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Rebuilding after Disaster Strikes: How Local Lenders Aid in the Recovery

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Using detailed employment data on firm age and size, I show that the presence of local finance improves job retention and creation at young and small firms. I use natural disasters and regulatory guidance to disentangle the effects of credit supply and demand. I find that an additional standard deviation of local finance offsets the negative effects of the disaster and can lead to 1 to 2% higher employment growth at either young or small firms. Banks increase lending but are not borrowing against future lending, nor do they experience changes in default rates. These findings suggest that local lenders play an important and necessary role in job creation in the economy.

Keywords: quarterly workforce indicators, natural disasters.

JEL Classication: G21, O47.

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1 Introduction

To identify the impact of access to local finance on employment, I use natural disasters to test if local lenders spur growth at small and new firms. I show that access to local finance generates growth in employment at young firms and small firms. I use rich county level data for the U.S. which details employment growth by firm age and size. Natural disasters provide useful identification because banks are explicitly encouraged to lend by their regulatory supervisors to help in the recovery process after the crisis. These results suggest that local lenders invest in rebuilding their local economies after a disaster strikes.

Calculating the effects of local finance is difficult because of the myriad of endogeneity issues present. It could be that lending flows to areas that are booming, so the increase in employment and lending are both caused by an omitted factor that was driving the economic growth. It could also be that higher quality borrowers receive lending and they also happen to have successful businesses, which has more to do with the intrinsic value of the borrower than the lending itself. Additionally, in areas with limited access to finance, what may look like positive effects of local lending is really masking the fact that they are the only lenders available and that they serve no different role in the economy than any other financial lending institution.

To identify the impact of local access to finance, I use natural disasters as an exogenous shock to the local economy. Specifically, I look at the growth rates of employment across firm age and size post-disaster to determine if having greater access to local finance during the recovery process can generate growth. I find that employment growth at new firms and at small firms is aided by the presence of local financing when a disaster strikes.

These findings contribute to the literature that young and small firms depend on external financing. [1]

A novel feature of this identification technique is that government regulators explicitly encourage lending after a natural disaster or emergency declaration. While still stressing "sound banking practices," the Federal Reserve system via their supervision and regulation division delivers letters periodically to the system announcing that "effects of a disaster on local businesses and individuals are often transitory, and prudent efforts to adjust or alter terms on existing loans in affected areas should not be subject to examiner criticism." Certain practices, such as increasing credit card limits or easing credit terms on new loans are spelled out as example of understandable and acceptable behavior post-disaster. Figure 1 shows a similar letter from the Federal Depository Insurance Corporation (FDIC.) While the Federal Board of Governor's and its regional banks discuss disasters in general terms, the FDIC in their supervisory capacity send letters to specific regions affected by disasters. As is stated in the document, the FDIC encourages banks to work constructively with borrowers and will consider regulatory relief from certain filing and publishing requirements. [2]

The direct effect of the disaster is negative but the interaction term of local lender deposits and a disaster is positive and significant for new firms, firms 2-3 years old and firms that are more than 11 years old. A standard deviation greater share of local credit results in a 1% increase in the growth rates of the employment share at young firms and a .1% growth rate at mature firms. Also, the direct effect of the local share is either negative

[1] DeYoung et. al (2012) explain why community and specifically rural banks continue to exist; Kerr, Lerner and Schoar (2010) use a regression discontinuity approach to tie the effects of financing to entrepreneurial growth.

[2] Danisewicz et. al (2013) shows there are negative consequences to regulatory enforcement actions.

or nonsignificant, so the growth rate increases can be accurately attributed to the channel of access to local finance when it is needed most.

The results for employment growth by firm size continue to confirm the theory that access to credit is needed mostly by young and small firms. The growth rates for the smallest firms up to 50 employees, are positive and significant. Local lenders increase lending after the disaster and I do not find a subsequent decrease suggesting that the lenders are not solely borrowing against future lending. This evidence indicates that access to local finance improves firms' ability to grow furthers documents the benefits of financial intermediation.

It is this injection of capital to the economy that helps identify the credit supply channel. Disaster themselves create increased credit demand, which is why I interact a disaster occurring with a measure for local finance. Areas that are hit by a disaster but have limited access to local finance can serve as the counterfactual. Figure 2 is a graphical representation of how often disasters occur in each county. The map includes the total number of disasters that hit the county over the entire sample.[3] Many areas of the U.S. are affected by multiple disasters over the sample and there is a large variety across the coasts and in the plain states of how often disasters strike. I use severe natural disasters that could potentially cause damage to capital and run a detailed study at the U.S. county level, quarterly, to understand the rich nature of the interaction between local access to finance and growth in an economy. [4]

An additional noteworthy feature of the analysis is that I have data on firm age. Previ-

[3]Mapping technology is made possible by Google Earth.

[4]Morse (2010) shows that in the event of a natural disaster, the presence of payday lenders can alleviate some of the financing constraints which then translates into a better economic outcome for the area.

ous studies take advantage of employment data by firm size but by using detailed data on firm age, I can measure employment growth at new firms as well. Unfortunately, data by both firm age and size, is still unavailable. Firm age data is also extremely useful because while young firms are typically small, it does not have to be the case that small firms are necessarily young.[5] Figures 5 and 6 illustrate the breakdown of employment growth across firm age and size. [6]

To measure access to local finance, I identify local lenders and capture their geographical presence using branch level deposit data. This helps explain what lenders operate in concentrated areas and would behave as local lenders. I define a lender to be *truly local* if it has roughly a two thirds majority of its deposits in any given market. Once lenders are identified as local, I sum up their deposits at the county level and use that to proxy for local financial intermediation. Figures 3 and 4 detail how the landscape of local lending has changed over time. I also measure the loan growth rates at *truly local* lenders and I find that lending does increase in the event of the disaster. I study the behavior of lending over a two year horizon beyond the disaster and find an increase in lending that does not subsequently fall right away which provides evidence that lenders are maintaing the increase in lending for some time after the disaster.

The results show that in the event of a disaster, areas with one standard deviation more local deposits experience between 1 to 2% less employment loss for young and small firms. These growth rates indicate that access to local finance can have positive effects on small business and job creation in the economy. The direct effect of the disaster is

[5]Please see Hurst and Pugsley (2011).

[6]Note that growth rates are stacked to ease comparison between buckets, the total growth rate is graphed as a line to remind the reader that the growth rates within each bucket would not add up to the overall employment growth rate.

negative but having more local finance reduces the negative effects. Ideally, we would like to see the positive effects in the economy without the disaster so by studying the channel that can increase employment we can implement changes to replicate only the positive consequences.

