[Preliminary draft]

Small Businesses, Federal Loans, and Local Employment Growth

Yong Suk Lee, Williams College[1]

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Abstract

I examine the impact of government guaranteed small business loans on local employment. I find that an increase of $10,000 in the Small Business Association's Small Business Loan (SBL) decreases county employment by about 5 people. I also find that a $1 billion increase in the SBL increases the net number of small establishments by about 3.5 but reduces the net number of medium sized firms by about 1 and larger firms by about 0.6 within a county. The SBL can be associated with workers shifting away from larger firms to create their own businesses but at the cost of the health of larger firms and the county's aggregate employment. However, there is also evidence of the SBL being used to create businesses when larger firms go under. In sum, government guaranteed small business loans do not create local economic growth at the county level and whether or not there is a social welfare argument for such loans warrants further examination.

1. Introduction

Employment statistics often show that small businesses are the major driving force that adds new jobs in the US economy. Kleisen and Maues (2011) calculate that between 1992 and 2010 small firms with 1 to 19 employees provided about 30 percent of the new jobs in the economy, which is the largest percentage among the different firm size categories. Though many researchers have pointed out the importance of understanding firm dynamics, i.e., the birth and death of small businesses, to fully comprehend the role of small businesses in the overall economy, politicians and small business advocates have emphasized the role small businesses have played in adding

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new jobs.[2] The government has been supporting small businesses since the establishment of the Small Business Administration (SBA) in 1953 and continues to promote the creation and growth of small businesses through various loan programs.

This paper examines whether SBA guaranteed loans generate local employment. Specifically, I examine three SBA loan programs- the Small Business Loan (SBL), the Certified Development Company Loan (CDC), and the Physical Disaster Loan (PDL)- and their impact on employment at the county level. The SBL and CDC are loans issued by private banks that are guaranteed by the SBA and the main purpose is to be used in the creation and growth of small businesses. The PDL is a direct loan and is used primarily to help businesses or families that have suffered physical damage to their properties due to a natural disaster. The paper focuses on the guaranteed loans but I also include the disaster loan as a control variable in the empirical analysis. To fully understand the impact of the SBA guaranteed loans on economic development, one need to understand whether the firms receiving the small business loans create jobs or not, but also the aggregate impact of small business loans on the local economy that includes general equilibrium effects, i.e., the impact on other small firms not receiving these loans or the larger firms. Given that economic growth differs between small firms and large firms, it is important to know at what expense or with what trade off small businesses are being created.

In order to examine the aggregate impact of SBA loans on the local economy, I construct a county level panel data and examine the within county variation in SBA loans and employment over time. Pooled cross-sectional estimates show that SBA loans are statistically significantly associated with higher levels of employment. However, this relationship is likely due to the across county correlation in SBA loans and employment. When I focus on the within county variation, I find that the Small Business Loan actually decreases county employment. A $10,000 increase in the Small Business Loan is associated with about a 3 to 5 people reduction in the county's employment. This result is quite robust to different specifications including a lagged dependent variable model, a fixed effect model, and a combination of the two specifications estimated with instruments. Also, the results are robust to the different time periods of the 1990s and the 2000s. Employment on average steadily grew in the 1990s and then flattened out in the

[2] Kleisen and Maues (2011) show that for the same period, small firms showed the smallest percentage of net job creation indicating a high rate of job destruction by small firms. Firms with 500 or more employees exhibited the largest percentage of the net jobs created at about 38%.

2000s. Though the employment growth patterns were different for the two periods, the negative impact of Small Business Loans on county employment is statistically significant for both periods.

To understand the mechanisms of why the Small Business Loans result in lower aggregate employment, I examine the impact of SBA loans on the number of different size firms, where firm size is categorized by the number of employees, within counties over time. I find that the Small Business Loans increase the number of small establishments that has 1 to 4 employees but is associated with a decrease in the number of larger firms, that is, firms with over 20 employees. This indicates that small businesses are being created at the expense of larger firms. Furthermore, when I perform the analysis that includes the one year lag and one year lead of the Small Business Loans, I find that the Small Business Loans not only hinder the large businesses but also that the underperformance of large businesses increase the amount of the Small Business Loans.

The results of this paper together with findings from recent studies have important policy implications. Based on a survey of small business owners, Hurst and Pugsley (2011) find that most small business owners have little desire to grow and start businesses for non-pecuniary benefits, such as not having a boss and having flexibility of hours. My finding that Small Business Loans generate new small firms at the expense of larger firms is consistent with employees leaving larger firms to create their own business or employees starting small businesses rather than seeking reemployment when a large firm goes under. However, the transition to small business activity does not seem to generate employment growth. This latter fact is consistent with the literature that shows that small businesses are not more effective in generating growth compared to larger firms. (Kleisen and Maues, 2011, Haltwinger et al., 2011). Haltwinger et al. (2011) examine the relationship between firm size and growth using a comprehensive establishment level data and control for firm age. They find that once firm age is controlled for small firms do not generate employment growth more than larger firms and that small and young firms grow more rapidly than small but old firms but also are more likely to exit. Hence, the effectiveness of government backed small business loans will likely depend on having a better understanding of which type of small businesses at what stage is likely to grow. The current state of government backed small business lending does not seem to have been very

successful in this aspect. However, there could a social welfare argument for small business loans. If the SBL enables people to start a business and work rather than remain unemployed when large firms go under, then the loans could be serving a type of welfare purpose. Given the fact that many small businesses fail, whether or not it is socially optimal for these people to start a business remains controversial and warrants further study.

