Do Capital Tax Incentives Attract New Businesses? Evidence across Industries from the New Markets Tax Credit

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### Abstract

All levels of government pursue policies to attract new businesses with the hope that these enterprises will create local economic growth. In this paper, we use the New Markets Tax Credit (NMTC) to determine the effect of a capital tax credit on where firms in different industries locate. When estimating the impact of the tax credit on business location, there are likely to be unobservable local characteristics that are correlated with where businesses choose to open that would cause OLS estimates to be biased. To control for the endogenous selection, we use a plausibly exogenous eligibility cutoff and compare census tracts that are just eligible for the NMTC to those that are just ineligible. Using data from the Dun and Bradstreet MarketPlace Files, we find that in Metropolitan Statistical Areas, the NMTC incentivized new businesses to locate in tracts that were eligible for the tax credit. When we stratify the sample by industry, we find that this tax credit had the strongest positive effect those industries that likely to have more capital intensive demands. This is consistent with our priors, as the NMTC was used primarily for capital investments. Our results are important to policy makers, as we find that the type of tax credit offered heterogeneous effects across industries.

# I. Introduction

New businesses are considered a key driver of local economic growth in the United States. Since new establishments are so important to the local economy, policy makers design tax programs to attract new businesses with the hope that these enterprises will drive future growth within their jurisdiction (Neumark et al., 2007). These tax credits are typically place-based policies, where a business is eligible to receive the credit if it locates in a specific area, typically low-income or high-poverty census tracts. In general, research that has estimated the impact of tax credits on where businesses locate has produced mixed results, with some researchers finding tax credits attract new establishments while others find no significant effect.<sup>1</sup>

One explanation for the discrepancy regarding the effect of place-based programs on business location decisions is that there are heterogenous effects of the policy across industries (Hanson & Rohlin, 2011b; Patrick, 2014). For example, the government could offer a tax credit to firms that locate in a specific area and hire workers from that jurisdiction.<sup>2</sup> A program such as this creates a labor subsidy for businesses that locate in the area, so we expect industries that are more labor-intensive will outbid industries that are more capital-intensive for land in the areas that are eligible for the credit. Sorting of this type is consistent with the standard urban economics model, which predicts that the firm or household that values locating in a given area the most will outbid others for the land in that area.

In this paper, we use the New Markets Tax Credit (NMTC) to determine the effect of a capital investment tax credit on the location decisions of new businesses. We consider not only at the effect of the policy on all types of establishments, but also how the effect of the policy

<sup>&</sup>lt;sup>1</sup> For example, there is an extensive literature that has looked at the impact of the Enterprise Zone program on business location decisions (see Oakley & Tsao (2006), Hanson (2009), Krupka & Noonan (2009), Hanson & Rohlin (2011a) and (2011b), and Busso, Gregory, & Kline (2013) for more information)

 $<sup>^{2}</sup>$  This type of program would be similar to the Enterprise Zone (EZ) program, though there are other conditions of the EZ program which we do not consider in this simple example.

varies across firms in different types of industries. The NMTC, which was passed in 2000 but the tax credits were not allocated for the first time until 2003, provides a tax credit to businesses to make investments in low-income communities.<sup>3</sup> While the NMTC could be used for a variety of purposes, the credit was used primarily for capital investments, so throughout the paper we will refer to this program as a capital tax credit.<sup>4</sup>

One of the issues when estimating the effect of a place-based tax credit on business location decisions is that there is likely to be a non-random selection of communities by both businesses and policy makers. First, businesses choose which neighborhood to locate in based on numerous local attributes, some of which are observable, such the poverty rate and the crime rate, and others that are unobservable, such as agglomeration economies. If these unobserved attributes are correlated with where the NMTC is allocated, then simple OLS estimates would produce biased results. Second, there is a selection process with regards to which businesses receive the tax credit. Not all applicants for the NMTC receive the credit. Therefore, to compare those businesses that received the tax credit to those that did not would be problematic if firms were selected based on expected growth in the local area.

To control for these factors and obtain causal estimates, we draw upon a plausibly exogenous eligibility cutoff in the NMTC to determine whether or not the program attracted new business activity. Eligibility for the NMTC program is based on the ratio of the census tract median family income (MFI) to the state MFI or MSA MFI, whichever is higher, which we refer to as the income eligibility ratio. To be eligible to receive the NMTC, the income eligibility ratio

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<sup>&</sup>lt;sup>3</sup> Other papers that have looked at the economic impact of the NMTC are Gurley-Calvez et al. (2009), Freedman (2012), and Freedman (2013). We discuss each of these papers in more detail later.

<sup>&</sup>lt;sup>4</sup> The NMTC could be used for labor expenses. However, due to the required materials to use the NMTC, this is not what was observed. Most existing tax credit programs are aimed at hiring workers, and if new businesses could use multiple programs to fund the new business, it would be expected that firms will use the other labor-specific credits for workers and the NMTC for the capital expenditures needed. For more information on the types of projects these funds went to, please see <a href="http://www.taxpolicycenter.org/UploadedPDF/412958-new-markets-tax-final.pdf">http://www.taxpolicycenter.org/UploadedPDF/412958-new-markets-tax-final.pdf</a>.

in a given census tract must be less than 0.80.<sup>5</sup> We use whether or not a census tract falls just above or just below this cutoff as exogenous variation to estimate the effect of the NMTC on business location decisions. Note that we do not know whether or not a specific business was allocated the tax credit, only if a business that located in a tract that was eligible to receive the credit. By comparing business activity in tracts that just qualify to receive the NMTC to those that just fail to qualify, we are able to control for unobserved local attributes. In addition, by focusing only on eligibility, not the actual allocation of the tax credit, we are also able to remove any concerns regarding endogenous selection of which businesses receive the tax credit.

