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Alexander Foxx
Xavier University

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The Relationship Between Small Business Loans and Wages

Alexander Foxx

Introduction

Ninety eight percent of small businesses do not utilize equity funding (Bates 1990), making debt a pivotal source of capital. Examining the underdevelopment and poverty of many urban areas, it is reasonable to question if an increase of available capital benefits these areas. While loans may be necessary to build wealth, they may not always be beneficial. Loans could benefit areas by increasing capital to fuel growth or, conversely, serve as an unnecessary debt burden. Using data on loans from the Community Reinvestment Act (CRA), this paper examines if the number of small business loans in a county affects the wages of its residents.

The Community Reinvestment Act enacted by "Congress in 1977 . . . is intended to encourage depository institutions to help meet the credit needs of the communities in which they operate."¹ Banks are subsequently rated according to how well they serve their community and given a rating of Outstanding, Satisfactory, Needs to Improve, or Substantial Non-Compliance. The rules for these rankings are not standardized and may vary across banks, regulators, communities, and situations (Garrison and Lawrence 1995). However, the rankings are made public and are considered in bank requests of government approval (e.g., a merger or acquisition) and subsequently serve as an incentive for banks to seek a high rating. One way a bank can

increase this rating is by lending to small businesses, the thought being that as small businesses of a community are given access to capital, the businesses will grow and benefit the surrounding community. Indeed, small businesses receive a large portion, 18.75 percent, of their capital from banks (Berger and Udell 1995).

Do small business loans actually benefit a community? An inverse relationship between small business loans and the income of an area would suggest that small business loans are not benefitting communities. Conversely, a positive relationship may be cause to incentivize more small business loans. Not only do policy makers and small business owners have a stake in this question, in the form of improving their communities, but banks as well. As communities develop, default rates may decline and loans will be more profitable.

To estimate the relationship between small business loans and the growth of a community, I collected data from the IRS, CRA, and Census. The annual wages in a county are regressed against the number of loans originated in that year, controlling for poverty and population. This model demonstrates the effects of small business loans in counties, accounting for the size of the loan as well as the current economic development of the county, accounted for by poverty rate. I find that small business loans' ability to increase county wages varies depending on the type of county, with small counties demonstrating a positive effect and large counties a negative effect.

Literature Review

The efficacy of the Community Reinvestment Act is not agreed upon (Hylton and Rougeau 1997). The importance of small business loans to small businesses and the community can be seen in the dependency small businesses have on debt capital and relationship lending. Berger and Udell (2002) examine bank lending to small institutions, specifically how relationship based lending (versus a more metric based approach) functions between the banking industry

and small businesses. They, along with others (Chittendon 1996; Bates 1990), emphasize the importance commercial bank lending plays in the role of small business financing--it accounts for, on average, 18.75 percent of small business financing. Given this importance, Berger and Udell seek to explore the methods by which banks evaluate small business credit worthiness.

Berger and Udell create four evaluation methods, one of which is relationship-based lending. Their paper explores changes that can restrict or make more available financing under the basis of relationship-based lending. Their paper concludes that as the banking industry consolidates, relationship based lending will become more scarce and financing to small businesses more difficult, as banks will become much more institutionalized with more degrees of separation from the small businesses. Given this relationship-based approach between small businesses and banks, it is worth examining if small business lending is actually beneficial.

In addition to the necessity of loans to small businesses, lending may not be profitable in many areas. Economist Michael Porter posits the difficulty of effective lending in urban areas (Porter 1995). In regards to small business loans, Porter claims that lack of debt financing is a pervasive problem in the inner city, as these loans are only "marginally profitable." However, Porter notes that the Community Reinvestment Act has heightened lending competition in the inner city and, in some cases such as Boston, it is profitable. To take a broader view of this article, Porter maintains that inner city areas can be revitalized but only through catering to the strengths of the inner city which can be applied outside of the inner city, not by catering to strengths that exist outside of the inner city and attempting to internalize them. In order for this goal of an "exporting" the inner city to be realized, Porter claims that capital need be made available to urban, inner city areas. This will aid in creating an inner city that can serve its populace and the other populaces profitably.

