IMPACT OF SMALL BUSINESS ADMINISTRATION LENDING ON STATE-LEVEL ECONOMIC PERFORMANCE: A PANEL DATA ANALYSIS

Bienvenido S. Cortes, Pittsburg State University

ABSTRACT

Based on the few studies in their 2009 literature review, Craig, Jackson, and Thomson find that the economic impact of SBA loans on regional economic performance is positive, albeit small This study analyzes the relationships between economic performance and SBA lending using a panel of state-level data for the 1986-2008 period. It focuses primarily on the SBA 504-guaranteed lending program because this program's objective is to provide long-term financing to small firms. Through its Certified Development Companies working with local banks, the SBA is able to provide long-term, fixed rate loans so that businesses can acquire physical assets such as land and buildings and help generate jobs. Thus, the main purpose of this paper is to analyze and measure the impact of SBA 504 loans on various indicators of small business activity such as employment rate and per capita income, while also controlling for other determinants of state economic growth. A preliminary test showed that SBA lending is not endogenous at the state-level. As a result, moderated regression analysis was applied to the state-level panel data set whereby the dependent variable is regressed sequentially on certain control variables, independent variables, and then an interaction term. A version of Craig's model was estimated using three different dependent variables – income growth, small firm growth, and employee growth. The control variables of location quotient and NBER showed that local industrial composition and national business cycles are important determinants of state economic performance. The estimated coefficients for SBA lending were found to be small, insignificant, and had the unexpected negative signs with respect to its relationship with income. On the other hand, SBA loans had a positive and significant impact on the growth of small businesses and by consequence, the number of workers employed in small firms. The bank deposit variable had a positive and significant relation only with employee growth, albeit a very small effect. Finally, this study found that SBA lending was not biased in favor of lower income areas.

JEL: R11; O16

KEYWORDS: Small business lending, endogeneity, panel data

INTRODUCTION

ne of the major ways by which the U.S. federal government has tackled the current credit crunch especially for small businesses is to raise the loan guaranteed amounts (up to \$255 million this year) and to lower fees on Small Business Administration (SBA) loans. Still, some big banks have not been keen on participating in the program due to perceived burdens in the paper work and application process (Flandez, *Wall Street Journal*, 2009). The objectives of this study are to examine the lending patterns of the SBA in the 50 states over the period 1986-2008 and to evaluate the relationship between the supply of SBA small business credit and local economic performance in these states. In particular, it emphasizes the role of the Small Business Administration's Certified Development Company 504 Program loans in promoting long-term local economic growth. The economic impact of the SBA 504 program and its related operating units, the Certified Development Companies (CDCs), is especially significant in light of recent adverse developments in the financial markets. In November 2007, the U.S. Congress called into question the effectiveness of the SBA as a lending agency to small business firms. Congress wanted to know the effect of SBA-guaranteed loans on the revenues, jobs, and investments of the companies receiving these loans (CNNMoney.com, November 2, 2007). In response, a 2008 economic impact study was commissioned by the National Association of Development Companies, the trade association of CDCs, and conducted by the Applied Development Economics, Inc. (ADE). After a survey of CDCs and evaluation of over 800 SBA 504 program loans issued during the 2003-2005 period, the study concluded that:

"...the 504 loan program very clearly provides a cost effective means of generating new business activity of the national economy. In addition, the corresponding increase in tax revenues for the federal government is many times greater than the funding required to administer the program." (ADE, p. 2)

This study analyzes the relationships between state economic growth and the SBA 504 loan program using a cross-section of state data for 1986-2008. Through its Certified Development Companies working with local banks, the SBA 504 program is designed to provide long-term financing for businesses to acquire fixed assets and to stimulate local economic growth via job creation, business expansion, and tax revenue generation. Thus, the main purpose of this paper is to analyze and measure the impact of SBA 504 loans on various indicators of small business activity such as per capita income and employment, while also controlling for other determinants of state economic growth.

The rest of the paper is organized as follows. The next section provides a background on SBA lending patterns and a review of the past studies. This is followed by a description of the model, statistical method, and data used in the study. The results section discusses the findings of applying panel regression on the data. The final section provides the general conclusions of the study.