The results are stronger when I interact the size of the natural disaster, as measured by property damage, with the availability of financing. The effects of credit are positive across nearly all firm ages and sizes. While the literature demonstrates that young firms typically rely most of external financing, these results highlight that in certain circumstances all firms can benefit from additional financial intermediation. [7]

The literature has documented the ability of financial intermediation to spur growth.[8] Firms do seem to grow and form when there is increased banking competition or new financing options available. Cetorelli and Strahan (2006) documents how financial integration, in the form of more vigorous banking competition, is associated with more firms in operation and a general trend toward smaller firm size. The competition between banks allows for new firms in the area to receive funding, firms that may have had difficulty receiving credit from the established finance options previously. It is unclear how banking competition would effect entrepreneurship since Petersen and Rajan (1995) argue that banks can incur the cost of starting a relationship with an unknown risky entrepreneurs only if they will be able to receive a return on their investment in the event of a successful startup. Adelino, Schoar and Severino (2013) document growth in very small firms in

[7]Other literature that documents the role of relationship banking and soft information using distance and possibly alleviating credit rationing include the following: Cortés (2012); Marquez (2002); Petersen and Rajan (1994, 2002) and Stiglitz and Weiss (1981) among others.

[8]Please see: Demirguc-Kunt and Maksimovic (1998); Jayaratne and Strahan (1996); King and Levine (1993a,b); Levine, Loayza and Beck (2000); Paravisini (2008); Rajan and Zingales (1998); Rice and Strahan(2009) among others.

areas with high home price appreciation during the real estate boom. Showing that when financing was available, in the form of greater collateral in their homes, entrepreneurs were able to build businesses. Theory predicts that small and especially new firms rely on external capital so an infusion of capital to an area will help grow businesses and aid job creation. I find evidence that seems consistent with this story.

2 Variable Descriptions and Data Sources

2.1 Local finance and Natural disasters

I identify lenders as *truly local* if they have more than 65% of their deposits in a market. The FDIC summary of deposits provides annual data for all insured financial institutions' deposits at the branch level. With this detailed data I can accurately pinpoint the geographical presence of a lender. I define a market at the Metropolitan Statistical Area (MSA) when a lender operates within an MSA, otherwise at the county level. Many savings and loan institutions and a some commercial banks operate in a very concentrated market. Out of the eleven thousand financial institutions, roughly nine thousand are considered *truly local* by my measure. A typical example is an institution with only a few branches, that all operate in the same local area. An institution like this would easily have more than 65% of its deposits in a local area since it is highly probably it has 100% of its deposits in a market. Some community banks are statewide, however, and those do not always exceed 65% in a local market. The Community Bank of Colorado, for example, operates throughout the state, yet by being so spread out at no point does one market have the roughly two/thirds majority of its share so it does not get flagged as *truly local*.

Considering the nature of its lending one may expect the Community Bank of Colorado to be local so by maintaining this strict cutoff I may be excluding banks that could be operating like local banks and thus taking a conservative estimate.

Table 1 details the breakdown of FDIC institutions and how many would be considered *truly local* if the cutoff varied from 65% to 50%, 75% or 100%. Notice there are fewer institutions over time as merger activity and deregulation affects the financial sector. The 65% or roughly two-thirds "super majority" cutoff includes most institutions that would be included in a more conservative measure of 75%, with a correlation rate of .81. There is roughy a .9 correlation rate of institutions considered *truly local* between the cutoff of 50 and 65%.

To calculate a measure for access to local finance, I aggregate the deposits in a county by *truly local* lenders. Variables based on deposits are skewed so I take the natural log. This is a proxy for local banking activity prior to the disaster. When I interact this variable with a dummy variable for the occurrence of a disaster, I measure the effect that local lenders have to offset the negative effects of the disaster.

The Spatial Hazard Events and Losses Database for the United States (SHELDUS) is a county-level hazard data set for the U.S. for 18 different natural hazard events types such thunderstorms, hurricanes, floods, wildfires, and tornados. For each event the database includes the beginning date, location (county and state), property losses, crop losses, injuries, and fatalities that affected each county. The data were derived from several existing national data sources such as National Climatic Data Center's monthly storm data publications. [9]

[9] http://webra.cas.sc.edu/hvri/products/sheldus.aspx

I identify ten disasters that could pose the most risk for capital and deem these severe disasters. These include earthquakes, coastal damage, hurricanes, wildfires, landslides, tornados, tsunamis/seiches, flooding, hail and avalanches. Table 2 details summary statistics for the sample of natural disasters covered by SHELDUS from 1997-2011. I mark the severe disasters with stars (*). I include avalanches because of their propensity to cause damage to capital when capital is actually in their path, which is not always the case. Earthquakes cause the most property damage on average when I scale by how many counties have experienced the disasters. Hurricanes cause the most property damage overall, followed up by flooding, which causes roughly half the amount of property damage as hurricanes.

2.2 Output growth variables

The U.S. Census Bureau's Quarterly Workforce Indicators (QWI) includes information on firm age and size from the Business Dynamics Statistics microdata. The Business Dynamics Statistics reports results from the collaboration between the U.S. Census Bureau's Center for Economic Studies and the Ewing Marion Kauffman Foundation, the largest American nonprofit organization that focuses on entrepreneurship. The QWI are generated from federal and state administrative data on employers and employees combined with core Census Bureau censuses and surveys. This combination produces a rich, quarterly dataset that tracks employment, hires, separations, job creation and destruction, and wages for stable employees and new hires. [10]

Since the QWI breaks down employment by firm age I am able to identify the number

[10] More information on the QWI can be found at lehd.ces.census.gov and more information on Business Dynamics Statistics can be found at www.census.gov/ces/dataproducts/bds/data.html

of people employed at young firms and new firms. With this break-down I can track the growth rate of employment by firm age or size over time. Table 3 details the growth rates of total employment by firm age and Table 4 details the data by firm size. Despite high worker turnover at young firms, the share of hires that increase net employment is higher at young firms relative to established businesses. To measure bank lending behavior over time I use institutional level data on total loans and assets come from Call Reports which is available quarterly.

2.3 Microeconomic factors

2.4 Economic Data

I use macroeconomic data, such as median income and unemployment rates, to measure economic recovery of an area. Median income is measured at the county level annually. Median income growth is the difference between median income in year t+1 and year t, scaled by median income in year t. Unemployment rate data are also measured at the county level and are available quarterly. Data on median income are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rates are from the Bureau of Labor local area unemployment statistics.

3 Empirical Methods

I focus on the interaction of local lender deposits and a disaster to correctly study the effects of local access to finance. The interaction term helps alleviate the possible problems of reserve causality or an omitted factor. The direct effect of the disaster measures growth

after a disaster and the interaction term measures the effect of the local share in areas that are hit by disasters. The local lender deposit variable is continuous and I measure *disaster* as an indicator variable equal to one if the county is hit by a severe disaster that could potentially cause damage to capital.

