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Filene Research Institute

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*Progress is the constant  
replacing of the best there is  
with something still better!*

— *Edward A. Filene*



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The author would like to thank the International Association for the Economics of Participation conference participants at Mondragon, Spain; Charles Elliott of the Mississippi Credit Union Association; and George A. Hofheimer of the Filene Research Institute for astute comments and assistance. A number of credit union and bank presidents and staff also kindly contributed time, insight, and direction to this research.





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By George A. Hofheimer,  
*Chief Research Officer*

Millions of lives were dramatically changed by Hurricane Katrina, the worst natural disaster in U.S. history. Numerous businesses were wiped out. People lost their homes, their livelihoods, their lives. Nearly two years after Katrina, some sectors of the affected region have proved to be more resilient than others. Through the able data collection and analysis of Mark Klinedinst, an economics professor at the University of Southern Mississippi, this report examines the plight of credit unions in the face of this disaster. Klinedinst compares credit unions with banks in southern Mississippi and in New Orleans at both the aggregate and case study levels. Klinedinst argues that analyzing credit unions under this kind of duress may be useful in identifying cooperative strengths and weaknesses that are not apparent under normal circumstances. These findings may assist credit unions with larger contingency planning as it relates to disaster preparedness.

### What Did the Researcher Discover?

Since Katrina struck, banks and credit unions have generally recovered and even thrived, partly due to the large increase in assets in the affected areas, but mainly due to the hard work of employees and members and countless volunteer hours. It is important to note that the bank and credit union comeback is not evenly distributed. Klinedinst conducts a variety of statistical regressions and discovers that the greatest predictors of institutional recovery are size (bigger is better) and location (Mississippi is more favorable than New Orleans). For example, Klinedinst reports the following findings from the period between May 2005 and May 2006:

- Sixteen credit unions ceased operations (merged into other institutions). Almost all of these credit unions were in the New Orleans area.
- The number of bank employees increased by 9.8%, while the number of credit union employees decreased by 4.1%. Once again, a good deal of the credit union decrease occurred in and around New Orleans.
- The combined assets of credit unions and banks in the affected area increased by 27.6%.
- Return on assets increased 107.4% for Mississippi credit unions and 162% for Mississippi low-income credit unions, compared to only 8.8% for Mississippi banks.
- Return on assets increased 22.3% for New Orleans banks but decreased by 164.1% for New Orleans low-income credit unions and 107.6% for New Orleans credit unions.

In addition to the hard numbers, we learn through interviews on the ground that credit unions received quite a bit of assistance from other credit unions, nongovernment local organizations, and national credit union associations. The evidence indicates that banks mainly received nongovernment assistance from other branches of the same institution that were not heavily impacted by the storm, but not from other banking institutions. The social network of credit unions, then, seems to be at least partially responsible for their comeback, as represented by a 2.3% increase in credit union membership in the affected areas of southern Mississippi and New Orleans between May 2005 and May 2006.

## Practical Implications

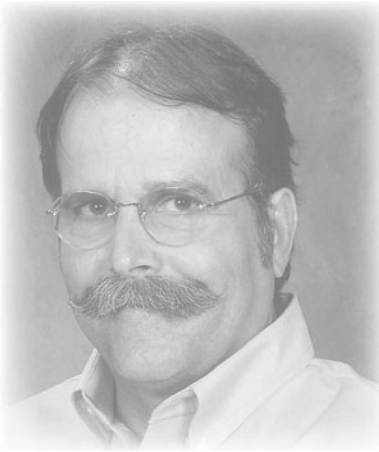
Credit unions and banks suffered enormously from physical damage, the loss of surrounding businesses, and employee personal losses caused by Hurricane Katrina. Institutions in New Orleans have a particularly hard road ahead, given the extent of the damage and the uncertainty surrounding the rebuilding plans. Unfinished local infrastructure, higher insurance rates, and building costs all represent hurdles to businesses and homeowners in both southern Mississippi and New Orleans.

This research is a small but significant contribution to the literature on organizational resilience in the wake of huge external disasters. While some of the key lessons learned from this catastrophe involve contingency planning and emergency operations, one of the most practical lessons credit unions can take away from this study has to do with understanding the potential strength of their cooperative structure in the face of wild-card, external events like hurricanes and terrorist attacks. Credit unions have the opportunity to learn from past experiences and apply these lessons going forward. (See the sidebar for a brief overview of effective disaster planning practices.)

### ELEMENTS OF GOOD DISASTER PLANNING

- Develop a plan based on various loss scenarios.
- Keep the plan up to date.
- Conduct practice drills.
- Ensure all data processing systems are backed up.

