The ABA Top Performing Banks in a Time of Financial Crisis: Can They Outperform the Worst?

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In this study, we examine whether firms exhibiting superior return on equity lauded in the annual *ABA Banking Journal* Top Performing Banks survey prior to the financial crisis of 2007–-2009 experience weak performance in periods during and after the financial crisis. We anticipate the Worst Performing Banks sample to outperform the Top Performers during and following the crisis due to lower levels of leverage leading up to the financial meltdown. We construct a Worst Performing Banks sample of the weakest financial performers based on ABA criteria in the banking industry pre-crisis to determine whether it outperforms the ABA's Top Performing Banks sample during and following the 2007–-2009 financial crisis. While we do not find support that the Worst Performing Banks were less leveraged and thus exhibited less financial risk leading up to the crisis, we do find support that the Worst Performers performed less poorly than the Top Performers both during and following the financial crisis.

1. Introduction

The banking industry has undergone significant changes since the financial crisis of 2007–-2009. Global regulatory authorities have reacted, and some argue overreacted, to the situation. The FDIC closed 465 banks between 2008 and 2012 in comparison to 10 bank failures in the five years leading up to the crisis. The Basel Committee on Banking Supervision continues to implement capital and liquidity reforms intended to improve the health and resiliency of the banking sector. In its most basic form, the Committee's approach requires banks to hold more "high quality Tier 1 capital" (i.e., common stock and retained earnings). The Basel Committee sees shoring up capital as the key to reducing bank risks. However, some argue that higher capital standards will spur banks to seek out even riskier opportunities to generate return, in an effort to keep return on equity (ROE) from falling. In fact, in this study we find evidence that leverage measures were relatively consistent across a sample of high performing banks pre-crisis and a sample of the weakest performers, pre-crisis, indicating that perhaps sweeping changes to capital requirements, as proposed by the BASEL Committee, may indeed be in order.

Banking sector risks and returns are of interest to policy makers and investors alike. For investors, reliable sources of information regarding bank performance can play an important role in the security selection process. One such source of information is provided by the American Bankers Association (ABA). In 1993, the ABA began publishing an annual survey in the *ABA Banking Journal.* The annual survey ranks the top performing banks in the industry. Investors would like to rely on publications such as the *ABA Banking Journal* and its top performing banks list to identify strong and healthy banks for possible investment. However, investors need to look forward and not simply hope that history will repeat itself and that the top performers of the past will be top performers in the future. Investors need reliable sources of information regarding the long-term health and performance of financial institutions. While the ABA survey is conducted annually and does not look at the long-term performance of the named banks, investors might infer that the strongest performing banks today will likely be the strongest performers in the future. Since 1999, the survey used ROE to rank performance. The change in methodology meant that the impact of leverage positively impacted performance for the superior performing banks based on the increased financial risk.

In this study, we examine whether superior accounting-based returns lauded in the annual *ABA Banking Journal* Top Performing Banks survey ultimately translates into weak performance in periods of financial crisis, in this case, the financial crisis of 2007–2009. Because the ABA survey ranks banks based on ROE, banks receiving higher rankings on the list prior to the crisis benefitted from greater levels of financial risk. However, risk is a double-edged sword, and our hypothesis is that because of the higher fixed costs associated with leverage, the strongest financial performers pre-crisis will be less resilient to weather financial storms during and following the crisis. We hypothesize that pre-crisis top performers will underperform those banks that were less successful in the years leading up to the 2007–2009 financial crisis. Thus, we examine whether a constructed sample of the weakest financial performers (Worst Performing Banks) in the banking industry pre-crisis outperforms the ABA's Top Performing sample during and following the recent financial crisis. While both samples performed poorly during the financial crisis, we discover that the Worst Performing Banks sample is less impacted by the financial crisis than the Top Performers. We find however that the resiliency of the worst performers relative to the top performers is not tied to differences in levels of financial risk leading up to the financial meltdown.

2. Literature Review

Much has been written on the subject of whether strong accounting measures of performance translate to shareholder returns regarding industrial firms. One of the earliest and most influential books on the subject was written by Peters and Waterman (1982). In the book *In Search of Excellence: Lessons from America's Best Run Corporations,* the authors use growth, size, and innovation as criteria for excellence. The financial performance of a sample of both private and public firms is examined.

Peters and Waterman identify 62 firms that are large, continuously innovative, and exhibit superior financial performance. The authors contend that higher shareholder returns are indicative of "managerial excellence."

Clayman (1987) focuses attention on the investment performance of these excellent firms, as well as the performance of firms deemed not so excellent based on the Peters and Waterman criteria. Specifically, she studies 29 of the Peters and Waterman (1982) excellent companies over a five-year period and compares them to a portfolio of 25 "unexcellent" firms, based on the Peters and Waterman criteria. She chooses firms with the worst combination of variables that Peters and Waterman claim define excellent firms. Clayman finds that the sample of firms with the worst combination of financial ratios significantly outperforms the Peters and Waterman excellent firms on a risk-adjusted basis. The "unexcellent" portfolio had a monthly alpha of approximately one percent per month while the excellent firms exhibited a monthly alpha of 0.2 percent per month, despite nearly identical betas and standard deviations of returns.

