis period. As a result, we are able to exploit a “natural experiment” setting, where the high variability in the HPI between these two distinct groups of states enables us to study banks’ earnings management behavior.

Relying on a large balanced panel dataset, our empirical findings do not provide evidence to suggest earnings management by banks for the period before the Financial Crisis of 2007-2009. On the other hand, for the period after the crisis, we find evidence that banks headquartered in states that were most impacted by the housing market meltdown practiced earnings management, while those in least impacted states did not, holding other factors constant. The remainder of this paper is organized as follows. In Section 2, an overview of the earnings management literature is presented and our hypothesis is developed. Section 3 describes the dataset and research methodology; and presents our empirical findings. Finally, Section 4 summarizes and concludes the paper.

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

One of the most widely accepted definitions of earnings management is given by Healy and Wahlen (1999, p. 368) who state that “Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers.” Earnings management may take a number of different forms and managers may be motivated by a variety of factors for engaging in earnings management activity. Dechow and Skinner (2000) observe that firms with large accruals (thus, large differences between accounting earnings and cash flows) and with weak governance structures are more likely to conduct earnings management activities. They also note that two of the strongest managerial incentives for earnings management are meeting analysts’ earnings forecasts and boosting stock price before making seasoned equity offerings.

The Statement of Financial Accounting Standards (SFAS) 5 (Accounting for Contingencies) is the principal source of guidance for recording of accruals for loan impairments. SFAS 5 requires that an estimated loss be accrued by a charge to income if it is probable that a loan had been impaired and the amount of the impairment can be reasonably estimated. Accordingly, banks and other creditors periodically estimate and record a provision for loan losses, and thereby, maintain a sufficient amount of reserves in their allowance for loan losses account (a contra-asset account deducted from gross loans to determine the amount of net loans). In addition, SFAS 114 (Accounting by Creditors for Impairment of a Loan), which amended SFAS 5, provides more specific guidance for creditors on the measurement and disclosure of impaired loans. Financial reporting standards provide bank managers with considerable flexibility in recording loan loss provisions, based on the notion that the use of judgement by managers increases the information quality of financial reports. As insiders, bank managers are in a better position than others to assess the credit quality of their banks’ loan portfolios, and build up and maintain adequate loan loss reserves. Thus, when this discretion is exercised in an objective and rational manner, banks may have a greater ability to absorb credit losses without experiencing drastic earnings declines or capital deteriorations. On the other hand, being able to exercise considerable judgement over loan loss provisioning also gives bank managers the ability to manage earnings in line with their personal agendas. Such abuses of managerial discretion over loan loss accruals ultimately pose significant uncertainties for external users of financial information by distorting the true economic picture. In a 1998 speech titled “The Numbers Game”, Arthur Levitt, then the chairman of the Securities and Exchange Commission (SEC), while describing earnings management as a widespread practice across industries, discussed five popular earnings management tools, including “using unrealistic assumptions to estimate liabilities for such items as sales returns, loan losses ... in doing so, stashing accruals in cookie jars during the good times and reach into them when needed in the bad times”. In regard to the banking industry, Chairman Levitt’s remarks point out the hypothesized practice of earnings management, in which banks tend to build up surplus loan loss reserves by overstating expected loan losses in good years (i.e., when earnings are high) and draw down on these excess reserves by understating loan loss provisions in bad years (i.e., when earnings are low). One likely motivation behind smoothing out excessive variability in reported earnings over time is reducing the risk perception of the bank (albeit by creating a false sense of stability), and in so doing lowering its cost of capital (both debt and equity) and enhancing the overall firm value.

While there exists a broad literature on the practice of earnings management across various industries, the breadth of studies analyzing the subject in the banking industry is rather modest. In an early study, Scheiner (1981) argues that banks do not use loan loss provisions to smooth income. Beatty et al. (1995) and Ahmed et al. (1999) also do not find evidence of income smoothing via loan loss provisions. On the other hand, Greenawalt and Sinkey Jr. (1988) show that large banks managed their earnings by using loan loss provisions during the period between 1976 and 1984. Similarly, according to Ma (1988), managers at the largest U.S. banks raised (lowered) loan loss provisions in periods of high (low) operating income for the period from 1980 to 1984, suggesting that loan loss provisioning of these institutions was not strongly related to the credit risk of their loan portfolios. Robb (1998) and Beatty et al. (2002) find that bank managers tended to manage earnings upward using loan loss provisions in order to meet the market's earnings expectations during the periods of 1986-1991 and 1988-1999, respectively. Based on a sample of publicly traded banks from the period 1987 to 2000, Kanagaretnam et al. (2003) find evidence that managers build up reserves in good years by reducing reported earnings through increased loan loss provisions and boost earnings in lean years by borrowing from those reserves through reduced loan loss provisions. Kanagaretnam et al. (2004) show that bank managers are more likely to smooth income using discretionary loan loss provisions, when earnings variability of their institutions is greater than that of the industry median. In addition, their findings suggest an interaction between smoothing income and signaling private information to the market, if a firm is underpriced.