*Source: CUNA Mutual Group.*



### Mark Klinedinst, PhD

Mark Klinedinst is a professor of economics at the University of Southern Mississippi. He received his PhD from Cornell University in 1987. He has published articles in the *Journal of Comparative Economics*, the *European Economic Review*, and a number of other journals. In 2006 he edited a book with Panu Kalmi: *Participation in the Age of Globalization and Information* (Amsterdam: Elsevier). He won the University Excellence in Teaching Award in 1991. He has received grants and has been a consultant for a number of organizations, including the National Science Foundation, the United Nations, the U.S. Department of Labor, the U.S. Department of Education, the U.S. State Department, and the World Bank. Dr. Klinedinst has also served as chair of the Department of Economics, Finance, and International Business at the University of Southern Mississippi. Currently he serves on the board of directors of the International Association for the Economics of Participation and the Hub City Farmers' Market, and on the Indian Springs Farmers' Cooperative. His research interests include transition economics, industrial efficiency, credit unions, employee ownership, and econometrics.

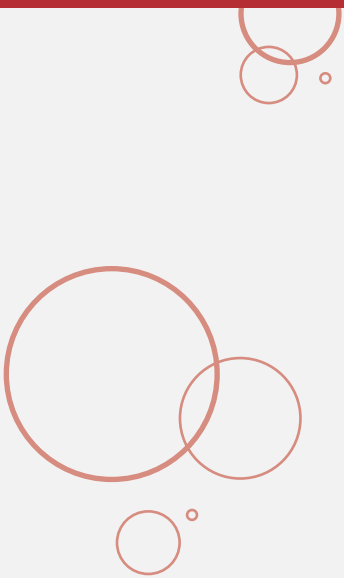




## CHAPTER 1

### Introduction to the Worst Natural Disaster in U.S. History

*Hurricane Katrina hit the Gulf Coast in August 2005, causing the worst-ever disaster in the United States in terms of total economic damages.*







It was a sad time. I pray for those hundreds of mothers who to this day have not found their children.

*—A usually happy and confident teacher,  
quoted on June 22, 2006, in Hattiesburg, Mississippi.*

Hurricane Katrina bore down on Louisiana and Mississippi with a power that was unexpected by many. The size of the storm brought devastation far inland across several states. The death toll stood at 1,810 as of August 2006 (Louisiana Department of Health and Hospitals 2006).<sup>1</sup> Although not the worst U.S. disaster in terms of the number of deaths, it is the worst in terms of total economic damages: Conservative estimates of insured damage are \$45 billion (B), compared with approximately \$21B for the September 11, 2001, terrorist attacks (Insurance Information Institute 2006), and federal government assistance through 2008 was at least \$90B (U.S. Congressional Budget Office 2006). This report seeks to determine which firms have shown the most resilience in the face of this tremendous devastation.

The literature on participative firms often suggests that firms with more participation are stronger along a number of dimensions, even more so if they are part of a network that fills the role of a “supporting structure.”<sup>2</sup> Having lived through this disaster myself, I have heard a number of anecdotes that seem to support this hypothesis of cooperative firms being able to come back after hard times. In this report I try to put some hard numbers behind the various rebuilding experiences of firms and root out what may be a hidden source of strength. Credit unions may find these experiences helpful in developing or evaluating their disaster preparedness or contingency plans.

1 The death toll is quite controversial. As with other natural disasters (e.g., the 1906 San Francisco earthquake), business and community leaders might want to keep the death toll low, and underreporting may occur. For example, a number of patients who died in hospitals that lost power were not counted as storm victims.

2 For example, see Klinedinst and Rock 1993, and also Wright 1991, written by the cofounder and manager of North Carolina’s Self-Help Credit Union.

*The physical destruction inflicted by Katrina was overwhelming.*

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Hurricane Katrina's main impact was felt in the New Orleans area and the coastal region of Mississippi. The number of businesses in the most severely hit areas was about 22,000. More than 350,000 homes were destroyed, and 137,000 had major structural damage (EconSouth 2005). In Louisiana alone, 1.1 million buildings were without power (Brinkley 2006, 386). The number of people who fled, conservatively estimated at 1.36 million (DeParle 2005), qualifies this as the largest diaspora in American history, with the possible exception of the Civil War. Many people moved to nearby cities where housing could be found. Hence, some cities close to the disaster area, such as Baton Rouge and Hattiesburg, saw dramatic increases in population.<sup>3</sup> These migrations to areas that were themselves impacted by the storm (e.g., winds in Hattiesburg were recorded at over 130 mph, or 208 kph) complicate the analysis of firms in the afflicted areas. Small regional variations could mean a dramatic difference in the extent of damage and the restoration of basic services and infrastructure. In order to control for these diverse factors and for the lack of reliable data covering the entire impacted area, I limit the focus of this report to the coastal areas of Mississippi and the city of New Orleans. While there are many different types of cooperatives in these areas (e.g., electric, worker, farmer,

3 A similar migration occurred after the 1900 hurricane in Galveston, Texas. Galveston was the largest city in Texas before the storm; after the storm, nearby Houston grew dramatically.

and credit unions), this report focuses on credit unions and their traditional counterparts, commercial banks.