First, I study banks themselves and measure loan growth at *truly local* lenders in a market, quarterly. This analysis allows me to include bank fixed effects as well and tests if lenders are in fact increasing loan supply.

$$\begin{aligned} \text{Loan Growth}_{k,t+1} = \text{Disaster}_{k,t} + \text{Bank Size}_{k,t} \\ +\text{Economics Controls}_{k,t} + \text{Bank Fixed Effects} + \text{Quarter Fixed Effects} + \varepsilon_{k,t} \end{aligned} \tag{3}$$

Then, I measure different outcome variables and estimate models with the following structure:

$$\begin{aligned} \text{Y}_{i,t+1} = \beta\ (\text{Local lender deposits* Disaster})_{i,t} + \text{Local lender deposits}_{i,t} + \text{Disaster}_{i,t} \\ +\text{Economics Controls}_{i,t} + \text{County Fixed Effects} + \text{Quarter Fixed Effects} + \varepsilon_{i,t} \end{aligned} \tag{1}$$

I calculate employment growth across firm age and then again across firm size. I regress the growth rate on the interacted variable of local lender deposits and a severe natural disaster. The data are available quarterly and at the county level which enables me to do a detailed analysis over my sample from 1997-2010. Using firm age buckets is useful to understand the potential effects on growth of new and young firms in an affected area. For ease of understanding better the units in the regression the growth rates are expressed at percentages in the linear-log models. I control for income characteristics of the county, the unemployment rate and poverty rate, the amount of federal funding received from the

Federal Emergency Management Agency (FEMA), and population growth.

I also use the log of the level of property damage in a county during a quarter to gauge the severity of the natural disasters. This is a continuous variable to compliment the indicator variable of whether a disaster occurred or not. The size of the disaster, measured by the property damage incurred, proxies for increase in demand in the affected area.

4 Results

Table 5 documents *truly local* lender's loan growth over a year horizon. The first quarter after the disaster receives a positive and significant increase in lending. The presence of a disaster is associated with .1% increase in lending. An increase of that amount explains roughy 10% of average loan growth. Columns 2-4 measure the cumulative growth rates, respectively, for up to a year. While these growth rates could be compounded with another disaster etc., the positive coefficients support the theory that banks lend more after a disaster. Perhaps banks are increasing lending due to the explicit encouragement from regulatory supervisors but there is no significant decrease after the disaster, so banks are not solely borrowing against future lending either.

Naturally when banks increase lending it is interesting to study the default rates of the loans that make up a bank's portfolio. I study delinquent loans for up to 3 years after the disaster and there is no clear pattern to suggest either more or fewer defaults. Including short term delinquencies (30 to 90 days) and longer term defaults (more than 90 days), the economic significance of the coefficients is trivial and in many cases the results are

not statistically different than zero. (Not reported.) It is not possible to identify the default rates on the new loans but the portfolio overall does not experience an increase in delinquent loans, nor a decrease, which may have occurred if very high quality borrowers flocked to banks and improved the quality of the loan portfolio overall.

Table 6 details the results for the panel regressions on firm age. It is documented in the literature that young firms rely more heavily on external finance and I am able to confirm this with my regressions. What is interesting is that while the effect goes away for firms older than 2 years, there is a positive and significant coefficient for firms that are over 11 years old. It may be that affected areas need to retain the established firms so that the economy can rely on some consistency and stable employment.

The results for new firms, (0-1 years) and young firms (2-3 years) each support the theory that young firms grow faster with access to capital. The local access to finance provide the credit needed to create new firms. The direct effect of the disaster is negative, as one would expect since these are severe disasters that destroy capital. Yet, the positive and significant coefficient on the interaction term documents that higher shares of local finance offset the damaging effects of disasters. A standard deviation difference in local lender deposits results in roughly 1% less loss of employment at young firms. While the results are positive for the firms over 11 years old as well, a standard deviation difference is associated with only .1% increase in employment growth. This supports the general hiring trend as well that a higher share of net employment is represented at young firms.

Firm age is useful to study in order to understand the role of local access to finance for young firms, especially startups after a disaster. Young firms do not necessarily have to be small though so I move on to study the relationship with local finance and firm size.

Table 7 documents the relationship of local finance with firm size. The interaction term is again positive and significant for the growth rates of small establishments. The direct effect of the natural disaster is no longer negative, so the interaction term highlights how a higher amount of local deposits in the affected area can have an effect even without the direct negative effects of the disaster.

The effect is present for large firms too, providing further support to the hypothesis that established firms help the economy recover as well. The effects range from .5% to 1% growth rates for the number of establishments in the small size buckets. The trend for growth in these size buckets is positive and represent some of the largest increases over time. The growth rates attributed would represent nearly half the the overall growth rates if they extended across the whole sample, so, in times of disaster access to local finance can be quite economically significant.

I then interact access to local finance with the property damage to measure the response across disasters of different magnitudes. The property damage measures the severity of disasters over the quarter in a county. Tables 8 and 9 report the results for age and size, respectively. As before the results are strongest for the youngest and smallest firms but when interacting local finance with property damage nearly all of the age and size groups report a positive and statistically significant result. This may be because in the most severe disasters, even firms that typically do not need external financing would accept additional loans to address loss of capital etc.

5 Conclusion

I use natural disasters as an exogenous shock to a local economy to test if local lenders spur growth at small and new firms. I show that access to local finance, measured by deposits at lenders with more than a super majority of deposits in a market, interacted with the event of a disaster, generates increased growth in employment at young firms and small firms. I use county level data for all U.S. counties from 1997-2010 from the QWI data, which details employment growth by firm age and size. Natural disasters provide useful identification because banks are explicitly encouraged to lend by their regulatory supervisors to help in the recovery process after the crisis. These results suggest that local lenders invest in rebuilding their local economies after a disaster strikes.

The direct effect of the disaster is negative but the interaction term of local lender deposits and a disaster is positive and significant for new firms, firms 2-3 years old and firms that are more than 11 years old. A standard deviation greater share of local credit results in a 1% increase in the growth rates of the employment share at young firms and a .1% growth rate at mature firms. Also, the direct effect of the local share is either negative or nonsignificant, so the growth rate increases can be accurately attributed to the channel of access to local finance at a time when it is most needed.

The results for employment growth by firm size continue to confirm the theory that access to credit is needed mostly by young and small firms. The growth rates for the smallest firms up to 50 employees, are positive and significant. Local lenders increase lending after the disaster and I do not find a subsequent decrease suggesting that the lenders are not solely borrowing against future lending. Overall this evidence helps to

further understand the role of access to local finance and understand in greater detail the benefits of financial intermediation.

