Working Paper No. 531

Do Government Guaranteed Small Business Loans Promote Urban Growth?

Yong Suk Lee

July 2016

Stanford
Center for International Development

John A. and Cynthia Fry Gunn Building | 366 Galvez Street, Stanford, CA 94305-6015

Do Government Guaranteed Small Business Loans Promote Urban Growth?

Yong Suk Lee [a, *]

[a] Stanford University, USA

July 10, 2016

Abstract

This paper examines the impact of government guaranteed small business loans on urban economic growth, and compares the growth impacts of government versus market financed entrepreneurship. OLS estimates indicate a significant and positive relation between the Small Business Administration's guaranteed loans and metropolitan growth between 1993 and 2002. However, first-difference and instrumental variable regressions show no growth impact from government guaranteed loans. In contrast, market entrepreneurship significantly and positively contributes to local economic growth. The results imply that, at least from an efficiency perspective, there are no net gains to the local economy from government guaranteed small business loans.

Keywords: Small Businesses, Guaranteed Loans, Entrepreneurship, Urban Growth

JEL Codes: L26, G18, K35, O18, R11

[*] Corresponding author: Freeman Spogli Institute for International Studies, Stanford University, 616 Serra Street, Stanford, CA 94305.

Email address: yongslee@stanford.edu

1. Introduction

Many governments around the world publicly support entrepreneurship with the implicit understanding that entrepreneurship spurs economic growth. In the United States, where the privatization of government service is widespread, the federal government has been providing guaranteed loans to small businesses since the 1950s, through the Small Business Administration's (SBA) guaranteed loan program. This paper's main objective is to examine the impact of government guaranteed small business loans on urban employment and income growth. The efficacy of government programs to promote entrepreneurship has been widely studied (Lerner 1999, Lerner 2002, Hsu 2006, Brander et al. 2015). This paper differs in its focus on the aggregate metropolitan economy. In addition, this paper examines how entrepreneurship supported by government guaranteed loans perform relative to entrepreneurship financed through the market.

Since the SBA provides guaranteed loans to entrepreneurs who have difficulty securing loans in the private market, it is not clear a priori whether these new entrepreneurs will generate economic growth. Hurst and Pugsley (2011) find that many entrepreneurs actually become entrepreneurs for the flexible lifestyle rather than to grow their businesses. I match the SBA small business loans data to each metropolitan statistical area (MSA) by year and create an MSA-year level panel of the number and value of new SBA loan approvals. I then examine how the SBA guaranteed loans affect urban employment and income growth between 1993 and 2002. The OLS estimates indicate that the number of SBA loans to new businesses significantly and positively affect employment and income growth. However, if cities with higher growth potential see more SBA loan applications and approval, then the OLS estimates would overstate the true

impact of SBA loans on urban growth. To the contrary, if cities that were declining see higher SBA loan applications and approval, then the OLS estimate would be biased downwards.

In order to alleviate endogeneity, I examine how the first-difference and instrumental variable estimates compare to the OLS estimates. Though fully resolving endogeneity is difficult, comparing results from different estimation methods shed light on what the true impact might be. The first differenced growth regressions control for MSA level fixed characteristics, and in particular, those related to each city's business environment. I find no effect of the SBA guaranteed loans on local growth in the first-differenced growth regressions.

In the 2SLS regressions I use a variety of instrumental variables - years since interstate banking deregulation, the historical density of SBA lenders in the region, and the homestead exemption levels specified by state bankruptcy laws – and compare results. The banking sector was heavily regulated during most of the 20th century. Gradually, each state allowed banks to operate across state borders and interstate banking became fully deregulated in 1994. The new competition generated by multiple banks likely provided more opportunities for personal and business finance. I find that in metropolitan areas that deregulated earlier, new businesses finance more through the market and less through the SBA's guaranteed loan program in 1993. Also, cities that historically had a higher density of SBA lenders would have had richer relationships with the community's potential entrepreneurs, and such relationship in turn could promote the application and approval of SBA guaranteed loans. I indeed find that higher density of SBA lenders in 1985, when banking technology was less advanced and banking deregulation not fully implemented, increases SBA backed entrepreneurship in 1993. Lastly, states varied widely in the degree to which debtors could avoid paying creditors back when filing for personal bankruptcy, and such variation dates back to the nineteenth century. I use the homestead

exemption levels set by state bankruptcy laws in 1975 and find that there are more SBA backed new businesses in MSAs with higher exemption levels.

By controlling for the MSA's initial economic conditions - population, education, income, housing cost, and the number of establishments - and by examining within each census division, the 2SLS regressions utilize the plausibly exogenous variation in SBA loans generated by the instrumental variables. Claiming instrument exogeneity with certainty is difficult when analyzing regional growth. However, despite the significant results from the first stage regressions, whichever instrument I use I find no effect of government-backed entrepreneurship on urban employment or income growth. The positive impact of SBA loans on economic growth found in the OLS estimates becomes null in specifications that control for endogeneity. To further assess the performance of government-backed entrepreneurship on MSA growth, I compare how SBA guaranteed loans perform relative to market entrepreneurship, i.e., entrepreneurship financed privately or through commercial lenders. In contrast to the results on SBA guaranteed loans, market entrepreneurship significantly and positively contributes to economic growth in both the OLS and 2SLS estimates. Overall, the results of this paper indicate that there is no local growth effect from government guaranteed small business loans.