To conduct our analysis, we use data from the Dun and Bradstreet (D&B) MarketPlace files from the second quarter of 2002, 2004, and 2006. We focus on those census tracts located in MSAs, as existing research has shown that there are fundamental differences in urban versus rural development (Stephens & Partridge, 2011; Rupasingha & Goetz, 2013; Stephens, Partridge, & Faggian, 2013).<sup>6</sup> In addition, approximately 91% of the investments that received the tax credit went to tracts in MSAs (Abravanel et al., 2013). The D&B data contains a wealth of information on establishments at the ZIP code level, including the SIC code of each business. In addition, the D&B data has information on how long each business has been open. Throughout the paper, we define a new business as an establishment that has been open for less than one year and an existing business as an establishment that has been open for four or more years.

When we estimate the effect of the NMTC on businesses across all MSA census tracts, we find that businesses are less likely to locate in those tracts that are eligible to receive the tax credit. However, businesses are likely to prefer to locate in areas with lower poverty rates and

<sup>&</sup>lt;sup>5</sup> We will discuss in detail the specifics of the NMTC program and the eligibility criteria later in the paper.

<sup>&</sup>lt;sup>6</sup> Also, while eligibility for the NMTC is primarily determined based on the median income of a tract, rural areas can qualify under a few additional criteria that were added in 2004. Rural census tracts can be eligible for the credit if there is high out-migration or if there have been significant population declines.

higher incomes, and these areas are not eligible for the NMTC. These higher income tracts are likely to have unobservable attributes that are substantially different from those low-income tracts that are eligible for the tax credit. To address this issue, we restrict the sample to those census tracts that are just above and just below the 0.80 income eligibility ratio. We focus first on those tracts that have an income eligibility ratio between 0.70 and 0.90, and then further restrict the sample to those with an eligibility ratio between 0.75 and 0.85.<sup>7</sup> Overall, we find that when we consider only those tracts near this 0.80 eligibility ratio, there is an increase in both new businesses and new business employment in the census tracts that are eligible for the NMTC in 2004 and 2006.

As mentioned earlier, the NMTC is a capital subsidy, so it is possible that the credit will have heterogenous effects across different industries. More specifically, the NMTC was allocated to firms primarily for capital expenditures, such as real estate and building space (Abravanel et al., 2013). When we stratify our results by industry, we find the effects on new employment seem to be most concentrated in services and FIRE. Given that FIRE includes real estate firms, this would be expected as one of the largest expenditures of the tax credit was real estate. In addition, it is not surprising that there is a notable effect on both FIRE and services, as the tax credit would have allowed these firms to obtain space to start their new business. We find some positive effect on the number of new establishments across all industries, except for construction. However, when we look at existing firms, we seen an increase in employment in existing construction. This result indicates that existing construction firms had to hire more workers to take on the additional projects created by the tax credit. Overall, our finding supports

 $<sup>^{7}</sup>$  We have run models further restricting the sample to be those tracts within 0.79 and 0.81 of the income eligibility ratio. Those results are consistent with what we presented before, but due to the decreased sample size tend to have larger standard errors. These results are available from the authors upon request.

existing work that has found that the impact of government programs varies based on whether the policy favors investment in capital or labor (Hanson & Rohlin, 2011b; Patrick, 2014).

The rest of the paper proceeds as follows. Section II describes in detail the specifics details of the NMTC program. Existing research on place-based tax programs and the NMTC in particular are discussed in Section III. Our empirical strategy is outlined in Section IV and in Section V we discuss our data. Section VI contains our results. We conclude and discuss policy implications in Section VII.

# II. The New Markets Tax Credit<sup>8</sup>

The Community Renewal Tax Relief Act of 2000 first established the NMTC program, and the tax credit has been renewed every year since implementation. While the program was established in 2000, the first tax credits were not allocated until 2003 (Freedman, 2012; Abravanel et al., 2013).<sup>9</sup> The goal of the NMTC program was to combine government and private funds to increase investment in low-income communities by \$15 billion over the next five years (Groves, 2006; Rubin & Stankiewicz, 2005). Although the NMTC program is similar to other location-based tax incentives, it is somewhat unique in that it aims to increase investment in 'risky' communities by using tax credits to mitigate some of concerns. However, the tax credit is not large enough to remove all risk and is likely to avoid overinvestment (Freedman 2012).

<sup>&</sup>lt;sup>8</sup> The information from this section, unless otherwise cited, comes from resources found at <u>www.cdfifund.gov.</u>
<sup>9</sup> Applications were accepted for the first year of the program beginning in July 2002. See <a href="http://www.cdfifund.gov/docs/2002\_NMTC\_NOAA.pdf">http://www.cdfifund.gov/docs/2002\_NMTC\_NOAA.pdf</a> for more information on when applications became available and when the applications were accepted.

The NMTC is allocated through a division of the U.S. Treasury department known as the Community Development Financial Institutions (CDFI) Fund.<sup>10</sup> The goal of the CDFI is to increase community development and economic opportunities for distressed areas within the United States. Since the inception of the NMTC, the CDFI fund has awarded roughly \$36.5 billion in tax credits through the program.<sup>11</sup> Table 1 provides information on the total amount allocated through the NMTC program from 2001 to 2012.

While firms could receive the NMTC for various types of investment, the majority of the funds went towards capital investments. The tax credit could be used for labor expenses, typically referred to as "business purposes," but this type of expenditure was infrequent. Given the requirements over time that firms had to meet to keep the tax credit, and the abundance of other tax credits available for labor purposes, most of the funds allocated through the NMTC went towards capital expenditures. According to Abravanel et al. (2013), 46% of the projects funded by the NMTC were used for office, retail, mixed use, or hotel development. The remaining projects were split up as follows: 22% to social services, educational, or cultural/arts use, 18% to manufacturing, industrial, or agricultural uses, 9% to health facilities, and 5% to housing. This breakdown of the expenditures of the program further demonstrates that the tax credit went towards more capital intensive expenditures.