The rest of the paper proceeds as follows. In section 2, I provide further background on the SBA loan programs. Section 3 describes the data and empirical strategy. Section 4 presents the main empirical results. Section 5 provides concluding remarks.

2. Background on the SBA loans

Most of the loans provided by the SBA are guaranteed loans, in the sense that the SBA backs a loan provided through a commercial lender and guarantees to pay back in case the loan goes bad. Commercial lenders often require collateral for business loans, which small business owners often do not have, and are less willing to provide loans to start a new business relative to loans to existing businesses with a track record. The government through the SBA fills in this gap and guarantees loans for small businesses. The SBA's main forms of guaranteed lending are the Small Business Loan, also known as the 7(a) loan program, and Certified Development Company Loan, also known as the 504 loan program. The Small Business Loan (SBL) is based on Section 7(a) of the Small Business Act and is provided by commercial lenders that structure loans according to SBA's guidelines and receive a guarantee from the SBA. The SBA does not guarantee the full amount but usually up 85% of the loan. The commercial lender is in charge of the process and the loan applicant must meet the commercial lender's criteria. Terms are negotiated between the applicant and the commercial lender subject to the SBA requirements and the applicant must meet the SBA's firm size requirements and be for-profit.

The Certified Development Company (CDC) or the 504 loan provides financing for fixed assets, such as, land, buildings, or machines, through a certified development company. A certified development company is a non-profit corporation set up to promote local economic development with several hundred locations nationwide. Another important difference between the CDC and the SBL is that the CDC is only available to existing small businesses that plan to expand its

business and cannot be used to start a new business. The loan portfolio is such that typically the applicant contributes 10% of the total cost, the commercial lender 50%, and the CDC 40% which is fully guaranteed by the SBA.

The SBA also provides direct loans in the case of disasters. Individuals, small businesses, and nonprofit organizations residing in counties declared a presidential disaster are eligible to apply for the SBA's Physical Disaster Loan (PDL). Once implemented, the PDL offer low interest loans to individuals and businesses for refinancing, repair, rehabilitation, or replacement of damaged property. Loans may be available to businesses which have suffered an economic impact as well. The SBA disaster declaration can be made independently or in concert with a Presidential Disaster Declaration. With an SBA independent disaster declaration there must be a minimum of twenty-five homes or businesses with 40 percent or more uninsured losses and/or five businesses with substantial economic or physical losses.

Though the PDL is a more of an ad hoc disaster relief loan and not one of the SBA's year-round programs that aims to develop small businesses, it does comprise a substantial part of the SBA's budget. In 1995 the SBA guaranteed 8.79 billion dollars in SBL, 2.2 billion dollars in CDC, and provided 1.55 billion dollars of PDL. These three programs comprised about 90.4% of all SBA loans for that year. In the empirical analysis I will focus on the impacts of the SBL and the CDC but also control for the PDL amounts.

3. Data and Empirical Strategy

I construct a US county level data that covers the 48 state (excluding Alaska, Hawaii, and the District of Columbia) from 1993 to 2003. Data were collected from various sources.

The County Business Pattern (CBP) provides county level employment by industry and the number of establishments by establishment size categorized by the number of employees. However, the CBP does not provide employment numbers by establishment size. Data on population and average personal income were collected from the Bureau of Economic Analysis' Regional Economic Information System. For the SBA loan data, I use the Consolidated Federal Funds Report (CFFR). The CFFR compiles all grants and loans provided to local governments. I

identify the aforementioned three SBA loan programs from the CFFR and aggregate the loan amounts to the county level for each year.

Later in the empirical analysis I experiment with instrumental variables using Congressional District, House Representative, and House Committee information. I collected House Representative and Committee information from the Congressional Data Page managed by Charles Stewart[3] and extracted the congressional district information from the Geographic Correspondence Engine. Table 1 provides summary statistics for the main variables used in the analysis.

My main estimating equation is

$$y_{cst} = \alpha + \beta X_{cst} + \gamma Z_{cst} + \mu_c + \zeta_{st} + \varepsilon_{cst} \qquad (1)$$

where y_{cst} is employment in county c in state s in year t, X_{cst} is the amount of SBA loan distributed in that county, Z_{cst} is a set of county characteristics including population, average income, and whether or not the county suffered a natural disaster in year t. μ_c is the set of county fixed effects and $\zeta_{st}$is the set of state-year fixed effects. The county fixed effects control for unobserved county features relevant for employment but also each county's small business lending and loan behavior. By including state-year fixed effects instead of year fixed effects, I alloy year level shocks to vary across different states. This captures state wide economic shocks as well as state level governmental and legal differences that vary over year.