Extending the work of Clayman; Kolodny, Laurence, and Ghosh (1989) study nearly double the number of excellent firms considered by Clayman and examine the firms' returns to shareholders over various long-term holding periods. They find no significant differences in the risk-adjusted returns of the "excellent" firms compared with either the market index or a matched sample of firms, supporting Clayman's findings.

Surveys have focused on other types of financial ratios as criteria for rankings. For example, beginning in 1997, *CFO Magazine* began ranking firms across 35 industries based on the efficiency of working capital management (i.e., cash conversion efficiency and days of working capital). Filbeck, Krueger, and Preece (2007) find little relationship between return and the key working capital variables of the firms listed in the *CFO Magazine* survey.

Evidence of industry struggles abound. The largest bank failure in U.S. history occurred in late September 2008 when Washington Mutual, Inc. failed (Sidel, Enrich, and Fitzpatrick, 2008). Exposure to sub-prime mortgage loans caused many bank failures and forced takeovers in the industry, including that of National City by PNC. While explanations ranging from lax regulation to insufficient capital to exposure to structured investment vehicles (SIVs) have been suggested as catalysts for the financial crisis, nearly all market participants agree that excessive risk-taking by banks was a major factor.

Few studies have focused on bank performance during and following the financial crisis of 2007–2009. Beltratti and Stulz (2012) perform an extensive examination of large bank (i.e., total assets equal to $50 billion or more) returns across the globe between July 2007 and December 2008, highlighting performance during the height of the financial crisis. They find that banks that were less leveraged and that had lower returns immediately prior to the crisis performed better during the crisis. The authors did not find that banks in countries with stricter regulations

performed better. Additionally, they find that banks with shareholder friendly boards were not less risky before the crisis and that they reduced lending more during the crisis. These banks also performed relatively worse during the crisis. Academics, regulators, and members of government alike identified "poor governance" in bank holding companies (BHCs) as a cause of the financial meltdown (e.g., Diamond and Rajan, 2009; The Financial Crisis Inquiry Report, 2011). However, Beltratti and Stultz do not find support for this argument in explaining differences in bank returns. Poor governance is assumed to lead to excessive risk-taking. The authors do not find evidence that banks with better governance were less risky leading up to the financial crisis.

The reliance on short-term financing prior to the financial crisis has been examined in several studies including Brunnermeier (2009), Adrian and Shin (2010), and Gorton (2010). Money market funding is subject to runs, unlike deposit funding. Deposit insurance insulates banks from runs on deposits. However, some (e.g., Demirguc-Kunt and Detragiache, 2002) show that explicit deposit insurance can harm bank stability due to moral hazard. Also, when money market funding dries up, banks are often left to sell assets in a "fire sale" at much reduced values. Beltratti and Stultz examine the issue in the context of the financial crisis and find strong evidence that banks that relied more heavily on deposit funding and less on wholesale funding sources prior to the crisis performed better during the crisis. Demirguc-Kunt and Huizinga (2010) develop a model of funding fragility. The authors define funding fragility as the sum of deposits from other banks plus short-term borrowings and other deposits divided by total deposits plus money market and other short-term funding. Using this definition of funding fragility, Beltratti and Stultz find that the more fragile the funding, the less well a bank performed during the crisis. Additionally, exposure to SIVs was not associated with weaker performance despite much attention paid to this potential risk source (see Acharya, Schnabl and Suarez, 2013, for a list of banks with exposure to SIVs).

A measure of the extent to which a bank's activities have migrated away from taking deposits and making loans is called income diversity. Income diversity, defined as the absolute value of the difference between net interest income and other operating income divided by total operating income, is not associated with weaker financial crisis performance in the Beltratti and Stultz study.

In this study, we examine banks named to the *ABA Banking Journal* Top Performing Banks list and compare them to a sample of the Worst Performing Banks. From its inception in 1993 until 1999, the survey ranked bank performance based on return on assets (ROA). In addition, the ABA focused primarily on smaller, privately held banks. In this study, we focus on the period after BHCs) were included in the survey, which occurred in 1999, and when the ABA acknowledged that ROE, not ROA, was a better measure of bank performance and switched measures. Bank returns are increasingly related to off-balance sheet activities and thus ROE is the more relevant measure of return. This position is supported by Cates (1996) who

argues that asset-based return measures like ROA were adopted by financial institutions to measure performance in the 1960s. During the early years of banking, revenues and expenses originated on the balance sheet and bank returns were derived from making loans and buying securities with funds supplied by depositors. Cates contends that ROE is a much more relevant measure of performance relative to ROA for the modern bank, where much of bank profits are generated from non-traditional and off-balance sheet activities.