The Financial Crisis of 2007-2009 had a profound effect on the U.S. banking industry as a whole, creating major disruptions in the banking system and bringing about a significant number of bank failures. Amid this financial turmoil, it was vital for banks, particularly for those in a weakened financial position, to have continued access to money and capital markets for funding needs. In the credit crunch that followed the financial crisis, banks with relatively strong and stable reported earnings would be in a better position to borrow at lower costs and, more importantly, have easier access to external financing sources. Moreover, in this turbulent environment, banks were under increased regulatory scrutiny and pressure to meet certain capital, solvency, and liquidity standards, and failing to comply with these requirements was likely to prompt already wary bank regulators to intervene and force a close-down.

As a result, in the post-crisis era, banks presumably had strong incentives to manage their earnings upward through loan loss provisions, in an attempt to hide their deficiencies and present themselves as lower-risk and resilient institutions to markets and regulators. The fortunes of most banks, particularly smaller ones, are highly dependent on the economic and financial viability of communities they operate in. Community banks along with many regional banks collect deposits from, supply credit to, and, in general, do business within a limited geographical area. Therefore, a downturn in a state's or a region's economy, which may be caused by a slump in real estate or a decline of a major local industry, tends to cause bank failures in that geographical area. For instance, the failure of a large number of banks during the early 1990s in the Northeast region of the United States was directly linked to the region's real estate problems (Federal Deposit Insurance Corporation, 1997).

As the real estate boom began to recede in 2006, banks started seeing an increased volume of non-performing loans and loan write-offs. Faced with unexpected and substantial loan defaults, banks had to rapidly increase their loan loss provisions, which resulted in large losses and deterioration of capital in the entire industry. The weakening condition of banks, along with decreasing demand for credit caused by declining overall economic activity, had a magnifying impact on an already severe downturn. The effects of the downturn were presumably experienced more extensively in places where real estate markets were hit especially hard. A real estate market downturn has a negative impact on the value of collateral underlying secured loans (e.g., mortgage loans), which constitute a significant portion of the banking industry's loan portfolio, and is likely to lead banks to further tighten lending. Moreover, a decline in the value of the underlying real estate increases both the likelihood and cost of foreclosures, therefore placing additional strain on banks as well as local economies. As a result, we hypothesize that banks operating in hard-hit

markets had more incentives to manage their earnings and lessen the perception of risk than those operating in relatively less impacted areas in the aftermath of the crisis.

In order to test our earnings management hypothesis, we focus our attention on two distinct groups of banking institutions. One group consists of banks headquartered in U.S. states which had the largest decline in the HPI published by the FHFA, while the other group includes institutions headquartered in states where the change in the index was the smallest in the period after the crisis. To a certain extent, the high variability in the HPI between these two distinct groups of states provides a “natural experiment” setting for studying earnings management behavior of banks in the post-crisis period. As explained earlier, one can argue that institutions in the former group were more likely to manage their reported earnings than institutions in the latter group. Table 1 shows top five and bottom five states with respect to the change in the purchase-only HPI between the first quarter of 2007 and the second quarter of 2011, the period when the index for the entire U.S. housing market peaked and bottomed out.

## DATASET AND METHODOLOGY

Our dataset is generated using the Reports of Condition and Income (Call Reports) and covers the periods before and after the 2007-2009 Financial Crisis. Call Reports provide detailed demographic and financial data on all U.S. banking institutions (i.e., commercial banks and thrifts) insured by the Federal Deposit Insurance Corporation (FDIC). We divide our balanced panel dataset into two equal subsets and analyze pre- and post-crisis periods separately. Each subset covers a four-year period (i.e., pre-crisis years of 2003 through 2006 and post-crisis years of 2007 through 2010) and consists of 7,560 observations gathered from the same 1,890 banking institutions that had been continuously active from 2003 to 2010.