The above specification assumes that the constant county fixed effect captures the unobserved determinants of employment. However, it is likely that there are unobserved county level components that vary over time and affect employment. To capture such effect I also estimate a lagged dependent variable (LDV) model and a lagged dependent variable model with fixed effects. In practice, I estimate two additional equations:

$$y_{cst} = \alpha + \rho y_{cst-1} + \beta X_{cst} + \gamma Z_{cst} + \zeta_{st} + \varepsilon_{cst} \qquad (2)$$

$$y_{cst} = \alpha + \rho y_{cst-1} + \beta X_{cst} + \gamma Z_{cst} + \mu_c + \zeta_{st} + \varepsilon_{cst} \qquad (3)$$

[3] Professor of Political Science at MIT. The url is http://web.mit.edu/17.251/www/data_page.html

Equation (2) includes the lagged dependent variable but not the county fixed effects. A more comprehensive specification is equation (3) where both the lagged dependent variable and fixed effects are included. However, the presence of both the lagged dependent variable and fixed effects generates an endogeneity problem in the estimation.[4] To deal with this problem I use the two period lagged dependent variable y_{cst-2} as an instrument for y_{cst-1} when estimating equation (3). The identifying assumption would be that the two period lagged variable y_{cst-2} is uncorrelated with the present error term ε_{cst}.

The estimates of β from the above equations provide good descriptions of the equilibrium relationship between SBA loans and local employment. It would be hard pressed to argue that the estimates of β from the above equations provide the causal impact of SBA loans on local employment. Fundamentally, small business loans are not an exogenous treatment. It is tied to the local economic condition and involves a process of application and approval. Individuals could see an upturn in their county's economy and start applying for more SBA loans to take advantage of the expanding economy. On the other hand, business owners experiencing difficulties may be applying for the SBA loans. Given the inherent endogenous process of business loans, a clear understanding of the equilibrium relationship is important for understanding the efficacy of such program.

Nonetheless, questions of causal impact can also be of interest when one thinks about hypothetical programs or variants of the current program. In order to generate potentially exogenous variation in small business loan amounts, I use each county's representation in the House Committee on Small Businesses as an instrument. The underlying idea for the instrument comes from the fact that the US counties and congressional districts do not perfectly overlap. Some counties are fully represented by one congressional districts. Other counties are represented by multiple congressional districts, ranging from 2 to 18. In such cases, the representation from different congressional districts can be identified by the county's population share for each congressional district. I identify which House Committees are represented by the congressmen in each county and calculate the share of the county's population represented by the Small Business Committee based on the allocation factor of each county to each congressional

[4] When one demean variables to deal with the fixed effects, the demeaned $y_{cst-1} - \bar{y}_c$ term in the right hand side automatically contains ε_{cst}.

district. I use this share as an instrument for the Small Business Loan amounts in equation (1) and examine the potentially exogenous impact of business loans on employment.

4. Empirical Results

4.1 The SBA loans and employment

Table 2 columns (1) and (2) present the pooled cross section estimates with different specifications for the state and year fixed effects. The SBA's main loan program, the SBL is positively and statistically significantly associated with local employment in the cross section. However, once I focus on within county variation over time I find that the impact of SBL on local employment is negative. The lagged dependent variable specifications in columns (3) and (4) return a negative impact that is statistically not different from zero. The fixed effects specifications in columns (5) and (6) return a statistically significant negative coefficient on SBL. A $10,000 increase in SBL results in about a 5 to 6 people reduction in county employment. The impact is stronger in MSAs relative to non MSAs as can be seen in columns (7) and (8).

Next I estimate the specification that includes both the county fixed effects and lagged dependent variable and use the two period lagged employment as the instrument. Table 3 column (1) reports that a $10,000 increase in SBL results in about a 3 people reduction in county employment. The impact on CDC is also negative but statistically not significant. In column (2) I constrain the two loan programs to have the same coefficient and estimate the combined impact of the SBL and the CDC loans on local employment and get a negative and statistically significant estimate. The estimates up to now indicate that the equilibrium outcome of the SBL on employment is negative and statistically significant.

In the next set of columns, I ask the hypothetical question of if there were some exogenous variation in the SBA loans what would its impact be on employment. In columns (3) and (4), I estimate the fixed effects model and instrument the SBA loan amounts with the one period lagged loan amounts. The estimates are negative and twice as large as before. In columns (5) and (6), I use the two Small Business Committee (SBC) variables: a dummy indicating if there is any representation of the SBC in the county and a variable indicating the share of population

represented in the county based on the mismatch between county lines and congressional districts. Figure 1 is a scatter plot illustrating the relationship between the SBL amount and the share of county population represented by the House Small Business Committee. Appendix Table 1 presents the first stage regression results. Having a non-zero Small Business Committee representation significantly increases the loan amount in the county. However, the loan amount decreases with higher shares of representation.[5] Column (5) of Table 3 indicates the instrument is quite weak when I use the two variables to instrument for both the SBL and the CDC separately. However, when I instrument for the combined SBL and CDC amount I gain more power as indicated by the 1st stage F-statistic. The estimate suggests that the combined SBA guaranteed loan has a negative causal impact on local employment. The estimate is not statistically significant.

The panel data I use spans from 1993 to 2003. As Figure 2 illustrates the 1990s was a period of growth with employment steadily increasing. However, after 2000 employment flattens out and remains steady. Hence, the dynamics of employment could be different between the two periods. To examine the robustness of my previous estimates I estimate the lagged dependent variable-fixed effects model for the 1990s in column (1) and the 2000s in column (2). The coefficient on SBL is -0.28 for the 1990s and -0.43 for the 2000s and both are statistically significant at the 1% level. Hence, the negative impact is robust in both periods but somewhat stronger during the 2000s.