Market analysts incorporate historic accounting-based metrics as one method in which to evaluate a bank's or BHC's stock for security recommendations. In addition, investors consider a variety of metrics in their decision-making processes regarding portfolio selections. While analysts are a primary source of information for investors (see Han and Wild, 1991; Pownall, Wasley and Waymire, 1993), investors may also respond to other sources of "news" based on behavioral or "noise" factors. For example, Statman (1999) considers alternative frameworks by which investors approach investment decision making. He points out that some investors are prone to representativeness, employing strategies that chase past winners or associate good or well-run companies with good investments. We investigate whether investors who pay attention to the ABA's list of Top Performing Banks as a means of identifying potential "winners" in the financial sector, are rewarded in times of financial stress, or if, instead, these banks underperform during a period of financial stress. The *ABA Banking Journal* Top Performing Banks list is one source that investors might use to identify firms as "good, or well-run," in order to make investment decisions. However, we also contend that the ABA list may not provide good information to investors, at least in hindsight, in times of financial crisis.

3. The ABA Banking Journal's Top Performing Banks Survey

The criteria used by the ABA *Banking Journal* Top Performing Banks survey have undergone adjustments since its inception. In the early years, survey banks were smaller and many were privately held, making it virtually impossible to examine survey banks in an empirical study. After 1999, the ABA only includes BHCs, not individual banks, in the survey. We include banks named in surveys from 2002 to 2014 because this time frame includes a five year pre-crisis and five year post-crisis period. Financial information included in the survey is gathered from FDIC call report data.

By comparing the performance of the ABA Top Performing Banks sample to a sample of worst performers, we investigate whether of the top performers are also investor worthy, specifically in times of financial distress. As noted previously, starting with Clayman (1987), researchers have attempted to determine which surveys are relevant to investor performance. Our research adds to this stream of literature as we investigate whether investors may benefit from information contained in the ABA Top Performing Banks survey. The *ABA Banking Journal* is the most widely read publication in the industry, reaching leaders of banks representing nearly 90 percent of all assets held in U.S. banks (*ABA Banking Journal,* 2015).

Investors would like to invest in banks that have not only performed well historically (i.e., in the year or years when banks were named to the top performers list), but will perform well in the future. We investigate whether top performing and worst performing banks' relative performance continues during and following the financial crisis of 2007–2009. We hypothesize that banks that experienced weaker performance pre-crisis are able to outperform their stronger, pre-crisis counterparts based on accounting performance, risk-adjusted return measures, and long-term shareholder returns. We argue that banks ranked higher on the ABA list pre-crisis would be less resilient to a market crisis because of greater levels of financial risk, evidenced by higher ROE. We explore the longer-term holding periods on a buy and hold and risk-adjusted basis associated with the banks named in the ABA survey and banks with the weakest combination of survey variables.

4. Sample and Methodology

The sample period spans 2002–2014, a period that includes the 2007–2009 financial crisis in the United States. Five years prior to and five years following the crisis period (i.e., 2002–2006 and 2010–2014) are defined as the pre-crisis and post-crisis periods, respectively. Survivorship bias may exist given that we are examining performance in a period of significant consolidation in the banking industry and, as such, many banks are delisted during this period.

The Top Performing Banks sample consists of all banks listed in the ABA bank survey that have available data in Research Insight® (Compustat) Bank file during the pre-crisis period (2002–2006). There are 250 top performing banks which have available information during the pre-crisis period. Banks with negative total assets or negative shareholders' equity are deleted. This screen leaves 182 Top Performing Banks. There are 94 distinct banks in the sample. Nearly half of the sample banks appear in the survey in more than one year during the pre-crisis period.

For each Top Performing Bank and for each year in the study, we construct a matched "worst" sample on the basis of the book value of total assets. We retrieve the previous year's total assets of all banks from the Compustat bank file for each year during the pre-crisis period. We calculate ROE for each bank which has available information from Compustat. Our potential universe of matching companies consists of all of the remaining banks (non-top performing banks) that have ROEs in the lower 40th percentile of all available banks[1]. Then, for each bank in the Top Performing Banks sample, we select the bank from the matching universe with the closest total assets. We repeat the same procedure for each top performing bank to create the matched Worst Performing Banks sample. The characteristics of the Top and Worst Performing Banks samples are presented in Table 1. Panel A shows the statistics of the overall 182 Top Performing Banks, while Panel B shows the statistics of the 94

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[1] While the use of the 40th percentile is arbitrary, this cutoff is chosen to maximize sample size while differentiating between samples. Sensitivity analysis around cutoffs produces indistinguishable results.