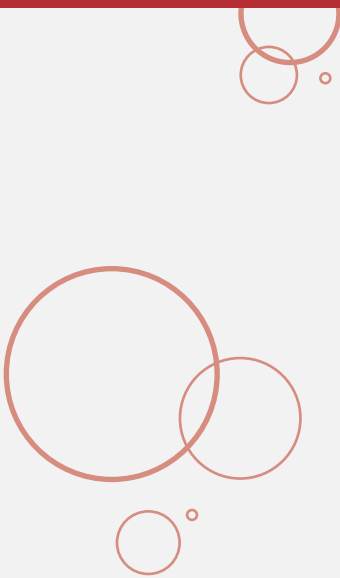
The next chapter looks at theories of firm resilience. Chapter 3 presents the data and discusses the results. Chapter 4 discusses policy implications and future research.



## CHAPTER 2

### Theories on Resilience in the Corporate and Cooperative Literature

*A number of different measures can be used to gauge the strength of a comeback following a disaster. Organizations that are part of a network and have internal cohesion are more likely to stage a strong comeback after a disaster like Hurricane Katrina.*





Corporate success has been the subject of numerous studies and analyses, with topics ranging from internal dynamics such as leadership, teamwork, and compensation to external macro events that can derail the best-laid plans. Given the magnitude of the disaster that Hurricane Katrina was, a number of factors came into play that are not often taken into account when considering business survival. The devastation to infrastructure, employee homes, and local markets subjected companies to stresses that many businesses never face. The sheer magnitude of the damage also had a positive side in that many supportive resources were brought in that firms normally would not have access to. Besides insurance and government funds, private philanthropy—estimated at approximately \$3B within three months of the storm (Lawrence 2006)—played a crucial role. Often this support was in kind, which was especially helpful when basic services were hard to come by.

The value of in-kind aid is particularly difficult to estimate. Not only did volunteers come from all over the country to help, but neighborhoods and firms also helped one another. Stories of looting, fraud, and shootings received a good deal of publicity, but many companies and neighborhoods witnessed a tremendous amount of volunteer effort. The statistics on these “random acts of kindness” (sharing food and water, helping with repairs, providing housing, etc.) are spotty at best, but their effects immediately after the storm were real and significant. A number of companies helped out their employees—continuing to pay wages and providing necessities and housing (Horsley 2005)—or other individuals and companies in the area.

This assistance is often a reflection of internal firm cohesion (Vanek 1970; Horvat 1979), team atmosphere, and network relations (Hurlin 2006; Halary 2006). Organizations that have internal cohesion and are part of a supportive network are not only more likely to be tougher competitors, but also able to make a comeback after a disaster

like Hurricane Katrina. Support organizations (such as the Mississippi Credit Union Association, in the case of Katrina) can often provide resources to help keep institutions on their feet. A growing literature in banking, economics, and other fields points to “social capital” as a crucial but often overlooked element of the success of businesses and the communities in which they operate.<sup>4</sup> This social capital infrastructure, if properly developed, allows companies with appropriate managerial procedures and physical and human capital to be successful and, in the post-Katrina environment, to have a higher degree of resilience.

This social capital infrastructure, if properly developed, allows companies with appropriate managerial procedures and physical and human capital to be successful and, in the post-Katrina environment, to have a higher degree of resilience.

A number of different measures can be used to gauge the strength of a comeback following a disaster. If we let  $y$  be the variable gauging the firm outcome, we can write the following equation:

$$y = a + b_1x_1 + \dots + b_kx_k + e.$$

Typical dependent variables might be profits or return on assets (ROA). The function described in the equation is a linear relation between the variables on the right-hand side and those on the left-hand side, or the dependent variable. The  $a$  in the equation is the intercept and is typically not of great statistical significance.<sup>5</sup>  $b_i$  (the difference between  $b_1$  and  $b_k$ ) represents the coefficients on either control variables (e.g., region, size) or policy variables that may impact on the dependent variable. A positive  $b_i$  indicates a positive correlation between the independent variable and  $y$ , the dependent variable.  $e$  is the error term that captures random unexplained influences on the dependent variable.

To account for the relatively short period since the storm, to avoid complications arising from accounting variability, and to take into consideration various firm indicators, a number of dependent variables are used in this report to indicate institutional vitality—e.g., asset growth in the nine-month period following the storm, ROA, and assets per employee.<sup>6</sup> These measures had to be available for both credit unions and banks. Financial institutions, especially credit unions, have many ways to gauge success in the short and long run, so the measures used here are broad and encompassing. The

4 See, for example, World Bank 2007, Coleman 1988, Becker and Murphy 2000, and Adam et al. 2005.

5 The intercept may be far away from where most of the data are located, and hence a small change in the slope parameters would cause a large change in the estimate of the intercept.

6 See, for example, Greer and Rhoades 1977, Lieberman and Asaba 1997, and Park and Weber 2006.

independent variables are factors that might help explain the strength of the dependent variables: the age of the institution, size, number of employees, location, etc. Both dependent and explanatory variables were picked not only for their ability to indicate resilience and strength, but also because they can be reliably quantified through interviews, surveys, and official reports.