Finally, in column (3) of Table 4, I focus on the two years, 2002 and 2003. Based on the 2000 Census, congressional district lines were newly drawn and the congress that opened in 2003 was the first to reflect this change. I intend to use the change in congressional districts as a more exogenous source of variation by narrowly focusing on this period. I use the two different sets of Small Business Committee instruments and find that the estimate is statistically not different from zero but negative as before.

[5] At this point, I do not have a clean explanation for the patterns described in Appendix Table 1. The fact that larger counties tend to have more congressional districts would suggest that this is a size effect. However, I am controlling for population and examining within counties. Hence, there must be a story other than simply the size of the county. The empirical regularity could be a story of information where representatives of more diversely represented counties actively advertise his or her committee affiliation to the constituents.

To briefly summarize the results up to now, at the county level, the SBA's main and largest loan program, the Small Business Loan, results in lower employment. A $10,000 increase in SBL results in 3 to 5 people not being employed. The impact of CDC loans on county employment is zero with estimates being more noisy than that of the SBL. Why does the SBL have negative impact on employment? The SBL is used to create new businesses and/or expand existing establishments. The addition or expansion of a new business should in general create jobs but what I find is a negative impact. The next section points to the underlying channels of what may be potentially going on.

4.2 The SBA loans and the number of establishments.

In Table 5, I examine the number of firms by establishment size measured by the number of employees. Instead of using employment as the dependent variable, I use the number of establishments of different size in each county as the dependent variable, where size is determined by the number of employees in each firm. Panel A, B, and C presents estimates from the lagged dependent variable model, county fixed effects model, and the combined lagged dependent variable – fixed effects model. The estimates show a similar pattern across all panels. I focus on Panel C in this discussion. A million dollar increase in the SBL results in a net increase of about 3.5 more small establishments. However, this increase is coming at the cost of larger firms. Firms with more than 20 but less than 100 employee see a reduction of about 1, and the larger firms see a negative net impact of about 0.7 (for firms with 100 to 500 employees) and 0.1 (for firms with more than 500 employees).

Hence, the SBL may have created new small firms but at the cost of larger firms and a reduction in aggregate county employment. This could happen if another firm died out in the larger firm categories resulting in previous employees applying for small business loans and creating new small firms. Or this could be due to more individuals voluntarily shifting out of employment from large firms to start their own businesses without generating much growth to the local economy hurting the large firm in the process. This would be consistent with the behavior of small business owners described in Hurst and Pugsley (2011).

To examine the timing of the impact of the SBL loans, I perform county fixed effect regressions that include the one period lags and leads of the various SBA loans. The first column present results when the dependent variable is the number of small firms (1 to 4 employees). The coefficient on the current SBL is positive and significant as before and the coefficient estimate on the 1 year lag of SBL is 4.7 and significant at the 10% level. This indicates that there is a lingering effect of the SBL in creating new small firms to the next year. However, the coefficient on the lead SBL is zero. An additional new small firm this period is not associated with more business loans the next year.

The second column is for the large firms with over 100 employees. The coefficient on the current SBL is negative and significant at -0.62 as before. The coefficient on the 1 year lag SBL is negative and significant at -0.49. So an increase of the SBL last year is associated with a decrease in larger firms this period. This indicates that in counties where individuals are utilizing more small business loans, there is a negative impact on the large firms. Moreover, the coefficient on the 1 year lead SBL is also negative and significant but much smaller in magnitude at -0.23. This implies that the SBL loan amount for one period can be anticipated by the health of larger firms in the previous period. An additional creation of a large firm in one county results in lower SBL loan the next period.

There is evidence for both of the channels mentioned above. Small business loans result in workers shifting out of larger firms, creating a negative impact on large firm survival, and eventually resulting in more small firms, with an overall negative impact on county employment. However, the health of larger firms can also predict how much small business loans will be taken out the next period. If there is a larger firm that goes under then more SBL will be processed the next period.[6]

Based on the evidence what should the verdict on the SBA loans be? There is no evidence to support an argument for employment growth. All the evidence points to the SBL resulting in lower employment and a negative impact on larger firms. If larger firms offer more growth opportunities than small firms as other studies have pointed out, then the SBL may be shifting

[6] Recall that I am looking into 1993-2003 which was a period of economic growth. Hence, the larger firm going under and small businesses being created as a response may be a less likely scenario than individuals choosing to leave a large company to gain freedom and become business owners.

human capital from larger firms to small firms at the expense of overall aggregate employment growth. However, there could be a social welfare argument for small business loans. When a large firm exits there is an increase in small business loans. If these loans enable people to start a business and work rather than remain unemployed then the program could be serving social welfare purposes. But the fine line, which requires further research, is that whether or not it is socially optimal for these people to start a business. A well known fact is that many small businesses die out. If the failing small businesses are coming from loans guaranteed by the SBA in disproportionately higher rates then even the social welfare argument for the Small Business Loan may be invalid. A follow up project using micro data at the firm level will examine this more carefully. [7]

5. Conclusion

I examine the impact of government guaranteed small business loans on local employment. I find that an increase of $10,000 in the Small Business Association's Small Business Loan (SBL) decreases county employment by about 5 people. I also find that a $1 billion increase in the SBL increases the net number of small establishments by about 3.5 but reduces the net number of medium sized firms by about 1 and larger firms by about 0.6 within a county. The SBL can be associated with workers shifting away from larger firms to create their own businesses but at the cost of the health of larger firms and the county's aggregate employment. However, there is also evidence of the SBL being used to create businesses when larger firms go under. In sum, government guaranteed small business loans do not promote local employment growth at the county level and whether or not there is a social welfare argument for such loans warrants further research.