Table 1. Descriptive Statistics

Panel A. Top performing banks

Variable	Number of bank year	Mean	Standard deviation	Min	50	Max
				Percentile		
Total assets ($M)						
Top performing banks	182	35,102.89	98,999.02	386.40	6,536.97	736,445.00
Worst performing banks	182	36,986.74	99,551.63	386.31	5,394.84	724,399.70
ROE						
Top performing banks	182	19.31	4.94	9.39	18.59	55.37
Worst performing banks	182	2.74	12.87	-89.80	6.61	9.21
ROA						
Top performing banks	182	2.21	0.70	0.87	2.11	7.71
Worst performing banks	182	0.56	1.71	-12.74	0.88	3.31
Equity Multiplier						
Top performing banks	182	13.36	2.70	8.04	12.91	25.50
Worst performing banks	182	13.62	9.21	3.85	11.29	69.96

Table 1 reports the descriptive statistics for the matched sample. Panel A includes the Top Performing Banks sample consisting of all Top Performing Banks listed by ABA bank survey that have available data from Compustat (183 banks). Panel B includes distinct Top Performing Banks sample (94 banks). Then we create a matched Worst Performing Banks sample. Our potential universe of matching companies consists of all remaining banks (non-Top Performing Banks) that have ROE in the lower 40 percentile of all available banks. Then, for each bank in our Top Performing bank sample, we select the bank from the matching universe with the closet ROE. We repeat the same procedure for each Top Performing bank in our study to create the matched Worst Performing Bank sample.

Table 1. Descriptive Statistics

Panel B. Distinct top performing banks

Variable	Number of bank year	Mean	Standard deviation	Percentile		
				Min	50	Max
Total assets ($M)						
Top performing banks	94	24,411.76	80,889.59	386.40	3,683.88	660,458.00
Worst performing banks	94	24,892.70	86,426.92	386.31	2,683.38	724,399.70
ROE						
Top performing banks	94	17.50	3.85	9.39	16.75	37.85
Worst performing banks	94	3.94	6.97	-32.91	6.23	8.87
ROA						
Top performing banks	94	2.03	0.52	0.87	1.95	3.60
Worst performing banks	94	0.67	0.92	-4.66	0.74	2.78
Equity Multiplier						
Top performing banks	94	13.24	2.99	8.04	12.62	25.50
Worst performing banks	94	12.89	8.17	3.78	11.12	62.90

Notes: Table 1 reports the descriptive statistics for the matched sample. Panel A includes the Top Performing Banks sample consisting of all Top Performing Banks listed by ABA bank survey that have available data from Compustat (183 banks). Panel B includes distinct Top Performing Banks sample (94 banks). Then we create a matched Worst Performing Banks sample. Our potential universe of matching companies consists of all remaining banks (non-Top Performing Banks) that have ROE in the lower 40 percentile of all available banks. Then, for each bank in our Top Performing bank sample, we select the bank from the matching universe with the closet ROE. We repeat the same procedure for each Top Performing bank in our study to create the matched Worst Performing Bank sample.

distinct banks. The Top Performing Banks sample and the matched Worst Performing Banks sample are very similar in terms total assets. By design, the matched Worst Performing Banks sample has much lower average ROE and ROA relative to the top performers. The mean equity multiplier of the Worst Performing Banks is slightly higher than the Top Performing Banks for the 182 bank sample (13.36 versus 13.62) but is slightly lower for the distinct banks sample (12.89 versus 13.24). However, the differences are not statistically significant.

5. Results

5.1 Accounting performance

Table 2 reports the accounting performance changes during and after the financial crisis for the Top Performing Banks and the Worst Performing Banks. The mean ROA and ROE during the pre-crisis period is compared to the mean ROA and ROE during the crisis period (2007–2009) and following the financial crisis (2010–2014). Table 2 shows that both samples experienced a decrease in their accounting measures of performance during and after the financial crisis. For example, the average ROE of the Top Performing Banks is 18.17 percent before the financial crisis and −3.14 percent after the financial crisis, which is a net decrease of 21.79 percent[2]. This decrease is statistically significant at the one percent level. Similarly, we find a significant decrease in bank ROEs and ROAs after the financial crisis for the Worst Performing Banks. These results are consistent with previous literature on bank performance (e.g., Aebi, Sabato, and Schmid, 2012; Beltratti and Stulz, 2012).

When comparing the pre-crisis to the crisis period, the declines are statistically significant at the one percent level for both the Top Performing Banks sample, and the Distinct Top Performing Banks sample. In contrast, the decline in ROA and ROE for the Worst Performing Banks samples is much smaller and statistically insignificant. For example, the Distinct Top Performing Banks sample saw ROA fall from 2.00 percent pre-crisis to 1.32 percent during the crisis, a drop of 0.72 percent, with a t-statistic of −7.26, which is statistically significant at the one percent level. For comparison, ROA fell from 0.84 percent to 0.73 percent for the matched Worst Performing Banks sample (a statistically insignificant reduction with a t-statistic of −0.91). Results are similar using ROE as a performance measure. The Worst Performing Banks saw ROE decrease much less (from 5.92 percent to 4.89 percent) from the pre-crisis period to the crisis period for the distinct banks sample. The decline is not statistically significant. In contrast, the Top Performing Banks sample ROE fell from 16.63 percent to 7.78 percent during the same period, which is statistically significant at the one percent level.