Table 1: Percentage Change in the Seasonally Adjusted HPI Between Quarter 1, 2007 and Quarter 2, 2011 For Top Five and Bottom Five States\*

	2007, Quarter 1	2011, Quarter 2	% Change
United States	224.54	177.76	-20.83
<i>Top Five</i>			
Nevada	264.47	114.80	-56.59
Arizona	319.58	162.99	-49.00
Florida	308.07	166.21	-46.05
California	273.32	153.37	-43.89
Idaho	259.89	178.03	-31.50
<i>Bottom Five</i>			
Kentucky	191.18	182.21	-4.69
Louisiana	232.76	221.91	-4.66
Iowa	197.94	190.79	-3.61
Texas	186.35	185.38	-0.52
Oklahoma	191.05	190.91	-0.07

\*We excluded N. Dakota, S. Dakota, Alaska, and Wyoming with percentage changes of 11.13%, 0.25%, -0.2%, and -4.58%, respectively from the bottom-five list since these states have relatively small housing markets with fewer than 15,000 transactions over the latest ten years. Source: Federal Housing Finance Agency (n.d.).

Table 2 describes the variables used in our regression analysis and Table 3 reports descriptive statistics. The data are annual as of December 31 and all continuous variables are scaled by total loans and leases. The dependent variable LLP is defined as the provision for loan and lease losses, which is a likely means of managing earnings. The primary focus in the current paper is to study possible earnings management behavior of banks in the period after the financial crisis. Our dataset design enables a direct comparison of banks potentially facing strong incentives to practice earnings management with those less motivated or compelled to do so. In this regard, we interact EARN (defined as the net income before taxes and provision for loan and lease losses) with TOP5, a dummy variable for institutions headquartered in one of the five states (i.e., Nevada, Arizona, Florida, California, and Idaho) that experienced the largest decline in the HPI over the period when the index for the entire U.S. housing market peaked and bottomed out. The base group

consists of institutions headquartered in one of the five states (i.e., Kentucky, Louisiana, Iowa, Texas, and Oklahoma) that experienced the smallest decline in the HPI over the same period. Holding other factors constant, a positive relationship between EARN x TOP5 and the dependent variable would provide evidence that banks headquartered in states where the housing market crash was most prominent resorted to the practice of earnings management, relative to their counterparts in the benchmark group.

Table 2: Description of Variables

Variable	Description
Llp	Provision for loan and lease losses to total loans and leases (%)
Earn	Net income before taxes and provision for loan and lease losses to total loans and leases (%)
Top5	Dummy variable for institutions headquartered in one of the five states that experienced the largest decline in the HPI
Lowroa	Dummy variable for institutions with a below-median pre-tax return on assets
Chroff	Net loan charge-offs to total loans and leases (%)
All	Lagged allowance for loan and lease losses to total loans and leases (%)
Nonc	Lagged other real estate owned plus noncurrent loans and leases to total loans and leases (%)
Δnonc	Change in NONCUR between the current and previous periods (% points)
Inter	Dummy variable for institutions operating branches in more than one state
Metro	Dummy variable for institutions headquartered in a metropolitan area
Cbank	Dummy variable for community banks

This table shows the description of variables used in two different specifications of a fixed effects model to study possible earnings management practices by banks before and after the 2007-2009 Financial Crisis.

Table 3: Descriptive Statistics

	Pre-Crisis		Post-Crisis	
	Mean	Std. Dev.	Mean	Std. Dev.
Llp	0.3116	0.7933	0.8081	1.9873
Earn	20.696	1559.0	2.6080	17.268
Top5	0.2083	0.4061	0.2090	0.4066
EARN x TOP5	18.436	1559.0	0.4953	14.293
Lowroa	0.5000	0.5000	0.5000	0.5000
EARN x LOWROA	0.8813	2.8207	0.4639	7.8670
EARN x LOWROA x TOP5	0.0866	1.0937	-0.0122	7.7686
Chroff	0.2406	0.6963	0.6551	1.5328
All	1.4316	1.0183	1.4325	0.9230
Nonc	1.1654	1.6401	1.9653	2.8998
Δnonc	-0.0911	1.1879	0.7844	2.4182
Inter	0.0335	0.1799	0.0519	0.2217
Metro	0.5399	0.4984	0.5481	0.4977
Cbank	0.9401	0.2374	0.9217	0.2687
N	7,560		7,560	

This table shows the descriptive statistics of our balanced panel dataset divided into two equal subsets where each subset covers a four-year period (i.e., pre-crisis years of 2003 through 2006 and post-crisis years of 2007 through 2010) and consists of 7,560 observations gathered from the same 1,890 banking institutions that had been continuously active from 2003 to 2010.