HISTORICAL TRENDS AND LITERATURE REVIEW

Table 1 below shows the total U.S. levels of SBA 504 loans, with values starting in September 1986 and ending in September 2008. At the national level, the flow of SBA 504 lending increased from approximately \$528 million in 1987 to over \$609 million in 2007, representing an average annual growth rate of about 15%.

The national pattern shows a general rise in the real value of SBA 504 loans from 1987 until 1996, followed by a decline in 1997 to 2000. Starting in 2001, lending dramatically increased up to 2007. The top ten states with the largest amounts of loans received during the 1986-08 period are:

California	\$13 trillion or 24% of total SBA 504 loans
Florida	\$2.9 trillion or 5.4%
Texas	\$2.8 trillion or 5.1%
New York	\$2.2 trillion or 4%
Illinois	\$2 trillion or 3.73%
Minnesota	\$2 trillion or 3.7%
Ohio	\$1.7 trillion or 3.1%
Colorado	\$1.6 trillion or 2.96%
Utah	\$1.6 trillion or 2.92%
Georgia	\$1.5 trillion or 2.85%

Year	SBA Loan
1986	305,331,204
1987	527,723,735
1988	434,153,878
1989	520,279,961
1990	632,320,605
1991	667,302,487
1992	863,978,937
1993	1,193,213,208
1994	1,674,630,173
1995	2,015,752,784
1996	2,769,568,152
1997	1,873,509,414
1998	2,193,683,623
1999	2,315,125,287
2000	2,041,602,056
2001	2,672,142,962
2002	2,903,906,723
2003	3,471,942,698
2004	4,346,307,706
2005	5,600,611,120
2006	5,613,108,805
2007	6,093,056,312
2008	3,531,215,398

Table 1: Value of SBA 504 Loans (in 2005 \$)

The smallest loan amounts went to the following states:

Delaware West Virginia	\$65.8 million or 0.12% of total SBA 504 loans
west virginia	
Alabama	\$102 million or 0.19%
Vermont	\$109 million or 0.20%
Wyoming	\$156 million or 0.29%
Montana	\$178 million or 0.33%
South Dakota	\$197.5 million or 0.36%
Hawaii	\$205 million or 0.38%
Rhode Island	\$206 million or 0.38%
Maine	\$231 million or 0.43%
Nebraska	\$256.6 million or 0.47\$

These state-level differences are obviously due to various regional factors such as population, industrial diversity, and economic growth. In an early study, Doctors and Wokutch (1979) analyzed the geographical patterns of SBA lending activity in nine metropolitan areas. They compared and contrasted SBA total loans per capita, per number of small businesses, and per number of small business employees for 1968-76. Doctors and Wokutch found that much of SBA lending was focused or concentrated in areas with the largest number of small firms. They felt that this was counterintuitive and contrary to the SBA's purpose of providing credit to regions with the most need. Table 2 presents state-level data for SBA 504 lending per 1,000 small firms (defined as firms with less than 500 employees) and for SBA lending per 10,000 employees in small firms for the 1988-2006 period.