The CDFI administers tax credit allocations to qualified Community Development Entities (CDEs) which then disperse the funds to private investments in targeted areas (Freedman 2012, Abravanel et al. 2013, Freedman 2013). CDEs consist of domestic corporations or partnerships that serve as intermediaries between investors and Low-Income Communities (LICs). In order to qualify as a CDE, a corporation or partnership must apply for certification

<sup>&</sup>lt;sup>10</sup> For more detailed information of the CDFI fund please see <u>http://www.cdfifund.gov/who\_we\_are/about\_us.asp</u>.

<sup>&</sup>lt;sup>11</sup> Specific statistics on the allocation of the tax credit were taken from the CDFI's website, <u>www.cdfifund.gov.</u>

through the U.S. Treasury's CDFI fund.<sup>12</sup> Only businesses listed as corporations or partnerships for federal tax purposes are eligible for CDE certification.<sup>13</sup> Once certified as a CDE by the CDFI fund, the certification remains valid for the lifetime of the business provided it continues to comply with specific requirements. The certification requirements detail only what is required to qualify as a CDE. Additional requirements and reports may be obligatory to receive the tax credit depending on the type and amount of investment a CDE receives.

To meet the certification requirements, the primary focus of a CDE must be to increase the amount of investment available to LICs. More specifically, at least 60 percent of the firm's financial activity is required to be directed to LICs.<sup>14</sup> In addition, qualification as a CDE is contingent upon community-resident representation on any advisory board within the organization (Freedman 2012). The purpose of the advisory board requirement is to ensure accountability to the residents of the LICs. CDEs accept qualified equity investments for use in low-income communities from private investors and in turn supply those investors with the NMTC funds. If awarded a NMTC allocation, individual investors receive a federal income tax credit totaling 39% of the initial investment over seven years.

When the NMTC program was initially created, a census tract could qualify as a LIC if it met one of two criteria. The first criteria is based on the median income of the tract. Non-MSA census tracts are eligible for LIC designation if the ratio of the census tract median family income (MFI) to state MFI is less than or equal to 80%. Census tracts located within an MSA qualify for LIC status if the ratio of the tract MFI to the larger of the state or MSA MFI, is less

<sup>&</sup>lt;sup>12</sup> For more information on the CDE certification process, please reference the CDE certification application found at <u>http://www.cdfifund.gov/docs/certification/CDE/CDE%20Certification%20Application\_01222013.pdf</u>

<sup>&</sup>lt;sup>14</sup> See <u>http://www.cdfifund.gov/docs/certification/CDE/CDEcertificationFAQs.pdf</u> for more information on the rules regarding the allocation of tax credits to census tracts.

than or equal to 80%. The second criteria under which a census tract could qualify is based on the poverty rate of the tract. Tracts with poverty rates of 20% or higher are designated as LICs. In 2004, a revision was made to the NMTC program that added two additional qualification criteria – the low-population criteria and the out-migration criteria. A tract qualifies on the lowpopulation criteria if it contained less than 2,000 people, is located within an empowerment zone, and is contiguous to at least one other LIC (Freedman, 2012; Abravanel et al., 2013). A tract qualifies on the migration criteria if it is located in a rural county with high out-migration, where high out-migration occurs if in the twenty years previous to the most recent census, the net outmigration from the county is at least 10% of the county's population at the beginning of the twenty year period.<sup>15</sup> This change allowed CDEs to invest in businesses that are not located in low-income areas if these businesses serve targeted populations, where targeted populations are individuals who lack adequate access to loans or credit opportunities.<sup>16</sup> Of all the census tracts that qualified as LICs, 98% qualify on the first two criteria listed above, and the remaining 2% qualify as either low-population or high out-migration tracts (Freedman, 2012).

## **Previous Research**

### Local Economic Development Policy and Business Location

State and local policy makers strive to attract new businesses, as these establishments are crucial drivers of growth for the U.S. economy. In 2005, approximately 3.5 million new jobs were created by new businesses, dramatically more than any other firm-age category (Haltiwanger et al., 2013). In order to help lagging areas within a jurisdiction, policy makers at all levels of

<sup>&</sup>lt;sup>15</sup> For a list of census tracts which qualify on the out-migration criteria please see http://www.cdfifund.gov/what we do/resources/ListofQualifyingNMTCCensusTractswithinHighMigrationRuralCo <sup>16</sup> See <u>www.cdfifund.gov</u> for more information on the different targeted populations.

government enact legislation that incentivizes new businesses to open in these struggling areas. This idea, known as "economic gardening," is emphasized by Neumark et al. (2007) who stated that "new firms contribute substantially to job creation."<sup>17</sup>

However, there are questions regarding the best way to set up incentives to attract new businesses to an area. Some argue that location-based programs are the optimal policy to incentivize businesses to locate in a specific area. Glaeser (2001) argues that attracting new businesses to an area will generate economic surplus for current residents in the targeted area. Furthermore, he suggests that offering location-based tax incentives may be justified as it compensates new businesses for future tax payments that will be made to the locality. This research is likely to be one of the reasons why policy makers at all levels of government offer location based tax incentives to attract new establishments to a specific jurisdiction.

Numerous papers have looked at the impact of various types of government policy on business location decisions. Kolko and Neumark (2008) use the National Establishment Time Series (NETS) database to track the movement of both businesses and employment into and out of California as a result of differences in state policy. Other researchers have used establishment level data to determine the impact of state tax policy on business location (Gabe & Bell, 2004; Rathelot & Sillard, 2008; Duranton, Gobillon, & Overman, 2011; Bruce & Deskins, 2012; Rohlin, Rosenthal, & Ross, 2014). Patrick (2014) created an index to capture the degree to which state constitutions are constructed in a manner that allows state governments to offer nontax incentives to attract new businesses. For a recent review of the methods used in this literature, see Arauzo-Carod et al. (2010).