[7] In Appendix table 2, I examine employment by industry. The coefficient estimates on the SBA are negative for construction, service and the FIRE industries. However, estimates are positive for agriculture, transportation, wholesale and retail. So it could be that workers from larger construction, FIRE, service firms are moving out to create small businesses in wholesale, retail, transportation, and agriculture. I plan to examine this industry level pattern more closely with the firm level data as well.

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Figure 1. County's SBA loan amount and political representation in the Small Business Committee

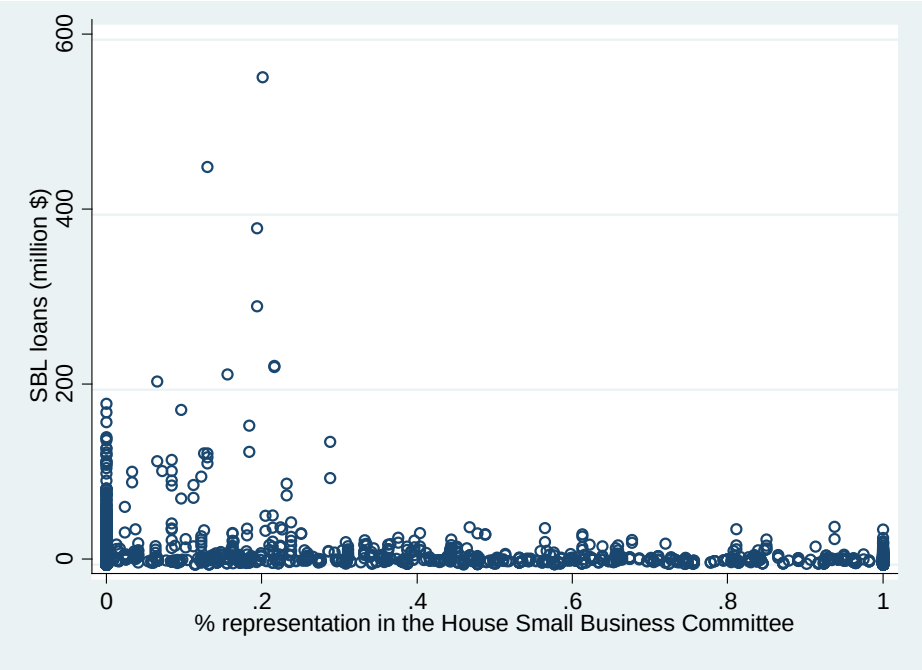

Figure 2. County average employment by year

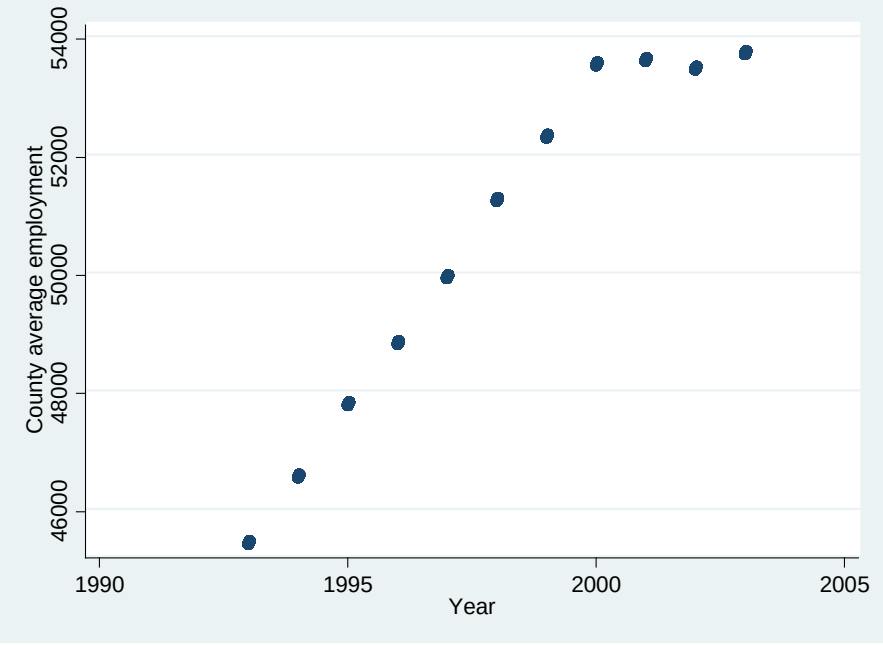

Table 1. Summary statistics

Variable	Mean	Std. Dev.	Min	Max	Obs
Employment	50605	176901	73	5516905	33860
Population	88776	289347	62	9857690	33860
Average income	21097	5632	4135	86121	33860
Year	1998	3	1993	2003	33860
Suffered a presidentially declared disaster	0.28	0.45	0	1	33860
Small Business Loans (SBL)	1592950	8002377	0	5.57E+08	33860
Certified Development Company Loans (CDC)	453143	2387857	0	1.23E+08	33860
Physical Disaster Loans (PDL)	244005	9395435	0	1.25E+09	33860
Received SBL loans	0.72	0.45	0	1	33860
Received CDC loans	0.28	0.45	0	1	33860
Received PDL loans	0.25	0.43	0	1	33860
Share of county represented in the House Small Business Committee	0.10	0.30	0	1	33584
Share of county represented in the House Appropriations Committee	0.15	0.34	0	1	33584
Number of 1~4 employee establishments	1189.8	4032.8	0	133029	33585
Number of 5~19 employee establishments	701.4	2232.8	0	67932	33585
Number of 20~99 employee establishments	247.9	900.2	0	28549	33585
Number of 100~499 employee establishments	45.7	176.2	0	5196	33585
Number of 500+ employee establishments	5.5	22.6	0	606	33585

Source: US Census County Business Pattern, Consolidated Federal Funds Report, Public Entity Risk Institute Presidential Disaster Declarations Site http://www.peripresdecusa.org/mainframe.htm , Congressional Data Page (Charles Stewart), http://web.mit.edu/17.251/www/data_page.html, Geographic Correspondence Engine, http://mcdc2.missouri.edu/websas/geocorr2k.html.

Table 2. The SBA loans and employment - OLS Estimates

	Pooled cross section		Lagged dependent varible		Fixed effects estimates		Fixed effects estimates	
	All counties		All counties		All counties		Counties in MSAs	Counties not in MSAs
Dependent variable	Employment							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SBL (1,000$)	1.644***	1.723***	-0.0668	-0.0631	-0.574***	-0.575***	-0.580***	-0.143***