This paper is related to several strands of the literature. First is the literature that examines the regional aspects of entrepreneurship and entrepreneurship's relation to regional economic development (Feldman 2001, Audretsch and Taylor Aldridge 2009, Sternberg 2009). Examining the local economy, rather than the firm itself, takes into account the various linkages and the general equilibrium effects from entrepreneurship and reflects upon the regional entrepreneurial eco-system (Stam 2015). The empirical focus of this paper is related to Glaeser et al. (2015) and Lee (2016), which use quasi-experimental design to examine the impact of

entrepreneurship on urban growth. This paper's focus on government guaranteed small business loans is related to the literature that examines the impact of local entrepreneurial finance on growth. Samila and Sorenson (2011) examine the impact of venture capital on entrepreneurship and growth at the MSA level. They find that venture capital positively and significantly increases urban entrepreneurship and employment growth. Craig et al. (2007) examine the impact of SBA loans on county growth using panel data and find statistically significant effects that are positive but economically small in magnitude. However, even when one examines within city over time, small business loans will likely fluctuate depending on the cities growth potential. I further tackle the endogeneity issue by examining estimates from both first-differenced growth regressions and instrumental variables regression, and ultimately find no growth effect. Finally, related is the literature that discusses the public policy aspects of entrepreneurship (Lerner 2012, Aduretsch and Walshok 2012, Acs et al. 2013). Especially, the null effect of government guaranteed small business loans I find has some relevance to Shane's (2009) discussion on ineffective entrepreneurship policy.

The paper proceeds as follows. Section 2 conceptually discusses the potential impact of small business loans on the local economy, and provides background on the Small Business Administration's guaranteed loan program. Section 3 discusses the data and empirical strategy. Section 4 examines the impact of small business loans on economic growth. Section 5 concludes.

2. Small Business Loans and the Local Economy

2.1 Entrepreneurship and Local Economic Growth

Entrepreneurship is widely believed to be a main source of local economic growth. Entrepreneurs that succeed and contribute to the local economy become the spotlight of local

media. Local politicians and business advocates emphasize the role small businesses play in adding new jobs to their region. While it is generally accepted that entrepreneurship is primarily a regional event, entrepreneurship scholars have provided empirical and theoretical foundations in understanding entrepreneurship's role in the local economy. Sternberg (2009) conducts a comprehensive review of the entrepreneurship literature and concludes that the regional environment and context is an important determinant of entrepreneurship and firm growth. Feldman (2001) highlights the role individual entrepreneurs play as agents of change. Entrepreneurs can transform regions into entrepreneurial hub by creating strong local networks and inducing abundant venture capital to be formed in the region. According to this view, policies that promote entrepreneurship could spur regional growth by nurturing entrepreneurs that serve as the agents of change. Researchers have identified the localized nature of knowledge spillover for some time (Jaffe et al. 1993, Audretsch and Feldman 1996). As knowledge becomes an increasingly important source of economic growth, organizations that have the comparative advantage in incorporating and developing new knowledge are more likely to grow. As Audretsch & Taylor Aldridge (2009) argue, entrepreneurship can serve as the link that facilitates the spillover of knowledge to the local economy. Beyond theory, whether or not entrepreneurship actually causes regional growth is fundamental for examining the impact of local entrepreneurial finance on local growth. If entrepreneurship has no relevance for regional growth, financing local entrepreneurship will likely have no relevance for regional growth as well. However, the empirical examination of entrepreneurship's impact on regional growth has been a challenge. Forces that promote local growth also promote local entrepreneurship and thus parsing out a causal relationship has been difficult. Recently, Glaeser et al. (2015) and Lee (2016) use quasi-experimental designs and find that entrepreneurship indeed increases employment and

wage growth in cities. These findings suggest that entrepreneurial finance will likely have positive local growth effects. Samila and Sorenson (2011) find that venture capital increases entrepreneurship and growth at the metropolitan level. However, venture capital is one particular form of entrepreneurial finance and public efforts to promote local finance to small businesses differs substantially with venture capital in terms of the lending organization but also the business owners being financed.

2.2 The SBA Small Business Loans and Local Economic Growth

Before discussing how new firms financed through government guaranteed loans might affect regional economic growth differently from new firms financed through the market, I first provide some background on the Small Business Association's guaranteed loan program. The US government established the Small Business Association (SBA) in 1953 to promote the creation and expansion of small businesses, and the SBA has since served as the advocacy agency that provides guidance and financially supports small businesses. The government is involved in the small business loan market for various reasons. Commercial lenders are unwilling to lend to potential entrepreneurs without sufficient collateral, may not be able to properly assess the feasibility of businesses, or may discriminate against female or minority entrepreneurs. There could be market failure in the small business loan market, i.e., capable potential entrepreneurs are unable to start or expand their businesses because of imperfect information or missing insurance markets. For these reasons, the SBA promotes entrepreneurship by guaranteeing loans provided through commercial lenders and taking over the debt in case the debtor defaults.

The SBA's main form of guaranteed lending is the Small Business Loan, also known as the 7(a) loan program.[1] 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 the SBA's guidelines and receive a guarantee from the SBA. The SBA usually guarantees up to 85% of the loan. The commercial lender is in charge of the process and the loan applicant must meet the commercial lender's criteria. The applicant and the commercial lender negotiate the loan term subject to the SBA requirements and the applicant must meet the SBA's firm size requirements and be for-profit.[2] The purpose of this study is to examine whether entrepreneurship supported by the SBA contributes to local economic growth. However, I note that local growth is not an explicitly stated goal of the SBA loan program.

Ex ante, it is difficult to assess whether small businesses financed through government guaranteed loans will have local growth impacts and whether the impact would differ from privately financed small businesses. Conceptually, there could be both positive selection or negative selection in SBA supported entrepreneurship. If the SBA guarantee draws in entrepreneurs that were not only credit constrained but also of lower entrepreneurial ability, there could be negative selection into government-backed entrepreneurship. If high ability entrepreneurs were shun from commercial lending, SBA guaranteed lending could create positive selection. Also, the complexity and the bureaucracy associated with the application

[1] There also is the Certified Development Company Loan, also known as the 504 loan program. The Certified Development Company (CDC) 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. An important difference 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 and hence is not subject of interest in this study. 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.

[2] The size cutoffs that quality as a small business under the SBA differs by industry and are generally expressed in either millions of dollars or number of employees. For instance, steel mills can have as many as 1,500 employees and still be considered a small business, while the cutoff for new car dealers is 200 employees. The SBA provides exact cutoffs for each industry on their website.

process itself could generate positive selection. As Hurst and Pugsley (2011) point out, not all entrepreneurs desire growth. If the types of entrepreneurs and businesses financed through the market differ from those backed by the SBA, their impact on local growth would likely differ. Also, credit rationing by lenders could result in banks diverting away from potential entrepreneurs who could have been able to secure loans in the market. If the high ability entrepreneurs were rationed out of market financing due to the SBA guaranteed loans, there could be a negative impact on economic growth. On the other hand, if the SBA loan recipients were similar to those being replaced in the market, the impact of SBA loans on economic growth would be negligible. All of the above channels maybe at work in the local economy. Hence, whether or not small businesses financed through SBA loans impact local growth ultimately becomes a question that needs to be assessed empirically.