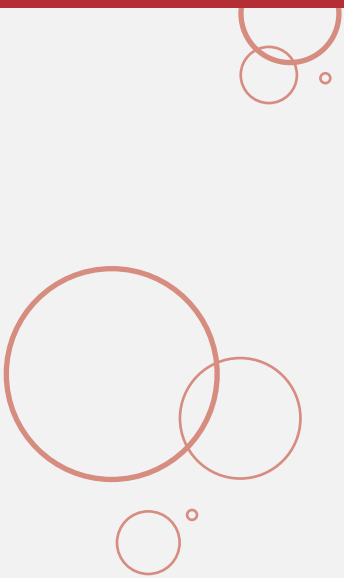




## CHAPTER 3

### Empirical Results

*Banks and credit unions have generally recovered and even thrived, partly due to the large increase in assets in the affected areas, but mainly due to the hard work of employees and members and countless volunteer hours.*







The total number of credit unions in the area impacted by the storm was 63—41 in New Orleans and 22 in the 12 Mississippi counties hit hardest by the storm.<sup>7</sup> There were also 28 banks in the area—13 in New Orleans and 15 in southern Mississippi (see Figure 1). By May 31, 2006, almost a year later, 16 credit unions no longer operated as independent institutions in the same area; typically they either moved or merged. New Orleans credit unions saw the biggest drop, with a total of 15 fewer credit unions (7 stopped operations or merged, and 8 moved out of New Orleans). Mississippi lost only one credit union during this period, through a merger, but this was already in the works prior to the storm, as was the case with some of the New Orleans credit unions. These closures are also reflective of the national trend of credit union mergers, with approximately 320 mergers taking place every year.

By May 31, 2006, almost a year later, 16 credit unions no longer operated as independent institutions in the same area; typically they either moved or merged.

The total number of banks increased by one: A new bank, First NBC Bank, opened in New Orleans in May 2006.

*Figure 1: Number of Institutions in Sample*

	May 31, 2005	May 31, 2006	Percentage change
<b>Credit unions: sample total</b>	63	47	-25.4
<b>Mississippi</b>	22	21	-4.5
<b>New Orleans</b>	41	26	-36.6
<b>Banks: sample total</b>	28	29	3.4
<b>Mississippi</b>	15	15	0.0
<b>New Orleans</b>	13	14	7.7

<sup>7</sup> The counties in Mississippi were Hancock, Harrison, Jackson, Pearl River, Stone, George, Lamar, Forrest, Perry, Greene, Jones, and Wayne.

The total number of employees in the sample increased by 8.9%.<sup>8</sup> Banks gained 9.8% more employees while credit unions lost 4.1%, with New Orleans credit unions experiencing an 8.5% reduction in employees and low-income credit unions in New Orleans seeing an almost 26% reduction in the number of employees. The figures for New Orleans are not too surprising, given that roughly one-third of the city’s jobs were gone almost a year after the storm (EconSouth 2006). The figures for banks may be on the high side, since some of the banks are quite large and have several offices outside the affected area.<sup>9</sup> Low-income credit unions in Mississippi experienced no change in employment.<sup>10</sup>

The combined assets of the institutions in the sample were more than \$42B in 2005 and grew 27.6% in one year to almost \$54B. Banks in the sample had a much larger average asset size than credit unions—about \$1.9B, vs. approximately \$52.5 million (M) for credit unions, which reflects the national averages of \$1.2B for banks and \$81M for credit unions. Somewhat surprising is the overall strength in asset growth of 27.6%. Given the devastation, it seems odd that about nine months after the storm, assets were over a quarter higher than they were three months before the storm. Banks and credit unions in the sample reported similar asset growth of just over 27%. The most reasonable explanation for this surge in assets is that the funds coming in from insurance claims, government assistance, etc., were available but had not yet been used. A number of bank and credit union officers

*Figure 2: Number of Credit Union and Bank Employees*

	May 31, 2005	May 31, 2006	Percentage change
<b>Credit unions and banks: sample total</b>	13,118	14,281	8.9
<b>Credit unions: sample total</b>	873	837	-4.1
<b>Mississippi</b>	685	665	-2.9
<b>New Orleans</b>	188	172	-8.5
<b>Mississippi, low income</b>	30	30	0.0
<b>New Orleans, low income</b>	39	29	-25.6
<b>Banks: sample total</b>	12,245	13,444	9.8
<b>Mississippi</b>	2,436	2,385	-2.1
<b>New Orleans</b>	9,809	11,059	12.7

8 Data from this point forward are for banks and credit unions that survived.

9 Later in the study three of the largest banks were excluded from some statistical analyses as outliers.

10 Low-income credit unions are defined as credit unions typically with a criterion where at least 80 percent of the members have incomes at or below the median household income. See NCUA Rules and Regulations Section 701.34(a)(2). This influx of assets caused hardship on some credit unions trying to avoid low net worth ratios; see, for example, NFCDCU 2006.

noted that high insurance rates, higher land prices making some homeowners sell to developers, and uncertainty as to whether the infrastructure and neighborhood would come back have led to large deposits being left at financial institutions. Low-income credit unions, as might be expected, have lower asset growth than their counterparts.