State	Average Loan Value per 1,000	Average Loan Value per 10,000 Employees
	Small Firms (in 2005 \$)	(in 2005 \$)
Alabama	489,693.0	481,001.4
Alaska	250,228.3	305,532.9
Arizona	584,864.8	579,165.3
Arkansas	255,685.5	274,170.6
California	827,682.4	825,387.4
Colorado	611,840.8	728,377.8
Connecticut	206,903.0	205,436.0
Delaware	157,813.5	173,380.2
Florida	312,934.8	394,736.9
Georgia	402,093.2	424,358.5
Hawaii	352,654.3	334,178.6
Idaho	864,411.3	1,047,312.0
Illinois	340,871.7	329,759.8
Indiana	382,038.4	345,019.3
Iowa	396,542.8	392,443.0
Kansas	292,316.0	295,335.5
Kentucky	186,216.9	177,175.1
Louisiana	194,050.6	182,617.3
Maine	284,454.4	328,586.7
Maryland	275,282.0	269,360.2
Massachusetts	358,259.3	343,732.8
Michigan	252,663.6	240,988.2
Minnesota	780,910.9	740,275.3
Mississippi	251,880.1	262,255.6
Missouri	458,141.6	463,037.9
Montana	281,939.4	377,684.5
Nebraska	277,952.5	289,521.8
Nevada	1,246,120.0	1,238,825.0
New Hampshire	1,132,809.0	1,196,075.0
New Jersey	98,955.77	110,463.9
New Mexico	452,471.3	482,081.5
New York	220,677.9	248,522.9
North Carolina	300,384.9	307,581.1
North Dakota	772,904.9	808,965.7
Ohio	349,967.6	312,734.5
Oklahoma	271,209.2	291,120.1
Oregon	351,801.8	388,404.1
Pennsylvania	145,987.3	136,392.0
Rhode Island	367,428.2	386,410.6
South Carolina	213,724.9	220,876.4
South Dakota	403,259.5	440,220.9
Tennessee	224,265.4	212,849.6
Texas	296,092.4	292,415.9
Utah	1,578,049.0	1,638,631.0
Vermont	234,553.1	272,747.9
Virginia	382,393.7	384,224.5
Washington	412,970.8	458,103.3
West Virginia	128,603.5	140,035.6
Wisconsin	512,670.5	459,045.1
Wyoming	454,943.9	596,461.9
Total US	417,651.4	436,680.4

Table 2: Real SBA Lending Per Firm and Per Employee, 1988-06

In general, "small" states in terms of absolute numbers of small businesses as well as employees in these small businesses received higher amounts of SBA 504 lending (for example, Utah, Nevada, New Hampshire, Idaho, and North Dakota) compared to the U.S. average. However, "large" states such as California, Minnesota, Wisconsin, and Missouri also ranked high in terms of these ratios. Thus, this current study attempts to determine the factors that influence the geographical distribution of SBA credit.

In their recent 2009 study and in 2007, Craig, Jackson, and Thomson surveyed the few studies (mostly theirs) which empirically test the impact of SBA guaranteed lending on economic performance; they generally find a positive, albeit small, impact of SBA financing and that the SBA lending-growth relationship is more significant in low-income markets. In another survey of the literature, Watkins (2007) underscored the fact that SBA lending accounts for less than 10 per cent of all lending in a given local economy. He also recommended that future studies consider the long-run nature of the SBA-growth relationship and employ other performance measures such as job creation/growth, small business failure rates, and local tax revenues as dependent variables.

Craig et al. (2006) analyzed data for all SBA 7(a) and 504 loans from 1991-2002 for MSA and non-MSA counties in the U.S. In their basic OLS fixed effects model, the employment rate is regressed on per capita income. Herfindahl index (to measure banking market concentration), a dummy variable for MSA county, total bank deposits per capita (a measure of financial development), total SBA loans per capita, and an interaction term equal to the product of bank deposits and SBA loans. The interaction term is Craig et al.'s focus in that a negative estimated slope parameter for this variable would mean that the impact of SBA lending is less at higher levels of bank deposits, or alternatively, SBA credit has more impact in low-income counties. In their analysis, Craig, et al. disregarded the important issue of endogeneity or simultaneity of bank deposits. They argued that they are primarily interested in the effect of the interaction term of deposits and SBA lending on employment. Craig et al. found a negative and statistically significant coefficient for the interaction term thus indicating that "...at higher levels of financial market development, per capita SBA lending has a lower impact on employment than it does at lower levels of financial market development." (p. 23) The authors concluded that SBA lending serves a "social welfare function" by providing needed small business credit and reducing shortcomings in the credit market especially in low income areas. Craig et al. admit that they do not know if SBA financing leads to growth because of "completing" the banking market or whether SBA loans are a substitute for other sources of small business credit. In addition, they cannot test whether SBA loans actually increase the amount of small business lending in the market.