A Definition of Variables

Quarterly Workforce Indicators (QWI)

- Total employment growth$_{i,t}$ = (Total employment$_{i,t+1}$ - Total employment$_{i,t}$) / Total employment$_{i,t}$, by age and size buckets respectively, measured quarterly.

Natural Disasters, SHELDUS

- Disaster = indicator equal to 1 for the following disaster types: avalanche, coastal, earthquake, flooding, hail, hurricane, landslide, tornado, tsunami/seiche and wildfire.

Summary of Deposits, FDIC (SOD)
Deposit data available annually at the branch level for FDIC institutions.

- Truly Local Lenders= An FDIC institution is considered truly local if more than 65% of the institutions deposits are in a market. The market is defined at the Metropolitan Statistical Area (MSA) level if the institution operates within an MSA, otherwise at the County level.
- Local lender deposits$_{i,t}$ = log of sum of deposits from Truly local lenders in a county.

Federal Emergency Management Agency (FEMA) variables

- Fema funding (per capital)$_{i,t}$ = (Total FEMA funding$_{i,t}$ / Population$_{i,t}$).

Call Report Data

- Total loan growth$_{k,t}$ = (Total loans$_{k,t+1}$ - total loans$_{k,t}$) / total assets$_{k,t}$.
- Cumulative total loan growth 6 months = (Total loans$_{k,t+2}$ - total loans$_{k,t}$) / total assets$_{k,t}$. Repeated for four quarters to capture a year of lending behavior.
- Size$_{k,t}$ = log (total assets$_{k,t}$).

Microeconomic Variables

- Population growth$_{i,t}$ = (Population$_{i,t+1}$ - Population$_{i,t}$) / Population$_{i,t}$, measured annually.
- Median income (log)$_{i,t}$ = log (median income$_{i,t}$), measured annually.
- Median income growth$_{i,t}$ = (median household income$_{i,t+1}$ - Median household income$_{i,t}$) / Median household income$_{i,t}$, measured annually.
- Unemployment rate$_{i,t}$ = unemployment rate$_{i,t}$, measured quarterly.

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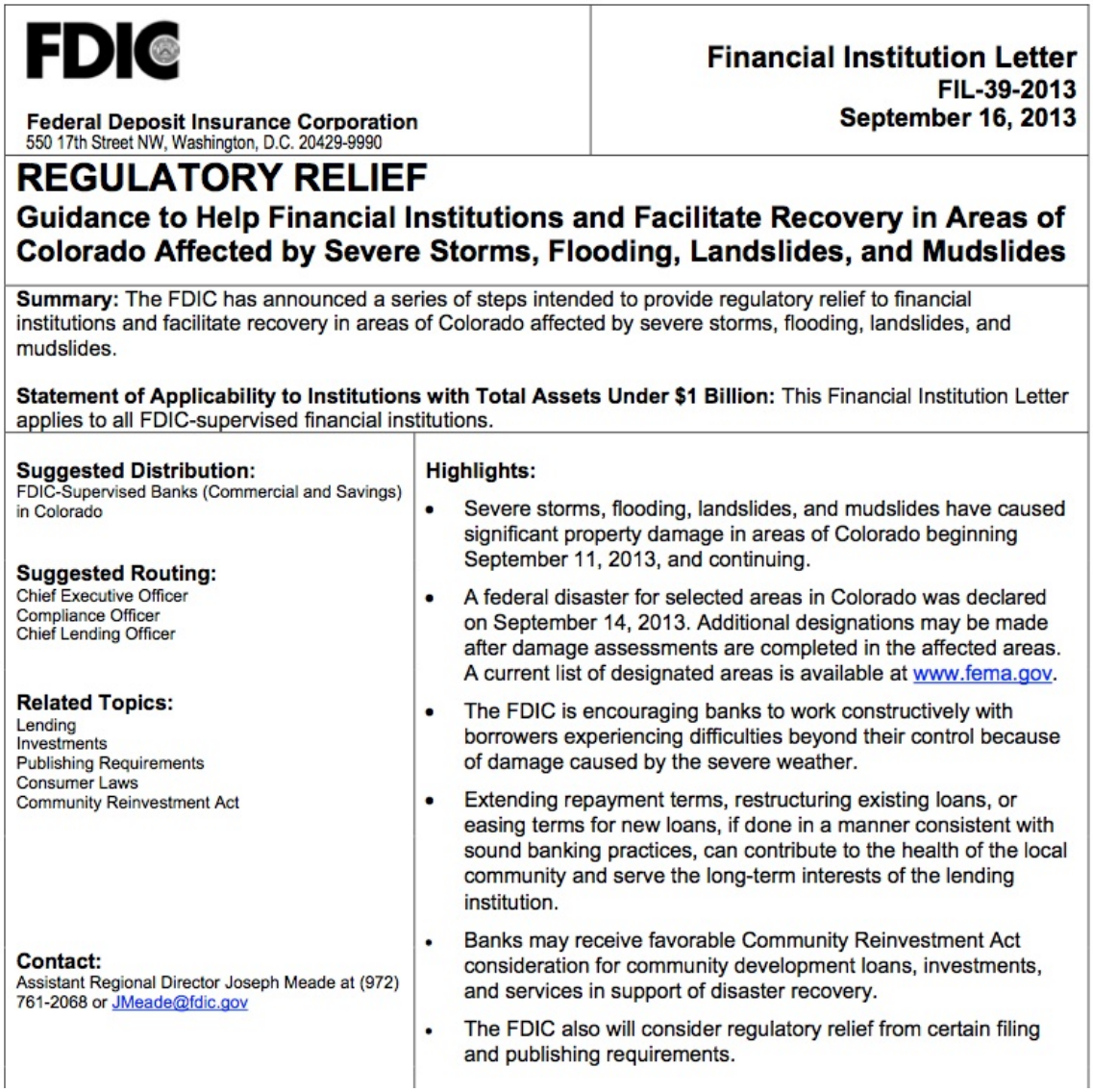
Figure 1: **Regulatory Guidance Letter**
This figure shows an excerpt from a letter sent by the FDIC in their supervisory capacity to financial institutions that could be affected by a natural disaster. It explicitly encourages lenders to aid borrowers and ease credit constraints while maintaing sound banking practices.



