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news and views

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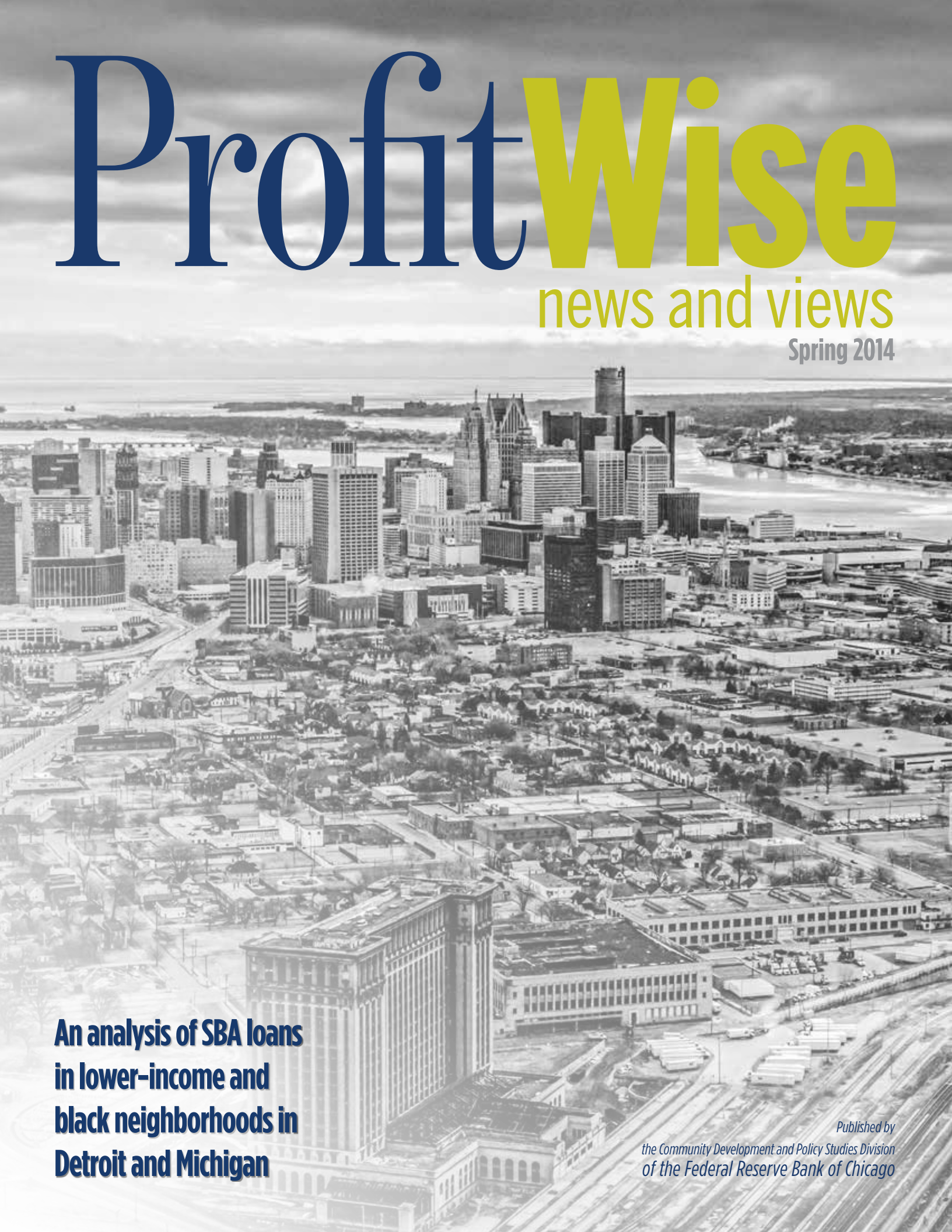

An analysis of SBA loans in lower-income and black neighborhoods in Detroit and Michigan

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Spring 2014

In our continuing efforts to understand the small business lending landscape in Detroit, this edition of *Profitwise News and Views* explores the role of the SBA 7(a) program in facilitating credit flow to the city's low-income and (predominantly) black neighborhoods in particular.

The Federal Reserve Bank of Chicago

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An analysis of SBA loans in lower-income and black neighborhoods in Detroit and Michigan

by Maude Toussaint-Comeau and Robin Newberger

Introduction and motivation

In this article, we analyze the extent to which the Small Business Administration (SBA) 7(a) loan guarantee program helps facilitate flows of credit to small businesses in the city of Detroit, and to black and low- and moderate-income neighborhoods in Michigan. In an environment of financial austerity and constrained small business credit, federal government programs like those administered by the SBA can facilitate lending to businesses. The SBA administers several programs designed to encourage lenders to provide loans to small businesses that might not otherwise obtain financing on reasonable terms and conditions. In the SBA's primary business loan program, the 7(a) program, the SBA guarantees as much as 85 percent for loans of $150,000 or less; up to 75 percent for loans over $150,000; and up to 50 percent for loans made under the SBA Express program. Using SBA data for the state of Michigan, we revisit the question of whether SBA 7(a) lending fills gaps in the credit market to small businesses in lower-income and minority areas in a case analysis of Detroit.

Perhaps nowhere is the need for business development, financing, and community revitalization more pronounced than in the city of Detroit. The business landscape there has been hindered for decades by declining population and property values, high concentrations of poverty, as well as a diminished presence of local banks and restricted credit flows (Toussaint-Comeau and Newberger, 2012). The recent (and historic) city bankruptcy raises further concerns regarding the availability of resources to address these long-standing issues.

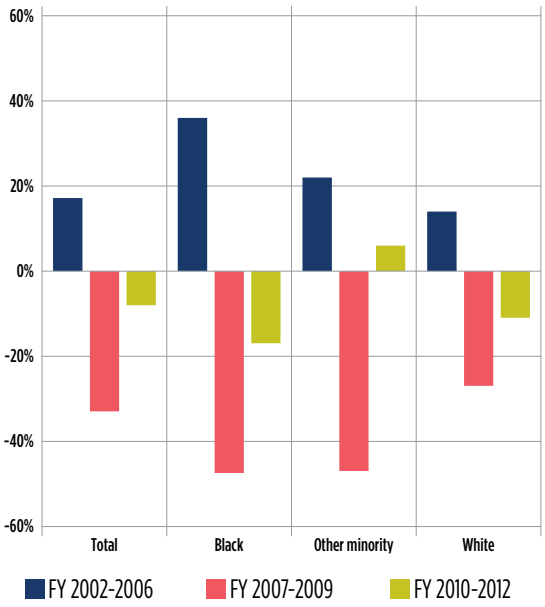
The federal government has long intervened in credit markets, through bank regulations (such as the Community Reinvestment Act or CRA), through government guaranteed lending programs, and through creation of government sponsored secondary markets that expand the capacity of (increasingly smaller) banks to lend by linking them to national capital markets.[1] These measures have improved access to credit by small businesses in low- and moderate-income (LMI) neighborhoods, where business owners may lack the types of financial/business relationships, the liquidity, and credit profile necessary to access mainstream business credit (Petersen and Rajan, 1994). Several studies have found that SBA lending programs are particularly impactful in certain markets. Craig, Jackson, and Thomson (2006) of the Federal Reserve Bank of Cleveland found that the SBA 7(a) programs have a positive influence on the rate of economic

growth in metropolitan areas and counties, and that the effect is greater in low-income markets. Researchers for the Urban Institute also found that these programs facilitate capital availability for firms that would otherwise not be served by alternative capital providers (Brash and Gallagher, 2008). In particular, women- and minority-owned firms, as well as start-up firms, which tend to have the most difficulty obtaining credit, accounted for a larger share of loans made under the 7(a) and 504 SBA programs. In a similar vein, a descriptive analysis by the Initiative for a Competitive Inner City (ICIC) suggests that the same two programs are relatively successful in steering credit to inner-city and low-income entrepreneurs (Lynch and Rho, 2011).

In the aftermath of the 2009 financial crisis, new issues have surfaced concerning the reach of SBA lending, particularly to black-owned small businesses (e.g., Simon and McGinty, 2014; Moskop, 2013; Switzky, 2012). After falling by more than 30 percent between 2007 and 2009, SBA lending somewhat stabilized nationally by 2012, around the 2009 level of 44,000 loans. But trends across white, black, and other minority groups (including Asians, Hispanics, and all other minorities) diverged significantly from 2010 to 2012.[2] SBA 7(a) lending to black-owned businesses declined by an annualized rate of 17 percent between 2010 and 2012. SBA lending for whites, which has traditionally comprised more than 70 percent of SBA 7(a) loans, declined at an annualized rate of 11 percent between 2010 and 2012. SBA lending to other ethnic/racial minority groups improved since the recession, increasing at an annualized rate of 6 percent between 2010 and 2012 (chart 1). It is unclear what these trends suggest for access to SBA loans, with no additional information on businesses, demand, or geographies.

While the lack of information on race in the Michigan state data precludes an analysis of differences in SBA lending by racial groups, the address-level loan information enables us to analyze factors that affect lending in different racial/ethnic locations. The Michigan data is well suited for exploring these dynamics insofar as the state and the city of Detroit have some of the largest populations and some of the highest growth rates of black-owned businesses in the U.S. In 2007 (the latest year for which census data on the characteristics of business owners was available), close to 9 percent of firms in Michigan were black-owned, compared to 7.1 percent for the nation (U.S. Census, 2007). In addition, the number of Michigan-based black-owned businesses increased by 63.5 percent between 2002 and 2007. To the extent that SBA lending reaches LMI and black neighborhoods, we expect to capture this tendency in the Michigan data. In addition, a large share – about three-quarters – of the Michigan SBA 7(a) lending occurred in the three-county Detroit MSA. From 2000 to 2012, 63 percent of all Michigan SBA loans were made in Macomb, Oakland, or Wayne County, excluding Detroit, and an additional 10 percent of all Michigan SBA loans were made in the city of Detroit. The place-based analysis of SBA lending in Detroit and Michigan provides a first step toward understanding some of the underlying issues impacting recent lending trends to minority businesses, and those in places with a predominantly minority population.

Chart 1. Annualized growth rate of SBA 7(a) loans, by race/ethnicity, U.S.



Source: Authors' calculations based on data from U.S. Small Business Administration. The 7(a) loans do not include SBIC and micro loans. Loans made through America's Recovery Capital Loan Program (known as ARC loans) are included starting in 2009. Fiscal year is October through September.

Research questions and summary of findings

To assess the extent to which SBA 7(a) programs serve businesses in places that face relatively greater conventional credit constraints, such as in the city of Detroit, low- and moderate-income neighborhoods, and predominantly black neighborhoods, we address the following questions:

1. What are the trends in terms of the types of 7(a) programs used in Michigan and the types of lenders making SBA loans in Detroit and elsewhere in the state?

2. What is the relative degree of market penetration of SBA lending, compared to conventional lending (captured through CRA small business reporting), and are there differences by the location of businesses?

3. What are the overall factors impacting the extension of small business credit, and are the effects different for SBA and conventional lending?

4. Controlling for the various factors impacting lending, does SBA lending fare better (compared to CRA-reported lending) in reaching small businesses in more vulnerable places, such as in the city of Detroit, LMI, and black neighborhoods? To what extent does SBA help mitigate credit constraints in those markets?

We track and describe trends in SBA lending in the city of Detroit and in Michigan and compare with CRA small business loans to answer the first two questions. We rely on multivariate analyses to disentangle the influences that different factors have in explaining small business lending, such as business characteristics, local and regional demographics, and macroeconomic influences. The findings of this research suggest that SBA lending helps mitigate risks in vulnerable markets. We find that SBA lending is significantly related to low- and moderate-income neighborhoods (those with family incomes below the area median), in contrast to small business lending more generally (CRA-reported), which is associated with higher-income neighborhoods. We also find some difference by race. Neighborhoods that are both black and low-income generally have less SBA lending than otherwise similar low- and moderate-income neighborhoods. For the city of Detroit, we find less SBA lending, as well as less CRA-reported lending, controlling for other factors in the multivariate setting. We argue that additional location-specific demand factors, as well as institutional factors including shifts in lenders and programs might have also contributed to the relative lackluster performance of SBA in Detroit and other low-income black neighborhoods in Michigan. Efforts to open SBA channels through geographically targeted programs are an important strategy to improve access to capital for small businesses and revitalize low-income, inner-city, and black neighborhoods.

