

Bank Risk, Performance, and the 2007-08 Financial Crisis : A Times Series Examination by Institution Size

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Banking evolves as the result of changing regulations, competition, and economic opportunities. There is little doubt that significant changes in bank operations occur due to financial crises. The Financial Crisis of 2007-08 is merely the latest to influence the behavior of bank managers and therefore the banking business. One question that arises is whether bank performance as measured by ROE has changed in an identifiable way since the Financial Crisis. A second question relates to whether smaller banks are/were more or less affected by this latest Financial Crisis. This paper examines the performance of both large and small banks through the Crisis to better understand the overall impact on the banking industry. Of primary interest is that we show that small banks are more significantly impacted by regulatory burdens than large banks during this crisis and under the Dodd-Frank Act.

JEL classification: G14; G30; G34

Keywords: Banking, Bank size, Financial Crisis

1. Introduction

Banking has experienced dramatic change over the past decades due to many and varied events. Significant changes occurred due to the Great Depression of the 1930s, the growth of Bank Holding Companies since the 1950s, the recession of the mid-1970s, the inflation of the late-1970s, the changes in regulation due to the passage of the Depository Institutions Deregulation and Monetary Control Act of 1980, the advent of Interstate Banking in 1985, the collapse of the Thrift Industry during the late-1970s through the early 1990s, nationwide Interstate Banking under the Riegle-Neal Act in 1997, and the repeal of the Glass-Steagall Act under the Gramm-Leach-Bliley Act of 1999. According to the FDIC, the total number of insured banks reached a maximum of 14,496 in 1984. Large numbers of bank failures and FDIC-assisted acquisitions in the 1980s and 1990s as well as mergers and acquisitions in interstate banking transactions, and numerous other reasons reduced the number to 8,315 in 2000.

Consolidation has continued to occur since the turn of the 21st century and the number of insured banks filing reports with the FDIC declined to 4,401 as of

September 2020.¹ A significant portion of this numerical decline can be attributed to the Financial Crisis of 2007-2008 as more banks were exposed to the risks being taken. Lack of adequate equity capital as well as problem loans and other investments led to acquisition and/or failure. As the FDIC Statistical Data indicates, there were three bank failures in 2007 and 25 in 2008. The number peaked at 157 in 2010. By 2013 the number of bank failures declined to 24. The total number of bank failures between 2007 and 2013 was 492.² One must believe that many of these failures trace directly to the Financial Crisis.

This Financial Crisis played a role in many facets of change in business and industry. Under recessionary conditions, demand for products slows, there is less access to credit markets, and fewer new businesses start operations. There is strong evidence of recovery within a decade of a crisis for most advanced economies (Bakas & Mendieta-Munoz, 2020). These issues are even more likely to affect smaller businesses as opposed to larger firms and represent significant challenges. For the banking sector of the economy these issues were even more ominous. Mortgage defaults from an implosion of housing markets affected bank earnings, with ripple effects on interbank lending and consumer borrowing. Reactionary legislation was passed, and Dodd-Frank reforms altered debt management and liquidity standards in an attempt to mitigate risk (Kus, 2020).

This research considers the idea that bank reforms occurred because of the crisis and those reforms may or may not have affected financial performance. The key metric this paper examines is to what extent return on equity (ROE) is affected when measured relative to selected bank performance variables over time. Does a relationship exist between these performance variables and ROE and, if so, do directional impacts remain constant or do they change before, during, and after the crisis? With small firms disproportionately affected by the financial crisis, smaller banks may likewise experience the brunt of reforms as measured by financial performance. We contend that prior research has not adequately addressed these issues, especially those relevant to measuring the time value aspect. The research questions that this model uses are as follows:

- 1) To what extent do endogenous measures of bank performance explain ROE over time, and
- 2) Does bank size play a role in this relationship and directional impact?