When comparing the pre-crisis period with the post-crisis period, the change in ROA and ROE are larger for both samples, although a similar pattern holds, the decline is larger for the Top Performing Banks samples. For example, ROA declined

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[2] The decrease is not exactly equal to the difference of post and pre-crisis period returns as some of the banks are delisted after the financial crisis.

Table 2. Accounting Performance during and after Financial Crisis

Panel A. Top performing banks

Top performing banks	Pre-crisis (2002 -2006)		Crisis period (2007 - 2009)		Change	Post-crisis (2010 - 2014)		Change
	# of banks	Mean (1)	# of banks	Mean (2)	(2) - (1)	# of banks	Mean (3)	(3) - (1)
ROE	182	18.17	135	10.27	-7.94***	106	-3.14	-21.79***
ROA	182	2.12	135	1.40	-0.76***	106	0.87	-1.32***
Worst performing banks								
ROE	182	5.92	135	4.89	-1.36	122	-2.58	-9.02**
ROA	182	0.91	135	0.68	-0.21*	123	0.49	-0.42**

Panel B. Distinct top performing banks

Top performing banks	Pre-crisis (2002 -2006)		Crisis period (2007 - 2009)		Change	Post-crisis (2010 - 2014)		Change
	# of banks	Mean (1)	# of banks	Mean (2)	(2) - (1)	# of banks	Mean (3)	(3) - (1)
ROE	94	16.63	67	7.78	-8.83***	53	-5.83	-22.66**
ROA	94	2.00	67	1.32	-0.72***	53	0.70	-1.37***
Worst performing banks								
ROE	94	5.53	67	4.26	-1.81	59	-8.53	-14.84**
ROA	94	0.84	67	0.73	-0.16	61	0.16	-0.74**

Notes: Table 2 reports the average accounting performance after financial crisis for different sub-samples. We define year 2007–2009 as the crisis period, five years prior to the financial crisis (2002–2006) as pre-crisis period, and five years after the financial crisis (2010–2014) as post-crisis period.***indicates significant at 1 percent level; **indicates significant at 5 percent level; *indicates significant at 10 percent level.

from 2.00 percent pre-crisis to 0.70 percent post-crisis for the Distinct Top Performing Banks sample, statistically significant at the one percent level. ROA declined from 0.84 percent to 0.16 percent for the matched Worst Performing Banks sample, which is statistically significant at the five percent level. The decrease in ROE for both the Top Performing Banks and Worst Performing Banks samples is statistically significant at the five percent level. It is also interesting to note that there is more attrition in the Top Performing Banks sample. The sample size falls from 182 banks to 106 banks in the Top Performing Banks sample and 94 to 53 banks in the Distinct Top Performing Banks sample. By comparison, the Worst Performing Banks sample falls from 182 pre-crisis to 122 post-crisis from 94 to 61 in the Distinct Worst Performing Banks sample. Also, it is clear that the performance gap between the Top Performing Banks and the Worst Performing Banks narrows as we move through the crisis and into the post-crisis period. For example, the Top Performing Bank sample ROE is 18.17 percent pre-crisis and −3.14 percent post-crisis. The Worst Performing Bank sample ROE is a mere 5.92 percent pre-crisis but −2.58 percent post-crisis. The difference between the Top Performing Banks and the Worst Performing Banks is nearly 12 percent pre-crisis but is negligible in the post-crisis period. Both the return results and the delisting results support the hypothesis that the Worst Performing Banks outperformed the Top Performing Banks during and following the crisis. Both samples saw declines in accounting return measures during the period, but the Worst Performing Banks were less affected. Also, fewer delistings occurred in the Worst Performing Banks sample relative to the Top Performing Banks sample. However, the results are not explained by differences in risk, pre-crisis as the pre-crisis equity multipliers are similar, as evidenced in Table 1.

The results in Table 2 should be interpreted with caution as many banks were delisted during and after the financial crisis. This change may result in a delisting bias as we only compare the accounting performance of the surviving banks.   For example, the results show that 94 Distinct Top Performing Banks exist prior to the financial crisis. After the crisis, only 53 Top Performing Banks remain in the sample, a reduction of nearly 50 percent. Similarly, about 39 percent of the Worst Performing Banks ceased to exist after the financial crisis. The CRSP database cites reasons for some, but not all, delistings. Three times more Top Performing Banks are cited to have been delisted due to "performance reasons" than Worst Performing Banks (6 banks versus 2 banks). In most cases CRSP lists mergers and acquisitions or "unidentified" as the reason for a delisting.[3] However, as noted previously, the fact that a greater number of Top Performers delisted relative to Worst Performers may in and of itself provide support that the Worst Banks weathered the financial

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[3] While the reasons for delistings cited in CRSP are not comprehensive, for the Top Performing Banks sample, 27   times   merger and acquisitions are cited, 6 are delisted for performance related reasons, and 8are unidentified (a total of 41 banks).   For the Worst Performing Banks sample, 13 delistings occur because of merger and acquisitions, 2 are delisted for performance related reasons, and 20 are identified as other (a total of 35 banks).   CRSP does not consider secondary or contributing factors.