Recent SBA 7(A) lending trends in Michigan and Detroit

In this section, we compare trends in SBA lending in Michigan and Detroit, and examine differences in the relative degree of penetration of SBA lending compared to conventional small business lending (represented by data collected through the CRA). Brief analyses of trends in lenders and SBA 7(a) programs are highlighted in textboxes A and B. (See appendix A for an overview of SBA lending programs used in Michigan from 2000 to 2012.)

SBA lending in Michigan shows improvement following the recession

SBA lending in Michigan has taken place in a generally volatile market environment. The data show clear expansion and contraction cycles in small business credit (chart 2). The number of 7(a) approvals in Michigan peaked in 2006 at 2,200 before falling to below 500 in 2009. During the recession, the number of SBA loans declined much more in Michigan than in the nation (70 percent versus 35 percent). After 2009, however, Michigan showed stronger growth in SBA lending in both the number of loans and dollars lent than the nation, reaching levels that were similar to peaks in lending experienced in 2006. However, as the volume of loans has rebounded in Michigan, the average size of loans has also increased. In the early 2000s, the average SBA loan size calculated in

Chart 2. Total number and total $ volume of SBA 7(a) loans, Michigan

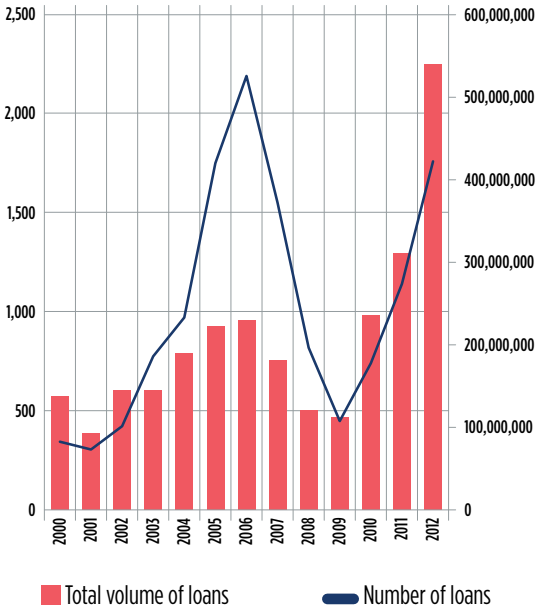
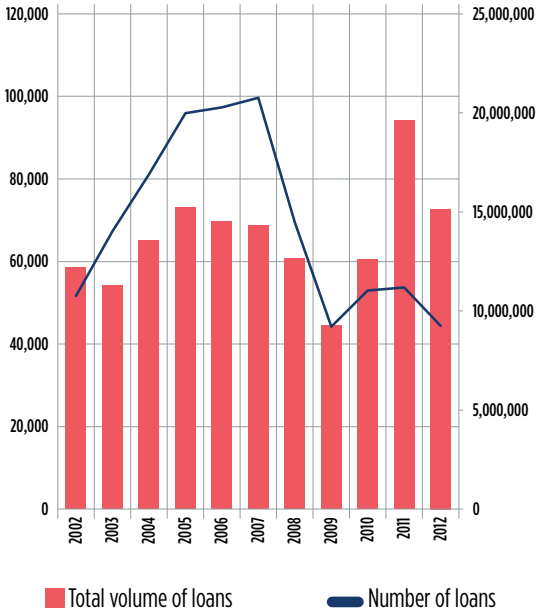


Chart 3. Total number and total $ volume of SBA 7(a) loans, U.S.



Source (chart 2): Authors' calculations based on data from Michigan SBA District Office. Source (chart 3): U.S. Small Business Administration.

Michigan was around $100,000 (average amounts not shown in charts 2 and 3). Since 2010, the average loan size calculated has hovered around $300,000.[3] By comparison, the number of SBA loans made in the U.S. have remained lower than their peak prior to the recession, although dollar volumes have been higher than any other time since 2002 (chart 3).

SBA lending in Detroit shows a weaker rebound following the recession

SBA lending in the city of Detroit has also expanded and contracted over time. Banks actively lent to Detroit-based businesses through SBA programs prior to the most recent recession. From 2000 to 2006, SBA lending (number of approved loans) in Detroit increased at an annualized rate of 41 percent in LMI neighborhoods, and 39 percent in middle- and upper-income neighborhoods. As with the state and the country as a whole, there was also a steep decline in both number and volume of 7(a) loans during the recession, with some difference by neighborhood. There was a drop of 41 percent in low- and moderate-income neighborhoods and a drop of 47 percent in high-income neighborhoods in the city (not shown in chart 4). In an apparent contrast with the state, the lending data suggests a comparatively weaker rebound following the recession. By 2012, SBA lending was still at one of the lowest points for the city, with just under 60 SBA loans closed in total, compared to a peak of over 300 loans in 2006 (chart 4).[4]

Comparing SBA lending in Michigan and Detroit: Accounting for the business landscape

A more nuanced image of SBA lending trends in Detroit compared to Michigan emerges when accounting for the number of businesses in the city and the state. On average over the period, the number of SBA loans per business was higher in Detroit than for the state as a whole (chart 5). The difference was most pronounced between 2003 and 2007, where the relative number of SBA loans on a per-business basis in the city tended to be more than twice that of the state.[5] For example, in 2006, the peak year for lending, 16 SBA loans were dispensed per 1,000 businesses in the city of Detroit, compared to slightly more than six SBA loans per 1,000 businesses statewide. Since 2009, however, the city has followed the state average of less than two SBA

Box A. Trends in types of lenders giving SBA loans, differences by location of businesses served and types of 7(A) programs dispensed

The growth in the amount and number of SBA 7(a) loans in Michigan has coincided with more institutions entering the Michigan market. Some community banks have made loans under SBA programs during and after the recession as a way to keep lending despite weakened balance sheets,[i] and regulator admonitions to preserve capital and reduce credit risk. In addition, the uptick in lending corresponded to a series of fee-reducing and loan-increasing incentives introduced through the Jobs Act of 2010.[ii] Close to 120 lenders participated in the SBA lending in Michigan in 2012, compared to fewer than 20 lenders in 2000. In the early 2000s, Michigan SBA 7(a) lenders comprised almost exclusively large banks (with over $10 billion in assets). The share of small and non-bank lenders rose to 45 percent in 2006 and 70 percent in 2012.

While smaller banks and non-bank institutions diversify the Michigan SBA lending base, these institutions, historically, have entered and exited the Michigan SBA market from one year to the next. Most institutions, including many of the credit unions, made loans in just one or two years between 2000 and 2012. Generally, large banks headquartered outside of Michigan remained more consistently in the Michigan SBA market during the years of this analysis.

Still, the wider variety of institutions may have some implications for shifts in the types of SBA programs used or where SBA loans are made. We conduct a simple correlation coefficient analysis that helps predict the relationship between types of lenders and SBA programs,[iii] and find the following: SBA Express are more likely to be done through large banks. Conversely, larger banks are less likely to give SBA loans through the Community Express program which was designed to target lower-income and minority areas. The latter is more likely to be used by medium-sized banks and finance companies. Results of a correlation analysis between types of lenders and location of businesses that receive SBA loans show a positive association between large banks and SBA lending both to businesses in the counties surrounding Detroit (Macomb, Oakland, and Wayne), as well as to businesses in higher-income neighborhoods in Michigan. The results do not suggest strong correlations between any particular type of lender and making SBA loans in Detroit. The results show either weak positive associations (as in the case of medium-size banks) or negative associations.

i. Robb Mandelbaum, "Big Banks Shrinking as S.B.A. Lenders," August 10, 2011, *The New York Times*, http://boss.blogs.nytimes.com/2011/08/10/big-banks-shrinking-as-s-b-a-lenders/?_php=true&_type=blogs&_r=0

ii. The Small Business Jobs Act of 2010 (P.L. 111-240) provided funding to temporarily reduce the 7(a) program's loan fees and increase the loan guarantee percentage. See Congressional Research Service. http://www.fas.org/sgp/crs/misc/R41146.pdf.

iii. The result of the correlation coefficient estimates between types of institutions and SBA programs are reported in appendix B1. The correlation coefficient matrix between types of lenders and location of businesses that receive SBA loans are reported in appendix B2.

Figure A1. SBA 7(a) lender, Michigan 2006

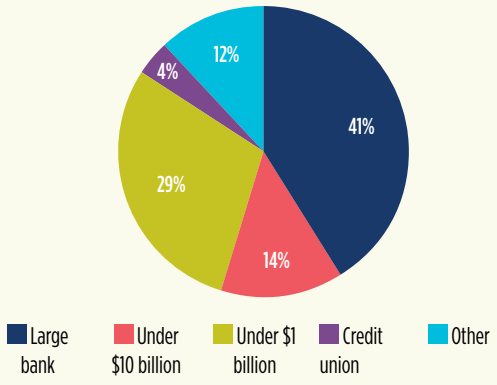
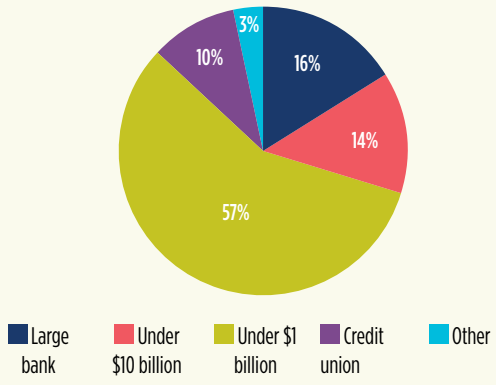


Figure A2. SBA 7(a) lender, Michigan 2012



Source: Authors' calculations based on data from SBA Michigan Office, and FDIC Institution Directory.

Chart 4. Total number and total $ volume of SBA 7(a) loans, Detroit

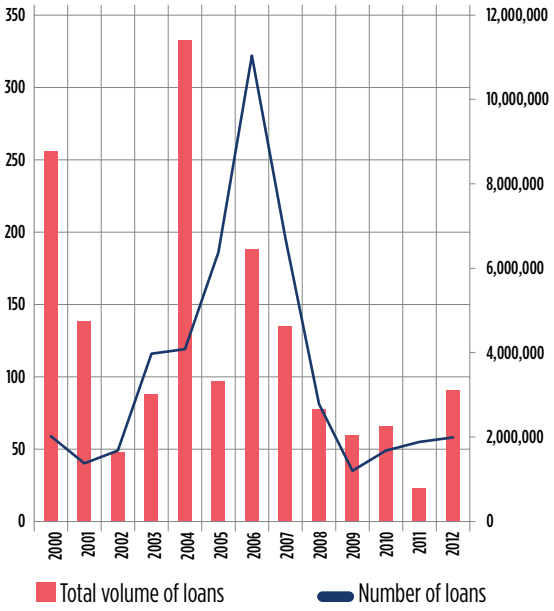
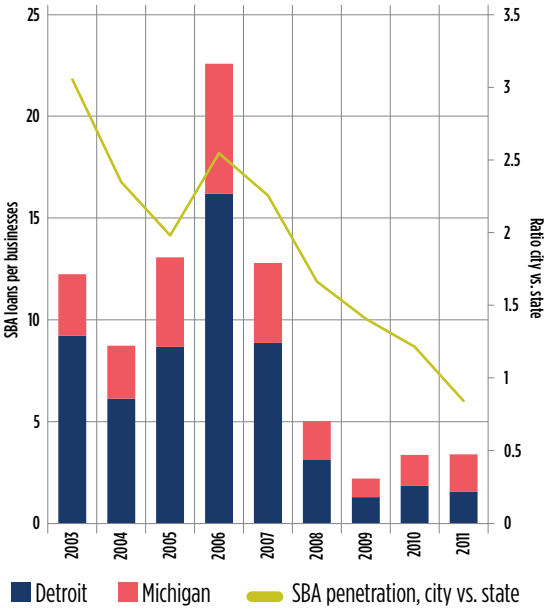


Chart 5. Number of SBA 7(a) loans per 1,000 businesses, Michigan



Source (chart 4): Authors' calculations based on data from Michigan SBA District Office. Source (chart 5): Authors' calculations based on data from Michigan SBA District Office and Dun & Bradstreet.

loans per 1,000 businesses. A comparison of the ratio of SBA loans per business in Detroit to the ratio of SBA loans per business in Michigan therefore shows a decline in the market penetration of SBA lending to businesses in the city relative to the state as a whole. Prior to 2009, for every one business that received a SBA loan in the state, there were between 1.5 and 3 businesses in the city that received an SBA loan. By 2011, the city's relative advantage in the SBA market was no longer apparent (chart 5).