Encouragingly, membership in credit unions in the study area grew 2.3%, to 358,016. This increase was largely due to the strength of the Mississippi credit unions, since New Orleans credit union membership actually dropped 3.7%. This difference in membership growth rates can be explained in part by the fact that some areas in Mississippi that are on higher ground

took in refugees from the New Orleans area and were quicker to rebuild. This observation is supported by the fact that the

Encouragingly, membership in credit unions in the study area grew 2.3%, to 358,016.

potential membership base in the Mississippi area grew by 11.6%, while the New Orleans potential membership base declined by 9.8%.

The largest bank in Louisiana at the time Katrina struck, Hibernia, reported that 107 of its 321 branches were impacted by flooding or storm damage (CUNA 2005a). ATMs were lost all over the storm

*Figure 3: Credit Union and Bank Assets*

	May 31, 2005	May 31, 2006	Percentage change
<b>Credit unions and banks: sample total</b>	\$42,220,160,825	\$53,866,198,457	27.6
<b>Credit unions: sample total</b>	\$2,020,923,825	\$2,572,636,457	27.3
Mississippi	\$1,636,170,398	\$2,088,736,352	27.7
New Orleans	\$384,753,427	\$483,900,105	25.8
Mississippi, low income	\$36,567,472	\$40,291,352	10.2
New Orleans, low income	\$43,627,712	\$52,711,452	20.8
<b>Banks: sample total</b>	\$40,199,237,000	\$51,293,562,000	27.6
Mississippi	\$5,945,826,000	\$7,794,418,000	31.1
New Orleans	\$34,253,411,000	\$43,499,144,000	27.0

*Figure 4: Number of Credit Union Members*

	May 31, 2005	May 31, 2006	Percentage change
<b>Sample total</b>	350,096	358,016	2.3
Mississippi	280,253	290,754	3.7
New Orleans	69,843	67,262	-3.7
Mississippi, low income	11,283	11,302	0.17
New Orleans, low income	13,603	13,254	-2.6

area. One company reported losing 114 of its 250 bank ATMs (CUNA 2005b). The average damage reported on surveys was \$119,200, which is probably about where the median institution stood, with quite a number experiencing much greater losses.<sup>11</sup> Most of the reported aid came from nongovernment sources. As mentioned earlier, nongovernment aid, though difficult to quantify, was

substantial—the mean estimates reported on the surveys were \$5,800 and 56.4 volunteer hours in the year following Katrina. A number of respon-

The top 10 observations had higher growth in assets and higher growth in potential credit union members.

dents emphasized the importance of setting up emergency support prior to a disaster. This support can take the form of redundant systems for hardware and financial resources—e.g., walkie-talkies, computers, cell phones, generators, cash, affiliations or partnerships over a wide geographical area, and off-site storage of e-mail addresses—as well as services for personnel, such as counseling, emergency shelters, ready-to-eat meals, and first aid.

An overall measure of health is ROA, which showed an overall decline of 15.2%. Banks and Mississippi credit unions in particular saw an increase in ROA, but New Orleans credit unions had negative ROA growth.

A comparison of the top 10 observations of ROA versus the bottom 10 reveals that overall, credit unions were in the top 10 according to their percentage in the sample, but were overrepresented in the bottom 10, as expected given the situation in New Orleans discussed above (see Figure 6). The top 10 observations had higher growth in assets and higher growth in potential credit union members.

Figure 8 shows regressions with asset growth one year after Katrina. Employee growth is consistently estimated to be correlated with asset growth in the four specifications listed. Larger

*Figure 5: Number of Potential Credit Union Members*

	May 31, 2005	May 31, 2006	Percentage change
Sample total	1,437,384	1,568,660	9.1
Mississippi	1,273,537	1,420,829	11.6
New Orleans	163,847	147,831	-9.8
Mississippi, low income	50,850	50,850	0.0
New Orleans, low income	49,495	36,250	-26.8

11 Only the five respondents who gave precise estimates of damage were used in this estimate. Others indicated that they had significant damage but did not offer an exact figure.

*Figure 6: Comparison of the Top 10 Observations of ROA versus the Bottom 10 for 2006*

Variable	Top 10 institutions	Bottom 10 institutions	Institutions overall
ROA	2.86	-2.90	0.862
Percent credit unions	60	80	64
Percent low-income credit unions	30	30	65
Percent in Mississippi	60	10	47
Age of institution	42	53	53
Change in number of employees (May 2005–May 2006)	-7%	-16%	-0.07%
Change in assets	22%	-0.1%	0.159%
Change in number of members (credit unions only)	-2.8%	-9.1%	-2.8%
Change in number of potential members (credit unions only)	2.0%	-14.2%	-3.8%
Membership as a percentage of potential membership (credit unions only)	58%	60.2%	58%

*Figure 7: Credit Union and Bank ROA (Percent)*

	May 31, 2005	May 31, 2006	Percentage change
ROA	1.02	0.86	-15.2
Banks	1.19	1.35	14.2
Credit unions	0.92	0.58	-37.3
Mississippi			
Banks	1.34	1.46	8.8
Credit unions	0.72	1.50	107.4
Low-income credit unions	0.73	1.92	162.0
New Orleans			
Banks	1.01	1.23	22.3
Credit unions	1.06	0.08	-107.6
Low-income credit unions	1.09	-0.70	-164.1

firms are associated with quicker growth, even though three firms were dropped as outliers for analysis here because of their large size relative to the total sample.<sup>12</sup> Credit unions are insignificantly different relative to commercial banks. The age of the institution also appears to be unimportant, and the overall explanatory power of these specifications is low.