We further test our earnings management hypothesis by focusing on low-profit banks in states that were most impacted by the housing meltdown, with the assumption that those banks are significantly more likely to manage their earnings upward, *ceteris paribus*. In order to do so, we use a three-way interaction term between EARN x TOP5 and LOWROA, a dummy variable for institutions with below-median pre-tax return on assets. A positive relationship between this three-way interaction term and the dependent variable would support our hypothesis. Variables CHROFF, ALL, NONC, and ΔNONC are used to control for nondiscretionary factors impacting banks' provisioning decisions, in other words factors that are not highly dependent on managerial discretion. A number of previous papers looking at earnings management in the banking industry, including Dolar (2019); Dolar and Drickey (2017); Kanagaretnam et al. (2004); Kanagaretnam et al. (2003); Ahmed et al. (1999); Beatty and Harris (1999); Kim and Kross (1998); Beaver and Engel (1996); and Wahlen (1994) utilize these variables as controls. CHROFF is the net loan charge-offs. The expected sign of the coefficient of CHROFF is positive, on the assumption that a bank would need to record more loan loss provisions as its net loan charge-offs increase, *ceteris paribus*. ALL is the lagged

allowance for loan and lease losses. The coefficient on ALL should be negative, assuming that a bank would require a smaller loan loss provision for the year, if it starts the year with a large reserve of provisions, *ceteris paribus*. NONC is the lagged other real estate owned plus noncurrent loans and leases and  $\Delta$ NONC denotes the change in NONC between the current and previous periods. The coefficient on both variables would be expected to be positive, since banks holding large sums of noncurrent loans and foreclosed property are likely to reserve more for loan losses, *ceteris paribus*.

The dummy variable INTER takes the value of 1 for institutions operating branches in more than one state and 0 otherwise. We included INTER in our analysis to differentiate between banks operating in only one of the ten states this study focuses on and those having further banking activities outside our focus-states. METRO is a dummy variable which takes the value of 1 when the headquarters of the observed institution is in a metropolitan area. The base group is defined as institutions whose headquarters are located in a non-metropolitan area. CBANK denotes community banks as defined by the FDIC for research purposes. It takes the value of 1 when the observed institution meets the FDIC-criteria and 0 otherwise. The FDIC developed a new research definition of the community bank in 2012, which uses extensive financial data beyond size as well as non-financial, demographic information. This definition first excludes any institution, regardless of the amount of their total assets, if they have: no loans or no core deposits; foreign assets greater than 10% of total assets; and more than 50% of assets in certain specialty banking areas (e.g. credit card or industrial loans). Of the remaining banking institutions, the ones with total assets less than \$1 billion (in 2010 dollars) are designated as community banks. The FDIC also designates institutions with total assets more than \$1 billion if they meet the following criteria: have loan to assets ratio and core deposits to assets ratio above 33% and 50%, respectively; operate more than one office but no more than 75 offices (as of 2010); operate offices in no more than three states and two large metropolitan statistical areas; and do not operate any single office with deposits more than \$5 billion (in 2010 dollars). METRO and CBANK are included to capture potentially significant differences between metropolitan versus rural institutions, and small versus large banks. Finally, we include year dummy variables to control for time-specific fixed effects. We use two specifications of a fixed effects model to study possible earnings management practices by banks before and after the 2007-2009 Financial Crisis. The first specification has the following general form:

$$Y = b_0 + b_1EARN + b_2TOP5 + b_3EARN \times TOP5 + b_4CHROFF + b_5ALL + b_6NONC + b_7\Delta NONC + b_8INTER + b_9METRO + b_{10}CBANK + \alpha + \varepsilon \quad (1)$$

The next specification looks at the possible differences in earnings management practices between low-profit and high-profit banks by interacting EARN with LOWROA. The specification has the following general form:

$$Y = b_0 + b_1EARN + b_2TOP5 + b_3LOWROA + b_4EARN \times TOP5 + b_5EARN \times LOWROA + b_6EARN \times LOWROA \times TOP5 + b_7CHROFF + b_8ALL + b_9NONC + b_{10}\Delta NONC + b_{11}INTER + b_{12}METRO + b_{13}CBANK + \alpha + \varepsilon \quad (2)$$

In the above regressions,  $Y$  is LLP (defined as the provision for loan and lease losses),  $\alpha$  is the institution-specific fixed effect which contains all factors that do not vary over time, and  $\varepsilon$  is the idiosyncratic error term. Estimated regressions for the pre-crisis and post-crisis periods include year dummy variables (not reported) to control for time-specific effects, with years 2003 and 2007 as the base, respectively.