Comparing SBA and CRA-reported lending in Michigan and Detroit

A comparison of SBA lending with small business lending more generally (represented by CRA small business lending data)[6] gives an indication of the changing credit environment in Detroit. SBA lending represents a portion of overall small business lending in both Detroit and Michigan (see textbox C: CRA reporters). As chart 6 shows, SBA lending accounted for a greater share of CRA-reported lending in Detroit than it did in the rest of the state. From 2005 to 2012, lenders closed between three and ten SBA loans for every 1,000 CRA loans in the state of Michigan. In the city of Detroit, lenders closed between six and 18 SBA loans for every 1,000 CRA loans.[7]

The calculated difference in the ratio of CRA lending to businesses in the state, compared to the ratio of CRA lending to businesses in the city, also gives some indication as to changing CRA loan market penetration in the city and state. From 2005 to 2010, the average number of CRA loans per 1,000 businesses in the state was slightly more than 500. In the city, this number was under 400 per 1,000 businesses (chart 7). This gap has tended to increase since 2007. The extension of CRA-reported small business credit in the state has gone from being about 20 percent higher than in the city in 2006 (a ratio of 1.20:1), to over 50 percent higher than in the city by 2011 (a ratio of 1.5:1).

Thus our analysis of the relationship between small business lending and location indicates a secular (i.e., long term) decline in SBA lending in both the city and the state. In addition SBA market penetration per business in the city has dropped disproportionately relative to the state. The disproportionate decline

Box B. Trends in SBA 7(a) programs, differences by location of businesses

The SBA has offered at least ten programs within the 7(a) facility since 2000, some to promote exports, some to help particular populations (i.e., veterans) and some to attract capital to particular geographies. Over the period, the two programs that have been utilized most in Michigan have been the SBA Express and the Preferred Lender Program. These programs are designed to streamline approval processes for preferred lenders and contain no explicit targets in terms of populations or geographies. (See appendix A for an overview of SBA lending programs used in Michigan from 2000 to 2012.)

In 2011, the SBA introduced additional or revamped 7(a) programs including Patriot Express, the Rural Lending Program, and the CAPLines program to reach particular subgroups and to expand working capital financing. Lending within the "Other 7(a)" category in Michigan, which includes programs for smaller businesses, programs with substantially higher loan limits such as the CAPLines, and other programs, grew from about 5 percent of total SBA lending in Michigan in the mid-2000s to over 40 percent by 2012.

The fluctuation across programs should not be interpreted too literally, however. A loan made by an institution designated as preferred lender may show up as a PLP loan. If the same loan is made by a lender that doesn't have this designation, it may be categorized within the CAPLines program.

A simple correlation coefficient analysis between SBA programs and geographic areas gives some indication as to with which places various programs are more or less likely to be associated (see appendix B3). The largest correlations are between the Community Express program and businesses located in the city of Detroit, as well as those located in predominantly black neighborhoods throughout the state. These positive associations make sense given the specifications of the program to target more underserved communities. We also find a positive (but weaker) correlation between the SBA Express program and businesses in the surrounding counties, and in upper-income neighborhoods. In spite of the association between Detroit and the Community Express program, we note that the Community Express program was phased out in 2011, and Michigan had approved just one Community Advantage lender by 2011, located in the northern part of the state. (An additional Community Advantage lender was approved in third quarter 2013.)

Figure B1. Gross $ approved to businesses in MI

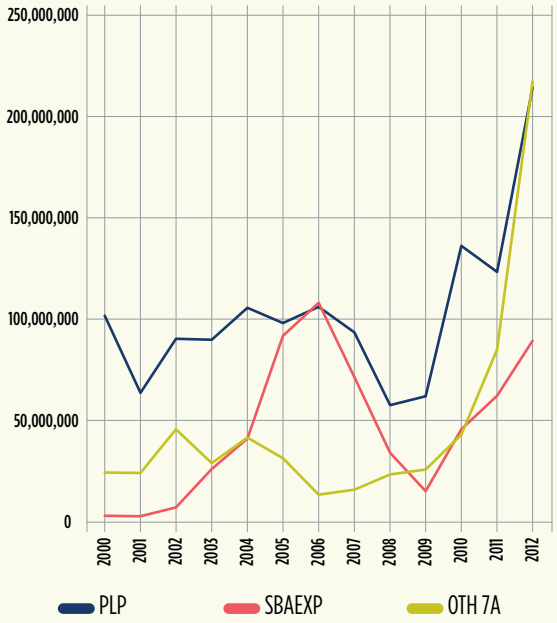
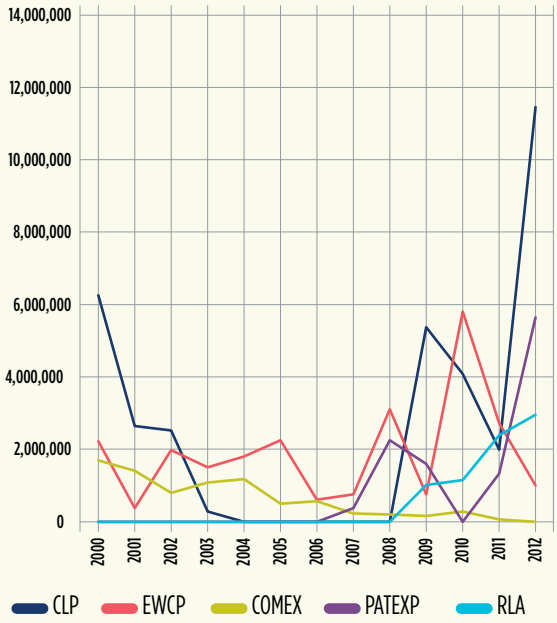


Figure B2. Gross $ approved to businesses in MI (other)



Source (figure B1): Authors' calculations based on data from Michigan SBA District Office. Source (figure B2): Authors' calculations based on data from Michigan SBA District Office. Programs included above are the Certified Lender Program (CLP), the Export Working Capital Program (EWCP), Community Express (COMEX), Patriot Express (PATEXP), and Rural Lender Advantage (RLA).

in SBA lending suggests that small businesses in the city may be more affected by the trends in SBA lending, even as businesses in the city face a widening gap in CRA-reported lending. It remains an open question as to whether and the extent to which SBA 7(a) programs mitigate credit constraints or help to fill lending gaps in the city and places that face less access to conventional credit. We turn next to analyzing this issue.

Multivariate analysis of lending to small businesses in different neighborhoods

The foregoing analysis allows us to track changes in SBA loans per business, but does not allow us to control for other factors that might be contributing to these changing levels. SBA lending – as well as overall small business lending – is based on a variety of factors. These factors include the lender underwriting standards, macroeconomic factors affecting demand for loans, and the creditworthiness of small business loan applicants. Even as we control for the number of small businesses in the analysis above, we need to take into consideration a broader lending framework, which includes controlling for demand factors, to understand the dynamics of credit market penetration more fully (Temkin, Theodos, and Gentsch, 2008).

We rely on multivariate (regression) analysis that allows us to better quantify the relationships between SBA lending and specific communities, controlling for other characteristics. As in the descriptive analysis above, we continue to use a *difference-in-differences* strategy to address the role of SBA lending in more vulnerable markets (which we define as lower-income, predominantly minority neighborhoods, and the city of Detroit). In the difference-in-differences strategy, we compare the extension of credit via SBA programs to the extension of credit via small business lending more generally as captured by CRA reporting, except that in this case we attempt to control for various other demand factors. We measure extension of credit in terms of the number loans for both SBA and CRA-reported lending.[8]

Chart 6. SBA 7(a) per 1,000 CRA small business loans, CRA reporting institutions

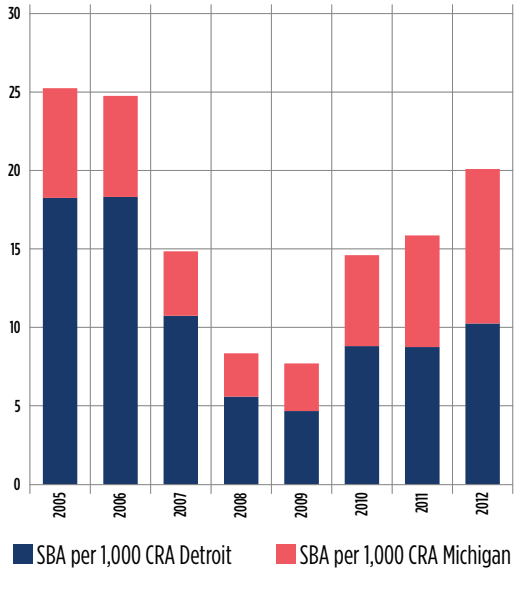
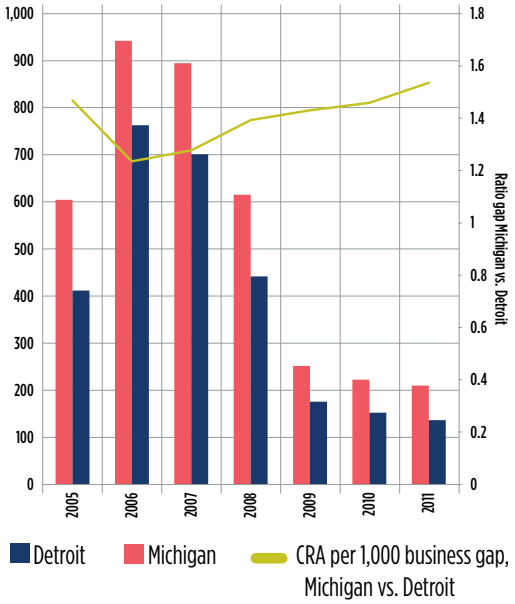


Chart 7. CRA reported loans per 1,000 businesses



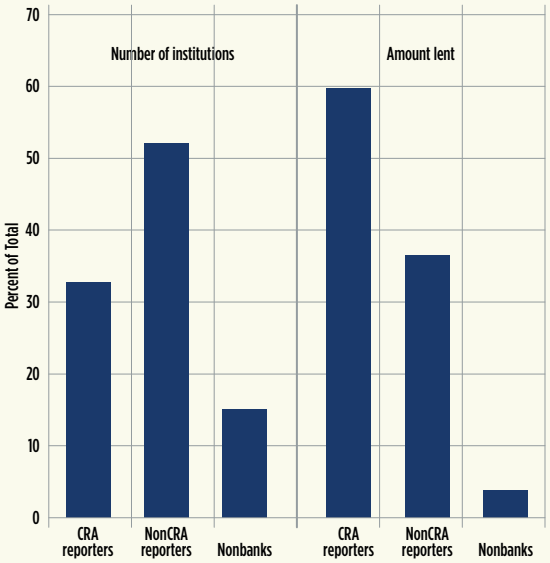
Source (chart 6): Authors' calculations based on data from Michigan SBA District Office and Federal Financial Institutions Examination Council (FFIEC). Source (chart 7): Authors' calculations based on data from Federal Financial Institutions Examination Council (FFIEC) and Dun & Bradstreet.

Box C. CRA and non-CRA reporters

Between 2005 and 2012, CRA-reporting banks were responsible for three-quarters of all SBA lending in Michigan. Thus the total volume of lending from larger banks provides a good deal of information on the overall small business lending environment in a given census tract.

By 2012, these institutions accounted for 60 percent of total lending, such that smaller banks (non-CRA reporters with less than $1 billion in assets) and non-bank entities such as credit unions and finance companies were responsible for the remainder of SBA lending in the state. However, most of these non-reporters did not lend in Detroit. Twenty percent of non-CRA reporters in 2012 included Detroit in their assessment areas (based on our review of each bank's CRA performance evaluation).[i] Nearly a quarter of non-CRA reporters were not even headquartered in Michigan. None of the credit unions was headquartered in the Detroit metro area (i.e., Wayne, Macomb, or Oakland counties). Thus CRA data provides a fairly complete picture of the small business lending market in the city, and the absence of geographic lending information from non-CRA institutions is more likely to affect an undercount in the rest of the state than in Detroit.