3. Data and Empirical Strategy

3.1 Data

I construct an MSA level panel of SBA loans and economic growth related variables from 1993 to 2002. I examine this ten-year period primarily because the census definition of MSAs often change after each census cycle. By limiting my analysis to these years I am able to maintain a consistent geography for the MSAs and examine the growth dynamics of cities in a consistent manner. I construct the SBA loans data by aggregating the universe of SBA approved loans to the MSA level.[3] The individual loans data contains a rich set of information including the loan amount, loan date, business location, lender, and whether the loan was to a new business or existing business. This information allows me isolate the loans that were given out to new businesses and link each loan to an MSA and year. I then aggregate the count and approval

[3] This data was purchased from Coleman Publishing.

amount of each relevant loan to generate the MSA level variables. Though the information provided in the data is quite comprehensive it does have some miscodes and missing information, particularly pertaining to the business location. I first match the loan data to the census geographic definitions based on the place name and zip code when available. The loans were then matched to a county and then linked to an MSA.[4] The SBA loan data follows a fiscal year. Hence, the number of SBA loans and the approved amount for 1993 are the aggregate values for all loans approved in FY1993, i.e., July 1992 - June 1993.

In order to examine market-financed entrepreneurship, i.e., new businesses financed privately or through commercial lenders, I need data on all new business creations in MSAs each year. The publicly available Statistics of U.S. Businesses (SUSB) Employment Change Data provide information on the birth of establishments, which is stratified into three categories - firms with 19 or less employees, 20-499 employees, and 500 employees or above. Since the size categories represent each firm's size from the previous year, establishment births that appear in the 20-499 or 500 or above category represent expansions by existing firms. For example, an opening of a new Starbucks store would appear in the 500 or above category. All new firm creation appears only in the 19 or less category, because a new firm starts with zero employee the previous year. New establishments created as an expansion by small firms (19 or less employees) are also included in this category. I will consider the birth of establishments in the 19 or less category to represent all new small business births. Using data on new firms rather than establishment would be ideal to proxy for market entrepreneurship. However, firm level data is not readily available and firm location becomes harder to specify when there are multiple

[4] Some of the loan data had missing reports and miscodes. In the end I was able to match 93% of the data to a county, which were in turn matched to MSAs.

establishments. Ultimately, my measure of market-financed entrepreneurship is constructed by subtracting the number of SBA loans from all new small business births in the MSA.

The SUSB Annual Data provides information on employment, number of establishments by the three size categories, and annual payroll, which includes all forms of compensations, such as salaries, wages, benefits, and bonuses for each MSA. I collect the MSA population data from the Census Bureau and use the Federal Housing Finance Agency's House Price Index (HPI) to control for MSA level housing price. The HPI measures single-family house prices based on the average price change in repeat sales or refinancing of the same properties. There are 329 MSAs in the 1993 to 2002 census data. I drop Anchorage, Honolulu, and MSAs that have missing information and eventually end up with a balanced panel of 316 MSAs.[5] The following empirical analysis is performed on this set of metropolitan areas. The variables used to measure SBA guaranteed entrepreneurship in an MSA are (1) the number of SBA loans approved to new businesses, and (2) the total dollar amount of SBA loans approved to new businesses. Descriptive statistics of these variables appear in Table 1.

3.2. Empirical Strategy

I first examine the impact of SBA loans on local economic growth. I use a specification based on standard economic growth regressions, which has also widely been used to examine economic growth in cities (Henderson et al. 1995, Glaeser et al. 2015). In practice, I run the following regression:

$$\Delta \ln Y_{i,1993-2002} = \beta \ln e_{i,1993} + \ln X_{i,1993} \cdot \gamma + \delta_d + \varepsilon_i \qquad (1)$$

[5] MSAs not included in the sample are Anchorage, AK, Honolulu, HI, Cumberland, MD-WV, Enid, OK, Flagstaff, UT-AZ, Grand Junction, CO, Hattiesburg, MS, Jamestown, NY, Johnstown, PA, Jonesboro, AR, Missoula, MT, Pocatello, ID, Steubenville-Weirton, OH-WV.

for Metropolitan Statistical Areas (MSAs) in the United States for the years 1993 to 2002. $\Delta \ln Y_{i,1993-2002}$ is the change in log employment, annual payroll, or wage between 1993 and 2002 for city i. Annual payroll includes all wages, salary, bonuses, and benefits paid to employees in the MSA. Wage is calculated as annual payroll divided by employment. $\ln e_{i,1993}$ is the log of government guaranteed small business loans either measured by the number or total amount of SBA loans to new businesses in FY1993. $\ln X_{i,1993}$ represents the vector of log control variables, which include employment in 1993, median family income in 1990, population in 1990, percent college educated and above in 1990, the housing price index in 1993, and the number of establishments by size categories in 1993. δ_d represents the set of census division dummy variables.

The difficulty of getting an unbiased estimate of β in equation (1) is the endogeneity of SBA loans to local economic growth. Cities with more growth potentials could see higher levels of entrepreneurial activity in general, and thus more government guaranteed small business loans, which would render the estimate of β upward biased in equation (1). On the other hand, if struggling cities see higher levels of government guaranteed small business loans, then the estimate of β would be biased downward. Such endogeneity hampers the causal interpretation of the impact of SBA loans on economic growth in an OLS regression. One of this paper's main contribution is to deal with this endogeneity using instrumental variables motivated from the banking sector and bankruptcy law. I discuss the instrumental variables in detail in the following section. In addition, I examine whether small businesses supported by government loans differ from market financed entrepreneurship regarding their impact on local growth by estimating the following model:

$$\Delta \ln Y_{i,1993-2002} = \beta_1 \ln mrktent_{i,1993} + \beta_2 \ln govtent_{i,1993} + \ln X_{i,1993} \cdot \gamma + \delta_d + \varepsilon_i. \quad (2)$$

$\ln govtent_{i,1993}$ is the log number of government guaranteed small business loans and $\ln mrktent_{i,1993}$ is the log number of small businesses financed through the market, which is constructed by subtracting the number of SBA guaranteed loans to new businesses from the number of small business birth in the MSA.