Table 3. Comparison of change of accounting performance between Top Performing Banks and Worst Performing Banks

Panel A. Change of accounting measures during financial crisis - top performing banks

| | $ROE_{crisis}-ROE_{pre}$ | | | | | | $(ROE_{crisis}-ROE_{pre})/ROE_{pre}*100$ | | | |
| | Top performing banks | | Worst performing banks | | Difference | | Top | Worst | Difference | |
Variable	# of banks	Mean (1)	# of banks	Mean (2)	(1) - (2)	t-stat	Mean (3)	Mean (4)	(3) - (4)	t-stat
ROE	135	-7.94	135	-1.36	-6.58	-4.07***	-43.67	-22.88	-20.79	-1.29
ROA	135	-0.76	135	-0.21	-0.55	-2.96***	-35.93	-23.04	-12.89	0.11

Panel B. Change of accounting measures after financial crisis - top performing banks

| | $ROE_{post}-ROE_{pre}$ | | | | | | $(ROE_{post}-ROE_{pre})/ROE_{pre}*100$ | | | |
| | Top performing banks | | Worst performing banks | | Difference | | Top | Worst | Difference | |
Variable	# of banks	Mean (1)	# of banks	Mean (2)	(1) - (2)	t-stat	Mean (3)	Mean (4)	(3) - (4)	t-stat
ROE	106	-21.79	122	-9.02	-12.76	-1.81*	-119.89	-152.39	32.50	0.40
ROA	106	-1.32	123	-0.42	-0.91	-3.21**	-62.45	-45.81	-16.64	-0.65

Table 3. Comparison of change of accounting performance between Top Performing Banks and Worst Performing Banks

Panel C. Change of accounting measures during financial crisis - distinct top performing banks

| | $ROE_{crisis}-ROE_{pre}$ | | | | | | $(ROE_{crisis}-ROE_{pre})/ROE_{pre}*100$ | | | |
| | Top performing banks | | Worst performing banks | | Difference | | Top | Worst | Difference | |
Variable	# of banks	Mean (1)	# of banks	Mean (2)	(1) - (2)	t-stat	Mean (3)	Mean (4)	(3) - (4)	t-stat
ROE	67	-8.83	67	-1.81	-7.02	-2.69**	-53.11	-32.78	-20.34	-0.53
ROA	67	-0.72	67	-0.16	-0.57	-2.61**	-36.12	-18.43	-17.69	-0.67

Panel D. Change of accounting measures after financial crisis - distinct top performing banks

| | $ROE_{post}-ROE_{pre}$ | | | | | | $(ROE_{post}-ROE_{pre})/ROE_{pre}*100$ | | | |
| | Top performing banks | | Worst performing banks | | Difference | | Top | Worst | Difference | |
Variable	# of banks	Mean (1)	# of banks	Mean (2)	(1) - (2)	t-stat	Mean (3)	Mean (4)	(3) - (4)	t-stat
ROE	53	-22.66	59	-14.84	-7.82	-1.22	-136.26	-268.17	131.91	-0.19
ROA	53	-1.37	61	-0.74	-0.63	-1.03	-68.66	-88.06	19.40	0.75

Notes: Table 3 shows the comparison of change of ROE and ROA during and after financial crisis between Top Performing Banks and Worst Performing Banks. ***indicates significant at 1 percent level; **indicates significant at 5 percent level; *indicates significant at 10 percent level.

meltdown better than the Top Performing Banks.

Table 3 reports the change in accounting performance during and after the financial crisis between the Top Performing Banks and the Worst Performing Banks. In this case, we take the change in performance of the Top Performing Banks over a specific time period (i.e., from pre-crisis to the crisis period) and subtract the change in performance of the Worst Performing Banks. We test if the difference in performance between the two groups is statistically significant. The results are similar to those exhibited in Table 2. The difference in performance between the two is generally statistically significant. The pre-crisis to crisis period differences for the whole sample, displayed in Panel A, are significant at the one percent level. The post crisis to pre-crisis differences for the entire sample, displayed in Panel B, are significant at the ten percent and five percent levels for ROE and ROA respectively. The Distinct Banks Samples pre-crisis to crisis period differences, displayed in Panel C, are statistically significant at the five percent level for both ROE and ROA. These results provide additional support for the hypothesis that Worst Performing Banks, while not actually outperforming the Top Performing Banks in raw performance terms, did weather the financial storm better.