12 Quite a few of the offices of these three institutions were not in the impacted area—e.g., Capital One, with assets over \$29B.

*Figure 8: Asset Growth of Financial Institutions Affected by Katrina, One Year Later*

	Asset growth (1)	Asset growth (2)	Asset growth (3)	Asset growth (4)
Employee growth	0.26** (3.25)	0.20** (3.38)	0.27** (3.36)	0.16* (2.30)
Size (assets in May 2005)	0.00 (0.96)	0.00 (1.14)	0.00 (1.07)	0.00 (1.10)
Credit union dummy	0.01 (0.24)		0.01 (0.18)	-0.12 (0.25)
Age of institution		-0.00 (1.11)	-0.00 (1.09)	0.00 (0.50)
Age of institution squared				0.00 (0.78)
N	74	74	74	74
Adjusted R-sq	0.12	0.13	0.12	0.11

Dependent variable is asset growth. Absolute values of t-ratios are in parentheses.

\* indicates significance at the 5% level.

\*\* indicates significance at the 10% level.

The regressions for variations in ROA (see Figure 10) have less explanatory power than those for asset growth. Size does help increase returns, as indicated by the positive and significant coefficient on assets. This finding is similar to those of Fried and Lovell (1993) and Kohers and Mullis (1988) on the efficiency of larger institutions. The negative impact of the storm is partially caught by the time dummy's negative sign, but it is not statistically significant. Being a credit union and being in Mississippi are both consistently

*Figure 9: Credit Union, Bank, and GDP Information*

	May 31, 2005	May 31, 2006	Percentage change
Assets of U.S. banks (year-end)	\$10,877.3B	\$11,860.2B	9.0
Number of commercial U.S. banks (year-end)	8,833	8,681	-1.7
Assets of U.S. credit unions (April)	\$693.2B	\$716.8B	3.4
Number of U.S. credit unions (April)	9,251	8,900	-3.8
Number of U.S. credit union members (April)	86.9 million	87.9 million	1.1
National GDP (first quarter)*	\$10,999.3B	\$11,394.7B	3.6
Mississippi gross state product*	\$68,830B	\$69,672B	1.2
Louisiana gross state product	\$137,524	\$135,362	-1.6

\* 2000 dollars.

Sources: FDIC 2007; CUNA 2006; U.S. Bureau of Economic Analysis 2006.

*Figure 10: Efficiency Measure of ROA*

	Return on assets (1)	Return on assets (2)	Return on assets (3)	Return on assets (4)
<b>Ln(Assets)</b>	0.003* (2.77)	0.003* (2.55)	0.003* (2.44)	0.003* (2.44)
<b>Time dummy (1 if 2006)</b>	-0.002 (0.67)	-0.002 (0.66)	-0.002 (0.66)	-0.002 (0.66)
<b>Credit union dummy</b>	0.005 (0.99)	0.005 (0.96)	0.005 (0.95)	0.005 (0.94)
<b>Mississippi dummy</b>		0.004 (1.04)	0.004 (1.03)	0.004 (1.04)
<b>Federal charter dummy</b>			-0.08 (0.73)	-0.05 (0.43)
<b>Age of institution</b>				0.003 (0.25)
<b>N</b>	147	147	147	147
<b>Adjusted R-sq</b>	0.05	0.05	0.05	0.03

Dependent variable is the natural log of ROA. Absolute values of t-ratios are in parentheses.

Net income after taxes and extraordinary items (annualized) as a percentage of average total assets (FDIC 2007; NCUA 2005).

\* indicates significance at the 1% level.

estimated to have a positive but insignificant impact on returns. Being federally chartered also does not appear to be significant, nor does the age of the institution.

A measure of efficiency similar to output per person—assets per employee—is used in Figure 11 to try to discern sources of performance strengths and weaknesses. This set of regressions has the most clarifying strength of any set explored, evidenced by a much higher adjusted R-square of around 0.54. Average assets per employee in the sample are just over \$2.7M in 2006, about a 25% increase from 2005. The large increase in assets mentioned earlier over this period seems to be better handled by larger institutions. The scale variable (natural logarithm of assets) is measured as having a positive and significant impact in Figure 11. Given the growth of assets over this period, which is significantly greater than that of employment, it is no surprise that the time dummy is also estimated as positive and significant.