4. The impact of government-guaranteed small business loans on urban economic growth

4.1. OLS Results

Table 2 reports the OLS results. Estimation is based on equation (1) and all specifications include the base control variables and the census division dummies. Columns (1) and (2) indicate that more loans approved to new businesses results in higher employment growth. However, the approved dollar amount has no significant impact on employment. Samila and Sorenson (2011) also find that the number of firms receiving venture capital matter for growth but not the total amount. The number of entrepreneurship seems to be more important for growth and getting more entrepreneurs off the ground is more important than giving out big loans. When loan amount is not controlled for in column (2) the coefficient estimate on the number of loans is smaller and no longer statistically significant at the 5% level. The annual payroll results in columns (3) and (4) are statistically weaker in general and the negative impact of total loan amount is more pronounced in column (3). Columns (5) and (6) indicate that more SBA loans are not associated with any wage growth. Table 2 suggests that a larger number of SBA loans were approved in cities that were growing, but a larger amount of SBA loans were approved in cities that were declining. The OLS estimates from columns (1) and (3) would imply that the number of SBA loans to new businesses have a statistically significant growth impact on employment and income growth. A 10 percent increase in market entrepreneurship is associated

with 2.1% higher employment and 2.4% larger payroll after 10 years. However, as previously discussed endogeneity besets any causal interpretation.

4.2. First-difference results

The cross-sectional analysis likely suffers from endogenous SBA loan application and approval that relates to unobserved city characteristics that impact growth. To alleviate some of the concerns that arise in Table 2, I present first-difference estimates in Table 3 based on the following specification:

$$\Delta \ln Y_{i,1997-2002} - \Delta \ln Y_{i,1993-1998} = \beta \Delta \ln e_{i,1993-1997} + \Delta \ln X_{i,1993-1997} \cdot \gamma + \varepsilon_{i,1993-1997}. \quad (3)$$

This specification essentially takes the difference between two 5-year OLS growth equations similar to that in Table 2. The first differencing would deal with unobserved MSA fixed effects, such as static metropolitan area growth potentials. Now all estimates are no longer statistically significantly different from zero at standard levels. There seem to be no local growth effects from government guaranteed small business loans. First differencing a dynamic framework introduces the potential for endogeneity through correlated error terms. Also, there could be unobserved time varying MSA level growth potential that is correlated with entrepreneurship in the regression. Hence, I further investigate the relationship using instrumental variables.

4.3 Instrumental Variables and 2SLS Results

To further deal with endogeneity, I introduce several instrumental variables - SBA lender per capita in MSA in 1985, years since interstate banking deregulation, and homestead exemption levels in 1975. As stated before, claiming perfect exogeneity in regional growth

regressions is difficult. Hence, I use these historical instrumental variables to generate plausibly exogenous variation in the number of SBA guaranteed loans and examine whether the results are consistent across the different specifications. The identifying assumption for inference is that the historical instrumental variables are unrelated to the unobserved growth factor between 1993 and 2002, *conditional* on the control variables. In addition to the control variables, which include the income, education, population, housing cost, and numbers of different size businesses in the base year, I include the nine census division fixed effects. Focusing on the within census division variation likely controls for a substantial part of the unobserved growth environment across different regions of the US.

Table 4 Panel A presents the first stage results of the 2SLS estimation, i.e., the impact of the instrumental variables on the number of SBA loans approved for new businesses in 1993. All specifications in Table 4 control for the base variables and census division dummies. Column (1) indicates that the number of SBA lender per capita in 1985 positively predicts the number of SBA guaranteed loans to new business in 1993. SBA lenders tend to be smaller regional banks, and the literature has highlighted the importance of relationship lending between small banks and small businesses (Cole 1998, Scott 2004). As Berger et al. (2014) discuss, the relationship between community banks and small businesses were more important when banking technology was less advanced and before banking competition increased due to the interstate branching deregulation in 1994. More SBA lenders per capita in 1985 would imply a larger network of relationships between banks and potential entrepreneurs, which would have likely resulted in more loans in 1993. Also, cities that had higher competition among SBA lenders would have seen lenders more actively advertising and promoting the SBA programs. This would have increased the exposure and understanding of SBA guaranteed loan programs to potential

entrepreneurs in the city. The validity of the instrument relies on the assumption that the number of loans given out in 1993, conditional on MSA employment, income, population, education, and housing price in 1993, is related to the density of SBA lenders in 1985 but not to unobserved demand factors determining urban growth between 1993-2002. Some may still worry that certain unobserved local attributes not included in the equation may be related to the number of SBA lender per capita in 1985. I further tackle this concern by introducing additional instrumental variables.

Column (2) uses years since interstate banking deregulation as an instrument. Banks in the U.S. were severely restricted in their ability to branch across state borders during most of the 20th century. Such restrictions were based on the concern that large concentrated banks would help the wealthy and larger firms, at the cost of the poor and small (Beck et al. 2010). Only in recent decades did states start to permit banks to open new branches out of state (interstate branching), and by 1994 all restrictions were lifted with the passage of the Riegle-Neal Interstate Banking and Branching Efficiency Act. Appendix Table 1 lists the years each state deregulated interstate banking. I use years since interstate banking deregulation in 1993, i.e., 1993 minus the year of deregulation, as my main instrumental variable. For MSAs that overlap with multiple states, I use the average years across the overlapping states. The main intuition behind the instrument is that MSAs that deregulated interstate branching earlier would see more competition for commercial lending in 1993. This in turn would reduce the need for marginal entrepreneurs to go through the bureaucracy of the SBA to get loans. Column (2) confirms this relationship. The longer it has been since deregulation the lower is SBA backed entrepreneurship in 1993. The validity of this instrument hinges on the assumption that the timing of deregulation was more or less idiosyncratic and unrelated to the growth potential of cities between 1993 and 2002.