The remaining sections of the paper are structured as follows: Section 2 reviews literature associated with bank performance during crises and section 3 discusses the Dodd-Frank reforms. Section 4 presents the methodology used, the data, and the statistical analysis, section 5 provides an analysis of the results while section 6 presents possible areas for future research.

¹ See: BankFind Suite: Find Annual Historical Bank Data; [FDIC](#) Website

² See the FDIC Statistical Data for an indication of the number of the number of bank failures and problem banks during and after the 2007-2008 Financial Crisis.

2. Literature Review

A number of studies has examined factors that influenced bank performance during the 2007-2008 financial crisis. For example, Beltratti and Stulz, (2012) and Berger and Bouwman, (2013) consider bank capital and funding structures. As expressed by Berger and Bouwman “capital helps to enhance the survival probabilities and market shares of small banks at all times” (during banking crises, market crises, and normal times) and “medium and large banks primarily during banking crises”. Erkens et al (2012), Fahlenbrach and Stulz, (2011), and Garel and Petit-Romec, (2017) studied corporate governance or ownership structure finding significant implications for bank performance and success (or lack thereof). Other authors, including Aebi et al., (2012), and Ellul and Yerramilli, (2013), have examined risk-management strategies and practices finding that who the chief risk officer reports to is important to the overall wellbeing of the bank and that risk-taking in financial institutions is influenced by institutional ownership and the number of independent directors. As Stulz (2015) indicates, bank management should seek to determine and take an optimal amount of risk. In turn, all of these factors influenced financial firm performance during the Great Recession.

One would hope that bank management would learn the lessons of the crisis and would perform differently (better) after experiencing a crisis period. There is evidence that this is not necessarily true. Garel, Martin-Flores, and Petit-Romec (2020) show that performance through the banking crisis of 1998 was a good predictor of performance through 2007-2008; low (high) performance in the earlier period manifests in low (high) performance in the later period. These findings indicate that managerial improvements did not necessarily occur. Additionally, bank management should be cognizant that their actions have significant implications for their customers. As Chava and Purnanandam (2011) discuss, disruption in a bank may also negatively impact the operations and success of many business customers.

One result of the Financial Crisis was the passage of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank). The next section considers the implications of Dodd-Frank and discusses changes in its powers over the past four years.

3. Dodd-Frank Wall Street Reform and Consumer Protection Act

With institutional size a metric to be considered in analyzing performance variables, regulatory compliance that disproportionately affects one size of institution should be considered. On May 24, 2018, President Trump signed into law a bipartisan bill known as the Economic Growth, Regulatory Relief and Consumer Protection Act. The bill was designed to relieve some of the regulatory burden on community and regional banks and eliminated many of the Dodd-Frank compliance requirements imposed on banks with fewer than \$10 billion in assets (Ryan and Ackerman, 2018).

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (DFA) was passed as the result of financial market excesses that led to the financial crisis of 2007-2008 (Bordo and Duca, 2018). The stated purpose of DFA is:

“To promote the financial stability of the United States by improving accountability and transparency in the financial system, to end “too big to fail”, to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes.”

The DFA is a massive piece of legislation, with roughly 3,000 pages, 16 titles, 38 subtitles, and 541 sections. Not surprisingly, compliance with the legislation proved to be an expensive proposition, particularly for smaller banks. In a 2017 *The Wall Street Journal* interview, former White House National Economic Council Director Gary Cohn stated that regulatory costs imposed on banks were “literally hundreds of billions of dollars every year” (Bender and Palmetta 2017). In addition to the compliance costs, Bordo and Duca (2018) argue that the DFA has resulted in fewer loans to small business firms, reduced incentives for lenders to make very small loans to any borrowers, and ultimately reduced the viability of smaller banks that rely on such loans as a primary revenue source.

