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The Effectiveness of Post-Katrina Disaster Aid: The Influence of SBA Loans on Small Businesses in Mississippi

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ABSTRACT

Following Hurricane Katrina, the United States government provided $45 billion in loans and rebuilding funds to individuals and businesses for the purpose of repairing the damage caused by the hurricane. However, it is not yet clear what impact this assistance had on small businesses in affected areas. In particular, the role of Small Business Administration (SBA) loans has yet to be fully examined. Though few doubt the benefits of short-term and immediate disaster relief, there is some debate on the benefits of SBA loans. Evidence suggests that receiving business loans may do more harm than good if the loan ultimately increases debt load. In this study we contribute to the disaster relief literature through completing the first analysis regarding the receipt of SBA loans after Hurricane Katrina. We find that there are several characteristics which increase the probability of application for a loan, but there is a set of different characteristics which determine the amount ultimately received. Further, results indicate that targeting programs for certain groups were unsuccessful in directing loans to these groups.

1. INTRODUCTION

When Hurricane Katrina hit the Southeastern United States in August 2005, it became the costliest hurricane in the history of the country, with more than $108 billion in damages and over 1,800 lives lost (Federal Emergency Management Agency [FEMA], 2013). The recovery effort was similarly unprecedented: over 13 million Americans donated money as individuals, the Red Cross provided $2 billion in emergency aid, and, in addition to $75 billion in immediate relief, the United States government provided $45 billion in loans and rebuilding funds (FEMA, 2013). However, it is not yet clear what impact this assistance had on small businesses in affected areas. In particular, the role of Small Business Administration (SBA) loans has yet to be fully examined. Though few doubt the benefits of short-term and immediate disaster relief, there is some debate on the benefits of SBA loans.

SBA disaster relief assistance is intended to support families and businesses through the recovery of losses that are not otherwise insured. However, evidence suggests that receiving business loans may do more harm than good, particularly if the loan ultimately increases debt load (Alesch, Holly, Mittler, & Nagy, 2001). In this study we investigate the factors which influence receipt of SBA loans after Hurricane Katrina. Results indicate that there are several characteristics which increase the probability of application for a loan, but there is a set of different characteristics which determine the amount ultimately received. With this analysis, we are able to better determine the role of national and local government in small business disaster recovery as well as suggest future strategies for aid distribution to small businesses.

The remainder of the paper is structured as follows: Section Two includes background on the SBA and its loan program, as well as a brief literature review on loan receipt after disasters. Sections Three and Four discuss the methodology implemented and data used, respectively. Finally, Sections Five and Six include results and a conclusion.

2. BACKGROUND AND LITERATURE REVIEW

The Small Business Act of 1953 created the Small Business Administration (SBA), with the stated function to “aid, counsel, assist, and protect, insofar as is possible, the interests of small business concerns.” SBA now provides a number of financial assistance programs for small businesses which are designed to help firms meet financing needs. Most commonly, this is done through loans. Generally, however, SBA does not make loans directly to small businesses. Instead, it sets guidelines for loans, which are then made by its partners (including “lenders, community development organizations, and microlending institutions” [U.S. Small Business Administration, 2013]). Therefore, when a business applies for an SBA loan, it is actually applying for a commercial

loan; albeit one that is structured per SBA requirements, with an SBA guarantee.

Disaster loans are structured somewhat differently, as they are provided directly from the government. During disasters, regions are designated as "declared disaster areas." These regions are then potentially eligible for financial assistance from the SBA. Businesses of any size, most private nonprofit organizations, and homeowners may apply to the SBA for a loan after a disaster. Loans are intended to cover losses not fully protected by insurance. Three primary loan types exist, including: (1) home and personal property loans, (2) business physical disaster loans, and (3) economic injury disaster loans. The interest rate for such loans is stipulated to not exceed 4% if it is not possible for the borrower to acquire credit elsewhere. For businesses that are able to obtain credit elsewhere, the interest rate is stipulated to not exceed 8%. Whether credit is available elsewhere is ultimately determined by the SBA.

While all business owners in declared disaster areas are eligible for SBA loans, preferential terms were designated for certain groups, including female, minority, and veteran business owners, following Hurricane Katrina. It is not clear, however, if these groups ultimately received loans. Additionally, coastal businesses were also eligible for a special class of loan, but this impact on application and receipt is also unclear.

Although SBA loans were available following Hurricane Katrina, evidence suggests that the process was largely mismanaged and that many eligible applicants were rejected. The Associated Press released a report of SBA data, finding that 55% of homeowners and businesses that applied for help were turned away. Of 318,953 applications processed, 175,463 were rejected and 143,490 were approved. Further, of the approved loan money, only 60% ultimately reached recipients. SBA officials claim many applicants never accepted the loans as they found other ways to rebuild. However, many applicants indicated that applications were abandoned as the process took too long and was overly complicated (Weiss, 2010).