Credit unions are estimated here to be quite a bit more efficient in the use of employees than are banks. The credit union dummy is estimated to be quite strong and significant across all specifications in Figure 11. In fact, the evidence from these regressions, the strongest in statistical terms, shows that once you hold constant other factors such as size and age, each credit union employee handles about

\$750,000 more in assets per year than their bank counterparts.<sup>13</sup> This handling of a larger amount of assets with fewer employees is an important source of cost savings. One possible explanation for this increased efficiency is that the average credit union member uses electronic services more often than the average bank customer. This could be because credit union members feel that their transactions are secure more than bank customers do, or because credit union members are more sophisticated users of technology in general. Another possible explanation, often seen in cooperative firms, is that because credit union employees identify so strongly with the goals of the firm, a smaller managerial staff is needed to monitor these employees. The highly successful credit unions and companies of the Mondragon Cooperative Corporation, for instance, are widely believed to gain high levels of efficiency partly because of higher morale and less supervisory staff per worker.<sup>14</sup>

A Mississippi location, a federal charter, and the age of the institution show no statistical explanatory power in any of the specifications in Figure 11.

*Figure 11: Efficiency Measure of Assets per Employee*

	Assets per employee (1)	Assets per employee (2)	Assets per employee (3)	Assets per employee (4)
<b>Ln(Assets)</b>	0.33* (10.97)	0.33* (11.08)	0.33* (10.51)	0.32* (10.50)
<b>Time dummy (1 if 2006)</b>	0.19** (2.12)	0.19** (2.12)	0.19** (2.12)	0.19** (2.13)
<b>Credit union dummy</b>	0.42* (3.14)	0.43* (3.19)	0.45* (3.27)	0.45* (3.29)
<b>Mississippi dummy</b>		-0.12 (1.38)	-0.12 (1.28)	-0.12 (1.35)
<b>Federal charter dummy</b>			-0.08 (0.73)	-0.05 (0.43)
<b>Age of institution</b>				0.003 (1.58)
<b>N</b>	147	147	147	147
<b>Adjusted R-sq</b>	0.54	0.54	0.54	0.55

Dependent variable is the natural log of assets per employee. Absolute values of t-ratios are in parentheses.

\* indicates significance at the 1% level.

\*\* indicates significance at the 5% level.

13 To be precise, the estimate is \$749,785 more per employee per year. This estimate was made at the mean of the sample.

14 See the Mondragon Web site ([www.mcc.es/ing/index.asp](http://www.mcc.es/ing/index.asp)) for current information. Additionally, Whyte and Whyte (1991) is a classic book on Mondragon's success.



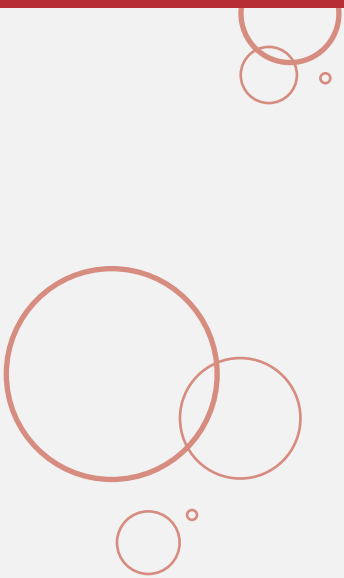




## CHAPTER 4

### Policy Implications and Future Research

*Extended social and physical networks are difficult to quantify, but their presence in the post-Katrina environment clearly made the difference for a number of institutions.*





Credit unions and banks suffered enormous losses through physical damage, the loss of surrounding businesses, and employee personal losses following Katrina. Because the credit unions based in the sample area were greater in number and tended to cater more to lower-income groups, they suffered more closures, movements out of the area, and mergers (16 out of 63 pre-Katrina credit unions). These losses were almost entirely in the New Orleans area. Banks gained employees in the year following Katrina, while credit unions lost about 4% of their workforce. Assets in the year following Katrina grew for both banks and credit unions by about 27%. This surge in assets was much greater than the national average for both types of institutions (9% for banks and 3.4% for credit unions). The likely explanation for this large increase in assets following such devastation is the collection of insurance funds and aid prior to the expenditure of those funds for rebuilding.

Heartening evidence of the resilience of credit unions is seen in the 2.6% growth in membership in the year after the storm. Mississippi credit unions were responsible for this growth, partly because much of that region is on higher ground and absorbed a large number of displaced people from harder-hit areas. The ROA in the area showed a decline of 15.2%, but most of that decline is attributable to the New Orleans credit unions, especially the low-income ones.

The regression analysis shows that asset growth was positively correlated with larger institutions and employee growth. Whether the institution was a bank or a credit union and the age of the firm were insignificant in explaining variations in asset growth. Results in the regression analysis for ROA are weaker in explanatory power than those for assets, but they show again that larger institutions had higher returns. Being in Mississippi and being a credit union are positively correlated with higher returns but statistically insignificant. The analysis of efficiency in terms of assets per employee shows again that size is important. Significantly, credit unions seem to be able to handle more assets per employee

than banks. The regression analysis on assets per employee is much more powerful in explanatory power than other performance measures.