## RESULTS

The estimated fixed effects specifications generate regression results reported in Tables 4-7. All regressions are statistically significant at the 1% level and explain between 73.4% and 86.7% of the variation in loan

loss provisioning of banks. Table 4 provides regression results from the first regression we ran using data from the pre-crisis period. There are 35 missing data points in the pre-crisis dataset because 35 of the 1,890 banks in the dataset were established in 2003 and had no datapoints for the lagged variables of ALL and NONC for that year. Neither of the coefficients on EARN and EARN x TOP5 is statistically significant, suggesting no evidence of earnings management by banks headquartered in states that were most and least impacted by the looming housing market crash, respectively, during the pre-crisis period of 2003-2006.

Table 4: Regression of Loan Loss Provisions on Reported Earnings for the Period Before the Crisis

	Coefficient	Std. Error	t-stats	p-value
earn	0.0046	0.0035	1.32	0.186
top5	0.0778	0.4170	0.19	0.852
earn x top5	-0.0046	0.0035	-1.32	0.186
chroff	1.0202	0.0087	117	0.000***
all	-0.3029	0.0105	-28.9	0.000***
nonc	-0.0160	0.0070	-2.27	0.023**
δnonc	0.0410	0.0053	7.76	0.000***
inter	-0.0358	0.0809	-0.44	0.658
metro	0.1110	0.0969	1.15	0.252
cbank	0.0317	0.0593	0.53	0.593
intercept	0.4275	0.1171	3.65	0.000***
f-stats	1,202***			
r <sup>2</sup> (with-in)	0.7355			
adjusted r <sup>2</sup>	0.6460			
n	7,525			
# of groups	1,890			

*This table shows the regression results generated by the first specification above for the period before the financial crisis. We interact EARN (defined as the net income before taxes and provision for loan and lease losses) with TOP5, a dummy variable for institutions headquartered in one of the five states (i.e., Nevada, Arizona, Florida, California, and Idaho) that experienced the largest decline in the HPI between Quarter 1, 2007 and Quarter 2, 2011. \*\*\*, \*\*, and \* denote 1%, 5%, and 10% significance, respectively.*

Table 5 shows our findings from the post-crisis period. The coefficient on EARN is statistically insignificant suggesting no earnings management behavior in the post-crisis period by banks headquartered in one of the five states that experienced the smallest decline in the HPI during the housing market crash. On the other hand, the coefficient on EARN x TOP5 has the predicted positive sign and is statistically significant at the 1% level. Variable TOP5 (the dummy variable for institutions headquartered in Nevada, Arizona, Florida, California, and Idaho) is omitted by STATA from regressions estimated using data from the post-crisis period, since TOP5 is constant within the grouping variable defined as the FDIC-designated bank certificate number. Since the fixed effects estimator (i.e.,  $\alpha$ ) explains all of the variance at the group level, nothing remains for TOP5 to explain. This finding is consistent with the earnings management hypothesis that banks headquartered in states where the housing market crash was most pronounced used their loan loss provisions to manage reported income upward in the post-crisis period.

Table 5: Regression of Loan Loss Provisions on Reported Earnings for the Period After the Crisis

	Coefficient.	Std. Error	T-Stats	P-Value
Earn	-0.0002	0.0013	-0.19	0.851
Top5				
EARN x TOP5	0.1052	0.0018	58.0	0.000***
Chroff	0.9663	0.0106	91.2	0.000***
All	-0.8392	0.0269	-31.2	0.000***
Nonc	0.1015	0.0069	14.8	0.000***
Δnonc	0.0761	0.0057	13.4	0.000***
Inter	0.0311	0.1698	0.18	0.855
Metro	0.1485	0.2738	0.54	0.587
Cbank	-0.1338	0.1412	-0.95	0.343
Intercept	1.0424	0.2021	5.16	0.000***
F-stats	1,443***			
R <sup>2</sup> (with-in)	0.7538			
Adjusted R <sup>2</sup>	0.6710			
N	7,560			
# Of groups	1,890			