<sup>&</sup>lt;sup>17</sup> There is an extensive literature estimating the effect and presence of agglomeration economics and the benefits to businesses of locating in areas with a large amount of economic activity (Arzaghi & Henderson, 2008; Duranton & Puga, 2004; Puga, 2010; Rosenthal & Strange, 2003; and Rosenthal & Strange, 2005).

## Sectorial Variation in Business Location

While an extensive literature has examined the relationship between firm location and local economic policy, it is possible that the effect of different programs varies based on the specifics of the policy and the degree to which the industry is labor or capital intensive. This relationship was formalized by Hanson and Rohlin (2011b) who examined the impact of Enterprise Zones (EZ) on where businesses located based on the industry of the establishment. The EZ program is a tax credit given to businesses to locate in struggling areas and to hire workers from that area, causing the program to be a tax credit on labor. Hanson and Rohlin (2011b) developed a theoretical model that showed that more labor intensive industries, such as retail and services, will be willing to bid more for land to locate in those areas that qualify for the EZ tax credit than more capital intensive industries, such as manufacturing. The results of their analysis support this theoretical model, and suggest that there are differential effects of the policy based on how capital or labor intensive the industry is.

Unlike the EZ program, the NMTC program is a tax credit given to businesses to make capital investments in targeted low-income communities. Therefore, our analysis builds off the work of Hanson and Rohlin (2011b) by testing if this capital tax credit also has a heterogenous effect across the different types of industries. We expect that a census tract that qualifies to receive the NMTC will likely attract those industries that are more capital intensive than those industries that are more labor intensive.<sup>18</sup> This prediction is consistent with the standard urban model, where the industry that values locating in a specific area the most will bid the highest for land in that jurisdiction.

<sup>&</sup>lt;sup>18</sup> Patrick (2014) looked at the impact of capital subsidies, versus tax credits, and found that effects of the subsidies varied across industries in a manner similar to our results.

## New Markets Tax Credit

First implemented in 2001, the NMTC has been renewed every year since it was enacted by Congress. Despite the overwhelming support for the program, little research exists examining the economic impact of this program. Gurley-Calvez et al. (2009) analyze whether there is an increase in new investment as a result of the NMTC or if investors simply reallocate investment intended for a non-qualifying tract into a qualifying tract. The authors use an instrumental variables approach to determine the effect of the policy and find that some new investments come from individual filers. However, they find that corporate filings, which comprise most of the NMTC recipients in their sample, are unlikely to represent new investment.<sup>19</sup>

Freedman (2012) examined the impact of the NMTC on the communities to which the tax credit was allocated. To address the endogenous selection process, he uses the income eligibility criteria as exogenous variation to determine whether the NMTC program caused improvements in the LICs to which the credit was utilized. Using census tract level data to examine several neighborhood outcomes, he finds that the NMTC program has some positive impacts for the targeted communities, such as reductions in the unemployment rate and poverty rate.

Freedman (2013) explores another possible avenue through which the NMTC could impact local jurisdictions – regional labor markets. Exploiting the same discontinuity in the income eligibility criteria, combined with data from the CDFI Fund and employment data from OnTheMap, Freedman (2013) examines whether NMTC eligibility affects the distribution of employment across residents of LICs. His results suggest that to the extent that new jobs are created in these targeted communities, few go to residents of the low-income areas that were

<sup>&</sup>lt;sup>19</sup> Rubin & Stankiewicz (2009) and Hicks & Faulk (2012) also provide evidence that the NMTC created investment in those areas that were eligible for the credit. However, their analysis did not address the endogenous selection of which investments receive the tax credit.

targeted. However, the findings do not account for the possibility of improvements in LICs as a result of the new investment through mechanisms other than employment effects.

We contribute to this growing literature and test whether or not the NMTC attracts new businesses to LICs. In addition, we look at how this effect varies across different types of industries, given that the NMTC is a capital investment tax credit and is likely to have a heterogenous effect across different types of businesses. Although previous studies examined the impact of the tax credit on new investment, employment, and neighborhood characteristics in the eligible communities, no studies to date have provided evidence of a relationship between NMTC eligibility and the creation of new businesses. Furthermore, no work thus far has used this capital tax credit to examine how the impact of the policy may vary across industrial sectors.

## **III.** Empirical Strategy

When estimating the effect of the NMTC on business location decisions, there are two selection processes that must be considered. First, businesses select locations based on various local attributes, many of which are unobservable. Second, not all applicants received the tax credit, so simply comparing those that received the credit to those that did not is problematic as businesses are likely to select locations based on their growth potential. To address these concerns, we draw upon a plausibly exogenously eligibility cutoff that determines whether or not a census tract is eligible to receive the NMTC. We do not consider whether or not a specific business received the tax credit, we only consider if more businesses locate in eligible versus ineligible tracts. Given that the goal of the program is for the NMTC recipients to drive future growth, the overall effect on the number of new establishments is important to consider.

As described above, to be eligible to receive the NMTC, the ratio of the median income in a given census tract to the state median income must be less than 0.80.<sup>20</sup> We draw upon this plausibly exogenous cut-off in eligibility for the tax credit and compare activity in tracts that were eligible to those that were ineligible. Using data on whether or not a census tract is eligible for the tax credit, we initially run the following regression across all MSA census tracts:

$$y_{ij2} - y_{ij1} = \beta_1 elig_i + \beta_i (X_{i2000}) + f(m) + \gamma_i + \delta_s + \varepsilon_{it}$$

Where *i* indicates a census tract, *j* indicates the two-digit SIC code, 2 designates the year following the enactment of the NMTC, which may be 2004 or 2006 and *I* designates 2002.  $y_{ij2} - y_{ij1}$  is the difference over time within a given census tract in the number of new business activity in a given industry, and  $X_{i2000}$  is a set of controls for other socio-economic attributes of the tract, including percent black, percent Hispanic, average age, average income, education measures, and percent female. We also include industry fixed effects,  $\gamma_j$ , at the two-digit SIC code and state fixed effects,  $\delta_s$ . Our variable of interest is *elig<sub>i</sub>*, which indicates whether or not a specific census tract is eligible for the NMTC. f(m) is a control function which allows for the relationship between the MFI and new businesses to be non-linear. We have experimented with multiple specifications of this control function, and the linear relationship was shown to be the best fit.<sup>21</sup>  $\varepsilon_{it}$  is an idiosyncratic error term.