In a study of compliance costs by bank size in the post-DFA time period, Dahl, Meyer, and Neely (2016) find that compliance costs as a percentage of noninterest expenses at banks with assets of less than \$100 million is 8.7 percent, while the same expense ratio is only 2.7 percent for banks with assets of \$1 billion to \$10 billion. A similar 2013 study by the Consumer Financial Protection Bureau (ironically created by the DFA), finds that total compliance costs for deposit-related regulations range from 4 percent to 6 percent of retail deposit operating expenses for banks with assets less than \$1 billion, and 1 percent to 2 percent for banks with assets greater than \$1 billion. Finally, in a pre-DFA study, Gilbert (2007) shows that banks that consistently realize high earnings do so by keeping a low operating expense to income ratio. The regulatory compliance costs resulting from the DFA impacted small banks much more severely than large banks.

Another impact of the regulatory burden imposed by the DFA is the potential loss of relationship-based small business loans. Relationship lending is normally carried out by small banks that base their lending decisions less on a formal scoring rubric and more on their personal relationship with specific borrowers. DeYoung, Hunter, and Udell (2004) argue that relationship lenders typically do not rely on financial statements and collateral as much as they rely on their personal experience with potential borrowers. Stein (2002) argues that relationship-based “soft” information is favored by smaller institutions since it is not easily processed and communicated by larger institutions. These types of less formal loans suffer under the weight of the DFA compliance costs since they are primarily made by smaller

community-based banks and the ultimate victim is the small business firms who struggle to acquire the financing. Bordo and Duca (2018) confirm this by finding a significant downward trend in the small business share of commercial and industrial loans since the enactment of the DFA.

4. Methodology

The methodology for this analysis considers selected measures of endogenous factors that affect bank performance as measured by return on equity (ROE). The five independent variables used in the model are listed below with a brief explanation of the factor that the variable measures: Net Interest Margin, as a proxy for interest rates; Tier 1 Capital Ratio as a measure of government regulation and liquidity; Noninterest Income to Assets, as a measure of revenue diversification; Efficiency Ratio, as a measure of bank operational efficiency; and Net Loan to Total Assets, as a proxy for lending activity. ROE is the dependent variable. The full model (equation 1) measures the multivariate effects of the independent variables on changes in ROE.

$$\text{ROE} = \alpha + \beta_1(\text{Net Interest Margin}) + \beta_2(\text{Tier 1 Capital Ratio}) + \beta_3(\text{Noninterest income to Total Assets}) + \beta_4(\text{Efficiency Ratio}) + \beta_5(\text{Net Loans to Total Assets}) \quad (1)$$

To attempt to capture specific, directional effects before, during, and after the 2007-2008 financial crisis interruption, the secondary model (equation 2) employs dichotomous and counter variables to isolate time effects individually attributable to the independent variables. Separate regressions substitute each independent variable in the following equation in measuring these effects.

$$\text{ROE} = \alpha + \beta_1(\text{independent variable}) + \beta(\text{BEFORE}) + \beta(\text{CHANGE}) + \beta(\text{AFTER}) \quad (2)$$

Net interest margin is a measure of interest income a bank generates from loans relative to interest paid on savings or other deposit accounts. Although this metric is more difficult to achieve in a low interest rate environment, a positive value indicates more efficiency while a negative value indicates inefficiency. The Tier 1 Capital Ratio measures a bank's core equity in relation to the risk-based assets a bank holds and is a significant measure of a bank's financial strength. Non-interest income is earned from various fees, is measured as a percent of total assets, and becomes a more important source of bank income when interest rates are low. The Efficiency Ratio measures how well a bank uses its current performance to generating revenue. The ratio is expressed as expenses, excluding interest, divided by net income. A lower Efficiency Ratio is preferred since this indicates that either expenses are lower, revenues are greater, or some combination of the two. Net loans are the sum of a bank's total loans and real estate minus aggregate mortgages measured as a percent of total assets. Return on equity (ROE) is a measure of bank

earning as a percent of shareholder equity. Data were collected from Federal Deposit Insurance Corporation (FDIC) and compiled for years 2001 to 2018.³