Figure C1. SBA lending 2012: Numbers of institutions and amounts



Source: Authors' calculations based on data from Michigan SBA District Office and Federal Financial Institutions Examination Council (FFIEC).

i. A bank's assessment area includes the geographies in which the bank has its main office and branches and can include surrounding geographies in which the bank originates or purchases a substantial portion of its loans. See FDIC Definitions of Terms in CRA performance evaluations at http://www2.fdic.gov/crapes/peterms.asp.

The *difference-in-differences* thought experiment is based on the following logic: to the extent that SBA lending plays a mitigating role in more vulnerable markets, we would expect to see a positive and significant relationship between the number of SBA loans and these more vulnerable places, relative to less vulnerable places, controlling for other factors. The reverse would be expected in the number of CRA-reported loans.[9] The approach of looking at difference-in-differences in the dynamics of SBA lending compared to CRA-reported lending gives us an indication as to the potential of SBA lending to help fill credit gaps in markets that may be more vulnerable and in times when conventional credit is more restricted.

The multivariate analysis is carried out at the neighborhood level. We use census tracts as our unit of measure for neighborhoods.[10] As a geographic unit, census tracts are designed to be economically and demographically homogeneous. In Detroit, census tracts vary substantially in their economic and racial composition. If lending relationships vary by race and/or ethnicity, we expect that patterns should be apparent at the census tract level. Our "panel" dataset is comprised of all neighborhoods (census tracts) in Michigan, from 2005 to 2010. We aggregate the address-level SBA 7(a) loan data to the neighborhood level, and match this information to the census in the panel database.[11] We include available census-tract level data on demographics and socioeconomic characteristics, namely population, race, income, housing factors, and income status. The various demographic characteristics of the neighborhoods serve to control for demand factors affecting the extent of lending one might observe

in a neighborhood. In addition we include CRA small business loan data at the census tract level, as well as data on characteristics of nonfarm businesses with less than 500 employees from Dun & Bradstreet, which includes the revenue stream of the businesses and their industry mix. Data on characteristics of businesses provide indicators for relative health/creditworthiness of the businesses in a given neighborhood, which affect both demand and supply decisions in lending. The primary variables of interest are the minority and income indicators of the neighborhoods, and whether the neighborhoods are located in the city of Detroit.

Neighborhood characteristics and correlations between neighborhood racial/ethnic composition and businesses

The mean of the variables retained in the lending models are reported in appendix C1. In short, the census tracts in Michigan vary considerably in their characteristics. Four percent are low income, 18 percent are moderate income, 53 percent are middle income and 25 percent are upper-income.[12] In contrast, in the city of Detroit, 10 percent of the tracts are low income, 52 are moderate income, 28 are middle income and 10 percent are upper income. Eight percent of the census tracts (with nonzero business and population) in the state of Michigan are in Detroit. The population patterns and racial composition also differ between the city and the state. The typical census tract in the state includes 4,195 residents, and about 22 percent of these are minority, subdivided into 15 percent black, 4 percent Hispanic, and 3 percent Asian. In the city, the tracts are less dense compared to the state. The average tract has 3,140 residents, 84 percent of which are minority, and 77 percent are black.

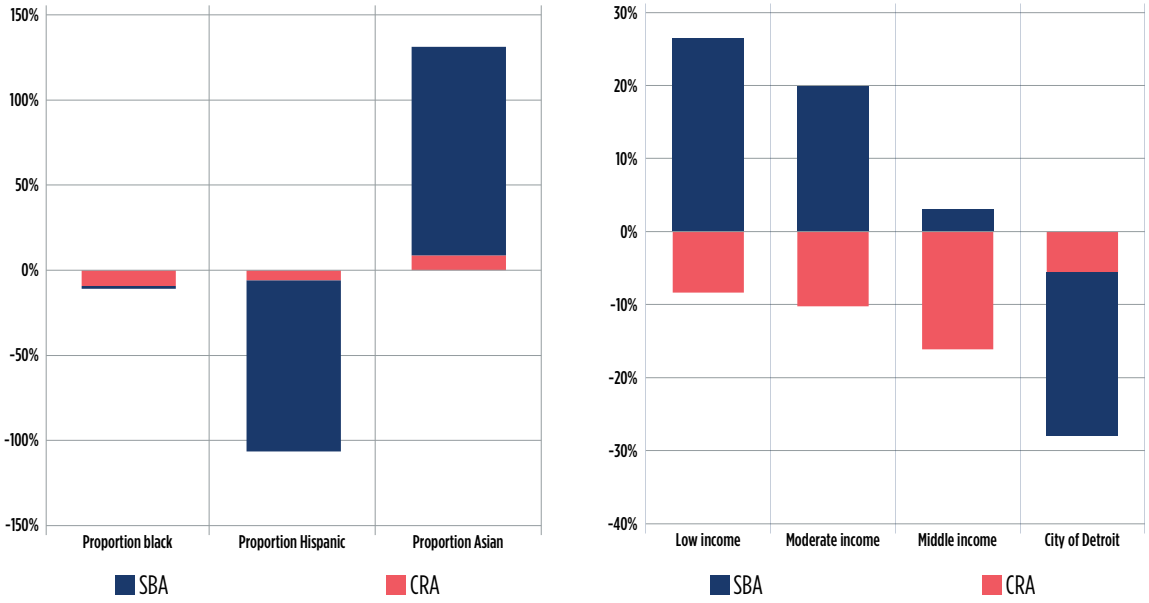
Cross tabulations of neighborhood, race, and businesses show various levels of correlations depending on the racial and ethnic composition of the neighborhood. Asians are more likely to be in high-income census tracts, in neighborhoods that tend to have more businesses, and are in businesses in diverse industries that run the gamut in terms of sizes of revenues. Higher percentages of whites coincide with middle-income and high-income neighborhoods not situated in the city of Detroit, with a higher likelihood of businesses in construction, manufacturing, wholesale, and accommodation sectors, and which fall along middle (less than $250,000) and very high (more than $1 million) ends of the revenue spectrum. Hispanics tend to be located in low- and moderate-income neighborhoods, but are also (weakly) positively linked with high revenue firms ($1 million or more). Neighborhoods with higher concentrations of blacks are more likely to be in low- and moderate-income census tracts, have less population, and located in the city of Detroit. These neighborhoods are also likely to have fewer businesses of any size in terms of revenue (see appendix C2).

The relationship between lending and the racial/ethnic composition and income of neighborhoods

Turning to the results of the multivariate analysis, charts 8A and 8B illustrate the racial and income effects associated with SBA and CRA-reported lending at the neighborhood level. The percentages on the charts display the (positive or negative) direction of these relationships as well as the relative magnitude of these effects.[13] As chart 8A shows, we find some similarities and contrasts between SBA and CRA lending with respect to neighborhood race and ethnicity. A greater percentage of Asians in a neighborhood is associated with both more SBA and CRA lending, and contributes to more than double the number of SBA loans made, holding other factors constant.[14] A greater percentage of Hispanics in a neighborhood is associated with lower numbers of both SBA and CRA loans.[15] A greater percentage of blacks in a neighborhood is associated with less CRA loans and does not contribute significantly to more SBA loans.[16] Going from a neighborhood with no black population, to an all-black neighborhood, all else equal, would result in a decrease of eight CRA loans (according to the regression estimates). Given the mean of CRA loans, the effect is a 9 percent decline in CRA lending for the census tract.

Chart 8B illustrates the income geography effects associated with SBA and CRA lending. With respect to income status of the neighborhoods, low- and moderate-income neighborhoods are found to be associated significantly with more SBA loans. Going from a high-income to a low-income neighborhood in Michigan with otherwise similar characteristics,

Charts 8A and 8B. Difference in lending associated with neighborhood race and income characteristics, controlling for other factors



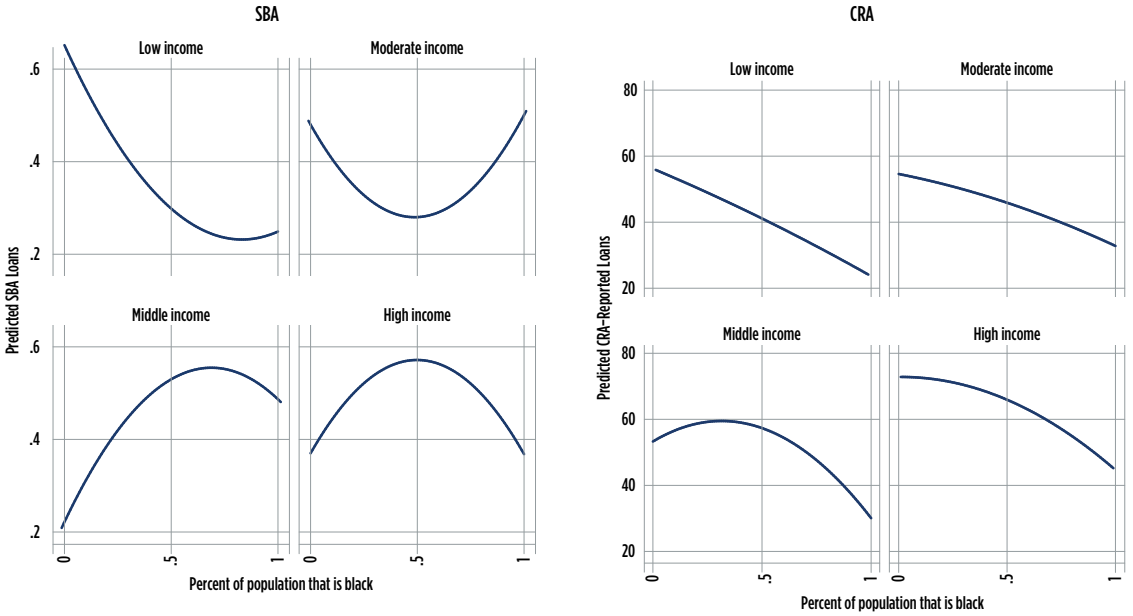
Source: Based on ordinary least squares (OLS) fixed effects regressions with the number of SBA loans and the number of CRA loans in a census tract as the dependent variables. Explanatory variables include bank institutional presence, population, vacancy, number of businesses in different revenue brackets, businesses in different industry category, time fixed effects, and county fixed effects.

is expected to result in an increase of 0.16 SBA loans per 100 businesses in a low-income census tract (according to regression estimates). Given a mean of 0.61 loans, this would be a 26 percent increase. In the case of moderate-income census tracts in Michigan, this would be a 20 percent increase in SBA loans. In contrast, for CRA-reported lending, low-, moderate-, and even middle-income neighborhoods are associated with significantly less loans than high-income neighborhoods. In addition, the city of Detroit is associated with 6 percent less CRA-reported lending and 22 percent less SBA loans, controlling for other factors.

Interaction between proportion of black residents and income in neighborhoods

For Detroit and Michigan, as in many places in the U.S., race and neighborhood income tend to be interrelated (Downey and Hawkins, 2008). Thus we examine further the combined effects of neighborhood income and race on SBA and CRA-reported lending (see appendix D2 for the regression results with race and income intersect terms). As chart 9 shows, when we interact race and low-income geographies, we see that the relationship with small business lending is significant, but varies by race. Neighborhoods that are both low income and predominately black are associated with decreased SBA lending, while low-income neighborhoods that are non-black have higher SBA lending. The first panel of chart 9 illustrates that if one goes from a low-income neighborhood which has essentially no black population to an otherwise similar low-income neighborhood where all residents are black, the number of SBA loans is expected to drop from 0.6 to slightly over 0.2 loans for every 100 businesses. In contrast, the combined effect of a higher proportion of black residents and moderate-income neighborhoods is positive with respect to SBA loans. The regression results in chart 9 also show that CRA-reported small business lending is negatively related to higher percentages of blacks in a neighborhood, regardless of the income level of that neighborhood. However, depending on neighborhood income, some

Chart 9. Predicted SBA and CRA lending for MI, with changes in race and neighborhood income



Note: Charts are based on ordinary least squares (OLS) fixed effects regressions with dependent variables as the number or SBA loans per 100 businesses in a census tract and the number of CRA loans per 100 businesses in a census tract. Explanatory variables include institutional presence, population, vacancy, number of businesses in different revenue brackets, number of businesses in different revenue, time fixed effects, and county fixed effects.