FDIC

Federal Deposit Insurance Corporation
550 17th Street NW, Washington, D.C. 20429-9990

Financial Institution Letter
FIL-39-2013
September 16, 2013

REGULATORY RELIEF

Guidance to Help Financial Institutions and Facilitate Recovery in Areas of Colorado Affected by Severe Storms, Flooding, Landslides, and Mudslides

Summary: The FDIC has announced a series of steps intended to provide regulatory relief to financial institutions and facilitate recovery in areas of Colorado affected by severe storms, flooding, landslides, and mudslides.

Statement of Applicability to Institutions with Total Assets Under $1 Billion: This Financial Institution Letter applies to all FDIC-supervised financial institutions.

Suggested Distribution:
FDIC-Supervised Banks (Commercial and Savings) in Colorado

Suggested Routing:
Chief Executive Officer
Compliance Officer
Chief Lending Officer

Related Topics:
Lending
Investments
Publishing Requirements
Consumer Laws
Community Reinvestment Act

Contact:
Assistant Regional Director Joseph Meade at (972) 761-2068 or JMeade@fdic.gov

Highlights:

- Severe storms, flooding, landslides, and mudslides have caused significant property damage in areas of Colorado beginning September 11, 2013, and continuing.
- A federal disaster for selected areas in Colorado was declared on September 14, 2013. Additional designations may be made after damage assessments are completed in the affected areas. A current list of designated areas is available at www.fema.gov.
- The FDIC is encouraging banks to work constructively with borrowers experiencing difficulties beyond their control because of damage caused by the severe weather.
- Extending repayment terms, restructuring existing loans, or easing terms for new loans, if done in a manner consistent with sound banking practices, can contribute to the health of the local community and serve the long-term interests of the lending institution.
- Banks may receive favorable Community Reinvestment Act consideration for community development loans, investments, and services in support of disaster recovery.
- The FDIC also will consider regulatory relief from certain filing and publishing requirements.

Figure 2: **Incidence of Natural Disasters**
This figure shows the total number of disasters throughout the sample of 1997-2011 by U.S. County. These disasters include earthquakes, coastal damage, hurricanes, wildfires, landslides, tornados, tsunamis/seiches, flooding, hail and avalanches. The order of colors is as such: light green (7 disasters or less), dark green (14 or less), light blue (28 or less), dark blue (64 or less), and red represents the top 5%.

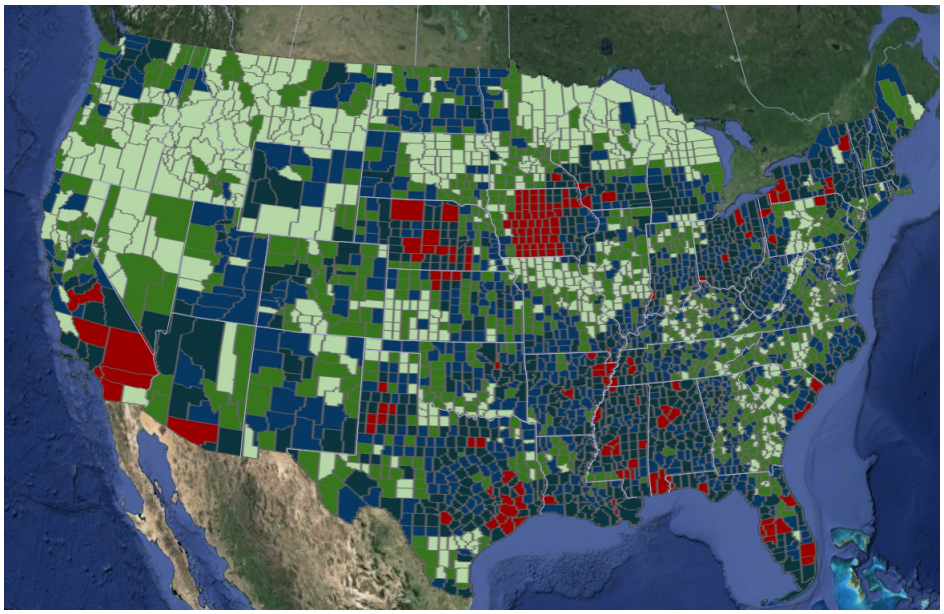


Figure 3:
Total local lender deposits by county in 1997.

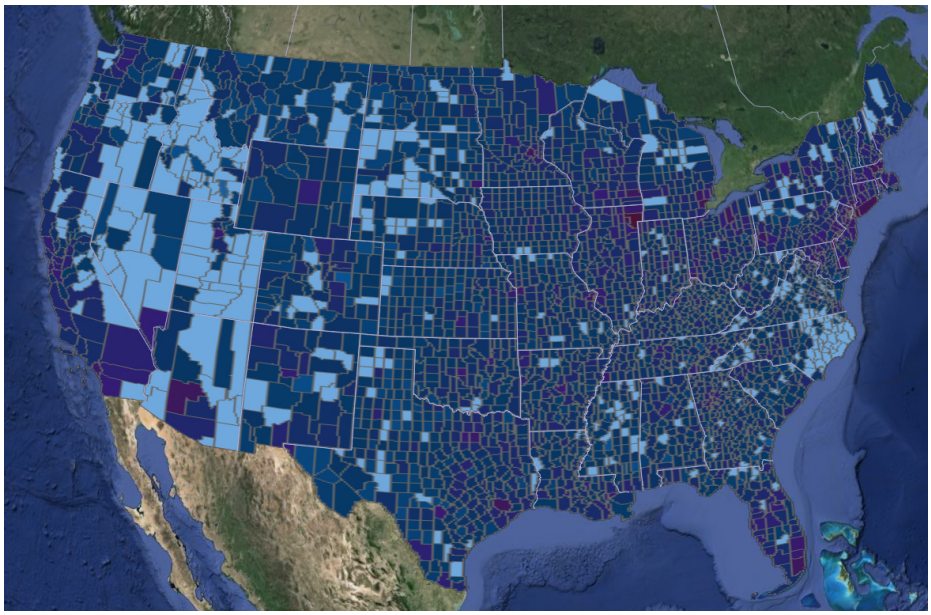
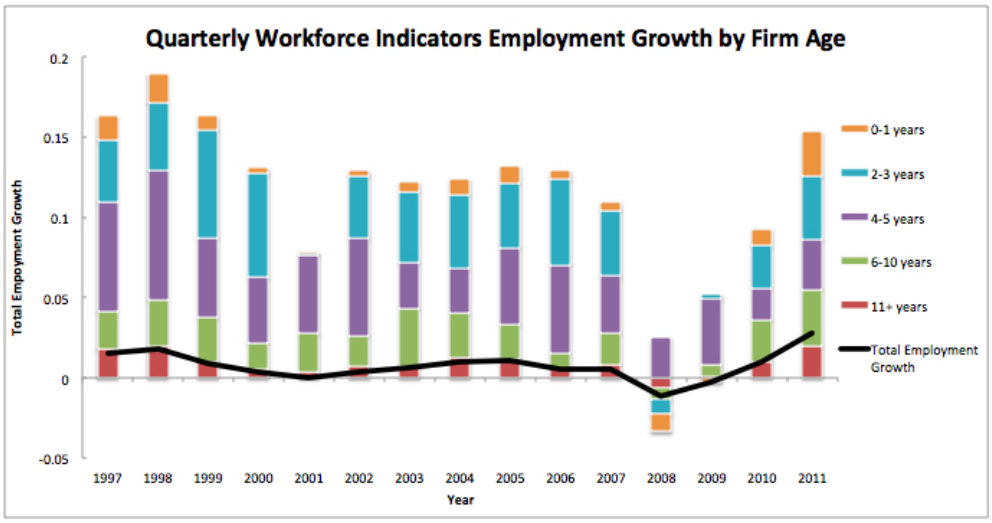


Figure 4:
Total local lender deposits by county in 2010.