In their earlier 2004 study, Craig *et al.* used per capita income as the measure of economic performance. Their main explanatory variable of interest is SBA loans scaled by total deposits. Control variables include market structure variables (Herfindahl index and rural-urban dummy), local (employment rate) and national economic conditions (a dummy variable for national economy in recession), and types of SBA lending (share of 7(a) loans, share of loans going to manufacturing firms). The model was tested for levels and rates of change. In the levels regression, the SBA loan to deposit variable is positive but insignificant. However, using growth rates, Craig *et al.* found that SBA lending significantly and positively affect income growth but only after two lags.

A 2003 study by PM Keypoint LLC for the SBA Office of Advocacy examined the impact of SBA loan programs on local business activity during periods of economic contraction or tight money. In contrast to Craig *et al.*, this analysis used state-level annual data for 1991-2000 and measured the effects of bank capital, SBA lending, loan delinquency rates, and local and national economic conditions (primarily interest rates) on small business activity. The dependent variable is represented by three factors: number of business firms, employment, and payroll. The study found that SBA guaranteed loans were positively related to business activity especially during periods of tight money and slow economic growth, thereby acting as a stabilizer.

Although there have been very few empirical studies of the impact of SBA lending, the importance of small business credit supply has long been recognized (see, for example, Ou and Williams, 2009). Government regularly collects micro data from businesses and financial institutions via surveys such as the Survey of Small Business Finances, Call Reports, and in reports required under the Community

Reinvestment Act (CRA) to monitor and assess the lending markets for small firms in the U.S. In a study similar to Craig *et al*'s 2006 paper, Hicks (2004) used CRA data to measure the effect of CRA-reported loans on employment for the 55 counties of West Virginia for the period 1996-98. In his growth model, county employment (classified according to four different employee ranges) was regressed on CRA-reported loans of less than \$100,000, human capital (education), public capital (with construction expenditures as proxy), county distress ranking, a trend variable, and a spatial autocorrelation adjustment. Hicks found that the loans to small businesses had a positive and statistically significant effect but only for firms with five to nine employees.

The current paper extends the above previous studies with some differences. First, it applies an economic model and method developed by Driscoll (2004) who used state panel data to test whether bank loan supply influences state-level per capita income. Second, it addresses the econometric issue of endogeneity or simultaneity (which the earlier studies did not take into account), also following Driscoll. Third, it re-examines Craig, Jackson, and Thomson's finding that the link between SBA guaranteed lending and economic growth is stronger in low-income areas. Finally, it tests the relationship between SBA credit and other economic growth indicators, specifically the growth of small business firms and employment change in small businesses.

DATA AND METHODOLOGY

To analyze the relationship between SBA 504 lending activity and state-level economic growth (measured in terms of income, small firm growth, and employees in small firms), this study uses data from four government sources. Annual loan data for 1986-2008 were kindly provided by the Small Business Administration. State personal income data were gathered from the Bureau of Economic Analysis while total deposits and interest expense were from the Federal Deposit Insurance Corporation. Employment data used to calculate the location quotients were taken from the Bureau of Labor Statistics.

The model estimated here follows from earlier studies by CJT. It differs primarily in the following ways: (1) the model is applied only to SBA 504 loans received in the 50 states in 1986-2008; (2) it corrects for the endogeneity problem since SBA lending may be responding to local economic growth or performance. The method used here is derived from Driscoll (2004) who employs a two-step procedure: (1) in the first stage, he estimates a state panel regression of bank loans (commercial and industrial) on output and money demand shocks, and; (2) in the second stage, he regresses output on the supply of bank loans. According to Driscoll, using money demand shocks as instrumental variables in this two-stage least squares (2SLS) technique answers the question: "Do changes in bank deposits affect the quantity of loans?" If these instruments are found to be statistically significant, then this evidence indicates the presence of a lending channel whereby firms (especially small firms) are dependent on their local bank lending sources. Driscoll estimates shocks to money demand using the standard money supply-money demand equilibrium condition. Money supply is measured by real per capita bank deposits in the state. Real money supply is then regressed on real per capita state income and on the interest rate (defined as the ratio of interest expense to total deposits); the estimated residuals represent the money demand shocks.