However, when looking at where businesses locate, there are likely to be unobservable attributes of the local jurisdiction that affect where new enterprises open (Puga, 2010; Rosenthal

<sup>&</sup>lt;sup>20</sup> For tracts located in MSAs, eligibility is established based on the state median income or the MSA median income, whichever is lower. We account for this distinction in our analysis but for ease of discussion only mention the state median income in the text.

<sup>&</sup>lt;sup>21</sup> Using the AIC criteria, we determined that the linear specification was the best fit for the regression. We have experimented with higher order polynomials as well, and the results are consistent.

& Strange, 2003, 2005; Arzaghi & Henderson, 2008; Duranton & Puga, 2004). Businesses are likely to prefer areas that are growing over struggling or declining jurisdictions. Therefore, when we run the above regression for the entire sample, there are likely to be unobservable local attributes that are correlated with business location decisions that may bias our estimates.

To control for these unobservable variables, we draw upon a plausibly exogenous cutoff set by the government regarding eligibility for the NMTC program and compare census tracts that are just eligible for the tax credit to those that are just ineligible. By using this boundary, we are able to compare similar areas and control for unobserved attributes of the locality. Recall that for a tract to be eligible for the NMTC, the ratio of the median family income in that census tract to the state median family income has to be less than or equal to 0.80. We draw upon this cutoff in the income eligibility criteria and compare census tracts with an eligibility ratio just above and just below 0.80, as these areas are likely to have similar unobservable characteristics.<sup>22</sup> Initially, we restrict the sample to those tracts with a ratio between 0.75 and 0.85.<sup>23,24</sup>

Our identifying assumption is that prior to the change in policy, there was no systematic difference in those tracts just above and just below the 0.80 income eligibility cutoff. To justify this assumption, we need to show that there was nothing unique about the 0.80 cutoff prior to the policy change. While the law was passed in 2000, applications did not start being accepted until July 2002 and funds were not allocated until the beginning of 2003. Therefore, we use the

<sup>&</sup>lt;sup>22</sup> Similar boundary type regressions have been used in other applications in the literature, such as Holmes (1998), Levitt (1998), and Black (1999).

 $<sup>^{23}</sup>$  A tract can be eligible for the NMTC based on either the eligibility ratio or the poverty rate in the tract. However, few tracts qualify based on the poverty criteria alone. Freedman (2012) showed that approximately 70% of tracts that have a poverty rate between 15-20% qualify for the NMTC based on the income eligibility criteria. Therefore, since the poverty rate criterion does not appear to be the determining factor for eligibility in the NMTC, we focus only on the median income eligibility criteria.

<sup>&</sup>lt;sup>24</sup> Data on where the individual investments were made is not currently publically available. It is possible to obtain information on the address of the CDEs, but we are unable to determine which tracts the investments were made.

second quarter of 2002 as our pre-period, as it is unlikely new businesses formed as a result of the tax credit until after they were allocated the credit.<sup>25</sup> Looking close to the 0.80 boundary in 2002, we show in Figure 1a that there is nothing unique about this boundary, as the number of employees from new establishments appears to be continuous across the boundary. However, in Figures 1b and 1c, we look at this same portion of the income eligibility ratio in 2004 and 2006. We see that in those years, there is a clear jump in the number of new employment at this boundary, suggesting that this policy did have an effect on the relative attractiveness of one side of the boundary relative to the other.

# IV. Data

We use two primary data sets for our analysis. First, we use 2000 Census data to control for local attributes of each census tract. Because eligibility for the NMTC was determined in 2000, we use this year of the decennial census to create our eligibility ratio. Table 2a presents the year 2000 summary statistics for tracts that were eligible to receive the NMTC as well as those that were ineligible. As we can see, these two groups are substantially different across many observable characteristics. Those tracts that are eligible for the tax credit tend to have significantly higher unemployment rates, higher percentage of the tract that is black and Hispanic, lower average income, and lower educational levels. Therefore, looking at the entire sample of tracts that are eligible versus those that are not is likely to produce biased estimates, as there are likely to be unobservable attributes of the neighborhoods that may affect the decisions of business owners.

To address this concern regarding unobservable local attributes, we utilize a regression discontinuity research design. We compare tracts that are just above the 0.80 income eligibility

<sup>&</sup>lt;sup>25</sup> As a robustness check, we use 1994 as our pre-period later in the paper and the results are consistent.

ratio to those that are just below the cutoff. In Table 2b, we compare those tracts that have a ratio of 0.70 to 0.80 and those tracts with a ratio of 0.80 to 0.90. As shown in this table, these tracts have similar observable attributes than the full sample, suggesting that by focusing on tracts right near the income eligibility ratio boundary, we are better able to control for unobserved local attributes that may bias our results.