	(0.616)	(0.641)	(0.0926)	(0.0936)	(0.0960)	(0.0992)	(0.0972)	(0.0390)
CDC (1,000$)	0.681	0.782	0.0729	0.107	0.398*	0.417*	0.540**	-0.0635
	(0.729)	(0.756)	(0.149)	(0.151)	(0.238)	(0.236)	(0.233)	(0.0500)
PDL (1,000$)	-0.164	-0.162	-0.0267	-0.0275	-0.0195	-0.0192	-0.0289*	0.0217
	(0.271)	(0.271)	(0.0278)	(0.0273)	(0.0214)	(0.0210)	(0.0172)	(0.0132)
Disaster dummy	717.3	609.6	103.1**	27.96	182.1***	95.96	48.12	6.611
	(571.6)	(745.2)	(45.52)	(52.00)	(69.98)	(100.5)	(362.2)	(18.31)
Income	3.321***	3.356***	0.0645***	0.0646***	1.082***	1.123***	3.422***	0.197***
	(0.401)	(0.408)	(0.0201)	(0.0203)	(0.216)	(0.253)	(0.758)	(0.0313)
Population	0.542***	0.539***	0.00850***	0.00832***	0.756***	0.757***	0.748***	0.845***
	(0.0115)	(0.0118)	(0.00165)	(0.00161)	(0.0259)	(0.0264)	(0.0268)	(0.238)
Lagged employment			1.002***	1.001***				
			(0.00310)	(0.00309)				
County FE	N	N	N	N	**Y**	**Y**	**Y**	**Y**
State FE	**Y**	N	**Y**	N	N	N	N	N
Year FE	**Y**	N	**Y**	N	**Y**	N	N	N
State-Year FE	N	**Y**	N	**Y**	N	**Y**	**Y**	**Y**
Observations	33,860	33,860	30,781	30,781	33,860	33,860	9,042	24,818
R-squared	0.941	0.942	1.000	1.000	0.999	0.999	0.999	0.997

Notes: Standard errors are clustered at the county level. SBL: Small Business Loans, CDC: Certified Development Company Loans, PDL: Physical Disaster Loans. All loan amounts are aggregated to the county level and are based on recipient location. *** p<0.01, ** p<0.05, * p<0.

Table 3. The SBA loans and employment - 2SLS Estimates for various specifications

Dependent variable	Employment					
	(1)	(2)	(3)	(4)	(5)	(6)
SBL (1,000$)	-0.326***		-0.969***		0.306	
	(0.0452)		(0.176)		(4.641)	
CDC (1,000$)	-0.0104		0.999*		-3.882	
	(0.133)		(0.574)		(7.889)	
SBL+CDC (1,000$)		-0.256***		-0.471***		-1.273
		(0.0320)		(0.102)		(1.001)
PDL (1,000$)	0.0135	0.0142	-0.0251	-0.0248	0.0275	0.0719
	(0.0145)	(0.0152)	(0.0184)	(0.0207)	(0.165)	(0.0997)
Disaster dummy	52.45	58.10	12.82	37.93	52.88	-40.63
	(56.28)	(57.99)	(98.73)	(96.18)	(329.1)	(189.3)
Income	0.291***	0.283***	1.056***	1.055***	1.041*	0.892**
	(0.0838)	(0.0846)	(0.260)	(0.253)	(0.584)	(0.359)
Population	0.254***	0.256***	0.733***	0.751***	0.843***	0.838***
	(0.0388)	(0.0375)	(0.0259)	(0.0278)	(0.108)	(0.0926)
Lag employment	0.576***	0.578***				
	(0.0450)	(0.0447)				
Instrumented variables	Lag employment		SBL, CDC	SBL+CDC	SBL, CDC	SBL+CDC
Excluded instruments	Two period lag employment		Lag SBL, lag CDC		Small Business Committee instruments	
1st stage F-statistic	623.5	630.5	47.1	242.1	0.3	13.7
County FE	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Year FE	N	N	N	N	N	N
State-Year FE	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Observations	27,702	27,702	30,782	30,782	33,583	33,583