This table shows the regression results generated by the first specification above for the period after the financial crisis. We interact EARN (defined as the net income before taxes and provision for loan and lease losses) with TOP5, a dummy variable for institutions headquartered in one of the five states (i.e., Nevada, Arizona, Florida, California, and Idaho) that experienced the largest decline in the HPI between Quarter 1, 2007 and Quarter 2, 2011. \*\*\*, \*\*, and \* denote 1%, 5%, and 10% significance, respectively.

Table 6 reports the findings from the second regression we ran using data for the period before the 2007-2009 crisis. The coefficient on EARN x LOWROA is negative and statistically significant at the 1% level, indicating that banks in the base group (i.e., low-profit banks from one of the five states least impacted by the impending housing market woes) did not engage in earnings management. The coefficient of the three-way interaction variable EARN x LOWROA x TOP5 also has a negative sign, but it is not statistically significant. These findings suggest that, in the pre-crisis period, there were no differences in loan loss provisioning practices (that did not involve earnings management) between banks headquartered in states that were most affected by the housing crash and those least affected by it.

Table 6: Regression of Loan Loss Provisions on Reported Earnings for the Period Before the Crisis

	Coefficient	Std. Error	t-stats	p-value
earn	0.0085	0.0036	2.35	0.019**
top5	0.0980	0.4167	0.24	0.814
lowroa	0.0819	0.0215	3.80	0.000***
earn x top5	-0.0085	0.0036	-2.35	0.019**
earn x lowroa	-0.0256	0.0068	-3.78	0.000***
earn x lowroa x top5	-0.0085	0.0111	-0.77	0.443
chroff	1.0203	0.0087	117	0.000***
all	-0.3058	0.0105	-29.2	0.000***
nonc	-0.0171	0.0070	-2.43	0.015**
δnonc	0.0402	0.0053	7.61	0.000***
inter	-0.0411	0.0808	-0.51	0.611
metro	0.0963	0.0968	0.99	0.320
cbank	0.0370	0.0592	0.62	0.533
intercept	0.4060	0.1175	3.46	0.001***
f-stats	981***			
r <sup>2</sup> (with-in)	0.7364			
adjusted r <sup>2</sup>	0.6471			
n	7,525			
# of groups	1,890			

This table shows the regression results generated by the second specification above for the period before the financial crisis, where we look at the possible differences in earnings management practices between low-profit and high-profit banks by interacting EARN with LOWROA. \*\*\*, \*\*, and \* denote 1%, 5%, and 10% significance, respectively.

The findings reported in Table 7 do not provide any evidence of earnings management practice by institutions with below-median pre-tax return on assets in the base group in the post-crisis period, since the coefficient on EARN x LOWROA is negative and statistically insignificant. On the other hand, the positive

and statistically significant coefficient (at the 1% level) on EARN x LOWROA x TOP5 indicates that low-profit banks headquartered in Nevada, Arizona, Florida, California, and Idaho managed their earnings upward during the same period. This result is consistent with our hypothesis that banks facing declining profitability in states where the impact of the housing market crash was most felt were particularly prone to managing their earnings.

Table 7: Regression of Loan Loss Provisions on Reported Earnings for the Period After the Crisis

	Coefficient	Std. Error	t-stats	p-value
Earn	-0.0003	0.0009	-0.30	0.766
Top5				
Lowroa	0.0509	0.0304	1.67	0.094*
EARN x TOP5	-0.0014	0.0020	-0.67	0.502
EARN x LOWROA	-0.0104	0.0099	-1.05	0.294
EARN x LOWROA x TOP5	0.1577	0.0101	15.7	0.000***
Chroff	0.9679	0.0078	124	0.000***
All	-0.8188	0.0199	-41.2	0.000***
Nonc	0.0971	0.0051	18.9	0.000***
Δnonc	0.0790	0.0042	18.8	0.000***
Inter	0.0502	0.1248	0.40	0.687
Metro	0.1288	0.2015	0.64	0.523
Cbank	-0.1408	0.1038	-1.36	0.175
Intercept	1.0780	0.1488	7.25	0.000***
F-stats	2,458***			
R <sup>2</sup> (with-in)	0.8670			
Adjusted R <sup>2</sup>	0.8222			
N	7,560			
# Of groups	1,890			

This table shows the regression results generated by the second specification above for the period after the financial crisis, where we look at the possible differences in earnings management practices between low-profit and high-profit banks by interacting EARN with LOWROA. \*\*\*, \*\*, and \* denote 1%, 5%, and 10% significance, respectively.