These figures depict the gradient going from light to dark of the density of Total local lender deposits by county. Total local lender deposits is the sum of deposits in a county at *truly local* lenders.

Figure 5:
Employment growth by firm age reported quarterly, by county, aggregated to annual level.



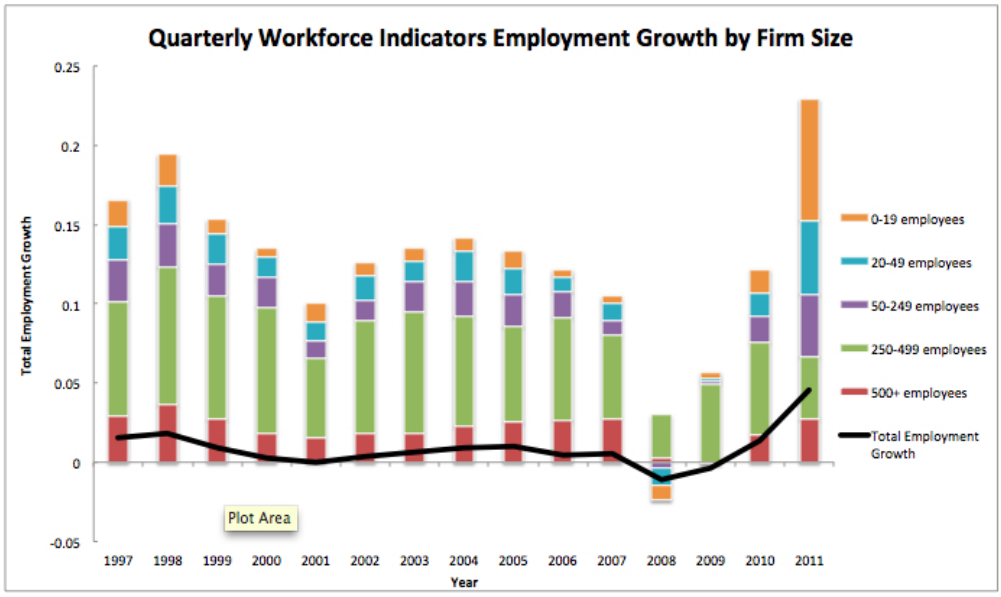


Figure 6:
Employment growth by firm size reported quarterly, by county, aggregated to annual level.

Table 1: **Total Number of FDIC Institutions and Deposit Breakdowns**
This table details how many institutions would be considered *truly local* at a variety of cutoffs. In the analysis, an institution is considered *truly local* if it has greater than 65% of its deposits in a market. A market is defined at the MSA level if the bank operates in an MSA, otherwise at the county level. This table reports how the total number of institutions would differ at different concentration measurements.

	Total Branches	Total FDIC Institutions	Local Total if $> 50\%$	Local Total if $> 65\%$	Local Total if $> 75\%$	Local Total if 100%
1997	81,532	11,159	10,741	10,138	9,691	8,262
1998	82,712	10,709	10,271	9,675	9,211	7,750
1999	83,696	10,321	9,872	9,260	8,782	7,341
2000	84,853	10,084	9,633	9,002	8,538	7,056
2001	85,429	9,729	9,239	8,596	8,126	6,694
2002	85,951	9,456	8,959	8,285	7,816	6,397
2003	87,147	9,240	8,725	8,028	7,537	6,132
2004	89,147	9,047	8,545	7,847	7,358	5,951
2005	91,402	8,839	8,337	7,631	7,111	5,707
2006	94,098	8,747	8,221	7,488	6,990	5,545
2007	96,622	8,587	8,037	7,294	6,797	5,357
2008	98,526	8,424	7,886	7,136	6,620	5,169
2009	98,943	8,169	7,592	6,875	6,341	4,938
2010	97,955	7,809	7,218	6,487	5,958	4,632
2011	97,678	7,510	6,885	6,170	5,644	4,379

Table 2: **Natural Disasters and Property Damage**
This table reports summary statistics for all natural disasters covered by SHELDUS from 1997-2011. The unit of observation is at the county level. The disasters that include an asterisk (*) make up the disaster dummy in the panel regressions due to their propensity to cause property damage and potentially destroy capital.

Natural disaster	Total counties affected	Total property damage (billions)	Average property damage
Earthquake*	20	2.109	122,300,000
Coastal*	1,203	44.711	37,166,251
Hurricane*	2,567	85.012	33,117,257
Wildfire*	1,553	8.057	5,188,023
Landslide*	376	1.370	3,643,617
Tornado*	11,348	22.788	2,008,107
Tsunami/Seiche*	34	0.060	1,764,706
Flooding*	30,581	49.363	1,614,172
Hail*	19,952	10.993	550,972
Drought	4,053	2.109	520,355
Severe Storm	1,412	0.649	459,632
Winter Weather	23,293	6.932	297,600
Wind	27,223	5.404	198,509
Severe Storm and Wind	93,294	7.231	77,508
Lightning	9,988	0.710	71,085
Fog	308	0.020	64,935
Heat	3,056	0.024	7,853
Avalanche*	637	0.004	6,279

Table 3: **Quarterly Workforce Indicators Average Annual Growth Rates**
QWI employment growth rates based on firm age. Each year includes the fourth quarter growth rate to the first quarter of the next year. The unit of observation is at the county level.