Previous studies have found the timing of deregulation to be unrelated to state economic conditions (Beck et al. 2010). Column (3) illustrates the first stage when both instruments are used.

I also use the homestead exemption level in 1975 as instrumental variables. When non-incorporated businesses fail, the debt becomes personal liability of the business owner and he or she can file for personal bankruptcy. However, property exemption laws in the US protect a part of the debtor's property according to each state's homestead exemption level. Homestead exemption protects ownership on real property, such as house or land, up to the specified level. For example, If an entrepreneur owns $50,000 equity in a house and files for bankruptcy in a state where the homestead exemption level is $30,000, the entrepreneur would keep $30,000 and the rest would go to the (unsecured) creditors. The homestead exemption levels vary substantially across states ranging from zero to unlimited exemption. Appendix Table 1 presents the exemption levels in 1975 by state. The variation in the state's desire to promote migration in the 19th century and the legislative negotiation process, where negotiation starts based on initial exemption levels, caused state exemption levels to persist over a long period of time (Posner et al. 2001). Given how the historical events determined the bankruptcy law, homestead exemption levels in 1975 is unlikely to be related to the unobserved city growth potential between 1993 and 2002, conditional on the control variables. I create two MSA level variables - the exemption level and a dummy variable equal to one if the MSA has unlimited exemption. I average across states if an MSA overlaps with multiple states. Column (4) presents the 2SLS regression results when I use the homestead variables as instruments. As Panel A indicates the log exemption level variable is positively and statistically significantly related to SBA loans to new businesses. Potential entrepreneurs are more likely to pursue a business when the exemption level is higher

and also apply for more SBA loans. Lastly, in column (5) I use all four instrumental variables. All four instrumental variables are statistically significant at the 5 percent level in the first stage.

Table 4 Panels B through D report the 2SLS results on employment, payroll, and wage. For each column the instrumental variables are the variables reported in Panel A. Whichever instrumental variables I use, the estimated impact of SBA loans on either urban employment or income growth is statistically indistinguishable from zero. The first stage F-statistic is generally strong, and when multiple instruments are used most of the over-identification test passes the first cut for instrument exogeneity at the 5 percent level. Despite the strong first stage the 2SLS estimates all point to effects that are statistically indistinguishable from zero, and if any towards a negative effect. The null results from the 2SLS regressions, and the null effect from the first-difference regression present strong evidence that government guaranteed small business loans have no impact on economic growth.

I also perform a battery of robustness tests by estimating specifications that additional control for state minimum wage, Right-to-work status, past populations, or the industrial composition in the city. I do not report the results here because none of these change the null impact of SBA loans on urban growth.[6] Ultimately, Tables 2 through 4 indicate that the OLS estimates were upward biased. Cities with higher growth potential see more SBA loans approvals, but once unobserved growth potential is controlled for SBA loans have no impact on urban growth. I note that the empirical results here are at the MSA level and the same results may not necessarily transfer to a study that examines the impact of SBA loans on individual firm growth. Moreover, there may be heterogeneity across MSAs, i.e., certain cities may see positive impacts while certain cities do not. The current empirical results are capturing the average effect conditional on the empirical specification used in the analysis.

[6] The robustness checks are available upon request.

4.4 Market versus Government-backed entrepreneurship

I next compare the impact of market-financed entrepreneurship relative to government-backed entrepreneurship on economic growth following equation (2). Since the census establishment birth variable includes all births in the MSA, I subtract the number of SBA guaranteed loans to new businesses from the number of small business birth to get the number of market entrepreneurship. Table 5 presents the OLS results. All specifications control for the base control variables and the census division dummies. Columns (1) through (3) report results on employment, payroll, and wage growth. The coefficient estimates on market entrepreneurship is positive and statistically significant at the 1 percent level. A 10 percent increase in market entrepreneurship is associated with 2.6% higher employment, 3.6% larger payroll, and 1% higher wages after 10 years. However, the coefficient estimates on the SBA loans decrease substantially in magnitude relative to those of Table 2, and are statistically indistinguishable from zero.

Table 6 estimates the same specification using 2SLS. Since market entrepreneurship is likely endogenous to urban growth, I also instrument for market entrepreneurship. Columns (1) and (2) report the first stage results when I use all four instrumental variables. Note that the banking related instruments impact market-financed entrepreneurship versus government-backed entrepreneurship in opposite directions, whereas higher homestead exemption increases both market and government financed entrepreneurship. As I discussed with the deregulation instrument, a lending environment helpful for market entrepreneurship decreases the potential entrepreneur's need to seek government help and in turn suppresses government-backed entrepreneurship. The coefficient estimates on years since deregulation are indeed significant and positive for market entrepreneurship, but negative and significant for SBA loans. Unlimited

homestead exemption strongly and positively affects market-financed entrepreneurship, which may reflect the larger collateral associated with private financing. Columns (3) through (5) report the 2SLS results using all four instrumental variables. The first stage F-statistics is 6 and the over-identification test reports relatively large p-values.[7] Similar to the OLS results in Table 5, there is no impact of government-backed entrepreneurship on urban economic growth. The coefficient estimates on market entrepreneurship decreases slightly to 0.185 for employment growth, 0.39 for payroll growth and 0.205 for wage growth, and are all statistically significant. Tables 5 and 6 indicate that entrepreneurship financed privately or by commercial lenders have a positive impact on growth, but entrepreneurship financed by government guaranteed small business loans do not.