The second data set used is the Dun and Bradstreet (D&B) Marketplace files for the second quarter of 2002, 2004, and 2006.<sup>26</sup> This data is collected by Dun and Bradstreet and was obtained aggregated to the ZIP code level. We convert the ZIP code level data to year 2000 census tract geography using GIS software.<sup>27</sup> We transform the D&B data to the tract level because census tract median income is the criteria used to determine eligibility for the NMTC program. The D&B data contains a wealth of information on businesses. This includes detailed information on the industry to which each establishment belongs (based on the establishment's Standard Industrial Code), the number of employees, how long the business has been in operation, and sales information.<sup>28</sup>

Table 3a provides summary statistics of new and existing business activity in 2002 in all eligible tracts versus all ineligible tracts. The first two rows contain the mean and standard deviation for businesses in all industries, then we stratify the new and existing businesses by industry type – construction, manufacturing, transportation wholesale, retail, FIRE (financial, insurance, real estate), and services. As we can see, the tracts that are not eligible for the NMTC

<sup>&</sup>lt;sup>26</sup> The D&B data includes nearly all establishments apart from part-time schedule-C filers. The data have been used in a number of studies including Rosenthal and Strange (2001, 2003, 2005) and Rosenthal and Ross (2010). Kolko and Neumark (2010) and Kolko (2012) use a panel version of the data referred to as the National Establishment Time-Series (NETS) that was jointly developed by Don Walls and Dun and Bradstreet.

<sup>&</sup>lt;sup>27</sup> To make such a conversion, we assume that the businesses within a given ZIP code are uniformly distributed throughout the area.

<sup>&</sup>lt;sup>28</sup> The D&B data includes information on employees working within an establishment. However, for many businesses the employment data is not reported and appears as a zero. For this reason, we focus on the number of establishments throughout this paper versus using the employment data.

have more business activity in general than those that are eligible across all industries, as well as for each specific industry. This suggests that the benefits of agglomeration between the eligible and ineligible census tracts are likely to be different and thus the groups are not comparable.

Just like with Table 2b, in Table 3b we restrict our sample to those tracts with an income eligibility ratio between 0.70 and 0.90. When we restrict our sample to just those tracts that are slightly above the income eligibility cutoff to those that are slightly below the cutoff, we see that these tracts are more similar regarding the number of new and existing businesses prior to the allocation of the NMTC. The pattern is consistent when we consider all industries, as well as when we focus on each industry separately. Overall, the summary statistics in Tables 2a and 3a suggest that comparing all eligible tracts to all ineligible tracts is likely to be confounded by unobservable attributes. When we restrict our sample to those tracts just above and just below the eligibility ratio, as we do in Tables 2b and 3b, we have a set of census tracts that appear relatively similar and are more likely to be comparable to one another.

### V. Results

### Impact of the NMTC on New Employment and Businesses

We begin by looking at the impact of eligibility for the NMTC on new business activity. Throughout this discussion, we will define a new business as an establishment that has been open for less than one year. As mentioned earlier, we do not have information on whether or not a specific business received the tax credit. Therefore, we only use whether or not a given tract is eligible for the NMTC as exogenous variation in where new businesses locate. While the decision of which investment projects receive the tax credit is subject to a political process that may be endogeneous, eligibility for the NMTC, which is based on census tract characteristics, is likely to be exogenous.

We first consider all census tracts in located within MSAs in the United States. Results using the change in new employment as the dependent variable are presented in Table 4a, while the results using new firms as the dependent variable are in Table 4b. Panel A contains the results using 2004 as the post period, the year right after the NMTC allocations were first distributed. Panel B provides estimates of the effect of the policy change over a longer period, looking at the change from 2002 to 2006. Standard errors are clustered at the MSA level and are reported in parenthesis under each coefficient. All models include neighborhood controls, as well as fixed effects for the two-digit SIC code and state fixed effects.<sup>29</sup>

When we consider all census tracts that are located in an MSA, we find a negative and statistically significant effect of the NMTC on the number of new businesses and new employment, suggesting that the tax incentive deters businesses from locating in eligible areas. However, as mentioned earlier there are issues regarding unobservable differences between high-income tracts and low-income tracts that are likely to bias the estimates. Therefore, we restrict the sample to those census tracts located in an MSA that are close to the income eligibility ratio, specifically those with an income eligibility ratio between 0.70 and 0.90 and 0.75 and 0.85.

When we restrict the sample to those tracts near the eligibility cutoff, we find some evidence that the NMTC has a positive effect on the number of new firms and new employment in 2004 and 2006.<sup>30</sup> We see consistent positive effects of the policy on new employment, though

<sup>&</sup>lt;sup>29</sup> The neighborhood attributes included as controls are percent female, percent black, percent Hispanic, average age, measures of educational attainment, average income, unemployment rate, and the percent of households that have a female head of household and children. All of these variables are at the census tract level.

<sup>&</sup>lt;sup>30</sup> One other concern is that the 2000 decade had a decline in business activity, followed by a period of growth, which then turned into a recession later in the decade. Given our identification strategy, we are comparing tracts that are eligible for the tax credit to those that are not eligible for the tax credit in a given year. Therefore, as long as any shocks to the economy affect these tracts in a similar manner, then such business cycle trends will not bias our estimates. While this is likely to be a concern when looking at all census tracts, it is less likely this is driving our results when we are comparing those tracts that are just eligible to those that are just ineligible.

we only have statistically significance when the eligibility ratio is between 0.70 and 0.90 in 2004 and between 0.75 and 0.85 in 2006. Overall, our results suggest that the NMTC increased in employment at new firms in those areas close to the eligibility ratio.

Table 4b contains our results regarding the number of new firms after the policy was implemented. As before, we find the negative effect for the entire sample, which is not surprising given the likelihood that we have unobserved variables present when considering all tracts. When we focus on those areas close to the boundary, we find positive and statistically significant increases in the number of new firms within 0.70 and 0.90 of the eligibility ratio. However, when we look closer to the cutoff at 0.75 to 0.85, we have similar coefficients but the standard errors have increased so we no longer obtain statistically significant results. Overall, our findings thus far are consistent with the policy having a positive impact on those census tracts that are close to the 0.80 eligibility ratio cutoff.