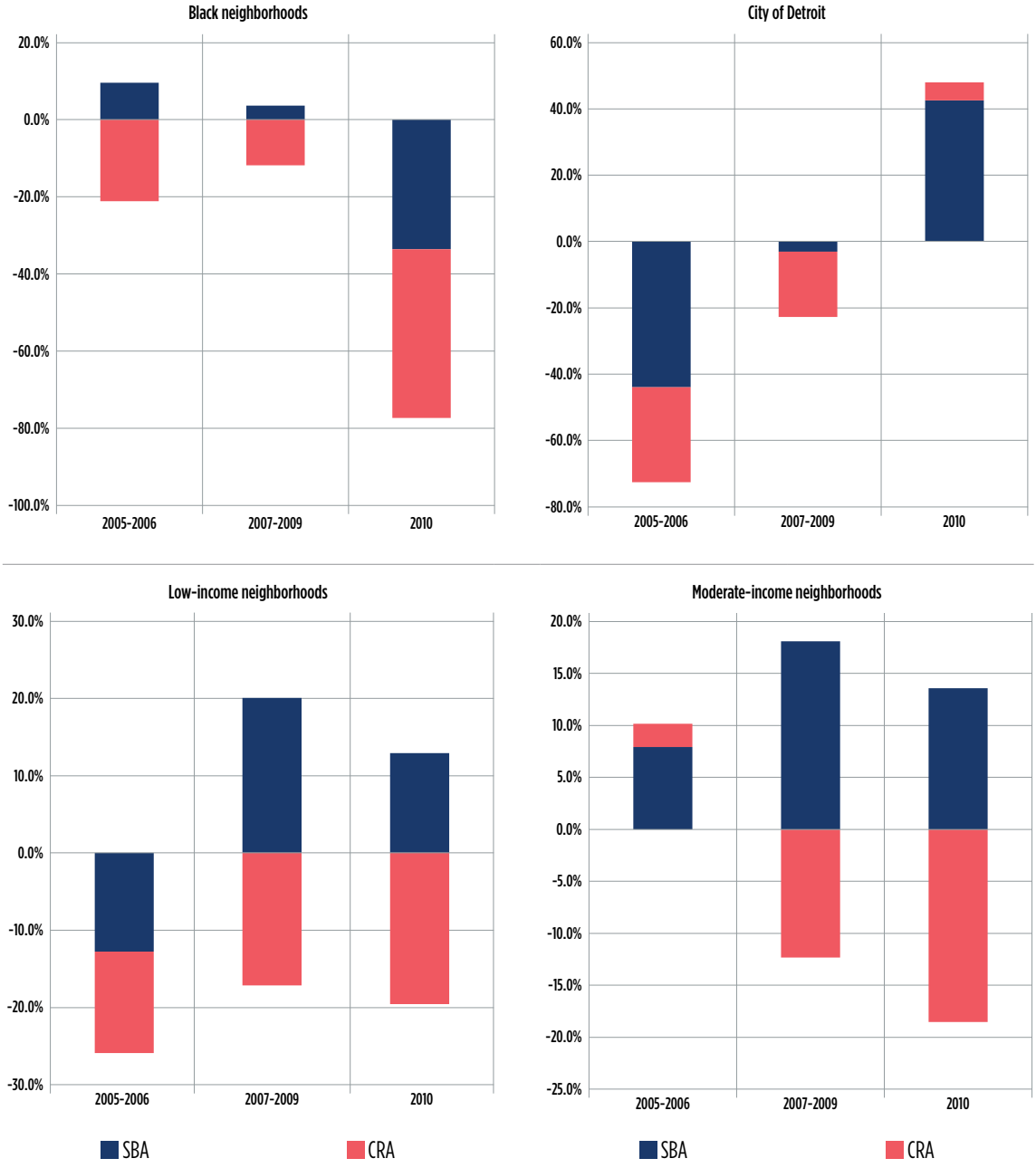
differences exist in the levels and rate of decline in CRA lending as the racial composition changes.[17] For example, the results suggest that if one goes to moderate, middle- and upper-income neighborhoods that have no black population, the numbers of CRA-reported lending are predicted to be over 60 loans on average for every 100 businesses. If one goes to the same types of neighborhoods but where all residents are black, the number of CRA loans drops to between 20 and 40 loans for every 100 businesses.

Lending in black, LMI, and Detroit neighborhoods across credit cycles

Thus far in assessing the relationships between lending and race, we have held constant time trend effects. The time trend is a control for macroeconomic fixed-effects factors or economic shocks affecting credit cycles. We release this assumption in the analysis below and construct a framework which allows the effects of credit cycles to vary in different neighborhoods with different racial composition. We condition our small business lending model on three separate periods for which we have full data, and which mark clear points in the small business lending cycle: the pre-recession (2005-2006), the years of credit contraction (2007-2009), and the year where we started seeing movement toward recovery (2010). Results are presented in chart 10.

The results suggest that the relationship between lending and race and income characteristics in a neighborhood is a changing function of time. Moderate-income neighborhoods are significantly associated with more SBA loans (per 100 businesses), an effect which was significant in the recession period. With the average number of SBA loans of 0.80 per 100 businesses for census tracts during that period, one could expect to have an additional 0.14 loans or 18 percent more SBA lending, if in a moderate-income neighborhood. Black neighborhoods are associated with significantly less CRA-reported lending across most of the different cycles. The city of Detroit is associated with both less SBA and CRA-reported lending during the different credit cycles as well. The effect of 2010 recovery is

Chart 10. Differences in lending in black, LMI neighborhoods, and Detroit across credit cycles, controlling for other factors



Note: Based on ordinary least squares (OLS) fixed effects regressions with the number or SBA loans per 100 businesses and the number of CRA loans per 100 business in a census tract as the dependent variables, for years 2005-2006, 2007-2009, 2010, run separately. (See appendix D3 for coefficient estimates). For 2005-2006 the results are significant for the city of Detroit (negative) in both the SBA and CRA-reported loan model. They are not significant for low income, moderate income, or proportion of blacks in census tracts. For 2007-2009 the results are significant for city of Detroit (negative), for moderate-income census tracts (positive) in the SBA model, and for all the geographic areas reported in the CRA loan model (negative). For 2010 the results are not significant for the city of Detroit in either lending model. They are significant (negative) for low, moderate, and proportion of blacks in the CRA-reported loan model.

showing a positive relationship for both CRA and SBA in the city of Detroit (though not significant) and merits continued monitoring and analysis to assess this tendency.

Summary and policy implications

This study addresses the ability of government-guaranteed loans, namely the SBA 7(a) program, to facilitate flows of credit in low-income and black neighborhoods, using the city of Detroit and Michigan as a case study. Nationwide, black business owners have trailed other racial and ethnic groups in accessing SBA loans. While data on race is not available on a loan-level basis, this place-based analysis of SBA lending provides a first step toward understanding some of the underlying issues impacting recent lending trends to businesses in predominantly black neighborhoods. The results of the analysis have some important policy implications.

In our descriptive analysis of trends in SBA loan volume and amounts, we find that SBA lending per business in the city of Detroit, which in the earlier 2000s showed higher levels of penetration, declined to a point of trailing behind that in the state by 2011. The multivariate analysis brings additional nuances regarding the role that SBA programs play in improving credit access in LMI and minority neighborhoods in the state and in the city of Detroit. Controlling for other factors, we find a significant relationship between SBA lending and low- and moderate-income neighborhoods (where income is below the area median). Furthermore, we also find that these effects vary depending on the racial composition of the neighborhood. Low-income, moderate-income, and black neighborhoods generally have less SBA lending than otherwise similar low- and moderate-income, non-black neighborhoods, holding constant various other factors. This result suggests that opportunity exists to develop a targeted strategy to close some of the credit access disparity in those neighborhoods.

In response to the question as to whether SBA helps mitigate risks in vulnerable markets, the evidence seems to suggest that it might—in low- and moderate-income, non-black neighborhoods. The effects of these neighborhoods are positive in the case of SBA lending, but not for CRA lending. The credit cycle seems to matter to small business lending as well, and reflects the extent to which general economic declines affect specific places to different degrees. Prior to the recession, before the credit contraction, we find a positive relationship (although not highly significant) between both CRA-reported and SBA lending and moderate-income neighborhoods in Michigan. For the city of Detroit proper, as in other black low-income neighborhoods throughout the state, however, controlling for other factors in the multivariate setting, we find less SBA and CRA-reported lending during most of the periods which we analyze, including the pre-2007 credit boom. Other factors, beyond which we have controlled for in this analysis, might be hindering the ability of small businesses in Detroit to access more credit. These factors may relate to a number of issues, including the possibility that many small business people in Detroit do not have the tools, processes, or professional guidance to grow and fund their businesses; that Detroit is still a complex market where many of the deals have a "story" that needs to be told before financing is approved; that relationship banking in Detroit has suffered from the decline in community banking and overall institutional presence in the city; or that alternative financing sources (such as micro-lenders and others) may offer a better financing fit for many small businesses.[18]

Our analysis of the SBA data also suggests that the relative lackluster performance of SBA lending in the city of Detroit could reflect shifts in participating lenders and programs. While the recent growth in SBA 7(a) lending in the state has coincided with more institutions entering the Michigan market, many of these banks have assessment areas that fall outside of the city of Detroit. Additionally, the Community Express program designated for low-income markets, which was actively used in Detroit in the early 2000s, has been eliminated, and capacity for distributing loans through the Community Advantage program was still ramping up in the Detroit area during the latest period of our analysis. We also note that the increase in the average size of loans, irrespective of programs and institution type, may hurt smaller businesses in need of smaller amounts of credit. It remains clear that as part of an overall strategy to improve access to capital for small businesses, efforts to open SBA channels should remain a priority in Detroit.

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Notes

1. See General Accounting Office report at http://www.gao.gov/products/T-GGD-98-184. Other sources of federal money or incentives for small businesses include the Treasury Department's State Small Business Credit Initiative, and the Community Development Block Grant Revolving Loan Fund among many others.

2. According to National Bureau of Economic Research, the recession lasted from December 2007 to June 2009.

3. The shift toward higher loan amounts could be due to various reasons. Prior to 2006, small businesses were more able to use home equity lines of credit or money from refinancing their home to meet their credit needs. This could have led to demand for smaller business loans from banks. It is also possible that smaller businesses may have been disproportionately affected during the recession, as such may have become more or less creditworthy, and were not able to obtain (smaller) loans (Laderman and Reid, 2010).

4. Our data includes SBA loans made in the city of Detroit based on addresses that we were able to geocode. We were able to geocode all but four loans made in Detroit over the period.

5. We use proprietary data from Dun & Bradstreet that defines small businesses as those with less than 500 employees (which may include businesses with no employees), with a reported revenue.

6. CRA data is the only publicly available data on small business lending available at the local (census tract) level. CRA regulations require banks to report small business lending if they have total assets greater than $1 billion. Some smaller banks voluntarily report in the CRA data. In the Michigan SBA dataset, six small banks report.

7. For the sake of comparing SBA and CRA, the count of SBA loans may be somewhat understated since we restrict the calculations to reflect only SBA loans made by CRA reporters.

8. To estimate the model we use time fixed effects ordinary least squares (OLS) multivariate estimation technique. The time series structure of the data allows us to build a time and county fixed effects model that explains variations of lending across census tracts and across time. This time series model helps to account for location heterogeneity and for unobservable factors, to which the neighborhoods are likely to be susceptible. These may include, for instance, unobservable differences in practices in businesses across neighborhoods, differences in cultural factors of business owners, and different attitudes toward borrowing. As for the sources of the data, identification of income status of the census tracts is based on data from PolicyMap. The data source of population, vacancy, and race is the Longitudinal Tract Data Base (Logan, Zengwang, and Stults, 2012). The source for CRA data is the Federal Financial Institutions Examination Council (FFIEC).