5. Conclusion

This paper examines whether government guaranteed small business loans to entrepreneurs who are unable to finance in the market generate urban growth. I find no growth impact from government-backed entrepreneurship. In contrast, entrepreneurship financed through the market significantly and positively contributes to local economic growth. While the empirical results of this paper indicate that there are no net efficiency gains from government guaranteed small business loans, I note that the SBA small business loans do not have the explicit objective to promote regional growth, but rather have the simple goal to support small businesses that have difficulty getting private finance, compared with larger firms. In this regard, the empirical results of this paper do not assess the general value of SBA loans. There indeed is evidence of discrimination in small business lending and SBA loans may be suitable to address

[7] In specifications where I use the four census region fixed effects instead of the nine census division fixed effects, the instruments become stronger and F-statistics greater than 10. The results do not change. I report results using the census division fixed effects since it better controls for regional characteristics across the U.S.

such inequality. Blanchflower et al. (2003) find that black entrepreneurs are twice as likely to be denied credit compared to white entrepreneurs. Gender inequality in Silicon Valley start-ups has become a social issue in recent years. Understanding the ramifications of inequality in entrepreneurship in relation to this paper's finding would enable a richer assessment of the government's role in small business lending.

As Acs et al. (2013) and Lerner (2012) point out the policy world has looked to entrepreneurship as a way to stimulate economic growth. Facilitating financing for small businesses has been one of the main policy tools to promote entrepreneurship. This paper's finding that government guaranteed small business loans have no effect in promoting local growth may at first seem discouraging. Indeed, the literature that has examined public efforts to spur entrepreneurship have often found weak or spotty results. However, the literature has also found that venture capital or programs that support technology startups do promote growth. To better design entrepreneurship policy, it is important to identify which entrepreneurs are driving economic growth. Is it predominantly high technology firms that are driving urban growth or are the various small businesses, from retail to services, doing their share in promoting growth? Are there certain indicators of the entrepreneur that explain firm growth? Coming up with plausibly exogenous variation in the specific types of entrepreneurship and entrepreneurs would be challenging but future work on these questions would add to our understanding of entrepreneurship's role in regional growth and help tailor policies to such end.

Acknowledgements

I thank Simon Parker, two anonymous referees, David Love, Ross Levine, Junfu Zhang, Nathaniel Baum-Snow, Kenneth Chay, and seminar participants at Brown University, Johns Hopkins University, Williams College, the Korea Development Institute, Rimini Conference in Economics and Finance, the American Real Estate and Urban Economics Annual Meetings, and the Urban Economics Association Annual Meeting for comments.

References

Acs, Zoltan J., David B. Audretsch, and Robert J. Strom. 2013. Entrepreneurship, Growth, and Public Policy. Kauffman Foundation.

Audretsch, David and Maryann P. Feldman. 1996. "R&D spillovers and the geography of innovation and production." *American Economic Review*, 86(3): 630-640.

Audretsch, David and T. Taylor Aldridge. 2009. Knowledge spillovers, entrepreneurship and regional development. In: Capello, R., Nijkamp, P. (eds.), Handbook of Regional Growth and Development Theories. Cheltenham, Northampton: Elgar. 201-210

Beck, Thorsten, Ross Levine, and Alexey Levkov. 2010. "Big Bad Banks? The Winners and Losers from Bank Deregulation in the United States." *Journal of Finance*, 45(5), 1637-1667.

Berger, Allen N., William Goulding, and Tara Rice. 2014. "Do Small Businesses Still Prefer Community Banks?" *Journal of Banking and Finance*, 44(4), 264-278.

Blanchflower, David G., Phillip B Levine, and David J. Zimmerman. 2003. "Discrimination in the Small-Business Credit Market." *Review of Economics and Statistics*, 85(1): 930-943.

Brander, James A., Qianqian Du, and Thomas Hellmann. 2015. "The Effects of Government-Sponsored Venture Capital: International Evidence." *Review of Finance*, 19(2): 571-618.

Cole, R., 1998. "The importance of relationships to the availability of credit." *Journal of Banking and Finance*, 22, pp. 959-977.

Craig, Ben R., William E. Jackson III, and James B. Thomson. 2007. "Small Firm Finance, Credit Rationing, and the Impact of SBA-Guaranteed Lending on Local Economic Growth", *Journal of Small Business Management*, 45(1), pp. 116-132.

Feldman, Maryann P. 2001. "The Entrepreneurial Event Revisited: Firm Formation in a Regional Context." *Industrial and Corporate Change* 10: 861-891.

Glaeser, Edward L., Sari Pekkala Kerr, and William R. Kerr. 2015. "Entrepreneurship and Urban Growth: An Empirical Assessment with Historical Mines." *The Review of Economics and Statistics*, 97(2): 498-520.

Henderson, Vernon, Kuncoro, Ari, and Matt Turner. 1995. "Industrial Development in Cities." *Journal of Political Economy*, 103(5), 1067-1090.

Hsu, David. 2006. "Venture Capitalists and Cooperative Start-up Commercialization Strategy." *Management Science*, 52(2): 204-219.

Hurst, Erik, and Benjamin Pugsley. 2011. "What do Small Businesses Do?" *Brookings Paper on Economic Activity*, Vol 43(2), 73-142.

Jaffe, Adam B., Manuel Trajtenberg, and Rebecca Henderson. 1993. "Geographic Localization of Knowledge Spillovers as Evidence by Patent Citations." *Quarterly Journal of Economics*, 108(3): 577-598.

Lee, Yong Suk. 2016. "Entrepreneurship, Small Businesses, and Economic Growth in Cities." *Journal of Economic Geography,* forthcoming.

Lerner, Josh. 1999. "The Government as Venture Capitalist: The Long-Run Effects of the SBIR Program." *Journal of Business,* 72: 285-318.

Lerner, Josh. 2002. "When Bureaucrats Meet Entrepreneurs: The Design of Successful 'Public Venture Capital' Programs." *Economic Journal*, 112(477): 73-84.

Lerner, Josh. 2012. Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed and What to Do About it. Princeton: Princeton University Press.

Neumark, David, Wall, Brandon, and Zhang, Junfu. "Do Small Businesses Create More Jobs? New Evidence for the United States from the National Establishment Time Series." *The Review of Economics and Statistics*, February 2011, Vol. 93, No. 1, pp. 16-29

Posner, Eric A., Hynes, Richard, and Anup Malani. 2001. "The Political Economic of Property Exemption Laws." John M. Olin Law & Economics Working Paper No. 136.