#### Impact of the NMTC by Industry Type

Next, we consider how the impact of the tax credit varies across different types of industries. As noted above, the NMTC was used primarily for capital investments, such as office renovations and investments in capital equipment. As has been shown previously by Hanson and Rohlin (2013) and Patrick (2014), taxes and subsidies do not necessarily have the same effect across all industries. The effect of a policy is likely to vary across sectors, specifically if the policy provides a larger benefit to more capital intensive or labor intensive industries. Given that the NMTC was primarily utilized for capital investment, we expect the policy to attract new firms from industries that are likely to require initial capital start-up funds.

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Looking first at the effect on employment at new firms located in census tracts with an eligibility ratio between 0.70 and 0.90 in Table 5a, we find positive and statistically significant effects in both 2004 and 2006 on FIRE and services. Given that a large portion of the funds allocated through the NMTC went towards office space and real estate, the positive effect on FIRE is expected. We also find a positive effect on services, which is likely due firms being able to acquire additional office space which allows firms to hire more employees. When we look at areas within 0.75 and 0.85 of the eligibility ratio in Table 5b, we still find a positive effect on services and FIRE. In addition, we find a significant positive effect on manufacturing in 2006, which is consistent with the tendency for these subsidies to go towards capital investment.

Tables 6a and 6b follow the same structure as Tables 5a and 5b but use the change in the number of new firms as the dependent variable. We find that in 2004 and 2006 there is a positive impact of the policy across all industries, and the coefficients are generally always statistically significant in the 0.70 to 0.90 eligibility ratio range. When we look closer to the cutoff at 0.75 to 0.85, we find positive effects in manufacturing, retail, FIRE, and services, which again is consistent with where the funds from the program were allocated. Combining these results with the employment results, this suggests that firms in all industries were able to use the funds towards capital investment, but this did not necessarily lead to increases in new employment at these firms.

### Impact of the NMTC on Existing Employment

Next, we examine the impact of the NMTC on existing employment.<sup>31</sup> The goal of the NMTC

<sup>&</sup>lt;sup>31</sup> We have also run all these regressions using the number of existing firms. The results are consistent using existing employment and existing firms as the dependent variable. Since we primarily care about employment effects, we choose to only show these results only to streamline the discussion. If interested in the firm results for existing businesses, please contact the authors.

was to incentivize investors to allocate more investment funds in lower income census tracts. The investments could be directed towards new establishments, but the credits could also be used for capital investment for existing businesses as well, where we define an existing business as one that has been open for at least four years. Therefore, it is possible that the NMTC has an effect on existing businesses through increased capital investment in these establishments.

In Table 7, we look at the effect of eligibility for the NMTC on existing employment. We see that when we have all census tracts, the effect is negative, but not statistically significant. When we focus on just those tracts close to the boundary, we find positive effects, but we are not finding statistically significant effects. This suggests that while the NMTC could have been used towards existing firms, it appears that the money had the strongest effect on attracting new firms versus affecting the activities of existing establishments.

In Tables 8a and 8b, we look at the effect of the tax credit by industry. Looking first at those tracts between 0.70 and 0.90, we find positive and statistically significant increases in construction and retail employment. The positive effect on construction is consistent with the capital tax credit leading to new building investments. If the funds went primarily to capital investments, then firms will likely need to undergo some form of construction, causing the employment levels at existing construction firms to increase. Retail also experiences an increase. One possible explanation for this is that retail includes eating and drinking places, as well as hardware stores. The expansion of hardware stores would be consistent with expansions related to construction companies. Employment at existing eating and drinking places may have expanded as a result of the additional new firms from the NMTC, given that there will now be higher demand for places to eat lunch and obtain these types of services as more and more new firms open in the area.

In Table 8b, we look at the effect across industries even closer to the boundary at 0.75 to 0.85. Here, we continue to find the positive effect on retail employment, but also FIRE. This effect on employment in FIRE would be consistent with new firms needing the services of these industries, such as financial planning and investment. We also find a positive effect on manufacturing employment in 2006, suggesting that the effect of the tax credit may have caused these manufacturing plants to expand over a longer time period.

## Using 1994 as the Pre-Year

While applications for the NMTC were not accepted until July of 2002, because the legislation was passed in 2000 there may be concerns that 2002 is not the appropriate pre-policy change year. To address this concern, we consider the effect of the NMTC using 1994 as the pre-policy change year and 2002, 2004, and 2006 as the post-policy change years. Because the D&B survey started in the early 1990s, there were some issues initially regarding the employment numbers.<sup>32</sup> For that reason, we focus on the effect of the NMTC on new establishments.

Table 9 contains the results of the impact of the NMTC on the change in new firms using 1994 as the base year. We find the same negative and statistically significant effect across all tracts, consistent with the selection issue we have argued is present throughout the paper. We find a positive and statistically significant effect when we only consider those tracts between 0.70 and 0.90 of the eligibility ratio, consistent with the results we found earlier in the paper. We continue to find a positive effect when we restrict the sample to be even closer to the boundary at 0.75 and 0.85, but these coefficients are not statistically significant.

When we consider the results across industries, we continue to find the strong positive

 $<sup>^{32}</sup>$  In 1994, there were 831 tracts that reported having at least one new firm but no new employees. In 2002, there were no tracts with this reporting problem, and in 2004 and 2006 there were 3 and 4 respectively. For this reason, we are not confident in the employment numbers in 1994, and therefore focus only on the firm results.

effects in FIRE and services in the 0.70 to 0.90 band, as is shown in Table 10a. In Table 10b, when we look even closer to the boundary near 0.75 and 0.85, we do not find much in terms of statistical significance, except a strong positive effect on manufacturing in 2006. This is consistent with our prior that it would take manufacturing firms a little more time to start up after receiving the tax credit. Overall, our findings using 1994 as the pre-period year are consistent with the other results presented earlier in the paper.