Notes: Standard errors are clustered at the county level. The excluded instruments in columns (5) and (6) are the share represented by the Small Business Committee and a dummy equal to one if there is any representation. The reported 1st stage F-statistics are the Kleibergen-Paap rk F statistics except for column (6) which reports the Cragg-Donald F-statistic.. All loan amounts are aggregated to the county level and are based on recipient location. *** p<0.01, ** p<0.05, * p<0.1

Table 4. Estimation for different sample years

Dependent variable	Employment		
Sample period	1995-1999	2000-2003	2002-2003
	(1)	(2)	(3)
SBL (1,000$)	-0.279***	-0.435***	
	(0.0733)	(0.103)	
CDC (1,000$)	0.122	-0.353	
	(0.105)	(0.493)	
SBL+CDC (1,000$)			-0.666
			(0.677)
PDL (1,000$)	0.0351***	-0.0827	0.163***
	(0.00804)	(0.0644)	(0.0241)
Disaster	-7.520	128.5	209.3
	(61.11)	(115.5)	(228.5)
Income	0.279***	0.621***	0.143**
	(0.0893)	(0.225)	(0.0569)
Population	0.200***	0.830***	0.665**
	(0.0452)	(0.171)	(0.298)
Lagged employment	0.733***	-0.570**	
	(0.0653)	(0.244)	
Excluded instruments	Two period lagged employment		Small Business Committee instruments
1st stage F-statistic	151.6	112.6	0.5
County FE	Y	Y	Y
State-Year FE	Y	Y	Y
Observations	15,390	12,312	6,106

Notes: Standard errors are clustered at the county level. The excluded instruments in column (3) are the share represented by the Small Business Committee and a dummy equal to one if there is any representation.
The reported 1st stage F-statistics are the Kleibergen-Paap rk F statistics. All loan amounts are aggregated to the county level and are based on recipient location. *** p<0.01, ** p<0.05, * p<0.1

Table 5. The SBA loans and the number of establishments by employment size

	(1)	(2)	(3)	(4)	(5)
	Number of establishments in county by employment size				
	1~4 emp.	5~19 emp.	20~99 emp.	100~499 emp.	500+ emp.
Panel A. LDV Model					
SBL (1,000,000$)	2.088**	0.972**	-0.0625	-0.0956	-0.0440*
	(0.918)	(0.422)	(0.340)	(0.128)	(0.0228)
CDC (1,000,000$)	3.510*	1.199	0.640	0.144	0.0353
	(2.053)	(0.940)	(0.687)	(0.251)	(0.0421)
PDL (1,000,000$)	-0.545***	-0.959***	-0.419**	-0.0329	0.000864
	(0.203)	(0.188)	(0.185)	(0.0570)	(0.00772)
Lagged dependent variable	Y	Y	Y	Y	Y
Panel B. Fixed Effects Model					
SBL (1,000,000$)	4.913**	-0.236	-2.354***	-1.045***	-0.162***
	(1.973)	(0.952)	(0.550)	(0.162)	(0.0323)
CDC (1,000,000$)	4.245	-0.749	1.888	0.473	0.0192
	(5.293)	(2.802)	(1.488)	(0.448)	(0.0717)
PDL (1,000,000$)	-1.731***	-0.613***	-0.116*	0.0401**	0.00851*
	(0.330)	(0.103)	(0.0627)	(0.0177)	(0.00493)
Panel C. LDV Fixed Effects Model					
SBL (1,000,000$)	3.523***	0.216	-1.135***	-0.678***	-0.127***
	(1.053)	(0.594)	(0.262)	(0.123)	(0.0236)
CDC (1,000,000$)	-1.868	-2.036	-0.744	-0.274	-0.0317
	(2.397)	(1.577)	(0.723)	(0.375)	(0.0567)
PDL (1,000,000$)	-1.087***	-0.316	-0.0148	0.0823*	0.0198***
	(0.223)	(0.352)	(0.216)	(0.0489)	(0.00463)
Lagged dependent variable	Y	Y	Y	Y	Y
Excluded instrument	Two period lagged dependent variable				
1st stage F-statistic	580.9	273.2	759.4	601.5	466.2
All Specifications					
Disater dummy	Y	Y	Y	Y	Y
Income	Y	Y	Y	Y	Y
Population	Y	Y	Y	Y	Y
State-Year FE	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y

Notes: Standard errors are clustered at the county level. The reported 1st stage F-statistics are the Kleibergen-Paap rk F statistics. All loan amounts are aggregated to the county level and are based on recipient location. *** p<0.01, ** p<0.05, * p<0.1