9. Lending can also be measured in terms of the dollar volume of CRA lending. To the extent that lenders perceive more risk in a vulnerable market, we would expect to see CRA-reported lending going to larger, more established, higher-revenue businesses, which would therefore be associated with higher lending volumes (i.e., larger loan sizes) compared to in less risky markets, controlling for other factors. The reverse is expected to be true in the case of SBA lending, where businesses that receive SBA loans are traditionally smaller in markets with more constraints (e.g., Brash and Gallagher, 2008; Lynch and Rho, 2011). The scope of the analysis in this paper focuses on the number of loans distributed rather than on the volume of lending.

10. Census tracts are delineated for most metropolitan areas and other densely populated counties by local census statistical areas committees following Census Bureau guidelines. Census tracts usually have between 1,200 and 8,000 persons and, when first delineated, are designed to be homogeneous with respect to population characteristics, economic status, and living conditions. Census tracts do not cross county boundaries. See https://www.census.gov/geo/education/pdfs/CensusTracts.pdf. In addition, census tract boundaries are delineated with the intention of being maintained over a long time so that statistical comparison can be made from census to census. Census tracts occasionally are split due to large population growth, or combined as a result of substantial population decline. In Michigan and Detroit, there were various changes to census boundaries during the 2000s, which resulted from census tracts changing from LMI to non-LMI, and vice versa. We use the Longitudinal Tract Data Base, which developed a methodology to convert census tracts across time, which allows for consistency of the analysis at the census level, across time (Logan, Zengwang, and Stults, 2012).

11. We geocode the SBA loans and identify the census tracts (our proxy for neighborhoods), and characterize the neighborhoods in which the lending took place in terms of their minority composition and income status. It is possible that some of the addresses in the SBA data correspond to the residence of the owner and not to that of the business. We have an 80 percent success rate using Maptitude to geocode and identify the census tracts. We geocode the remaining loan addresses manually where we have close to 100 percent success. (Seventy-four loans were not geocoded because they were either not actually in Michigan or did not have enough information that would allow us to identify the census tract. Just four of those unidentifiable loans were in Detroit.)

12. Low-income geographies have a median family income less than 50 percent of the area median income; moderate-income geographies have a median family income of at least 50 percent and less than 80 percent of the area median income; middle-income geographies have a median family income of at least 80 percent and less than 120 percent of the area median income; and high-income geographies have a median family income of 120 percent or more of the area median income (see http://www2.fdic.gov/crapes/peterms.asp). We retain for this analysis census tracts with nonzero population and nonzero businesses.

13. The results of the multivariate analysis show that a number of factors, in addition to race and income, are associated with the flows of small business bank credit to neighborhoods throughout the state. See appendix D1 for the regression results.

14. Going from a non-Asian to an all-Asian neighborhood is expected to result in an increase of 0.76 SBA loans per 100 businesses. Given an average of 0.61 SBA loans per 100 businesses in a typical census tract, this would more than double the amount of SBA loans per 100 businesses in the all-Asian census tract.

15. We find variation by income geography, however. Low- and moderate-income Hispanic neighborhoods are associated with increased CRA loans. Hispanics tend to be associated with larger size businesses in terms of revenue in low- and moderate-income neighborhoods. Hispanics are one of the fastest growing groups of entrepreneurs in the U.S. While this study places emphasis on predominantly black neighborhoods, some Hispanic neighborhoods in Detroit have viable business sectors, and issues of access to credit, including government guaranteed loans, is also important for these communities. See Beesley, C, "Latinos in Business: Government Resources for Hispanic Entrepreneurs," updated 2013, at http://www.sba.gov/community/blogs/community-blogs/small-business-matters/latinos-business-government-resources-hispani.

16. The coefficient estimates for the proportion of blacks in a neighborhood and increase in SBA lending is negative, not statistically significant (see regression results in appendix D1).

17. There is a large and well established literature that explains why lending in black neighborhoods is lower. Some assert that it is due to a lack of relationship and networks. Others find that socio-demographic factors make these markets more risky (i.e., they tend to have more defaults, lower credit scores, etc.). Still others find discrimination in lending explain some part of the differences. (See, for example, Robb, 2013; Fairlie, 2010; Blanchflower, Levine and Zimmerman, 2003). This paper focuses instead on determining whether the underlying relationship between SBA lending and more vulnerable markets, including black neighborhoods, is different than between (presumably more conventional) CRA-reported lending and more vulnerable markets, with a view to assess the potential for SBA to help mitigate risks in those markets.

18. These possible explanations reflect ideas from exchanges in various meetings and discussions with experts in Detroit who have provided insights into issues with credit access by small businesses. For summaries and analyses of discussions organized through the Community Development and Policy Studies Detroit Project. See http://www.chicagofed.org/webpages/region/community_development/community_economic_development/detroit_project/index.cfm.

Appendix A. Overview of SBA 7(a) programs in Michigan data, 2000–2012

Certified Lenders/ Preferred Lenders (CLP/ PLP)	Designed to provide expeditious service on 7(a) loan applications received from lenders who have a successful SBA lending track record. Established in 1979, CLP includes lending institutions that participate with the SBA on a regular basis and have a staff trained and certified by the SBA. Under this program, the lender reviews all the paperwork and decides whether the borrower merits a loan but gives the SBA the final word. Under the PLP, which began in 1983, the SBA delegates the final credit decision and most servicing and liquidation authority and responsibility to the lender. The SBA designates its "best and most reliable lending partners" as preferred lenders. Most preferred lenders tend to be major commercial banks that may have specialized SBA divisions in their organization.
SBA Express (SBAEXP)	Designed to increase the availability of credit to small businesses by permitting lenders to use their existing documentation and procedures in return for receiving a reduced SBA guarantee on loans. It provides a 50 percent loan guarantee on loan amounts up to $350,000. It was established as a pilot program in 1995 and made permanent through legislation in 2004.
Community Express (COMEX)	Established as a pilot loan program in May 1999 and ended in April 2011. This program was designed to increase SBA lending to pre-designated geographic areas (underserved communities) and to New Market borrowers (i.e., women, minorities, and veterans) who had difficulty accessing capital from traditional lending markets. The COMEX program generally conformed to the SBA Express policies and procedures except that borrowers under the COMEX program had to receive technical and management assistance, which had to be paid for by these lenders. The maximum loan amount was $250,000. However, in a 2010 review of the program by the SBA's inspector general, the COMEX program was found to have fallen short in terms of loan volumes and attraction of lenders.
Patriot Express (PATEXP)	Created in 2007 "to support the entrepreneur segment of the Nation's military community (including spouses)." The Patriot Express Pilot Program provides the same loan guarantee as the 7(a) program on loan amounts up to $500,000 (up to 85 percent of loans of $150,000 or less and up to 75 percent of loans exceeding $150,000).
SBA Programs for Exporters	• **The Export Working Capital program (EWCP)** provides short-term loans to small businesses for export-related transactions. The loan provides advances for up to $5 million to fund export transactions from purchase order to collections.. • The **Export Express program (EXPEXP)** offers financing up to $500,000. The SBA provides lenders with a 90 percent guarantee on loans up to $350,000 and a 75 percent guarantee on loans between more than $350,001 and $500,000. Any business that has been in operation, although not necessarily in exporting, for at least 12 full months and can demonstrate that the loan proceeds will support its export activity is eligible for Export Express. • The **Export-Import Bank** (EXIM), provides working capital for smaller companies to finance export and foreign marketing operations.
Rural Lender Advantage (RLA)	Piloted in 2008 with a new version introduced in 2011. The initiative is designed to accommodate the loan processing needs of small community/ rural-based lenders by simplifying and streamlining the loan application process and procedures for smaller SBA loans. The maximum loan is $350,000 with a guarantee of 85 percent for loans up to $150,000 and 75 percent for those greater than $150,000.
Other 7(a)	Includes other types of SBA programs not identified in the categories listed above. It covers lending programs for smaller and/or businesses located in underserved markets, as well as programs with substantially higher loan limits. • **The Community Advantage program** became operational in February 2011. The Community Advantage program replaces the Community Express Pilot Program, and was designed to increase lending to underserved low- and moderate-income communities by increasing "the number of SBA 7(a) lenders who reach underserved communities, targeting community-based, mission-focused financial institutions, which were previously not able to offer SBA loan." These mission-focused financial institutions include Community Development Financial Institutions (CDFIs), Certified Development Companies (CDCs), and microlenders who provide technical assistance and economic development support in underserved markets. The Community Advantage program was initially announced as a three-year pilot program (through March 15, 2014) and was subsequently extended through March 15, 2017. The loan guarantee is 85 percent for loans up to $150,000 and 75 percent for those greater than $150,000 • **The Small Loan Advantage program** became operational in February 2011. Along with the Community Advantage program, the Small Loan Advantage program replaced the Community Express Pilot Program. The program is available to lenders participating in the SBA's Preferred Lender Program. The program "is structured to encourage larger, existing SBA lenders to make lower-dollar loans. The program offers a streamlined application process for loans up to $350,000. The program offers an 85 percent guarantee for loans up to $150,000 and 75 percent for those greater than $150,000. • **The CAPLines program** is for loans up to $5 million and is designed to help small businesses meet their short-term and cyclical working capital needs. The four loan programs under the CAPLines umbrella are the Contract Loan Program; the Seasonal Line of Credit Program; the Builders Line Program; and the Working Capital Line of Credit Program. These programs finance seasonal working capital needs.

Sources: Small Business Administration (see http://www.sba.gov/category/navigation-structure/loans-grants/small-business-loans/sba-loan-programs/7a-loan-program, http://www.sba.gov/content/small-loan-advantage, and http://www.sba.gov/sites/default/files/files/SBA%20Program%20Inventory.pdf) and Congressional Research Service (see http://www.fas.org/sgp/crs/misc/R41146.pdf).

Appendix B1. Descriptive statistics: Relationship between types of SBA 7(a) lender and SBA program

	CLP	COMEXP	EWCP	EXPEXP	OTH 7A	PATEXP	PLP	RLA	SBAEXP
CLP	--								
COMEXP	-0.01 (0.31)	--							
EWCP	0.00 (0.73)	-0.01 (0.41)	--						
EXPEXP	0.00 (0.74)	-0.01 (0.43)	0.00 (0.79)	--					
OTH 7A	-0.02 (0.03)	-0.05 (0.00)	-0.02 (0.07)	-0.02 (0.08)	--				
PATEXP	0.00 (0.57)	-0.01 (0.17)	0.00 (0.65)	0.00 (0.66)	-0.03 (0.00)	--			
PLP	-0.03 (0.00)	-0.07 (0.00)	-0.02 (0.01)	-0.02 (0.01)	-0.15 (0.00)	-0.04 (0.00)	--		
RLA	0.00 (0.70)	-0.01 (0.35)	0.00 (0.75)	0.00 (0.77)	-0.02 (0.04)	0.00 (0.61)	-0.03 (0.00)	--	
SBAEXP	-0.09 (0.00)	-0.22 (0.00)	-0.07 (0.00)	-0.07 (0.00)	-0.47 (0.00)	-0.12 (0.00)	-0.70 (0.00)	-0.08 (0.00)	--
Large banks	0.02 (0.01)	-0.21 (0.00)	-0.03 (0.00)	-0.03 (0.00)	-0.34 (0.00)	-0.11 (0.00)	-0.08 (0.00)	-0.11 (0.00)	0.38 (0.00)
Banks under $10 billion	-0.02 (0.06)	0.24 (0.00)	0.02 (0.04)	0.00 (0.97)	0.15 (0.00)	0.06 (0.00)	-0.04 (0.00)	-0.01 (0.09)	-0.14 (0.00)
Banks under $1 billion	-0.01 (0.10)	-0.04 (0.00)	0.03 (0.00)	0.00 (0.72)	0.30 (0.00)	0.06 (0.00)	0.02 (0.01)	0.14 (0.00)	-0.23 (0.00)
Credit unions	0.00 (0.63)	-0.01 (0.24)	0.00 (0.69)	0.00 (0.71)	0.09 (0.00)	0.01 (0.35)	-0.03 (0.00)	0.10 (0.00)	-0.04 (0.00)
Other	0.00 (0.70)	0.21 (0.00)	-0.01 (0.32)	0.09 (0.00)	0.01 (0.22)	0.05 (0.00)	0.19 (0.00)	-0.01 (0.26)	-0.24 (0.00)

Note: See appendix B3.