Previous literature also suggests that the loan application processes following disasters is problematic. Nigg and Tierney (1990) examine granted loans after the Whitter-Narrows earthquake of 1987, finding mixed results on characteristics which lead to loan receipt. Tierney (1995) further finds that, even when available, as after the 1993 Midwest Floods and the 1994 Northridge Earthquake, very few eligible parties actually apply for loans. The United States Government Accountability Office has undertaken review the SBA loan procedures, leading to extensive testimony regarding attempts to modify and improve the loan process due to shortcomings following Hurricane Katrina (United States Government Accountability Office [USGAO], 2010).

Another body of literature has examined the effect of disaster loans on small businesses. Haynes, Danes, and Stafford (2011) find that aid does not play a role in the survival of a firm. Alesch et al. (2001) find similar results, indicating that if a firm's debt load is increased by receipt of a loan, they are ultimately worse off.

This study contributes to the literature through determining which characteristics of small businesses and their owners are associated with applying for a SBA loan and, ultimately, the receipt of that disaster loan. We also attempt to investigate the effect of targeting programs through determining if certain characteristics of businesses and their owners are more likely to lead to loan receipt.

3. METHODOLOGY

In estimating the effect of financial aid, we consider two measures: (1) did the business attempt to apply for an SBA loan and (2) conditional on application, what loan amount was received. As these two questions signify multiple components which contribute to a single process, we use a double-hurdle model for the analysis. This model allows for the distinguishing of the determinants of the participation decision (that is, completing the application for the loan) from those of the amount of participation (that is, the amount of the loan received). This permits separate stochastic processes for the participation decision, and, later, the actual consumption decision. Therefore, we utilize a double-hurdle model, originally modeled by Cragg (1971).

The double-hurdle model has a participation equation:

$$dt = zt'\alpha + \eta t \quad (1)$$

and a consumption equation:

$$yt = xt'\beta + \varepsilon t \quad (2)$$

where d_t indicates whether or not the firm applied for a loan, y_t indicates the amount which the firm received, if a loan application was completed, while α and β are vectors of parameters, and ηt and εt are error terms.

In the first stage of the double-hurdle model, the participation component, a Probit regression mode,l is estimated, considering whether or not a firm applied for an SBA loan. Following Moffat (2005), in this first stage, we only include characteristics of the

business owner. As participation is an individual, endogenous decision, only traits of the individual who makes the decision to apply or not, are relevant.

The second-stage model includes a truncation estimation procedure and considers the loan amount received by the firm. In this case, only the firms who receive a loan are included in the second stage. Again, following Moffat (2005), this stage includes characteristics of the firm and the business owner. As the loan amount received is an exogenous decision by the SBA, only the relevant business and demographic characteristics taken into account during that process are considered.

Table 1. Variables used in double-hurdle model

Variable	Description
First Hurdle: Did the business apply for an SBA loan?	
gender	= 0 if male, = 1 if female
education	highest level of education attained
race	= 0 if white, = 1 if non-white
veteran	= 0 if no, = 1 if yes
married	current marital status
ownership	year in which owner began working in the business
experience	number of years worked in industry
home	= 1 if business operating from residential area, = 0 if not
insurance	= 1 if business had insurance, = 0 if not
past	= 1 if previously suffered disaster, = 0 if not
qual_damage	owner's qualitative perception of incurred damage
coast	= 1 if the business is coastal, = 0 if not
Second Hurdle: What amount loan did the business receive?	
legal	form of legal ownership
employees	number of employees
insurance	= 1 if business had insurance, = 2 if not
claim	= 1 if claim filed with insurance, = 2 if not
paid	= 1 if claim was paid, = 2 if not
quant_damage	damage to business, in dollars
revenue	revenue tiers, entered as dummy variables
age	number of years business has existed
gender	= 1 if male, = 2 if female
race	= 0 if white, = 1 if non-white
veteran	= 1 if yes, = 2 if not
experience	number of years worked in industry
coast	= 1 if the business is coastal, = 0 if not

Please see Table 1 for a full list of the variables included in each stage.

It is worth noting that several variables are included in both stages. These include: (1) gender of business owner, (2) race of business owner, (3) whether the business owner is a veteran, (4) whether the business is located along the coast, (5) experience of business owner, and (6) whether the business had insurance.

The first four characteristics are given specific considerations for SBA loans and, therefore, may play a role in application as well as receipt. Additionally, the latter two traits play a role determining if a business receives an SBA loan and likely also have some role in determining if they apply at all.

Finally, each stage is run discretely. The first stage is run using a probit model with errors clustered based on location. The second stage is run using a truncated OLS regression in which those who did not receive a loan are excluded. Errors are again clustered, based on location.

4. DATA

To conduct our analysis, we use the Small Business Disaster Recovery Study, which follows 500 small businesses in the ten southern-most counties of Mississippi. The dataset includes resilience data and business characteristics, as well as information on aid receipt, including disaster assistance, its perceived importance and source, and detailed data on the SBA loan process.

Eligible businesses were founded before August 2005 and were operating during the period of Hurricane Katrina in the 10 county areas of interest.