This analysis utilizes a methodology that is similar to the interrupted time-series analysis model used by Kellough (1990); Neter, Wasserman, and Kutner (1990, pp. 370-375); Miller and Pierce (1997); Landry, Boozer, and Lowe (2012); and Boozer, Staples, Lowe, and Landry (2016). As Kellough surmised, the limited number of pre and post data points suggests that time-series is preferred to another modeling technique known as autoregressive integrated moving average (ARIMA) that could have otherwise been used as a statistical technique. The interruption for this analysis is the change in economic conditions surrounding 2007-2008 financial crisis. We use 2008 as the fulcrum point. The model examines whether economic conditions affect the relationship between bank performance, relative to institution size (small or large), and operational variables. Directional changes are an essential component of this measure, to the extent that such change occurs before, concurrent with, or after a change in economic conditions.

Using backwards regression as a variation of stepwise regression and based on the statistical significance of each variable, variables are added or removed from the model. The last iteration represents the best fit of the data in the regression. All variables are initially included in the full model. Next, each independent variable is measured with each counter variable included. Independent and counter variables are removed as necessary between iterations. Data are entered in a semi-annual format for the seventeen years from 2001 to 2018 for a total of 35 periods: six years before the change in economic conditions; the contemporaneous year of the change; and ten years after the change.

Bank size is considered independently. Five independent variables are employed. A counter variable (BEFORE) is coded as one for the first year of the analysis, two for the second year, three for the third year, and four for the fourth year, etc. The second independent variable (CHANGE) is dichotomous and is coded zero for the six years of analysis before and including the year of the change in economic conditions, and one for observations for the ten years after the change year. The remaining independent variable (AFTER) is a post-intervention counter coded as zero for observations six years prior to and including the contemporaneous year of change of economic conditions, one for first year after the change, two for the next year, three for the next year, and so forth.

The intercept for the multiple regression equation describes the value of the dependent variable at the beginning of the time period. The coefficient, or slope, for the BEFORE variable describes the annual increase or decrease in the dependent variable that occurred before the change in economic conditions. The estimated increase or decrease in those years is unaffected by the counter AFTER variable. The

³ Appendix 1 provides descriptive summary information for the banks within the different size categories as of year-end 2006, 2010, 2014 and 2018.

coefficient for CHANGE estimates the one-time increase or decrease in the value of the independent variable that came about in the first year following the change in economic conditions. The coefficient of the AFTER variable estimates the increase or decrease in slope that occurred after the change in economic conditions. The coefficient for the counter AFTER variable must be added to the coefficient for BEFORE to get the estimated slope after the change. Table 1 summarizes the independent variables within the model.

Table 1: Model Variables

Counter Variables	
BEFORE	Measures changes in bank performance variable before, concurrently, and after the change year, 2008, of the financial crisis, respectively
CHANGE	
AFTER	
Bank Performance Variables	
Net Interest Margin	Interest income received relative to interest paid
Tier 1 Capital Ratio	Core equity and assets to total assets
Noninterest Income	Fees and other sources of income separate from interest
Efficiency Ratio	Use of assets in generating revenue
Net Loans	Sum of loans minus mortgages

Multivariate statistical output for the model is presented in Table 2 for small banks and in Table 3 for large banks. Output is categorized for the full model for each size bank, small and large, and for each statistically significant bank performance variable when measured with the three counter variables. Each performance variable is entered individually, along with the counter variables, with variables removed sequentially in finding the best fit for the model in terms of adjusted R square. Using the three counter variables introduces the possibility of autocorrelation that could violate the premise of OLS regression in predicting output (Miller & Pierce, 1997). Based on the Durbin and Watson (1950) test statistic, autocorrelation does not appear to be present.⁴