Given Porter's claim that debt financing would improve the inner city, my topic seems an apt one. Will providing financing in an area

improve the wages of the residents? If so, it seems Porter's claim is founded. If not, perhaps another source of capital and stimulus need be considered for urban funding, such as equity or subsidies (to Porter's chagrin, he maintains that government subsidies often introduce businesses to an inner city area that cannot viably operate in the long-run).² While Porter notes that the CRA might find difficulty in revitalizing communities and others note the poor implementation of the associated bank ranking system (Garrison 1995), viewpoints exist that support its continuance (Hylton and Rougeau 1997). This paper estimates the effect the CRA has on communities in the form of small business loans in order to provide a view of the Act.

Theoretical Model

The primary economic theory underpinning my empirical analysis is the Theory of a Multiplier Effect. This effect describes how an initial influx of money creates more value than its original injection due to a multiplicative circulation. The Multiplier Effect suggests that spending and investment will beget more spending and investment. In the context of small business loans, a single small business loan will multiply to an investment in the community larger than the size of the original loan. This growth is illustrated in the labor market. An initial loan will increase the size of a small business, which will subsequently need to hire more workers, increasing the demand for laborers from D to D' (Figure 1).

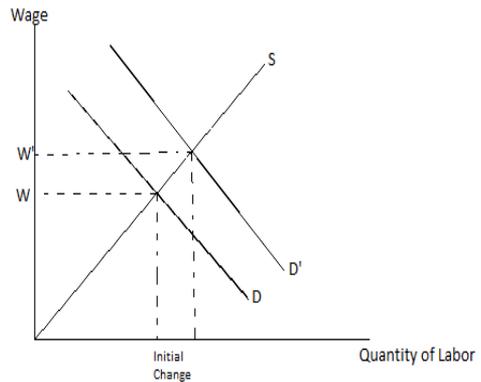


Figure 1
Theoretical Model

This initial stimulus raises the wages of workers, allowing for additional spending in the community. In turn, there arises a need for more workers to produce the newly demanded goods and services in the community. This shift in labor demand even further from D' to D'' raises wages from their initial position at W to a final position at W'' (Figure 2). This growth in wages and the quantity of labor is beyond the initial business loan.

The magnitude of the multiplier effect is determined by the marginal propensity to consume, or how much of every additional dollar earned a wage-earner will spend. The Multiplier Effect can also illustrate decreases, as some of my data illustrates. A negative multiplier would demonstrate that a stimulus is harming the labor market by causing labor demand to shift left. This would imply there is something inherently harmful in the stimulus.

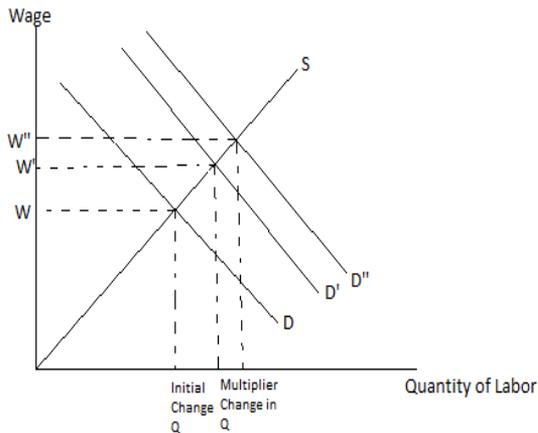


Figure 2
Theoretical Model

Data

To examine the effect of loans on wages, I collect data from various sources. The CRA website reports small business loan originations and I used information from the years 2006-2012. For the

same years, I collect wages from the IRS and county poverty and population from the US Census Bureau. Summary statistics for these variables are reported in Table 1.

Summary Statistics

The summary statistics pertain to 88 Ohio counties over seven years for a total of 616 observations. Total number of loans is the total number of business loans in a given county year, combining the number of small, medium, and large small business loans. This serves as the primary regressor. Wages are measured as *total* county wages, as reported on form 1040 by the individuals of a county, for a county and year. The poverty rate measures the number of all individuals in a county year in poverty over the number of total individuals in that county year. It should be noted that in the loan categories, as well as in total wages and population, the three largest Ohio cities' counties (Hamilton-Cincinnati, Franklin-Columbus, Cuyahoga-Cleveland) consistently demonstrate the maximum values over all seven years.