The current study applies Driscoll's procedure but differs in the following ways. First, although Driscoll's intention was to determine the impact of loans on small business firms, he uses total commercial and industrial bank loans; on the other hand, this study employs SBA loans targeted specifically for "small businesses." Second, this study uses a larger and more recent pooled cross-section (50 states) and time-series (1986-2008) data set. Third, it estimates an expanded economic growth model following Craig *et al* (2004). Finally, instead of using 2SLS method, the Hausman two-step test of endogeneity is performed.

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The generalized model of state per capita personal income takes the following form:

$$PI = b_1 + b_2SBA + b_3DEP + b_4(SBA*DEP) + b_5NBER + b_6LQ + b_7SBA7a + e$$
(1)

where PI is state-level per capita income, SBA is per capita SBA 504 loans, DEP is bank deposits per capita, SBA*DEP is an interaction term, NBER is a dummy variable equal to one if the year is a recession year, LQ is the location quotient for manufacturing, SBA7a is the share of total SBA lending that is a SBA 7(a) loan (the most basic and commonly used SBA loan type; for more information, see www.sba.gov), and e is the error term.

The interaction term (SBA*DEP) is the variable of interest here. The effect of SBA lending on economic growth depends on the value of DEP. Craig and others find that the coefficient b_4 is negative indicating that SBA credit is biased in favor of lower income areas (where bank deposits are a proxy for the financial depth of an area). NBER, LQ, and SBA7a are considered control variables reflecting local and national economic conditions. The dummy variable, NBER, reflects the impact of the national business cycle. The manufacturing location quotient, LQ, is a ratio of the share of manufacturing employment in state employment to the share of overall manufacturing in U.S. employment; thus, a ratio greater than one indicates that a state's manufacturing sector accounts for a larger share of state employment as compared to that of the nation. LQ and the share of 7(a) loans in the state's total SBA loans represent the local environment.

To test and correct for simultaneity with respect to the SBA variable, the Hausman two-step procedure is followed (see Pindyck and Rubinfeld, 1998, p. 353-355). In the first step, SBA is regressed on the money demand shocks and the other independent variables in the economic growth model (1). In the second step, the estimated residuals from the first step regression are then added as another explanatory variable in equation (1). If the estimated coefficient of the residual variable is significant, then the model has considered the simultaneity issue and is therefore the correct and robust model.

Preliminary testing of the variables for unit roots indicated that SBA loans, income, and bank deposits are stationary in first-differences; thus, the estimated regressions included two lags, based on the Schwartz criterion test (Pindyck and Rubinfeld, p. 238-239).

EMPIRICAL RESULTS

The results of applying the Driscoll method on the state-level panel data indicated the absence of any simultaneity bias. Thus, the economic growth model is estimated using panel least squares and using the following stepwise procedure: (1) the control variables, NBER, LQ, and SBA7a, are entered first (these control variables represent both national and local economic conditions); (2) the main independent variables of SBA 504 credit and bank deposits are entered to join the control variables; (3) in the full model, the interaction term, SBA*DEP, is entered to join the independent and control variables.

The results of applying this procedure appear in Table 3. Model 1 shows that the NBER recession dummy and the location quotient are negatively and significantly related to state-level income growth. State incomes tend to fall during recession years and are more vulnerable when the state economy is relatively more dependent on a manufacturing base. Lagged income growth (two periods back) is also significant but the share of SBA7(a) loans is not a factor. In Model 2, inclusion of the main independent variables, SBA and DEP, as well as lagged effects reveal that SBA and DEP have the unexpected negative effect on output/income. This confirms earlier findings by Driscoll and Craig *et al* of very small and often negative effects of loans. The important finding in Model 3 is that the estimated parameter for the interaction term is infinitesimal and statistically insignificant, albeit with a negative sign.