Three of the variables (i.e., CHROFF, ALL, and ΔNONC) controlling for the nondiscretionary component of loan loss provisioning have the expected signs on their coefficients and are statistically significant at the 1% level in all estimated regressions. The coefficients on NONC, on the other hand, have the expected signs and are significant at the 1% level in two of the four estimated regressions. Overall, these findings are consistent with the prediction that nondiscretionary factors, to a large extent, determine banks' loan loss provisioning. On the other hand, none of coefficients on other control variables (i.e., INTER, METRO, and CBANK) are statistically significant in either model. Lastly, the main findings of our paper are generally consistent with prior research that banks tend to use loan loss provisions to manage earnings by employing the high degree of discretion provided by accounting rules in determining the proper balance for the allowance for loan losses account through loan loss provisions.

## CONCLUDING COMMENTS

The median home price in the United States reached an all-time high in the first half of 2007 before it began a prolonged descent. Over the next four years, the HPI published by the FHFA fell more than 20% nationwide, making this momentous house market correction one of the main contributors to the Financial Crisis of 2007-2009. Making central use of this natural experiment setting, our study aims to test the earnings management hypothesis that banks are strongly incentivized to understate loan loss provisions in order to manage reported earnings upward during times of declining earnings. Our dataset is generated using Call Reports and covers the periods before and after the 2007-2009 Financial Crisis. We divide our balanced panel dataset into two equal subsets and analyze pre- and post-crisis periods separately. Each subset covers a four-year period and consists of 7,560 observations gathered from the same 1,890 banking institutions that had been continuously active from 2003 to 2010. For the pre-crisis period of 2003-2006, our findings do not provide any evidence of earnings management by banks (including those with below-median profitability) headquartered in states that were most and least impacted by the housing market crash.

In contrast, our empirical findings support the earnings management hypothesis that banks (both low- and high-profit ones) headquartered in states where the housing market crash was most pronounced used loan loss provisions to manage reported earnings in the post-crisis period. However, for the same period, we did not find any evidence of banks headquartered in states that experienced the smallest decline in the HPI practicing earnings management. Finally, we show that nondiscretionary factors also played a big role in determining banks' loan loss provisioning.

This paper adds to the literature on the loan loss provisioning practices of U.S. banks, with emphasis on institutions particularly likely to conduct earnings management due to experiencing financial distress. Our study has significant economic and regulatory implications. The findings suggest that banking institutions faced by declining financial conditions are likely to resort to the practice of earnings management, which in return distorts the financial picture of this vital industry that is at the heart of the economic and financial systems. If bank financial statements are found to be inaccurate or misleading, a loss of confidence in the banking system among investors and customers would be the likely outcome. Furthermore, distorted financial statements may cause a breakdown of trust in the financial system, thus negatively impact the overall economy, consequences of which would be magnified when the economy is already under strain. In this regard, banking and financial regulators, who play a crucial role in maintaining public confidence in the banking system, have the oversight responsibility to prevent the obscuring of true financial performance through dubious loan loss provisioning practices. This study has certain limitations that should be considered when our findings are expounded; yet the same limitations also offer opportunities for further research. First, our analysis may be extended by analyzing the financial and demographic characteristics of banks that are more likely to manage earnings when faced with difficult economic conditions. Also, our paper does not differentiate between earnings management practices of institutions of different sizes in the context of strengthening incentives to manage reported earnings amid rising financial strain. Future research may incorporate institutional size as a variable of interest, given that it significantly impacts organizational and operational characteristics of banks.