	(1) Firm Age (0-1 years)	(2) Firm Age (2-3 years)	(3) Firm Age (4-5 years)	(4) Firm Age (6-10 years)	(5) Firm Age (11+ years)
Year	Employment growth	Employment growth	Employment growth	Employment growth	Employment growth
1997	1.53%	3.82%	6.81%	2.34%	1.80%
1998	1.78%	4.19%	8.09%	2.91%	1.97%
1999	0.90%	6.69%	4.94%	2.79%	0.99%
2000	0.36%	6.49%	4.09%	1.59%	0.56%
2001	0.04%	0.12%	4.86%	2.39%	0.37%
2002	0.35%	3.88%	6.08%	1.95%	0.68%
2003	0.60%	4.43%	2.84%	3.61%	0.72%
2004	0.95%	4.61%	2.80%	2.79%	1.22%
2005	1.04%	4.05%	4.73%	2.23%	1.13%
2006	0.52%	5.38%	5.46%	0.91%	0.66%
2007	0.52%	4.06%	3.54%	2.01%	0.81%
2008	-1.14%	-0.94%	2.50%	-0.71%	-0.61%
2009	-0.30%	0.24%	4.22%	0.66%	0.10%
2010	1.00%	2.68%	2.00%	2.58%	1.03%
2011	2.74%	3.98%	3.07%	3.55%	1.97%

Table 4: **Quarterly Workforce Indicators Average Annual Growth Rates**
QWI employment growth rates based on firm age. Each year includes the fourth quarter growth rate to the first quarter of the next year. The unit of observation is at the county level.

	(1) Firm Size (0-19)	(2) Firm Size (20-49)	(3) Firm Size (50-249)	(4) Firm Size (250-499)	(5) Firm Size (500+)
Year	Employment growth	Employment growth	Employment growth	Employment growth	Employment growth
1997	1.68%	2.11%	2.69%	7.17%	2.93%
1998	2.02%	2.40%	2.67%	8.71%	3.64%
1999	0.94%	1.86%	2.06%	7.75%	2.70%
2000	0.48%	1.31%	1.88%	7.95%	1.85%
2001	1.18%	1.19%	1.07%	5.01%	1.57%
2002	0.83%	1.50%	1.31%	7.09%	1.85%
2003	0.86%	1.28%	1.85%	7.69%	1.84%
2004	0.83%	1.90%	2.21%	6.95%	2.27%
2005	1.12%	1.65%	2.00%	6.04%	2.54%
2006	0.44%	0.97%	1.60%	6.50%	2.65%
2007	0.47%	1.07%	0.97%	5.21%	2.78%
2008	-0.94%	-1.07%	-0.39%	2.66%	0.31%
2009	0.42%	0.11%	0.23%	4.93%	-0.11%
2010	1.46%	1.45%	1.68%	5.81%	1.76%
2011	7.63%	4.65%	3.95%	3.98%	2.70%

Table 5: **Total Loan Growth by Truly Local Lenders**
This table reports OLS regression coefficients for the following model: Total loan growth$_{k,t+1,t+2,t+3,t+4} = \beta$ Disaster$_{k,t}$ + Economic Controls$_{k,t} + \phi_k + \phi_t + \alpha + \varepsilon_{k,t}$ in which ϕ_k is bank fixed effects and ϕ_t is quarter fixed effects. The regression model is repeated for 4 quarters post disaster to report a year of lending behavior. Truly local lenders are institutions that have more than 65% of their deposits in a single market, defined at either the MSA or county level. Bank level data are from the Call Reports and data on natural disasters come from SHELDUS. Data on median income are from the U.S. Census Bureau SAIPE. Data on the unemployment rate are from the Bureau of Labor statistics.

VARIABLES	(1) Cumulative Loan growth 3 months	(2) Cumulative Loan growth 6 months	(3) Cumulative Loan growth 9 months	(4) Cumulative Loan growth 12 months
Disaster	0.178**	0.190*	0.243*	0.254*
	(0.0712)	(0.102)	(0.124)	(0.130)
Size	-14.89***	-21.33***	-33.32***	-34.96***
	(0.557)	(0.852)	(1.21)	(1.27)
Unemployment rate	-0.166***	-0.369***	-0.685***	-0.899***
	(0.0414)	(0.0651)	(0.103)	(0.0996)
Median income (log)	5.36***	7.34***	10.5***	10.3***
	(1.03)	(1.57)	(2.30)	(2.52)
Median income growth	0.421	0.366	1.96	1.64*
	(0.520)	(0.588)	(1.21)	(0.990)
Bank fixed effect	Yes	Yes	Yes	Yes
Quarter fixed effect	Yes	Yes	Yes	Yes
Observations	388,259	384,309	380,968	376,742
R^2	0.235	0.329	0.373	0.425

Table 6: **Total Employment Growth by Firm Age**
This table reports OLS regression coefficients for the following model: Employment growth$_{i,t+1}$ = β Local lender Deposits*Disaster$_{i,t}$ + Local Lender Deposits$_{i,t}$ + Disaster$_{i,t}$ + Economic Controls$_{i,t}$ + ϕ_i + ϕ_t + α + $\varepsilon_{i,t}$ in which ϕ_i is county fixed effects and ϕ_t is quarter fixed effects. Firm age data are from the QWI and data on natural disasters come from SHELDUS. Deposit data are from the FDIC summary of deposits. Data on median income are from the U.S. Census Bureau SAIPE. Data on the unemployment rate are from the Bureau of Labor statistics. Standard errors are clustered at the State and Year level.*** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)
	Firm Age	Firm Age	Firm Age	Firm Age	Firm Age
	(0-1 years)	(2-3 years)	(4-5 years)	(6-10 years)	(11+ years)
VARIABLES	Employment growth	Employment growth	Employment growth	Employment growth	Employment growth
Local lender deposits*Disaster	0.225***	0.180***	0.0764	0.0651	0.0769***
	(0.0865)	(0.0497)	(0.0719)	(0.0470)	(0.0215)
Local lender deposits	0.136	-0.0517	-0.173**	0.0076	-0.0101
	(0.0836)	(0.0770)	(0.0832)	(0.0345)	(0.0120)
Disaster	-1.81*	-1.19*	-0.176	-0.380	-0.707***
	(0.931)	(0.614)	(0.897)	(0.597)	(0.272)
FEMA funding (per capita)	0.0055	-0.0022	-0.0018	0.0004	0.0019***
	(0.0051)	(0.0028)	(0.0018)	(0.0013)	(0.0007)
Population growth	8.11**	4.78***	3.41***	4.87***	3.92***
	(32.0)	(16.9)	(12.5)	(10.7)	(4.03)
Median income (log)	10.6	5.66	6.27	5.75**	5.08***
	(8.90)	(4.22)	(5.01)	(2.76)	(1.22)
Median income growth	7.68	4.35	-0.261	3.93	5.34**
	(12.0)	(6.77)	(6.87)	(4.32)	(2.40)
Median income growth lag	-1.16	1.58	-0.643	-0.975	1.84
	(8.39)	(3.74)	(3.96)	(2.78)	(1.96)
Unemployment rate	1.86***	1.48***	1.14***	1.49***	1.03***
	(0.302)	(0.210)	(0.173)	(0.191)	(0.0880)
Poverty rate	-0.735**	-0.246**	-0.178	-0.316***	-0.134***
	(0.315)	(0.115)	(0.108)	(0.0717)	(0.0304)
Observations	145,938	145,854	144,921	147,562	148,638
R^2	0.075	0.037	0.032	0.071	0.102