Variable	Mean	Std. Dev.	Max	Maximum
Total Number of Loans	2515.6	5175.4	33.0	48020.0
Number of Small SB Loans	2332.3	4857.9	30.0	46225.0
Number of Medium SB Loans	88.5	166.3	0.0	1088.0
Number of Large SB Loans	94.8	194.4	0.0	1239.0
Wages (Thousands of \$s)	2217429.0	3918968.0	131431.0	24700000.0
Poverty Rate	14.2	4.7	4.2	35.0
Population	131015.8	212082.6	13219.0	1305273.0

n=616

Table 1
Summary Statistics

Empirical Model and Results

Using the data from the following section I construct a model to estimate total county wages in a year. My model estimates total wages in a county and year using the following regression specification:

$$y_{it} = \beta_0 + \beta_1 (\text{Number of Loans}_{it}) + \beta_2 (\text{Poverty Rate}_{it}) + \beta_3 (\text{Population}_{it}) + \delta_t + \tau_i + U_{it}$$

The variable y_{it} is the total wages in a county for a given year; β_1 estimates how an additional loan in county i and year t affects the total wages in that county and year, in thousands. The coefficient β_2 estimates the change in thousands of dollars of county wages that a 1 percent increase in poverty rate has on county i in time period t ; β_3 estimates the effect of increasing population by one will have on thousands of dollars of total wages in a county year; δ_t and τ_i account for origination year and county fixed effects respectively. The baseline regression yields the results in Table 4.

DV: Wages in County-Year	All Counties
Number of Loans	-57.2*** (17.9)
Poverty Percentage	-1,789 (5,889)
Population	11.2 (8.62)
Constant	-10,514 (275,791)
Observations	616
R-squared	0.997

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 4
Regression of all county years

The coefficient in Table 4 indicates that additional small business loans decrease total wages of a county by \$57,200 on average, holding poverty rate and population constant. The coefficient on loans is significant at the one percent level. This produces an unexpected result with a theoretical model that typically predicts growth.

To explore this result further, I divide counties into two sections based on loan volume. Table 5 illustrates differences in "small" and "large" counties. I define small counties as counties with less than an average of 600 loans over the seven year period while big counties have greater than or equal to an average of 600 loans.

DV:Total Wages in County-Year	with loans<600	with loans=>600
Number of Loans	54.2*** (12.7)	-58.6*** (18.3)
Poverty Rate	-567 (666)	-2,375 (8,966)
Population	-5.23 (3.91)	11.3 (8.36)
Constant	417,953*** (111,078)	9660000.00 (10700000)
Observations	175	441
R-squared	0.996	0.997

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5

Regression with divided counties specified

This stratification illustrates that small business loans appear to be associated with decreasing wages in large counties and increasing wages in small counties. On average, an increase of one small business loan in a small county leads to wages increasing by \$54,200. In large counties, however, an additional loan creates a decline of \$58,600. Both results are significant at the one percent level.

This result is also consistent across the dollar amount of the loans, which is calculated by substituting the total dollar amount of loans for the number of loans in the regression model. This yields the results of Table 6. Across all counties the model estimates a dollar loaned decreases total wages by \$1.30. This result holds for large counties, but small counties have an estimated \$1.54 gain for every dollar loaned to small businesses. This supports the claim that small business loans may have a positive effect in small counties and negative effect in large counties due to the negative coefficient for large counties and positive for small counties. This illustrates a multiplier effect that is negative in large counties and positive in small counties.

DV: Total Wages	All Counties	with loans<600	with loans>=600
Amount of Dollars Loaned	-1.30*** (0.37)	1.54*** (0.52)	-1.31 (1.62)
Poverty Rate	2,155 (9,273)	-754 (676)	810 (9,695)
Population	11.5*** (2.29)	-5.25 (4.10)	11.6 (11.2)
Constant	-154,170 (227,316)	434,765*** (115,487)	8.85e+06 (1.39e+07)
Observations	616	175	441
R-squared	0.996	0.996	0.996

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 6
Dollar Amount Results

The criticism of the effect of the data capturing county wages before the small business loans were made might also arise. Reverse causality might arise if a large number of loans are originated at the end of a year and the effects not seen until the following recording period for wages. To account for this the total loan number of each county was lagged one year. The results are reported in Table 7.