## REFERENCES

- Ahmed, A. S., Takeda, C., and Thomas, S. 1999. "Bank Loan Loss Provisions: A Reexamination of Capital Management, Earnings Management and Signaling Effects." *Journal of Accounting and Economics* 28 (1): 1–25.
- Beatty, A., Ke, B., and Petroni, K. 2002. "Earnings Management to Avoid Earnings Declines across Publicly and Privately Held Banks." *The Accounting Review* 77(3): 547–570.
- Beatty, A. and Harris, D. G. 1999. "The Effects of Taxes, Agency Costs, and Information Asymmetry on Earnings Management: A Comparison of Public and Private Firms." *Review of Accounting Studies* 4(3-4): 299–326.
- Beatty, A., Chamberlain, S. L., and Magliolo, J. 1995. "Managing Financial Reports of Commercial Banks: The Influence of Taxes, Regulatory Capital, and Earnings." *Journal of Accounting Research* 33(2): 231–261.
- Beaver, W., and Engel, E. E. 1996. "Discretionary Behavior with Respect to Allowance for Loan Losses and the Behavior of Securities Prices." *Journal of Accounting and Economics* 22(1-3): 177–206.
- Dolar, B. 2019 "Cyclicality of Loan Loss Provisioning in the U.S. Banking Industry: Evidence from the Period 1993–2007." *Journal of Business and Economic Studies* 23(1): 63–80.

Dolar, B. and Drickey, K. M. 2017 “The Differential Impact of Size on Earnings Management Practices of Banks: Evidence from the Financial Crisis of 2008.” *Journal of Business and Accounting* 10(1): 63–80.

Dechow. P. M., and Skinner, D. J. 2000. “Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators.” *Accounting Horizons* 14(2): 235–250.

Federal Deposit Insurance Corporation. 1997. “History of the 80.” Vol 1, Chapter 1. Available from <<https://www.fdic.gov/bank/historical/history/vol1.html>>.

Federal Housing Finance Agency. States House Price Index, Available from <<https://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx#qpo>>.

Financial Accounting Standards Board (FASB). 1993. *Accounting by Creditors for Impairment of a Loan*. Statement of Financial Accounting Standards No. 114.

Financial Accounting Standards Board (FASB). 1975. *Accounting for Contingencies*. Statement of Financial Accounting Standards No. 5.

Greenawalt, M. B., and Sinkey Jr., J. F. 1988. “Bank Loan-Loss Provisions and the Income-Smoothing Hypotheses: An Empirical Analysis, 1976–1984.” *Journal of Financial Services Research* 1: 301–318.

Healy, P. M., and Wahlen, J. M. 1999. “A Review of the Earnings Management Literature and Its Implications for Standard Setting.” *Accounting Horizons* 13(4): 365–383.

Kanagaretnam, K., Lobo, G. J., and Yang, D. H. 2004. “Joint Tests of Signaling and Income Smoothing Through Bank Loan Loss Provisions.” *Contemporary Accounting Research* 21(4): 843–884.

Kanagaretnam, K., Lobo, G. J., and Mathieu R. 2003. “Managerial Incentives for Income Smoothing Through Bank Loan Loss Provisions.” *Review of Quantitative Finance and Accounting* 20: 63–80.

Kim, M., and Kross W. 1998. “The Impact of the 1989 Change in Bank Capital Standards on Loan Loss Provisions and Loan Write-Offs.” *Journal of Accounting and Economics* 25(1): 69–99.

Levitt, A. 1998. “The ‘Numbers Game’.” Speech at the NYU Center for Law and Business, 28 September.

Ma, C. 1988. “Loan Loss Reserves and Income Smoothing: The Experience in the U.S. Banking Industry.” *Journal of Business, Finance, and Accounting* 15(4): 487–497.

Robb, S. 1998. “The Effect of Analysts’ Forecasts on Earnings Management in Financial Institutions.” *Journal of Financial Research* 21(3): 315–331.

Scheiner, J. 1981. “Income Smoothing: An Analysis in the Banking Industry.” *Journal of Bank Research* 12(2): 119–124.

Wahlen, J. M. 1994. “The Nature of Information in Commercial Bank Loan Loss Disclosures.” *The Accounting Review* 69(3): 455–78.

## **BIOGRAPHY**

Dr. Burak Dolar is a Professor of Accounting at Western Washington University. Dr. Dolar's research interests include bank accounting, accounting and financial reporting of banking institutions, and earnings management. His publications have appeared in Journal of Money Laundering Control, Global Finance Journal, Journal of Banking Regulation, Journal of Finance and Accountancy, Journal of International Business Disciplines, International Journal of Business and Finance Research, Journal of Business and Accounting, Journal of Emerging Technologies in Accounting, and Journal of Business and Economic Studies. He can be contacted at Department of Accounting, Parks Hall 35, 516 High Street, Bellingham, WA 98225.