5.2 Risk-adjusted performance and buy and hold returns

Next, we compare the stock performance of the Top Performing Banks with the performance of the Worst Performing Banks. We first calculate five risk-adjusted performance measures. The Sharpe reward-to-variability ratio (Sharpe, 1966, 1994) is a measure of excess return per unit of total risk. Sharpe (1994) argues that for ex-post evaluation of performance, the differential form of the ratio should be used, which appears below:

$$\text{Sharpe ratio} = \frac{d_1}{s_{d1}}, \tag{1}$$

where:

d_1 = mean holding period difference between the Top Performing Banks sample (or S&P 500 or worst performing banks sample) and the T-bill return, calculated over each day

s_{d1} = the sample standard deviation of the daily return differences

We also calculate the Treynor reward-to-volatility ratio (Treynor, 1965), which measures return per unit of systematic risk. It is calculated:

$$\text{Treynor ratio} = \frac{d_1}{\beta}, \tag{2}$$

where:

d_1 = the mean holding period difference between the portfolio (or the worst performing banks sample) and the T-bill return, calculated over each day

$$\beta \quad = \quad \text{portfolio beta, or market beta } (\beta_m = 1)$$

Betas are calculated by regressing daily excess returns for both the Top Performing Banks sample and the Worst Performing Banks sample portfolios against market excess returns during each sampling period.

Jensen's (1968) alpha, indicates whether a portfolio exhibits above or below average risk-adjusted returns on an absolute basis. Jensen's alpha, α, is the intercept term of the regression of the excess returns on a portfolio of the Top Performing Banks (or Worst Performing Banks) against the excess returns of the market:

$$R_{it} - R_{ft} = \alpha + \beta(R_{mt} - R_{ft}) + e_{it}, \tag{3}$$

A positive (negative) alpha is consistent with a portfolio of undervalued (overvalued) securities.

The information ratio (IR) is defined as the active return divided by tracking error, where active return is the difference between the return of the portfolio and the return of a selected benchmark (i.e., the S&P 500 Index in this study), and tracking error is the standard deviation of the active return. The IR is:

$$IR = \frac{R_P - R_B}{SD(R_P - R_B)} \tag{4}$$

The information ratio is often used to gauge the active management skills of mutual fund and hedge fund managers by measuring the expected active return of the manager's portfolio divided by the amount of active risk that the manager takes relative to the benchmark.

Next, we calculate buy and hold returns. Buy and hold returns are calculated as geometric returns:

$$\text{Buy and hold return} = \sum[(1+R_1)(1+R_2)(1+R_3)...(1+R_n)] - 1 \tag{5}$$

where Ri is the return in day i and n is the total number of days during the test period. Panel A of Table 4 shows the results of these risk-adjusted performance measures for the total Top Performing Banks and the Worst Performing Banks sample.

The results show that Top Performing Banks generally have higher Sharpe, Treynor, and Jensen's alpha ratios compared to the Worst Performing Banks during the financial crisis (2007–2009), but the reverse is true after the crisis (2010–2014). However, the differences between the samples are not statistically significant in either period. For example, the Top Performing Banks' (total sample) Sharpe ratio is −0.006 during for the crisis period, slightly better than the Worst Performing Banks' Sharpe ratio of −0.014 during the financial crisis. Results are similar for the Treynor ratio (i.e., −0.014 versus -0.030). Following the financial crisis (i.e., in the 2010–2014 sample period) the Worst Performing Banks sample Sharpe ratio is 0.054 compared to the Top Performing Banks' 0.039.

Table 4. Risk adjusted performance measures and buy and hold returns during and after financial crisis

Panel A. Top performing banks	Crisis period: 2007–2009	After crisis period: 2010–2014
Sharpe measure		
Top performing banks (1)	-0.0059	0.0389
Worst performing banks (2)	-0.0135	0.0540
S&P 500 index (3)	-0.0118	0.0532
Treynor measure		
Top performing banks (1)	-0.0137	0.0461
Worst performing banks (2)	-0.0302	0.0627
S&P 500 index (3)	-0.0223	0.0537
Jensen's alpha		
Top performing banks (1)	0.0122	-0.0095
Worst performing banks (2)	-0.0094	0.0100
Information ratio		
Top performing banks (1)	0.0014	0.0059
Worst performing banks (2)	-0.0092	0.0243
Buy and hold returns		
Top performing banks (1)	-0.3844***	0.8168***
Worst performing banks (2)	-0.3745***	1.1610***
Panel B. Distinct top performing banks		
Sharpe measure		
Top performing banks (1)	-0.0091	0.0440
Worst performing banks (2)	-0.0153	0.0599
S&P 500 index (3)	-0.0118	0.0532
Treynor measure		
Top performing banks (1)	-0.0210	0.0520
Worst performing banks (2)	-0.0343	0.0719
S&P 500 index (3)	-0.0223	0.0537
Jensen's alpha		
Top performing banks (1)	0.0019	-0.0021
Worst performing banks (2)	-0.0137	0.0190
Information ratio		
Top performing banks (1)	-0.0037	0.0146
Worst performing banks (2)	-0.0121	0.0314
Buy and hold returns		
Top performing banks (1)	-0.4254***	0.9908***
Worst performing banks (2)	-0.3810***	1.3319***

Notes: Table 4 shows the risk adjusted performance measures and buy and hold returns for the Top Performing Banks and Worst Performing Banks during and after the financial crisis.***indicates significant at 1 percent level; **indicates significant at 5 percent level; *indicates significant at 10 percent level.