It is clear from anecdotal evidence and findings from the survey that credit unions obtained significant support from other credit unions locally and across the nation. The damage to the institutions and to customer and employee homes, along with the psychological wounds from such a profound disaster, means that the firms that come back must offer a wide array of support services. The need for nongovernment support networks was made clear in the wake of Katrina, especially with the slow response of the federal government. Post-Katrina planning for disaster in the areas impacted by the storm typically stresses redundancy in communications and financial resources.<sup>15</sup> Communications redundancy can be achieved by having cell phones, generators, partnerships or agreements with other institutions, satellite phones, walkie-talkies, e-mail off-site with a list of contacts to get information out to, and so forth. Financial resource redundancy is seen in the increased use by credit unions of shared branching (see, for example, Liberto 2006) and partnership agreements with other credit unions in diverse geographical areas. These extended social and physical networks are difficult to quantify, but their presence in the post-Katrina environment clearly made the difference for a number of institutions. Banks with branches outside the affected areas could rely on the resources of the untouched branches to help them out. National and local credit union associations provided volunteers, cash, and managerial help during this crucial time (Elliott 2005).

<sup>15</sup> The NCUA's Risk Alert (2006) gives some guidance in these areas.

## PEOPLE HELPING PEOPLE

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According to Charles Elliott, president and CEO of the Mississippi Credit Union Association, a credit union on the coast that had been severely damaged in the storm and was unable to offer services through its regular outlets had an armed manager hand out cash from the back of a pickup truck. Once the manager had helped those

he could at his own credit union, he went on to help another credit union in a similar fashion. The courage and heroism that often arise in difficult situations like these was shown over and over again on the coast, but the solidarity that credit unions showed—as people helping people—was extraordinary.

The credit unions, banks, and other businesses in the storm area still have much work ahead of them. High insurance and land costs mean that many businesses and homeowners may never rebuild.<sup>16</sup> The further development of ties between firms means that if another



Communications redundancy can be achieved by having cell phones, generators, partnerships or agreements with other institutions, satellite phones, walkie-talkies, e-mail off-site with a list of contacts to get information out to, and so forth.

disaster hits this area, financial institutions, especially credit unions, will be better prepared. The strength of cooperative networks and the loyalty of employees and members have helped bring many firms back, and the development of better disaster plans makes a repeat of the difficult post-Katrina days much less likely.

<sup>16</sup> Oreck Corporation left the Mississippi Gulf Coast after doing heroic work to help employees. For a recent summary, see Elliott 2007.

## Data Collection

Data were collected from online sources and from credit union and bank presidents and staff through interviews and a survey. Altogether, direct contact was made with about 20% of the total population of surviving financial institutions. The survey consisted of 17 questions about storm damage, volunteer hours, sources of aid, and number of employees, among other things. The survey was e-mailed or hand-delivered to institutions; the credit union leagues of Louisiana and Mississippi helped in its distribution.

Some sample selection bias is likely, given that some of the institutions are small and did not have e-mail addresses, and many very large institutions did not respond. The survey was kept short to encourage responses. The only survey responses came from credit unions, but the survey provided a basis for on-site interviews, and the open-ended question at the end was helpful for understanding a number of new developments. The survey was supplemented by data gathered from online sources (e.g., the Federal Reserve and CUNA). These online sources gave detailed financial information and macroeconomic conditions for the region. The sample used here includes the total population of credit unions and banks in New Orleans and in the 12 counties of southern Mississippi that were hit hard by the storm. Banks are usually much larger than credit unions; in fact, there were two banks (not in the current sample) with assets in 2005 of over a trillion dollars, more than all U.S. credit unions combined.

1. Employees as of May 2005:
2. Employees as of May 2006:
3. Assets as of May 2005:
4. Assets as of May 2006:
5. Customers as of May 2005:
6. Customers as of May 2006:
7. Branches as of May 2005:
8. Branches as of May 2006:
9. ATMs as of May 2005:
10. ATMs as of May 2006:
11. Estimated volunteer hours, September 1, 2005, until June 1, 2006:
12. Estimated storm damage in dollars:
13. Aid (tax relief, etc.) from federal sources, September 1, 2005, until June 1, 2006:
14. Aid (tax relief, etc.) from state sources, September 1, 2005, until June 1, 2006:
15. Aid (tax relief, etc.) from local sources, September 1, 2005, until June 1, 2006:
16. Aid (tax relief, etc.) from organizational sources (corporate, professional association, etc.), September 1, 2005, until June 1, 2006:
17. Other factors and comments:

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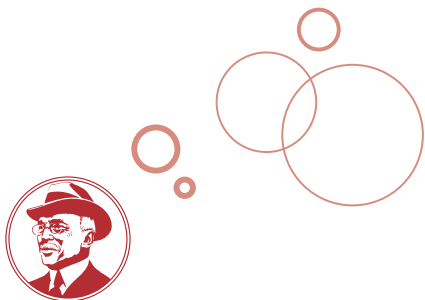
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