		Model 2	
	Model 1	Control and Independent	Model 3
Predictor	Control Variables	Variables	Full Model
Constant	0.02	0.02	0.025
	(5.68)***	(6.29)***	(6.38)***
Lagged Income (-1)	0.05	0.03	0.03
	(1.71)	(0.93)	(0.90)
Lagged Income (-2)	0.14	0.14	0.14
	(4.81)***	(4.67)***	(4.63)***
NBER	-0.02	-0.02	-0.02
	(-9.83)***	(-9.65)***	(-9.67)***
LQ	-0.004	-0.004	-0.004
	(-1.95)**	(-2.29)**	(-2.28)**
SBA7a	-0.0002	-0.0003	-0.0007
	(-0.05)	(-0.08)	(-0.18)
Growth of SBA		-0.003	-0.003
		(-2.22)**	(-2.23)**
Lagged SBA (-1)		-0.009	-0.009
		(-5.72)***	(-5.71)***
Lagged SBA (-2)		-0.0003	-0.0003
		(-0.22)	(-0.21)
Growth of Deposits		0.00006	0.00006
		(1.29)	(1.31)
Lagged Deposits(-1)		-0.0001	-0.0001
		(-1.96)**	(-1.96)**
Lagged Deposits(-2)		0.00006	0.00006
		(1.07)	(1.08)
SBA*DEP			-0.0000
			(-1.07)
Adjusted R ²	0.10	0.13	0.14
F-statistic	22.35***	14.02***	12.95***
No. of observations	1,000	971	971

Table 3: Dependent Variable is Growth Rate of Per Capita Income

This table shows regression estimates for three versions of Equation (1) above, with per capita income as dependent variable. Model version 1 includes only the control variables. Model version 2 includes both control variables and independent variables. Model version 3 is the full equation (1) with the interaction term. T-statistics are in parentheses. ** and *** indicate significance at the 5 and 1 percent level respectively.

Equation (1) is also estimated for two other dependent variables, growth of small firms and growth of employees in small businesses, to evaluate the effectiveness of SBA guaranteed lending activity. Given available data, the time period considered here is 1988-2006. Table 4 shows the results with small firm growth as the dependent variable. The control variables, LQ and NBER, as well as the lagged small firm growth rate are consistently significant and have the expected signs.

After controlling for these variables, the findings reveal that SBA lending activity directly and significantly influences the growth of small firms in the states. On the other hand, the coefficients for financial assets and the interaction term are very negligible and insignificant. Similar results are found in Table 5 including the important finding that deposit growth has a significant and positive relationship with the growth of employees in small businesses. Finally, in both regressions, the impact of the SBA*DEP interaction term is insignificant, as evidenced by the minute absolute value of the estimated coefficient as well as the absence of any change in the adjusted R-squared as a result of adding the interaction term into the model.

Predictor	Model 1 Control Variables	Model 2 Control and Independent Variables	Model 3 Full Model
Constant	0.01	0.01	0.01
	(3.85)***	(3.17)***	(3.20)***
Lagged Firms (-1)	0.69	0.67	0.67
	(21.62)***	(20.61)***	(20.60)***
Lagged Firms (-2)	-0.04	-0.01	-0.01
	(-1.27)	(-0.38)	(-0.39)
NBER	-0.01	-0.01	-0.01
	(-10.74)***	(-10.55)***	(-10.55)***
LQ	-0.004	-0.004	-0.004
	(-4.20)***	(-3.76)***	(-3.75)***
SBA7a	0.001	0.002	0.002
	(0.58)	(0.77)	(0.73)
Growth of SBA	· · ·	0.005	0.005
		(5.61)***	(5.62)***
Lagged SBA (-1)		0.002	0.002
		(2.19)**	(2.19)**
Lagged SBA (-2)		0.001	0.001
		(1.39)	(1.40)
Growth of Deposits		0.00001	0.00001
I I I I I I I I I I I I I I I I I I I		(0.57)	(0.58)
Lagged Deposits(-1)		0.00001	0.00001
		(0.17)	(0.17)
Lagged Deposits(-2)		-0.00004	-0.00004
		(-1.47)	(-1.46)
SBA*DEP			-0.00000
			(-0.46)
Adjusted R^2	0.58	0.60	0.60
F-statistic	223.73***	108.35***	99.24***
No. of observations	800	779	779

This table shows regression estimates for three versions of Equation (1) above, with small firm growth as dependent variable. Model version 1 includes only the control variables. Model version 2 includes both control variables and independent variables. Model version 3 is the full equation (1) with the interaction term. T-statistics are in parentheses. ** and *** indicate significance at the 5 and 1 percent level respectively.