Table 6. Timing of the SBA loans and number of establishments

	Number of establishments in county by employment size	
	1~4 employee	100+ employee
SBL (1,000,000$)	5.758***	-0.615***
	(1.959)	(0.131)
1 year lag SBL (1,000,000$)	4.787*	-0.485**
	(2.789)	(0.210)
1 year lead SBL (1,000,000$)	0.381	-0.229**
	(1.125)	(0.113)
CDC (1,000,000$)	-3.355	0.134
	(2.286)	(0.276)
1 year lag CDC (1,000,000$)	-3.221	-0.0833
	(4.119)	(0.376)
1 year lead CDC (1,000,000$)	1.248	-0.454
	(3.963)	(0.312)
PDL (1,000,000$)	-0.683	0.0407
	(0.644)	(0.0465)
1 year lag PDL (1,000,000$)	-0.934	0.128***
	(0.665)	(0.0383)
1 year lead PDL (1,000,000$)	-0.834	0.0153
	(0.758)	(0.111)
Controls	Y	Y
State-Year FE	Y	Y
County FE	Y	Y
Observations	27,477	27,477

Notes: Standard errors are clustered at the county level. Controls include population, average income, the disaster dummy, and the number of establishments in the different size categories. All loan amounts are aggregated to the county level and are based on recipient location. *** p<0.01, ** p<0.05, * p<0.1

Appendix Table 1. First stage results when using the Small Business Committee instruments

Dependent variable	(1) SBL (1000$)	(2) CDC (1000$)	(3) SBL+CDC (1000$)
County's representation in the House Small Business Committee			
Share represented in county	-1,139	-681.1**	-1,820*
	(810.8)	(315.8)	(1,027)
Dummy variable for any representation	1,133	701.2**	1,834*
	(812.7)	(312.8)	(1,026)
Disaster dummy	-73.93	-16.52	-90.45
	(87.34)	(30.93)	(109.6)
Ln(average income)	-0.151**	-0.0403**	-0.191**
	(0.0687)	(0.0174)	(0.0834)
Ln(population)	0.0384	0.0272***	0.0657
	(0.0336)	(0.00798)	(0.0404)
County FE	Y	Y	Y
State-Year FE	Y	Y	Y
Observations	33,584	33,584	33,584
R-squared	0.785	0.709	0.784

Notes: Standard errors are robust standard errors. All loan amounts are aggregated to the county level and are based on recipient location. *** p<0.01, ** p<0.05, * p<0.1

Appendix Table 2. The SBA loans and employment by industry

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	Employemnt in							
	agriculture	construction	manufacturing	transportation	wholesale	retail	finance, insurance, real estate	service
Panel A. Fixed Effects Mo								
SBL (1,000$)	0.0236***	-0.0693***	-0.0920	0.0517*	0.0170	0.278***	-0.0109	-0.657**
	(0.00590)	(0.00875)	(0.0757)	(0.0294)	(0.0170)	(0.0912)	(0.0108)	(0.263)
CDC (1,000$)	-0.0145	0.0817**	-0.147	-0.0115	-0.0371	-0.0973	-0.0241	0.429
	(0.0134)	(0.0330)	(0.179)	(0.0572)	(0.0512)	(0.209)	(0.0515)	(0.501)
PDL (1,000$)	0.00188***	0.00842***	0.0224	0.0145	0.00443	0.0584***	0.00640**	-0.130**
	(0.000522)	(0.000938)	(0.0144)	(0.0105)	(0.00511)	(0.0155)	(0.00265)	(0.0567)
Panel B. LDV Fixed Effects Model								
SBL (1,000$)	0.0180***	-0.0414***	0.00688	0.0655***	0.0154***	0.212***	-0.0219**	-0.467***
	(0.00370)	(0.00504)	(0.0300)	(0.0157)	(0.00552)	(0.0411)	(0.00989)	(0.103)
CDC (1,000$)	0.00488	0.0249	0.0383	0.0144	-0.0356	0.0944	0.0169	-0.163
	(0.00578)	(0.0158)	(0.0456)	(0.0256)	(0.0329)	(0.0790)	(0.0393)	(0.159)
PDL (1,000$)	0.000213	0.00641***	0.0110***	-0.000401	-9.28e-05	0.0217	0.00362	-0.0313**
	(0.000476)	(0.00219)	(0.00346)	(0.00670)	(0.00593)	(0.0132)	(0.00276)	(0.0133)
Lagged dependent variabl	Y	Y	Y	Y	Y	Y	Y	Y
Excluded instrument	Two period lagged dependent variable							
1st stage F-statistic	262.0	802.2	458.2	160.3	77.6	244.7	107.4	1343.1
Disater	Y	Y	Y	Y	Y	Y	Y	Y
Income	Y	Y	Y	Y	Y	Y	Y	Y
Population	Y	Y	Y	Y	Y	Y	Y	Y
State-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y	Y

Notes: Standard errors are clustered at the county level. The reported 1st stage F-statistics are the Kleibergen-Paap rk F statistics. All loan amounts are aggregated to the county level and are based on recipient location. *** p<0.01, ** p<0.05, * p<0.1