Under the full model for small banks each, independent variable is significant except net interest margin. Noninterest Income and Tier 1 Capital Ratio positively impact ROE, while Net Loans and Efficiency Ratio have a negative relationship. When the three counter variables are included, only two performance variables – Net Loans and Efficiency Ratio – are significant for small banks. The full model for small banks shows that Net Loans are negatively correlated with Return on Equity (ROE); a relationship holds when isolated as a performance variable and measured with each counter variable, but the effect of Net Loans on ROE is not as strong. The model shows that CHANGE and BEFORE have a negative impact, while AFTER has a

⁴ Field (2009) states that DW values higher than 3.0 and lower than 1.0 are cause for concern.

positive impact suggesting that the effect of Net Loans on ROE is negative before and during the Financial Crisis but is positive after the crisis ended.

The Efficiency Ratio shows a negative impact on ROE when measured independently with the counter variables. Since a lower Efficiency Ratio indicates better performance, a larger negative value shows the increased impact on ROE. The variable AFTER is statistically significant but CHANGE and BEFORE are not. This suggests that small banks are increasingly more affected by expenses in relation to revenue. AFTER is not a factor on ROE before and during the Financial Crisis.

Table 2 Small Banks

Full Model			
Variable	Coefficient	Durbin-Watson	R-square
Constant		1.546	0.953
Noninterest income to asset	0.111**		
Net Loans to TA	-0.389***		
Efficiency Ratio	-0.987***		
Tier 1 Capital Ratio	0.129***		
Net Loans			
Variable	Coefficient	Durbin-Watson	R-square
Constant		2.395	0.847
Net Loans to TA	-0.450***		
CHANGE	-1.222***		
AFTER	1.434***		
BEFORE	-0.758***		
Efficiency Ratio			
Variable	Coefficient	Durbin-Watson	R-square
Constant		0.527	0.847
Efficiency Ratio	-0.936***		
AFTER	0.252***		

Dependent variable: Return on Equity, ***Indicates significance at the 0.01 level, **Indicates significance at the 0.05 level.

Examining Table 3, for large banks all of the independent variables except Net Interest Income were statistically significant and positively related to ROE. Interestingly, Net Loans while positively related to ROE for large banks in the full model, the variable is negatively related when the counter variables are included. This suggests that while Net Loans positively impact ROE after the Financial Crisis, the effect of this variable was negative before and during the crisis. The strong, positive directional impact of AFTER in this iteration of the model supports these findings.

The Tier 1 Capital Ratio is statistically significant when measured with each counter variable. Directional impact is positive in both the full model and with counter variables, although the latter is slightly less significant. The impact of the

Tier 1 Capital Ratio was inverse during the Financial Crisis and before, but positive after and in succeeding years.

Table 3 Large Banks

Full Model			
Variable	Coefficient	Durbin-Watson	R-square
Constant		1.873	0.767
Noninterest income to asset	0.887***		
Net Loans to TA	1.018***		
Efficiency Ratio	0.536***		
Tier 1 Risk Based Cap Ratio	1.024***		
Net Loans			
Variable	Coefficient	Durbin-Watson	R-square
Constant		1.179	0.760
Net Loans to TA	-0.619**		
CHANGE	-1.504***		
AFTER	1.915***		
BEFORE	-1.338***		
Efficiency Ratio			
Variable	Coefficient	Durbin-Watson	R-square
Constant		1.037	0.773
Efficiency Ratio	0.261***		
CHANGE	-0.774***		
AFTER	1.634***		
BEFORE	-1.380***		
Tier 1 Capital Ratio			
Variable	Coefficient	Durbin-Watson	R-square
Constant		1.901	0.814
Tier 1 Capital Ratio	1.146***		
CHANGE	-1.466***		
AFTER	1.010***		
BEFORE	-1.145***		

Dependent variable: Return on Equity ***Indicates significance at the 0.01 level, **Indicates significance at the 0.05 level.