CONCLUSION

In their studies, Craig and others concluded that SBA lending matters especially for low-income areas. This paper added to the literature by applying Craig's approach to a panel data of U.S. states for the 1986-2008 period. A preliminary test was to determine if a two-way causality exists between SBA credit and income growth. The Hausman simultaneity test showed that SBA lending is not endogenous at the state-level. As a result, moderated regression analysis was applied to the state-level panel data set whereby the dependent variable is regressed sequentially on certain control variables, independent variables, and then an interaction term. A version of Craig's model was estimated using three different dependent variables – income growth, small firm growth, and employee growth.

Overall, the control variables of location quotient and NBER showed that local industrial composition and national business cycles are important determinants of state economic performance. The estimated coefficients for SBA lending were found to be small, insignificant, and having the unexpected negative signs with respect to its relationship with income. This confirms earlier studies and may be a statistical consequence of the fact that SBA lending accounts for a very small part (less than 10%) of total lending in the economy. On the other hand, SBA loans have a positive and significant impact on the growth of small businesses and by consequence, the number of workers employed in small firms. The bank deposit variable had a positive and significant relation only with employee growth, albeit a very small effect. Finally, the coefficient for the interaction term between SBA and DEP is statistically insignificant and minute in absolute value in all regressions, although it has the expected negative sign. This insignificant result is contrary to Craig's findings. Thus, this study finds that SBA lending is not biased in favor of lower income areas thereby questioning the effectiveness of the SBA in providing credit lines to firms in most need.

Predictor	Model 1	Model 2	Model 3
	Control Variables	Control and Independent	Full Model
Constant	0.02		0.02
Constant	(5.16)***	(4 71)***	(4 76)***
Lagged Employees (-1)	0.37	0.37	0.37
	(11.68)***	(11.52)***	(11.48)***
Lagged Employees (-2)	0.01	0.01	0.01
((0.32)	(0.25)	(0.24)
NBER	-0.03	-0.03	-0.03
	(-13.54)***	(-12.86)***	(-12.86)***
LO	-0.006	-0.006	-0.006
	(-3.50)***	(-3.03)***	(-3.03)***
SBA7a	-0.003	-0.003	-0.003
	(-0.72)	(-0.76)	(0.82)
Growth of SBA		-0.0004	-0.0004
		(-0.26)	(-0.24)
Lagged SBA (-1)		0.0006	0.0006
		(0.35)	(0.37)
Lagged SBA (-2)		0.003	0.003
		(2.36)**	(2.37)**
Growth of Deposits		0.00008	0.00008
		(1.90)*	(1.91)*
Lagged Deposits(-1)		-0.0001	-0.0001
		(-1.78)*	(-1.76)*
Lagged Deposits(-2)		0.00004	0.00004
		(0.76)	(0.77)
SBA*DEP			-0.000000
			(-0.68)
Adjusted R ²	0.30	0.29	0.29
F-statistic	68.20***	30.50***	27.98***
No. of observations	800	779	779

Table 5: Dependent Variable is Growth in Employees in Small Firms

This table shows regression estimates for three versions of Equation (1) above, with small firm employees as dependent variable. Model version 1 includes only the control variables. Model version 2 includes both control variables and independent variables. Model version 3 is the full equation (1) with the interaction term. T-statistics are in parentheses. ** and *** indicate significance at the 5 and 1 percent level respectively.

This study has limitations. First, the use of the state as the unit of analysis may be inappropriate given the importance of local market conditions (for example, local interbank competition, distance to bank, etc.) in the lending process. Second, as Craig and his colleagues point out, "we do not know whether SBA loan guarantees are contributing to economic performance by helping to complete the market or are simply proxying for small business lending in the market." (2006, p. 26) Further extensions of this study will examine more disaggregated data such as county-level or firm-level data. It will also incorporate local banking conditions such as banking market concentration, distance between banks and their small business borrowers as well as other sources of small business credit.

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BIOGRAPHY

Dr. Bienvenido S. Cortes is a University Professor at Pittsburg State University. He can be contacted at the Department of Economics, Finance and Banking, Pittsburg State University, Pittsburg, KS 66762. Email: bcortes@pittstate.edu