Samila, Sampsa and Olav Sorenson. 2011. "Venture Capital, Entrepreneurship, and Economic Growth." *The Review of Economics and Statistics*, Vol. 93, No. 1, pp. 338-349

Scott, J.A. 2004. "Small business and value of community financial institutions." *Journal of Financial Services Research*, 25, pp. 207-230.

Shane, Scott. 2009. "Why encouraging more people to become entrepreneurs is bad public policy." *Small Business Economics* 33, 141- 149.

Stam, Erik. 2015. "Entrepreneurial Ecosystems and Regional Policy: A Sympathetic Critique." *European Planning Studies*. 23(9): 1759- 1769.

Sternberg, Rolf. 2009. Regional Dimensions of Entrepreneurship. Boston: Now Publishers, Foundations and Trends in Entrepreneurship, vol. 5, Issue 4.

Table 1. Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Amount of SBA loans approved($1,000), FY1993	18400	30600	86	307000
Amount of SBA loans approved($1,000) for new businesses, FY1993	2809	4424	0	45700
Number of SBA loans approved, FY1993	68.6	101.97	1	879
Number of SBA loans approved for new businesses, FY1993	13.3	18.24	0	140
Number of SBA lenders in 1985	4.7	6.55	0	54
Employment, 1993	252130	439654	20957	3495130
Annual payroll ($1,000), 1993	6553740	13300000	335607	123000000
Change in log employment, 1993-2002	0.163	0.100	-0.261	0.550
Change in log annual payroll, 1993-2002	0.258	0.139	-0.169	0.752
Employment of establishments with less than 20 employees, 1993.3	48003	79320.2	5317	644273
Employment of establishments with 20 to 499 employees, 1993.3	82163	144312.4	6868	1203297
Employment of establishments with more than 499 employees, 1993.3	121963	217507.3	6870	1666884
Number establishments with less than 20 employees, 1993.3	11856	20298.56	1234	180540
Number of establishments with 20 to 499 employees, 1993.3	2357	3774.05	245	31251
Number of establishments with more than 499 employees, 1993.3	1999	3107.24	213	22605
Birth of establishments by new firms or firms with less than 20 employees, 1992.3-1993.3	1387	2390.85	105	20602
Birth of establishments by new firms of firms with 20 to 499 employees, 1992.3-1993.3	119	201.29	6	1771
Birth of establishments by firms with more than 499 employees, 1992.3-1993.3	153	254.10	8	1866

Notes: Unit of analysis is the Metropolitan Statistical Area (MSA) and the number of MSAs in the data is 316.

Table 2. Impact of SBA Loans on Economic Growth: OLS Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	Change in log employment, 1993-2002		*Change in log payroll, 1993-2002*		*Change in log wage, 1993-2002*	
Log number of SBA loans to new businesses, FY1993	0.0210**	0.0117	0.0235*	0.00867	0.00250	-0.00300
	(0.0104)	(0.00740)	(0.0141)	(0.00966)	(0.00613)	(0.00436)
Log amount of SBA loans to new businesses, FY1993	-0.00281		-0.00448*		-0.00167	
	(0.00189)		(0.00250)		(0.00119)	
Base controls	Y	Y	Y	Y	Y	Y
Census division fixed effects	Y	Y	Y	Y	Y	Y
R squared	0.374	0.37	0.416	0.411	0.409	0.406

Notes: The unit of analysis is the MSA and the number of observations is 316. The number of new SBA loans approved and the total amount approved between July 1992 and June 1993 in each MSA are proxies for government-backed entrepreneurship. Base controls are initial employment, median family income, population, percent college degree and above, the house price index, and the number of initial establishments by the three size categories. The nine census division dummies are included as controls. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors are in parentheses.

Table 3. Impact of SBA Loans on Economic Growth: First-difference Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	Change in 5 year employment growth, (1997 to 2002 growth) - (1993 to 1998 growth)		*Change in 5 year payroll growth, (1997 to 2002 growth) - (1993 to 1998 growth)*		*Change in 5 year wage growth, (1997 to 2002 growth) - (1993 to 1998 growth)*	
ΔLog number of SBA loans to new businesses, 1993-97	0.00252	0.00123	0.00532	0.00552	0.00280	0.00429
	(0.00518)	(0.00447)	(0.00747)	(0.00632)	(0.00385)	(0.00323)
ΔLog amount of SBA loans to new businesses, 1993-97	-0.000527		8.23e-05		0.000609	
	(0.00102)		(0.00134)		(0.000813)	
Base controls	Y	Y	Y	Y	Y	Y
R squared	0.568	0.568	0.572	0.572	0.562	0.562

Notes: The unit of analysis is the MSA and the number of observations is 316. The number of new SBA loans approved and the total amount approved between July 1992 and June 1993 in each MSA are proxies for government-backed entrepreneurship. Base controls include the change in log employment, payroll, population, house price index, establishment by the three size categories, and the 1990 percent college educated and log median family income. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors are in parentheses.

Table 4. Impact of SBA Loans on Economic Growth: 2SLS Estimates

	(1)	(2)	(3)	(4)	(5)
Panel A - 1st Stage: Dependent variable:	*Log number of SBA loans approved for new small businesses in 1993*				
Log number of SBA lender per capita in 1985	0.304***		0.295***		0.275***
	(0.0649)		(0.0649)		(0.0622)
Log years since banking deregulation		-0.289**	-0.242*		-0.291**
		(0.130)	(0.125)		(0.126)
Log homestead exemption level in 1975				0.0478***	0.0445***
				(0.0142)	(0.0137)
Unlimited exemption in 1975				-0.286*	-0.309**
				(0.160)	(0.156)
R squared	0.683	0.665	0.687	0.673	0.699
Panel B - 2SLS : Dependent variable:	*Change in log employment, 1993-2002*				
Log number of SBA loans approved for new small businesses, FY1993	0.00901	-0.127	-0.0119	-0.0350	-0.0240
	(0.0295)	(0.0941)	(0.0291)	(0.0376)	(0.0244)
Hansen J-statistic p-value			0.09	0.194	0.16
Panel C - 2SLS : Dependent variable:	*Change in log payroll, 1993-2002*				
Log number of SBA loans approved for new small businesses, FY1993	-0.00310	-0.158	-0.0268	-0.00586	-0.0269
	(0.0394)	(0.117)	(0.0384)	(0.0517)	(0.0317)
Hansen J-statistic p-value			0.135	0.04	0.098
Panel D - 2SLS : Dependent variable:	*Change in log wage, 1993-2002*				
Log number of SBA loans approved for new small businesses, FY1993	-0.0121	-0.0301	-0.0149	0.0292	-0.00293
	(0.0178)	(0.0360)	(0.0164)	(0.0260)	(0.0128)
Hansen J-statistic p-value			0.636	0.043	0.075
Instrumental variables:	*SBA lender density*	*Years since deregulation*	*SBA lender density, Years since deregulation*	*Homestead exemption variables*	*All*
1st stage F-statistic	21.88	5.0	13.8	5.8	9.232
Base controls	Y	Y	Y	Y	Y
Census division fixed effects	Y	Y	Y	Y	Y