Appendix B2. Descriptive statistics: Relationship between types of SBA 7(a) lender and location of business

	Large Bank	Banks under $10 billion	Banks under $1 billion	Credit union	Other	City of Detroit	3-County MSA	Low income	Moderate income	Middle income	High income
Large bank	--										
Banks under $10 billion	-0.55 (0.00)	--									
Banks under $1 billion	-0.63 (0.00)	-0.08 (0.00)	--								
Credit union	-0.14 (0.00)	-0.02 (0.04)	-0.02 (0.01)	--							
Other	-0.36 (0.00)	-0.05 (0.00)	-0.05 (0.00)	-0.01 (-0.16)	--						
City of Detroit	0.00 (0.83)	0.03 (0.00)	-0.06 (0.00)	-0.02 -0.02	0.06 (0.00)	--					
3-County MSA	0.17 (0.00)	-0.10 (0.00)	-0.13 (0.00)	-0.06 (0.00)	-0.02 0.0704	-0.45 (0.00)	--				
Low income	-0.03 (0.00)	0.03 (0.00)	0.00 (0.77)	-0.01 (0.39)	0.02 (0.01)	0.23 (0.00)	-0.11 (0.00)	--			
Moderate income	-0.03 (0.00)	0.04 (0.00)	-0.01 (0.49)	-0.01 (0.14)	0.02 (0.02)	0.28 (0.00)	-0.09 (0.00)	-0.10 (0.00)	--		
Middle income	-0.01 (0.24)	-0.01 0.533	0.02 0.0147	0.00 0.8861	0.00 0.7397	-0.16 (0.00)	-0.04 (0.00)	-0.19 (0.00)	-0.49 (0.00)	--	
High income	0.05 (0.00)	-0.04 (0.00)	-0.02 (0.05)	0.01 (0.31)	-0.02 (0.00)	-0.18 (0.00)	0.17 (0.00)	-0.12 (0.00)	-0.31 (0.00)	-0.60 (0.00)	--

Note: See appendix B3.

Appendix B3. Descriptive statistics: Relationship between types of SBA 7(a) programs and geographic areas

	City of Detroit	3-County MSA	Low income	Moderate income	Middle income	High income
City of Detroit	--					
3-County MSA	-0.45 (0.00)	--				
Low income	0.23 (0.00)	-0.11 (0.00)	--			
Moderate income	0.28 (0.00)	-0.09 (0.00)	-0.10 (0.00)	--		
Middle income	-0.16 (0.00)	-0.04 (0.00)	-0.19 (0.00)	-0.49 (0.00)	--	
High income	-0.18 (0.00)	0.17 (0.00)	-0.12 (0.00)	-0.31 (0.00)	-0.60 (0.00)	--
CLP	-0.02 (0.02)	0.00 (0.87)	-0.01 (0.18)	0.00 (0.64)	0.01 (0.16)	-0.01 (0.09)
COMEXP	0.15 (0.00)	-0.04 (0.00)	0.02 (0.01)	0.03 (0.00)	-0.01 (0.38)	-0.02 (0.01)
EWCP	-0.01 (0.43)	0.01 (0.54)	-0.01 (0.27)	-0.01 (0.52)	0.02 (0.02)	-0.01 (0.13)
EXPEXP	0.01 (0.23)	0.01 (0.17)	0.02 (0.05)	0.02 (0.05)	-0.01 (0.14)	-0.01 (0.40)
OTH 7A	-0.03 (0.00)	-0.08 (0.00)	0.01 0.45	0.00 0.89	0.01 0.28	-0.02 0.05
PATEXP	-0.01 (0.16)	-0.03 (0.00)	0.01 (0.27)	0.00 (0.86)	0.00 (0.74)	0.00 (0.86)
PLP	0.03 (0.00)	-0.01 (0.11)	0.02 (0.01)	0.01 (0.09)	0.00 (0.99)	-0.02 (0.01)
RLA	-0.02 (0.03)	-0.04 (0.00)	0.00 (0.63)	0.00 (0.67)	0.02 (0.07)	-0.02 (0.07)
SBAEXP	-0.04 (0.00)	0.08 (0.00)	-0.03 (0.00)	-0.02 (0.01)	-0.01 (0.39)	0.04 (0.00)

Note: All the variables in appendix B1-B3 are defined at the census level for years 2000 to 2012. The appendices B(1) –B(3) report Pearson correlation coefficients, with the P-values in parentheses. The correlation coefficient helps predict the association between two variables by giving the degree of linear association, indicating the strength and the direction of the relationship between the two variables. (As a rule of thumb, a result of -1 indicates perfect negative association; +1 indicates perfect positive association, while values between 0 and 0.1 indicate that the two variables in question have little or no relationship). Programs included the Certified Lender Program (CLP), the Export Working Capital Program (EWCP), Community Express (COMEX), Patriot Express (PATEXP), Rural Lender Advantage (RLA), and Other 7(a). See appendix A for an overview of the SBA 7(a) programs listed here.

Appendix C1. Descriptive statistics: Data sources and variables used

	Michigan			Detroit			
	Mean	Min	Max	Mean	Min	Max	Data Source
Instit presence trend in MI	294.09	1.0	2188	486.12	1.0	2188	Michigan SBA District Office
City of Detroit	0.08	0.0	1	1	1.0	1.0	Policy Map and Maptitude
Low income	0.04	0.0	1	0.10	0.0	1.0	Policy Map and Maptitude
Moderate income	0.18	0.0	1	0.52	0.0	1.0	Policy Map and Maptitude
Middle income	0.53	0.0	1	0.28	0.0	1.0	Policy Map and Maptitude
City of Detroit * low income	0.01	0.0	1	0.10	0.0	1.0	Policy Map and Maptitude
City of Detroit * moderate income	0.05	0.0	1	0.52	0.0	1.0	Policy Map and Maptitude
City of Detroit * middle income	0.03	0.0	1	0.28	0.0	1.0	Policy Map and Maptitude
Log (population)	8.27	-11.8	9.5	7.99	6.2	8.7	LTDB
Percent population that is black	0.15	0.0	1.0	0.77	0.0	1.0	LTDB
% pop that is black * low income	0.02	0	1.0	0.09	0	1.0	LDB, Policy Map and Maptitude
% pop that is black * mod income	0.07	0	1.0	0.40	0	1.0	LTDB
% pop that is Asian	0.03	0.0	0.6	0.02	0.0	0.54	LTDB
% pop that is Asian * high income	0.01	0.0	0.4	0.00	0.0	0.08	LTDB, Policy Map and Maptitude
% pop that is Asian * middle income	0.01	0.0	0.4	0.00	0.0	0.36	LTDB, Policy Map and Maptitude
% pop that is Hispanic	0.04	0.0	0.8	0.06	0.0	0.77	LTDB
% pop that is Hispanic * low income	0.00	0.0	0.7	0.00	0.0	0.59	LTDB, Policy Map and Maptitude
% pop that is Hispanic * mod income	0.01	0.0	0.8	0.05	0.0	0.77	LTDB, Policy Map and Maptitude
Log (number of vacant homes)	4.99	-20.1	8.0	5.34	3.07	6.74	LTDB
# firms with avg rev 50K or less	33.28	0.0	149	20.41	0.0	90	D&B
# firms with avg rev 50k - 100K	50.63	0.0	213	25.03	0.0	189	D&B
# firms with avg rev 100k - 250K	44.45	0.0	365	22.50	0.0	365	D&B
# firms with avg rev 250 - 500K	17.31	0.0	178	8.01	0.0	86	D&B
# firms with avg rev 500 - 750K	6.29	0.0	92	2.99	0.0	72	D&B
# firms with avg rev 750 - 1 mill	4.50	0.0	87	2.01	0.0	32	D&B
# firms with avg rev >= 1 mill	11.84	0.0	377	4.23	0.0	117	D&B
# firms in Construction	21.13	1.0	164	5.92	1.0	35	D&B
# firms in Manufacturing	9.25	0.0	268	2.85	0.0	39	D&B
# firms in Wholesale	8.02	1.0	177	3.69	1.0	21	D&B
# firms in Retail	18.52	0.0	134	11.53	0.0	71	D&B
# firms in Transportation	3.97	0.0	66	2.36	0.0	15	D&B
# firms in Information	3.75	1.0	39	2.73	1.0	32	D&B
# firms in Finance, Insurance	6.30	1.0	132	3.60	1.0	67	D&B
# firms in Real Estate	8.07	1.0	91	4.70	1.0	49	D&B
# firms in Professional	20.43	1.0	370	10.29	1.0	370	D&B
# firms in Management	20.26	1.0	144	10.51	1.0	90	D&B
# firms in Health	15.78	1.0	184	9.20	1.0	186	D&B
#f firms in Arts	3.86	1.0	30	2.38	1.0	24	D&B
# firms in Accommodation	7.86	1.0	103	4.92	1.0	103	D&B
SBA Loan #	0.40			0.55			Michigan SBA District Office
CRA Loan #	83.66			38.24			CRA Aggregate Data
Mean SBA loan per 100 bus	0.71			0.62			Michigan SBA District Office
Median CRA-reported loan per 100 bus	53.88			38.02			CRA Aggregate Data

Note: This appendix reports the weighted average (by population) of variables used in the analysis. All variables are defined at the census tracts, with nonzero population and nonzero business, for years 2005 to 2010, for which we have complete data on all variables.

Appendix C2. Descriptive statistics: Relationship between selected variables used – race/ethnicity, income, and business characteristics of neighborhoods, 2003-2010

	City of Detroit	Low income	Moderate income	Middle income	High income	Log (pop)	Percent black	Percent Asian	Percent Hispanic	Percent white	Log (vacancy)
City of Detroit	1										
Low income	0.05	1									
Moderate income	0.19	-0.05	1								
Middle income	-0.10	-0.15	-0.45	1							
High income	-0.05	-0.08	-0.25	-0.71	1						
Log (population)	-0.19	-0.12	-0.16	0.03	0.12	1					
Percent black	0.69	0.19	0.33	-0.11	-0.18	-0.23	1				
Percent Asian	-0.07	0.03	-0.06	-0.22	0.28	0.06	-0.07	1			
Percent Hispanic	-0.09	0.12	0.21	-0.04	-0.15	0.03	-0.01	-0.01	1		
Percent white	-0.64	-0.22	-0.35	0.15	0.17	0.21	-0.96	-0.11	-0.18	1	
Log (vacancy)	0.12	0.05	0.20	0.18	-0.37	0.17	0.14	-0.26	0.08	-0.12	1
# firms with avg rev 50K or less	-0.17	-0.08	-0.13	0.14	-0.03	0.46	-0.21	-0.13	-0.06	0.23	0.27
# firms avg rev 50k - 100K	-0.19	-0.09	-0.20	0.00	0.18	0.45	-0.25	0.07	-0.11	0.26	0.13
# firms avg rev 100k - 250K	-0.16	-0.05	-0.13	-0.02	0.14	0.29	-0.17	0.13	-0.07	0.16	0.09
# firms avg rev 250 - 500K	-0.17	-0.02	-0.06	-0.02	0.07	0.19	-0.15	0.13	-0.02	0.13	0.06
# firms avg rev 500 - 750K	-0.12	0.02	-0.01	-0.03	0.03	0.10	-0.08	0.15	-0.01	0.06	0.05
# firms avg rev 750 - 1 mill	-0.13	0.04	-0.02	-0.04	0.04	0.10	-0.09	0.16	0.04	0.05	0.02
# firms avg rev >= 1 mill	-0.12	0.07	0.02	-0.03	0.00	0.06	-0.05	0.17	0.07	0.00	0.00
# firms in Construction	-0.20	-0.04	-0.13	0.00	0.10	0.35	-0.20	0.11	-0.05	0.19	0.13
# firms in Manufacturing	-0.25	-0.10	-0.22	0.08	0.10	0.49	-0.37	-0.14	-0.10	0.41	0.12
# firms in Wholesale	-0.15	0.02	0.01	0.02	-0.04	0.16	-0.15	0.04	0.07	0.13	0.04
# firms in Retail	-0.15	0.03	-0.04	-0.06	0.08	0.19	-0.13	0.17	0.03	0.09	-0.02
# firms in Transportation	-0.14	-0.03	-0.01	0.09	-0.08	0.25	-0.17	-0.02	0.02	0.16	0.25
# firms in Information	-0.10	0.01	-0.04	0.13	-0.12	0.29	-0.08	-0.11	0.01	0.10	0.16
# firms in Finance, Insurance	-0.06	0.02	-0.06	-0.07	0.12	0.12	-0.01	0.27	-0.05	-0.03	-0.01
# firms in Real Estate	-0.08	-0.03	-0.08	-0.09	0.17	0.08	-0.01	0.22	-0.06	-0.01	-0.05
# firms in Professional	-0.10	-0.04	-0.11	-0.06	0.16	0.21	-0.06	0.17	-0.06	0.05	0.08
# firms in Management	-0.08	-0.01	-0.11	-0.18	0.29	0.11	-0.07	0.31	-0.09	0.04	-0.11
# firms in Health	-0.12	-0.07	-0.15	-0.05	0.20	0.35	-0.12	0.11	-0.10	0.12	0.03
# firms in Arts	-0.08	0.01	-0.03	-0.04	0.07	0.11	0.00	0.17	-0.01	-0.03	0.02
# firms in Accommodation	-0.12	-0.04	-0.13	0.00	0.11	0.21	-0.18	0.00	-0.06	0.18	0.16

Note: Pearson correlation coefficients matrix. All variables are defined at the census tract level for the state of Michigan, years 2005-2010.