Again, these results are similar for the Treynor ratio, 0.063 for the Worst Pperforming Banks compared to 0.046 for the Top Performers Banks. The results are not statistically different.

Jensen's alpha results indicate that the Top Performing Banks were slightly undervalued during the crisis with a Jenson's alpha of 0.012 versus slightly overvalued Worst Performing Banks (Jensen's alpha equal to −0.009). However, the signs on Jensen's alpha reverses following the crisis, implying that the top performers were overvalued while the worst performers were undervalued (Jensen's alpha equal to −0.010 and 0.010 respectively). These results are logical in that many of the largest, Top Performing Banks, prior to the financial crisis, saw their stock prices decline dramatically and in some cases likely too dramatically. However, many of these banks observed a marked rebound after the crisis was over. Results are similar for the distinct bank samples. The Top Performing Banks outperformed on a risk-adjusted basis during the crisis but underperformed the Worst Performing Banks on a risk-adjusted basis following the financial crisis.

The information ratio is higher for the Worst Performing Banks sample following the financial crisis (increasing from −0.009 to 0.024 after the crisis). The Top Performing Banks experiencing a decline from 0.0122 to −0.010.   This again lends some support for the notion that while much less well off than the Top Performing Banks initially, the Worst Performing Banks were able to maintain better during and following the financial crisis. The results for the buy and hold returns suggest negative returns for both the Top Performing and Worst Performing samples during the crisis, although the Worst Performing Banks of −37.45 percent is slightly better than the Top Performing Banks' −38.44 percent. Following the crisis, both portfolios saw positive buy and hold returns with the Worst Performing Banks increasing their spread over the Top Performing Banks (116.10 percent versus 81.68 percent. The results of the Distinct Banks samples are reported in Panel B of Table 4. Similar to our results in Panel A, during the financial crisis, both the Top Performing Banks and the Worst Performing Banks experienced statistically significantly negative buy and hold returns during the crisis.   Following the crisis both samples had positive buy and hold returns, and, consistent with previous results, higher buy-and-hold returns for the Worst Performing Banks in both the overall and Distinct Bank samples. After the financial crisis, both the Top Performing Banks and the Worst Performing Banks experienced positive buy and hold returns, with the Worst Performing Banks earning higher, but statistically insignificant, returns.

In conclusion, the ABA's Top Performing Banks generally do not outperform their Worst Performing Bank counterparts in terms of buy and hold returns and risk adjusted performance measures during and after the financial crisis. While the equity multipliers of the two samples are similar, the performance of the two groups is not. In fact, the Worst Performing Banks performed less poorly than the top performers in nearly every test. Beltratti and Stulz (2012) surmise that a lack of diversity among banking activities can help explain differences that exist in bank performance in cases

in which risk is not a factor. Thus, a plausible explanation, and a possible extension to this work, would be to test whether the Top Performing Banks in the ABA sample had less diversity in their banking activities, resulting in relative underperformance compared to the Worst Performing Banks sample. Also, there are likely differences in other types of risk (i.e., other than financial risk) between at least some of the best and worst banks.

6. Conclusion

In this study we hypothesize that the Top Performing Banks sample, derived from the ABA's Top Performing Banks survey, was more exposed to financial risk pre-crisis compared to their weaker counterparts (Worst Performing Banks) and would therefore be less resilient to the impact of the 2007–2009 financial crisis. What we find is that while the equity multipliers of the two samples are similar leading up to the crisis, and both portfolios saw performance drop off sharply as a result of the crisis, the Worst Performing Banks were less impacted than their Top Performing Bank counterparts during and after the financial crisis. While the performance of the two portfolios was, by design, quite different in the pre-crisis period, performance converged during and following the crisis. The portfolios initially have an approximately 12 percent difference in ROE, the difference narrows to a mere 56 basis points in the post crisis period. This, along with other performance measures, indicates that the worst performers weathered the financial crisis far better than the top performers. These results add to a growing literature on bank performance during and around the 2007–2009 financial crisis, specifically considering the performance of a nationally recognized portfolio of Top Performers, the ABA's Top Performing banks.

The results of this study imply that investors should not necessarily rely on the ABA's Top Performing Banks list to identify the top performers of the future, especially if a major financial crisis is looming. These results suggest that investors must consider the reasons behind top performance when relying on lists such as the ABA's Top Performing Banks survey to make investment decisions. In this case, the past did not repeat in the future and, in fact, investors who purchased a portfolio representing inferior performers prior to the financial crisis would have weathered the financial storm better than those holding a portfolio of the best performers.

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