Notes: Panel A presents the first stage of the 2SLS regression and Panels B to D present the 2SLS estimates. The unit of analysis is the MSA and the number of observations is 316. The number of new SBA loans approved and the total amount approved between July 1992 and June 1993 in each MSA are proxies for government-backed entrepreneurship. Base controls are initial employment, median family income, population, percent college degree and above, the house price index, and the number of initial establishments by the three size categories. The Kleibergen-Paap rk Wald F statistics are reported as the 1st stage F-statistics. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors are in parentheses.

Table 5. Market versus Government-backed Entrepreneurship: OLS Estimates

	(1)	(2)	(3)
	Change in log (1993-2002)		
Dependent variable:	*employment*	*payroll*	*wage*
Log number of SBA loans to new businesses	0.00563	0.000405	-0.00523
	(0.00626)	(0.00830)	(0.00429)
Log market entrepreneurship	0.262***	0.358***	0.0964***
	(0.0306)	(0.0394)	(0.0190)
Base controls	Y	Y	Y
Census division fixed effects	Y	Y	Y
R squared	0.498	0.535	0.451

Notes: The unit of analysis is the MSA and the number of observations is 316. The number of new SBA loans approved between July 1992 and June 1993 in each MSA measure government-backed entrepreneurship. Market entrepreneurship is defined as total small business birth minus the number of new SBA loans. Base controls are initial employment, median family income, population, percent college degree and above, the house price index, and the number of initial establishments by the three size categories. The nine census division dummies are included as controls. * $p<0.1$, ** $p<0.05$, *** $p<0.01$. Robust standard errors are in parentheses.

Table 6. Market versus Government-backed Entrepreneurship: 2SLS Estimates

	First-stage		2SLS results		
	(1)	(2)	(3)	(4)	(5)
Dependent variable:	*Log number of SBA loans to new businesses*	*Log market entrepreneurship*	*Change in log (1993-2002)* *employment*	*payroll*	*wage*
Log number of SBA loans to new businesses			-0.0179	-0.0142	0.00376
			(0.0227)	(0.0295)	(0.0135)
Log market entrepreneurship			0.185*	0.390***	0.205***
			(0.0985)	(0.138)	(0.0744)
Log number of SBA lender per capita in 1985	0.275***	-0.0131			
	(0.0622)	(0.0145)			
Log years since interstate banking deregulation	-0.291**	0.0611*			
	(0.126)	(0.0345)			
Log homestead exemption level in 1975	0.0445***	0.00669*			
	(0.0137)	(0.00360)			
Unlimited exemption in 1975	-0.309**	0.0945***			
	(0.156)	(0.0273)			
Base controls	Y	Y	Y	Y	Y
Census division fixed effects	Y	Y	Y	Y	Y
1st stage F-statistic			6.0	6.0	6.0
Hansen J-statistic p-value			0.13	0.42	0.77
R squared	0.699	0.986			

Notes: The unit of analysis is the MSA and the number of observations is 316. The number of new SBA loans approved between July 1992 and June 1993 in each MSA proxy for government-backed entrepreneurship. Market entrepreneurship is defined as total small business birth minus the number of new SBA loans. Base controls are initial employment, median family income, population, percent college degree and above, the house price index, and the number of initial establishments by the three size categories. The nine census division dummies are included as controls. The Kleibergen-Paap rk Wald F statistics are reported as the 1st stage F-statistics. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors are in parentheses.

Appendix Table 1. Homestead Exemption Level and Year Interstate Banking was Permitted by State

State	Homestead exemption level in 1975	Year of interstate banking deregulation	State	Homestead exemption level in 1975	Year of interstate banking deregulation
AK	19,000	1987	MT	40,000	1993
AL	4,000	1982	NC	2,000	1990
AR	U	1986	ND	80,000	1985
AZ	15,000	1989	NE	8,000	1987
CA	20,000	1987	NH	5,000	1986
CO	15,000	1988	NJ	0	1989
CT	0	1983	NM	20,000	1982
DE	0	1988	NV	25,000	1985
DC	N/A	1985	NY	4,000	1991
FL	U	1985	OH	0	1985
GA	1,000	1985	OK	U	1987
HI	50,000	1995	OR	12,000	1986
IA	U	1985	PA	0	1986
ID	14,000	1986	RI	0	1984
IL	10,000	1986	SC	2,000	1986
IN	1,400	1991	SD	U	1988
KS	U	1992	TN	7,500	1985
KY	2,000	1984	TX	U	1987
LA	15,000	1987	UT	11,000	1984
MA	24,000	1978	VA	10,000	1988
MD	0	1985	VT	10,000	1985
ME	6,000	1983	WA	20,000	1987
MI	7,000	1986	WI	25,000	1988
MN	U	1986	WV	0	1987
MO	2,000	1988	WY	20,000	1987
MS	30,000	1986			

Notes: Exemption amounts are nominal and were collected from Posner et al. (2001). U denotes unlimited exemption. Exemption amount was not available for DC. Year of interstate branching collected from the St. Louis Fed publication at www.stlouisfed.org/publications/re/2007/b/pdf/dereg.pdf.