Appendix D1. Association of race/ethnic composition and income of neighborhoods, and lending to small businesses in Michigan, 2005-2010 (no intersect)

	Number of SBA 7(a) loans (per 100 businesses)		Number of CRA-reported loans (per 100 businesses)	
	Parameter estimates	T-statistics	Parameter estimates	T-statistics
Intercept	-0.3669 **	-1.8	-87.50 ***	-9.75
Instit presence trend in MI	0.0009 ***	39.1	9.04 ***	10.5
City of Detroit	-0.1381 ***	-2.2	-5 ***	-5.4
Low income	0.1638 *	1.7	-7.48 ***	-6.0
Moderate income	0.1232 ***	2.4	-9.14 ***	-7.7
Middle income	0.0189	1.0	-14.41 ***	-11.8
Log (population)	0.0451 **	1.8	14.36 ***	12.2
Percent population that is black	-0.0106	-0.2	-8.32 ***	-7.8
Percent population that is Hispanic	-0.6212 ***	-3.8	-5.48 ***	-4.1
Percent population that is Asian	0.7590 ***	3.3	7.75 ***	8.2
Log (number of vacant homes)	-0.0010	-0.1	-3.21 ***	-2.5
# firms with med rev 50K or less	-0.0023 ***	-3.5	-16.53 ***	-17.2
# firms with med rev 50k - 100K	-0.0009 ***	-1.7	-7.07 ***	-10.4
# firms with med rev 100k - 250K	0.0014 **	2.1	-8.61 ***	-9.2
# firms with med rev 250 - 500K	-0.0050 ***	-3.4	-3.21 ***	-4.6
# firms with med rev 500 - 750K	-0.0030 *	-1.6	-3.8 ***	-4.6
# firms with med rev 750 - 1 mill	-0.0007	-0.3	-1.67 ***	-2.2
# firms in Construction	0.0002	0.2	7.47 ***	9.2
# firms in Manufacturing	-0.0005	-0.4	3.73 ***	8.3
# firms in Wholesale	0.0022 *	1.2	4.56 ***	7.2
# firms in Retail	0.0034 ***	2.6	6.14 ***	7.7
# firms in Transportation	0.0020	0.7	1.89 *	3.7
# firms in Information	0.0069 **	2.4	-0.2	1.0
# firms in Finance, Insurance	0.0001	0.0	1.88 *	4.4
# firms in Real Estate	-0.0046 ***	-3.5	3.81 ***	5.7
# firms in Professional	-0.0009	-1.5	9.48 ***	11.9
# firms in Management	0.0009	1.1	0.16	3.8
# firms in Health	0.0000	-0.1	2.77 ***	5.5
# firms in Arts	-0.0020	-0.9	4.09 ***	4.0
# firms in Accommodation	0.0003	0.3	-0.72	0.4
2005	0.0095	0.4	44.48 ***	52.1
2006	0.0022	0.1	64.65 ***	69.3
2007	0.0302	1.3	69.08 ***	73.0
2008	0.0789 ***	3.9	52.21 ***	57.4
2009	0.0010	0.1	8.74 ***	10.5
County fxed effects	yes		yes	
Number of observations	8637		8737	
F-statistic	50.92 ***		279.94 ***	
R-squared	0.5484		0.7641	

Note: Ordinary least squares (OLS) fixed-effects regression, robust standard errors, weighted by population. Dependent variables equal number of SBA 7(a) loans and number of CRA-reported loans. All variables are defined at the census tract level with nonzero population and nonzero business, for years 2005 to 2010, except the time trend/years dummy variables and Institutional Presence. Institutional Presence is defined as the count of institutions giving SBA loans each year in Michigan. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Appendix D2. Association of race/ethnic composition and income of neighborhoods, and lending to small businesses in Michigan, 2005-2010 (With intersect between race/ethnicity and income)

	Number of SBA 7(a) Loans (per 100 businesses)		Number of CRA-Reported Loans (per 100 businesses)	
	Parameter estimates	T-statistics	Parameter estimates	T-statistics
Intercept	-0.3768 **	-2.1	-90.2597 ***	-10.0
Instit presence trend in MI	0.0009 ***	39.4	0.0047 ***	9.0
City of Detroit	-0.3254 ***	-5.0	-5.3585 ***	-2.7
Low income	0.2801	1.3	-14.5785 ***	-4.3
Moderate income	0.1407 **	2.0	-9.5237 ***	-6.2
Middle income	-0.0072	-0.4	-9.5204 ***	-12.6
City of Detroit * low income	0.6947 *	1.8	-1.5917	-0.4
City of Detroit * moderate income	0.2973 ***	2.9	1.5121	0.6
City of Detroit * middle income	0.1535 ***	2.1	-6.7974 ***	-3.0
Log (population)	0.0490 **	2.0	15.0184 ***	14.6
Percent population that is black	0.0781	1.2	-9.6496 ***	-5.3
% pop that is black * low income	-0.5247 *	-1.7	-4.1987	-0.8
% pop that is black * mod income	-0.2308 *	-1.8	-8.4583 ***	-2.8
% pop that is Asian	0.2375	0.4	33.7105 **	2.4
% pop that is Asian * high income	0.2443	0.4	23.4782	1.4
% pop that is Asian * middle income	0.6745	1.1	42.3050 **	2.5
% pop that is Hispanic	-0.7834 ***	-4.3	-58.8987 ***	-6.5
% pop that is Hispanic * low income	0.2798	0.7	59.7759 ***	4.6
% pop that is Hispanic * mod income	0.1779	0.8	28.2403 ***	2.7
Log (number of vacant homes)	-0.0013	-0.1	-1.4324 ***	-3.2
# firms with avg rev 50K or less	-0.0022 ***	-3.5	-0.4276 ***	-16.7
# firms with avg rev 50k - 100K	-0.0009	-1.6	-0.1557 ***	-7.2
# firms with avg rev 100k - 250K	0.0016 **	2.4	-0.2197 ***	-8.6
# firms with avg rev 250 - 500K	-0.0051 ***	-3.4	-0.1567 ***	-3.5
# firms with avg rev 500 - 750K	-0.0029	-1.6	-0.2508 ***	-3.9
# firms with avg rev 750 - 1 mill	-0.0002	-0.1	-0.1198	-1.4
# firms in Construction	-0.0001	-0.1	0.2464 ***	7.5
# firms in Manufacturing	-0.0005	-0.5	0.1336 ***	3.7
# firms in Wholesale	0.0024	1.3	0.2902 ***	4.6
# firms in Retail	0.0035 ***	2.7	0.2605 ***	6.4
# firms in Transportation	0.0014	0.5	0.1178 *	1.8
# firms in Information	0.0069 ***	2.4	-0.0273	-0.3
# firms in Finance, Insurance	-0.0004	-0.3	0.0908 *	1.8
# firms in Real Estate	-0.0045 ***	-3.4	0.1658 ***	3.7

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Appendix D2. Association of race/ethnic composition and income of neighborhoods, and lending to small businesses in Michigan, 2005-2010 (With intersect between race/ethnicity and income) continued

	Number of SBA 7(a) Loans (per 100 businesses)		Number of CRA-Reported Loans (per 100 businesses)	
	Parameter estimates	T-statistics	Parameter estimates	T-statistics
# firms in Professional	-0.0008	-1.4	0.2317 ***	9.4
# firms in Management	0.0008	1.0	0.0068	0.2
# firms in Health	-0.0002	-0.4	0.0647 ***	2.9
# firms in Arts	-0.0027	-1.1	0.3722 ***	4.0
# firms in Accommodation	0.0001	0.1	-0.0216	-0.5
2005	0.0088	0.4	36.5996 ***	44.2
2006	0.0008	0.0	63.3179 ***	64.6
2007	0.0292	1.3	70.2709 ***	69.1
2008	0.0781 ***	3.9	43.3838 ***	52.2
2009	0.0007	0.1	3.6336 ***	8.7
County fixed effects	yes		yes	
Number of observations	8637		8637	
F-statistic	46.98 ***		258.11 ***	
R-squared	0.5478		0.7651	

Note: Ordinary least squares (OLS) fixed-effects regression, robust standard errors, weighted by population. Dependent variables equal number of SBA 7(a) loans and number of CRA-reported loans. All variables are defined at the census tract level with nonzero population and nonzero business, for years 2005 to 2010, except the time trend/years dummy variables and Institutional Presence. Institutional Presence is defined as the count of institutions giving SBA loans each year in Michigan. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Appendix D3. Association of race/ethnic composition and income of neighborhoods, and lending to small businesses in Michigan, across credit cycles, 2005-2006, 2007-2009, 2010

	Number of SBA 7(a) loans (per 100 businesses)		Number of CRA-reported loans (per 100 businesses)	
2005-2006				
	Parameter estimates	**T-statistics**	**Parameter estimates**	**T-statistics**
City of Detroit	-0.189 **	-2.57	-5.839 ***	-1.93
Low income	-0.055	-0.91	-2.664	-0.73
Moderate income	0.034	0.67	0.453	0.19
Middle income	0.002	0.08	-3.880 ***	-2.56
Percent population that is black	0.041	0.52	-4.294	-1.25
Number of obs.	3660		3660	
F-statistic	25.79 ***		19.68 ***	
R-squared	0.5893		0.2752	
2007-2009				
	Parameter estimates	**T-statistics**	**Parameter estimates**	**T-statistics**
City of Detroit	-0.244 ***	-2.68	-16.758 ***	-4.5
Low income	0.161	1.19	-14.601 ***	-3.4
Moderate income	0.145 **	2.15	-9.930 ***	-3.81
Middle income	0.019	0.76	-10.496 ***	-6.11
Percent population that is black	0.029	0.3	-10.075 ***	-2.56
Number of obs	6327		6327	
F-statistic	44.64 ***		27.58 ***	
R-squared	0.5319		0.2575	
2010				
	Parameter estimates	**T-statistics**	**Parameter estimates**	**T-statistics**
City of Detroit	0.066	1.18	1.133	0.79
Low income	0.020	0.52	-4.144 ***	-2.78
Moderate income	0.021	0.59	-3.927 ***	-4.64
Middle income	0.001	0.06	-3.177 ***	-6.02
Percent population that is black	-0.052	-0.93	-9.263 ***	-6.47
Number of obs	1511		1511	
F-statistic	.		.	
R-squared	0.6471		0.5428	

Note: Ordinary least squares (OLS) fixed-effects regression, robust standard errors, weighted by population of census tracts. Dependent variables equal SBA 7(a) loans and number of CRA-reported loans. All variables are defined at the census tracts level with nonzero population and nonzero business. Explanatory variables include institutional presence, population, vacancy, number of businesses in different revenue brackets, number of businesses in different industry categories, and county fixed effects, but are not shown here. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

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