Table 7: **Total Employment Growth by Firm Size**
This table reports OLS regression coefficients for the following model: Employment growth $_{i,t+1,}$ = β Local lender Deposits*Disaster$_{i,t}$ + Local lender Deposits$_{i,t}$ + Disaster$_{i,t}$ + Economic Controls$_{i,t}$ + ϕ_i + ϕ_t + α + $\varepsilon_{i,t}$ in which ϕ_i is county fixed effects and ϕ_t is quarter fixed effects. Firm size data are from the QWI and data on natural disasters come from SHELDUS. Deposit data are from the FDIC summary of deposits. Data on median income are from the U.S. Census Bureau SAIPE. Data on the unemployment rate are from the Bureau of Labor statistics. Standard errors are clustered at the State and Year level.*** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)
	Firm Size	Firm Size	Firm Size	Firm Size	Firm Size
	(0-19)	(20-49)	(50-249)	(250-499)	(500+)
VARIABLES	Employment growth	Employment growth	Employment growth	Employment growth	Employment growth
Local lender deposits*Disaster	0.0654**	0.0670**	0.0329	0.124	0.118***
	(0.0267)	(0.0261)	(0.0256)	(0.0881)	(0.0405)
Local lender deposits	-0.0131	0.000790	0.00961	0.165	0.0272
	(0.0144)	(0.0342)	(0.0198)	(0.102)	(0.0391)
Disaster	-0.480	-0.448	-0.0524	-0.904	-1.201**
	(0.342)	(0.328)	(0.316)	(1.083)	(0.505)
FEMA funding (per capita)	0.000894	0.00210**	0.000851	-0.00203	0.00625
	(0.00124)	(0.00106)	(0.000944)	(0.00202)	(0.00404)
Population growth	45.20***	48.52***	40.64***	47.94**	55.31***
	(5.044)	(6.848)	(6.617)	(23.89)	(13.61)
Median income (log)	9.656***	3.559*	4.801***	3.429	-3.770
	(1.729)	(1.929)	(1.604)	(6.032)	(3.235)
Median income growth	-0.176	0.989	-2.581	1.482	12.88
	(3.240)	(2.621)	(2.739)	(5.722)	(10.18)
Median income growth lag	-0.299	2.666	-1.909	-1.676	2.638
	(1.713)	(2.569)	(2.153)	(5.766)	(5.839)
Unemployment rate	1.524***	0.762***	0.963***	0.842***	0.651***
	(0.130)	(0.0788)	(0.0818)	(0.183)	(0.128)
Poverty rate	-0.287***	-0.0685	-0.143***	0.0260	-0.205**
	(0.0399)	(0.0461)	(0.0447)	(0.142)	(0.0897)
Observations	149,381	141,545	141,539	113,929	141,623
R^2	0.305	0.050	0.073	0.039	0.036

Table 8: **Employment Growth by Firm Age using Property Damage**
This table reports OLS regression coefficients for the following model: Employment Growth$_{i,t+1}$ = Local lender deposits*Property Damage$_{i,t}$ + Local lender deposits$_{i,t}$ + Property Damage$_{i,t}$ + Fema Funding$_{i,t}$ + Economic Controls$_{i,t}$ + $\phi_i + \gamma_t + \varepsilon_{i,t}$ in which ϕ_i is county fixed effects and ϕ_t is quarter fixed effects. Firm size data are from the QWI and data on natural disasters come from SHELDUS. Deposit data are from the FDIC summary of deposits. Data on median income are from the U.S. Census Bureau SAIPE. Data on the unemployment rate are from the Bureau of Labor statistics. Standard errors are clustered at the State and Year level.*** p<0.01, ** p<0.05, * p<0.1

	Firm Age (0-1 years)	Firm Age (2-3 years)	Firm Age (4-5 years)	Firm Age (6-10 years)	Firm Age (11+ years)
Local lender deposits*Property damage	0.0165***	0.0169***	0.00857	0.00900**	0.00766***
	(0.00622)	(0.00421)	(0.00605)	(0.00365)	(0.00187)
Local lender deposits	0.145*	-0.0513	-0.175**	0.00234	-0.0106
	(0.0845)	(0.0766)	(0.0828)	(0.0341)	(0.0119)
Property damage	-0.167**	-0.121**	-0.0431	-0.0720	-0.0762***
	(0.0741)	(0.0537)	(0.0765)	(0.0473)	(0.0238)
Observations	145,938	145,854	144,921	147,562	148,638
R^2	0.075	0.037	0.032	0.071	0.102

Table 9: **Employment Growth by Firm Size using Property Damage**
This table reports OLS regression coefficients for the following model: Employment Growth$_{i,t+1}$ = Local lender deposits*Property Damage$_{i,t}$ + Local lender deposits$_{i,t}$ + Property Damage$_{i,t}$ + Fema Funding$_{i,t}$ + Economic Controls$_{i,t}$ + $\phi_i + \gamma_t + \varepsilon_{i,t}$ in which ϕ_i is county fixed effects and ϕ_t is quarter fixed effects. Firm size data are from the QWI and data on natural disasters come from SHELDUS. Deposit data are from the FDIC summary of deposits. Data on median income are from the U.S. Census Bureau SAIPE. Data on the unemployment rate are from the Bureau of Labor statistics. Standard errors are clustered at the State and Year level.*** p<0.01, ** p<0.05, * p<0.1

	Firm Size (0-19)	Firm Size (20-49)	Firm Size (50-249)	Firm Size (250-499)	Firm Size (500+)
Local lender deposits*Property damage	0.00671***	0.00776***	0.00373*	0.0112	0.0104***
	(0.00230)	(0.00221)	(0.00220)	(0.00744)	(0.00331)
Local lender deposits	-0.0141	-0.00181	0.00842	0.166	0.0291
	(0.0143)	(0.0342)	(0.0197)	(0.101)	(0.0387)
Property damage	-0.0609**	-0.0621**	-0.0174	-0.0830	-0.104**
	(0.0300)	(0.0280)	(0.0284)	(0.0918)	(0.0424)
Observations	149,381	141,545	141,539	113,929	141,623
R^2	0.305	0.050	0.073	0.039	0.036