Further, the respondent was determined to be eligible based on their ownership stake in the business in the same period. Approximately 500 businesses were determined to be eligible, and we use the entire sample in our analysis.

5. RESULTS

The results of the double-hurdle model can be found in Tables 2 and 3, with the first stage in Table 2, and the second stage in Table 3.The results suggest that there are several characteristics which increase the probability of application for a loan, but a set of different characteristics determine the amount ultimately received.

We begin the discussion with some general descriptive statistics of the two groups. The entire

sample includes 499 businesses. Of these, only 153 applied for an SBA loan (the first hurdle); this is just over 30% of the businesses. Of these 153, only 64 would go on to actually receive a loan (the second hurdle); of the sample that applied this is about 42%, and of the entire sample it is about 12%. These descriptive statistics are quite close to the findings of the literature discussed above, in which 55% of those who applied for a loan were denied.

Table 2. First hurdle, probit results

Variable	Coefficient	Standard Error
gender	0.291***	0.041
education	0.020	0.015
race	0.068	0.170
veteran	-0.790	0.121
married	-0.039	0.160
ownership	-0.010***	0.003
experience	0.005*	0.003
home	-0.031	0.180
insurance	-0.068***	0.012
past	0.074	0.312
qual_damage	0.235***	0.090
coast	0.036***	0.032
constant	-1.22***	0.097

*** is significant at the 99th percent level, ** is significant at the 95th percent level, and * is significant at the 90th percent level

Table 3. Second hurdle, truncated OLS regression results

Variable	Coefficient	Standard Error
legal	0.181	0.142
employees	0.038	0.973
claim – business	0.246	0.188
claim – home	-0.411	0.291
paid –business	0.144	0.638
paid – home	-0.972***	0.043
insurance	-1.436	0.973
(log) quant_damage	0.123***	0.032
revenue tier 2	1.673***	0.377
revenue tier 3	1.790***	0.066
revenue tier 4	0.426***	0.158
revenue tier 5	1.037	0.804
business age	0.010***	0.001
gender	0.273	0.440
race	-0.336**	0.140
veteran	0.262	0.565
experience	0.007***	0.001
coast	-0.205	0.172
constant	9.127***	0.317

*** is significant at the 99th percent level, ** is significant at the 95th percent level, and * is significant at the 90th percent level

The first stage of the model considers whether business owners apply for a loan. Please see Table 2 for the full set of results. The results show that gender, perceived damage, and location on the coast increase the probability of applying for a loan, while number of years the business owner has had the business and whether the business had insurance decrease the probability of applying for a loan. This follows expectations. Women and coastal businesses were given preferential loan terms by the SBA which likely increased these groups' probability of applying for loans. Further, if a business owner perceived a high amount of damage, he or she would be more likely to apply for additional assistance from the SBA. Conversely, if a business owner had insurance, he or she would be less likely to require additional support from the SBA. Finally, if an owner has had his or her business for many years, he or she may be less likely to apply for a loan, as, over time, capital has been accumulated, allowing for liquidity that a newer business may not have.

The second stage of the model considers the loan amount which the business received. Please see Table 3 for the full set of results. The results indicate that the amount of damage, revenue, age of business, and industry experience of the owner all increase loan amount, while a paid insurance claim and race decrease the loan amount. This generally follows expectations. Greater damage may signify greater need and will increase the amount of loan received. Additionally, age of the business, revenue, and industry experience of the owner signify stability and the ability to repay the loan which may therefore increase the amount granted. A paid insurance claim decreases the amount received, as this suggests that some amount of the damage has already been covered. Finally, nonwhite business owners receive lower loan amounts.

Together, these results suggest that the traits which encourage a business owner to apply for a loan are different from those which ultimately result in receipt of a loan. Applying for a loan is increased in probability by a variety of demographic, location, and economic factors, while actual receipt of a loan has far more emphasis on economic and stability traits.

6. CONCLUSION

The results of our analysis suggest that the traits which encourage a business owner to apply for a loan are different from those which ultimately result in its receipt. Being female, greater perceived

damage, and coastal locations increase the probability of applying for a loan, while number of years the business owner has had the business and whether the business had insurance decrease the probability of applying for a loan. However, receipt of a loan is increased by the amount of damage, business revenue, age of business, being white, and industry experience of the owner, while a paid insurance claim decreases the loan amount.

Overall, these results suggest that business characteristics generally increase loan receipt, while owner characteristics tend to increase application.

Further, these results suggest that while some of the targeted programs for the SBA loans, particularly those for female business owners and businesses along the coast, may have increased applications for loans, there is no evidence to suggest that they impacted future receipt. Further, other programs, such as those for veterans and minority business owners, were not significant in influencing receipt or application. This suggests some lack of success in targeted SBA loan programs.

This paper is limited as it only focuses on application for and receipt of the loan. Future work may focus on the effect of receipt of a loan, as well as the effect of receipt of other types of aid.

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