5. Results Examined and Conclusion

The results show differing effects for small banks relative to large banks and also indicate increasing efficiencies in the aftermath of the Financial Crisis, with one notable exception: small banks are significantly more impacted by expenses in relation to revenues. This relationship worsens after the financial crisis. Unlike findings by Garel, Martin-Flores, and Petit-Romec (2020) who surmise that prior performance is an indicator of future performance, our results suggest that

performance overall may have improved since 2008 as most performance metrics support positive changes in the aftermath of the crisis.

That the performance of small banks would differ from large banks is not unexpected. Economies of scale suggests that larger banks should be more efficient in producing ROE. This outcome is supported by the results that find a positive relationship between each performance variable and ROE. Small banks do not typically enjoy the benefits of these efficiencies, nor do they typically possess a loan portfolio of a sizeable magnitude. Of the four performance variables that are statistically significant for both small and large banks – Noninterest Income, Tier 1 Capital Ratio, Net Loans, and Efficiency Ratio – the positive, directional relationship for each variable with large bank ROE was expected. For small banks, fee income identified by Noninterest Income is positively related to higher ROE. Similarly, core equity and assets as a percent of total assets, identified as Tier 1 Capital Ratio, is also positively related to ROE. The coefficient for small banks was smaller for these variables relative to large banks, suggesting that large banks are more adept at producing a higher ROE. Bordo and Duca (2018) would argue that these results reflect the regulatory burden of the Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA), where small banks are disproportionately constrained. The results from our model concur.

The negative relationship for Net Loans and Efficiency Ratio with ROE for small banks further supports Borda and Duca. That the loan portfolio of small banks is more costly to maintain is detrimental to return on equity. However, both small and large banks have improved after the Financial Crisis.

Differences between these directional measures for performance is important. For large banks NET LOANS is a strong overall indicator of ROE, although the directional impact is negative before and during the Financial Crisis, but positive in the full model. A large, negative coefficient for the CHANGE variable for small banks suggests that anticipatory fears attributable to the crisis and the ensuing DFA regulations may have played a role. A large, positive coefficient for this variable in the years after the Financial Crisis for small and large banks could reflect those regulatory burdens may not have been as onerous as expected.

A similar argument could be made from the results for Efficiency Ratio. For large banks, the coefficient is positive overall, with particular strength in the years after the crisis. A positive coefficient indicates that large banks are not as impacted by higher regulatory expenses in producing ROE. For small banks, the Efficiency Ratio shows a smaller positive movement in the years after the crisis, but it is overall negatively related to ROE and was not a significant indicator before or during 2008. Small banks are disproportionately impacted by expenses, a relationship that is exacerbated by DFA compliance. A low Durbin-Watson coefficient, however, raises questions of the extent that this performance measure is accurate or otherwise depicts autocorrelation in the model for small banks.

In summary, our findings support that small banks struggle to overcome greater regulatory burdens in producing ROE. This was especially evident in the period after the Financial Crisis. These results add to the existing literature in showing that while small banks are indeed burdened by regulatory compliance, a financial shock such as the Financial Crisis changes the dynamics in measuring performance over time. A large net loan portfolio and net interest income are better utilized by large banks, although a positive coefficient for institutions of both sizes after the Financial Crisis reflects managerial improvements that Stultz (2015) hypothesized. Referring to the t-statistic for the CHANGE variable for net loans, the shock of the crisis was twice as severe for small banks. Small banks must strive to better manage current performance and expenses as better efficiency is a strong predictor of improved ROE.

6. Future Research

Bank performance aligns with risk in prior research (Stulz, 2015) and offers a basis for additional research. Recent coronavirus pandemic conditions and regulatory and political changes have created turbulence in banking relationships. To the extent that post Financial Crisis trends are challenged represent future research opportunities

In a political climate where industry regulation may re-emerge, banking relationships may occupy an increasingly important role in loan decisions, especially to the extent that small banks are impacted in gathering and evaluating information as DeYoung, Hunter, and Udell (2004) investigated. Research in this area could examine whether small banks potentially reject good loans due to lack of information how the existence or fear of regulatory compliance shapes those decisions.