These results illustrate consistent results with loans in the same year; small business loans in big counties have an estimated negative effect and small counties a positive effect. These results also support the claim that small business loans originated in large counties harm wages, while small business loans originated in small counties raise wages.

DV: Total County Wages	All Counties	with loans<600	with loans>=600
Lagged Number of Loans	-79.3*** (12.5)	32.3** (13.9)	-80.6*** (12.9)
Poverty Rate	-4,395 (5,140)	-94.2 (655)	-5,260 (7,619)
Population	10.8 (6.72)	-9.99** (4.22)	10.9* (6.49)
Constant	91,296 (220,912)	581,008*** (119,982)	11400000 (8260000)
Observations	528	150	378
R-squared	0.998	0.996	0.998

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7
Lagged Results

Conclusion

The mechanism by which the effect of small business loans hurt or harm wages, depending on the county size in which the loan is originated, remains unclear. This may occur because small counties promote a more intimate lending environment where loans are not originated to small business that might perform poorly. By contrast, large counties may contain an environment of anonymity that allows small business loans to be obtained even by businesses that will not prosper. Small counties may have a better grasp on how successful

loan recipients will be because they are more familiar with the habits of the loan recipient. If this is the case, it would illustrate the importance of relationship-based lending over an automated metric-based approach because the relationship based lending of small counties would be proved superior to the anonymity of larger counties. The results illustrate an inherent difference in small and large counties; what this difference is may be the subject that can guide further policy or revision of current policy.

The importance of determining the efficacy of small business is important as it not only will serve to guide policy, but may determine what kind of capital is available to small businesses. If small businesses cannot aid the community through debt financing, it might be wise to consider policy that would raise their ability to gain equity financing. The result of the empirical model, estimating a detrimental effect of small business loan originations in large counties and a positive effect in small counties, may prompt a rethinking of policy toward credit accessibility. Perhaps policy advocating increases in small business loans should be redirected to small counties and eliminated from large ones, which would require a revision of current Community Reinvestment Act and other similar policies to account for the differences between counties.

Notes

¹ <http://www.ffiec.gov/cra/>

² Michael Porter. "The Competitive Advantage of the Inner-city." pg. 64 *Harvard Business Review* (1995): 55-71. Web. 6 Oct. 2014.

Bibliography

Bates, Timothy. "Entrepreneur Human Capital Inputs and Small Business Longevity." *The Review of Economics and Statistics* 72 (1990): n. pag. Web.

Berger, A. N. and Udell, G. F. (2002), "Small Business Credit Availability and Relationship Lending: The Importance of Bank Organisational Structure." *The Economic Journal*, 112: F32–F53. doi: 10.1111/1468-0297.00682

Chittendon, Francis, Graham Hall, and Patrick Hutchinson. "Small Firm Growth, Access to Capital Markets and Financial Structure: Review of Issues and an Empirical Investigation." *Small Business Economics*(1996): n. pag. Web.

Garrison, M. Jay, Angela Lawrence, and Hadley Leavell. "Community Reinvestment Act." (1995): n. pag. Sam Houston State University. Web.

Hylton, Keith, and Vincent Rougeau. "Lending Discrimination: Economic Theory, Econometric Evidence, and the Community Reinvestment Act." *Georgetown Law Journal* (1997): n. pag. Web.

Michael Porter. "The Competitive Advantage of the Inner-city." *Harvard Business Review* (1995): 55-71. Web. 6 Oct. 2014.

"SOI Tax Stats - County Data." *SOI Tax Stats - County Data*. Internal Revenue Service, n.d. Web. (Data Source)

"United States Census Bureau." *Small Area Income & Poverty Estimates (SAIPE)*. United States Census Bureau, n.d. Web. 22 June 2015. (Data Source)

"FFIEC Community Reinvestment Act." *FFIEC Community Reinvestment Act*. Federal Financial Institutions Examinations Council, n.d. Web. (Data Source)