Further, how could COVID-19 affect lending decisions; would the impact be different for small banks relative to large banks? Large banks could have an advantage in marketing to customers and reviewing portfolios as smaller banks seek to survive and reduce the risk of making a nonperforming loan. Various parallels should emerge with coronavirus disruptions and those disruptions studied by Chava and Purnanandam (2011), where financial shocks propagate from one economic area to another through the banking system.

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APPENDIX 1: BANK DESCRIPTORS: 2006, 2010, 2014, and 2018

2006			
	Avg. all	Avg. <100M	Avg. >10B
Number Of Institutions	7397	3243	88
Number of Employees	263	19	15263
Total assets	\$1,365,113,141	\$52,469,274	\$88,698,273,818
Total equity capital	\$139,317,741	\$6,678,638	\$8,909,260,534
Tier 1 (core) risk-based capital	\$102,662,141	\$6,534,170	\$6,161,963,170
Tier 2 risk-based capital	\$27,205,554	\$381,024	\$2,041,849,341
Derivatives	\$17,867,881,007	\$43,044	\$1,500,819,732,466
2010			
	Avg. all	Avg. <100M	Avg. >10B
Number Of Institutions	6519	2323	86
Number of Employees	295	17	16259
Total assets	\$1,851,425,464	\$56,732,919	\$113,792,405,279
Total equity capital	\$209,310,863	\$6,453,561	\$13,031,691,884
Tier 1 (core) risk-based capital	\$158,392,618	\$6,213,471	\$9,460,817,756
Tier 2 risk-based capital	\$34,832,505	\$419,350	\$2,400,727,849
Derivatives	\$35,602,784,724	\$88,916	\$2,697,769,947,802
2014			
	Avg. all	Avg. <100M	Avg. >10B
Number Of Institutions	5607	1640	91
Number of Employees	341	16	15445
Total assets	\$2,581,533,357	\$58,773,718	\$132,462,141,088
Total equity capital	\$287,873,719	\$6,918,052	\$14,697,989,747
Tier 1 (core) risk-based capital	\$232,506,029	\$6,665,717	\$11,608,791,505
Tier 2 risk-based capital	\$27,157,316	\$399,728	\$1,459,963,912
Derivatives	\$39,696,419,748	\$130,109	\$2,444,976,429,308
2018			
	Avg. all	Avg. <100M	Avg. >10B
Number Of Institutions	4715	1133	123
Number of Employees	412	15	12239
Total assets	\$3,547,847,928	\$59,446,407	\$116,427,859,350
Total equity capital	\$401,282,933	\$7,668,315	\$13,108,084,585
Tier 1 (core) risk-based capital	\$331,615,027	\$7,641,545	\$10,606,649,545
Tier 2 risk-based capital	\$35,365,467	\$403,835	\$1,204,202,715
Derivatives	\$37,752,888,367	\$92,985	\$1,446,211,104,260

Avg. all=the average of all insured commercial banks

Avg. <100M=average of all insured commercial banks with Total Assets < \$100 Million

Avg. >10B= average of all insured commercial banks with Total Assets > \$10 Billion

Number of Institutions=the actual number of insured commercial banks as reported by the FDIC

All other data items are the average per insured commercial bank for each category

We note that the number of insured banks overall and the number of insured banks in the <\$100 Million category have declined dramatically since 2006. At the same time, the number of employees per bank has increased overall, but declined in the >\$10 Billion category. Total Assets, Total Equity Capital, Tier 1, and Tier 2 Capital have increased overall from 2006. The notional value of Derivatives has increased substantially for all banks and for the <\$100 Million category while it has fluctuated substantially for the >\$10B category but ended 2018 at roughly the same level per bank as in 2006.