## VI. Conclusions and Policy Implications

In this paper, we examined the effect of the New Markets Tax Credit on new businesses and employment levels at these new establishments. However, there are selection issues that must be addressed when considering the effect of the policy on local jurisdictions. First, when firms choose where to open their new enterprise, as there are likely to be unobservable attributes of the neighborhood driving decisions. Second, not all firms that applied for the NMTC received the credit, so there may be issues regarding which firms are selected to receive the tax credit. To address these concerns, we use a regression discontinuity design and a differencing strategy to compare census tracts just on either side of a plausibly exogenous eligibility ratio. By utilizing this exogenous cutoff, we obtain causal estimates of the effect of the NMTC on the location decisions of new businesses.

When we focus only on tracts located in MSAs near the income eligibility ratio, we find that NMTC eligibility attracts new businesses and new employment to these areas in 2004 and 2006. When we stratify our results by industry, we find the effects on new employment seem to be most concentrated in services and FIRE. This is consistent with the tendency for the tax credit to be utilized primarily for capital expenditures. We find positive effects on the number of

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new establishments across all industries, except for construction. Taken together, this suggests that the policy allowed new firms to open in eligible areas, but there were limited employment effects across the different industries. In addition, we found an increase in employment in existing construction. This result indicates that existing construction firms had to hire more workers to take on the additional projects created by the tax credit.

Overall, our finding supports existing work that has found that the impact of government programs varies based on whether the policy favors investment in capital or labor (Hanson & Rohlin, 2011b; Patrick, 2014). This result is consistent with the existing literature that examines how the effect of policy varies across industries (Hanson & Rohlin, 2011b; Patrick, 2014). Given that the NMTC is a tax credit that was used primarily for capital investment, we expect the more capital intensive projects to locate in those areas that are eligible. This is what we find, as most of the funds were allocated towards real estate and office space and we find the strongest and most consistent effects on those types of firms in these industries. Additional research should consider this sorting behavior further, particularly with regards to obtaining additional years of data after the implementation of the tax credit to determine the long-run effects of the program.

The goal of the NMTC was to increase investment in struggling areas, with the hope that this investment will attract more businesses and spur growth. Overall, we find evidence that the program was successful in attracting business activity to these low-income areas. However, it should be noted that our findings are only applicable to those tracts that are close to these 0.80 eligibility ratio cutoff and cannot necessarily be generalized to those tracts that are not near this boundary. It is possible that there are spillover and sorting effects present. Future work should consider the spillover effects of the program on different areas.

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Figure 1a: Average Number of New Employment in 2002 over the Eligibility Ratio



Figure 1b: Average Number of New Employment in 2004 over the Eligibility Ratio



Figure 1c: Average Number of New Employment in 2006 over the Eligibility Ratio



Year	Total Allocation
2001-2002	\$2,485,699,042.00
2003-2004	\$3,493,786,205.00
2005	\$1,964,830,000.00
2006	\$4,099,765,000.00
2007	\$3,893,000,000.00
2008	\$4,965,000,000.00
2009	\$5,000,000,000.00
2010	\$3,475,000,000.00
2011	\$3,622,919,753.00
2012	\$3,500,000,000.00

**Table 1: Total NMTC Allocations** 

Notes: The information on the allocations was obtained from the CDFI website, http://www.cdfifund.gov/docs/nmtc/2014/NMTCQEI\_Report\_042014.pdf. During the first two years of the program, although Congress provided allocations to the program, no allocations were to CDEs until 2003 as start-up tasks delayed the process. The allocations awarded to the NMTC program by Congress in 2001 and 2002 were combined and awarded by the CDFI fund to CDEs in 2003. The allocations awarded to the NMTC program in 2003 and 2004 were then combined and dispersed to CDEs in 2004. See http://www.gao.gov/new.items/d07296.pdf for more information on the allocations awarded.

	Eligible Tracts		Ineligib	le Tracts
	Mean	Std. Dev.	Mean	Std. Dev.
Percent Female	51.00%	0.060	51.00%	0.035
Percent Black	26.97%	0.324	8.39%	0.157
Percent Hispanic	18.87%	0.265	8.24%	0.131
Average Age	34.47	5.581	37.00	4.671
Percent Some HS	20.31%	0.078	10.51%	0.059
Percent HS Graduate	33.06%	0.098	29.97%	0.112
Percent Some College	19.49%	0.073	23.44%	0.064
Percent College Graduate	12.68%	0.104	30.38%	0.182
Tract Average Income	39,547	9,354	73,149	3,329
Percent Unemployed	10.60%	0.079	4.57%	0.035

Table 2a: 2000 Census Tract Summary Statistics

	Ratio between 0.70 and 0.80		Ratio between	n 0.80 and 0.90
	Mean	Std. Dev.	Mean	Std. Dev.
Percent Female	50.90%	0.041	50.97%	0.034
Percent Black	16.66%	0.247	11.20%	0.191
Percent Hispanic	12.87%	0.207	12.27%	0.187
Average Age	36.20	4.848	36.82	4.647
Percent Some HS	17.17%	0.059	15.01%	0.053
Percent HS Graduate	36.06%	0.091	35.97%	0.091
Percent Some College	21.29%	0.066	22.35%	0.062
Percent College Graduate	14.49%	0.091	17.38%	0.099
Tract Average Income	45,245	7,214	51,104	8,027
Percent Unemployed	7.42%	0.042	6.18%	0.037

Table 2b: 2000 Census Tract Summary Statistics

	Eligib	le Tracts	Ineligib	le Tracts
	Mean	Std. Dev.	Mean	Std. Dev.
All New Businesses	2.696	5.337	5.2611	7.032
All Existing Businesses	126.484	237.100	217.290	253.26
New Construction	0.276	0.620	0.615	1.013
Existing Construction	9.762	20.315	21.332	26.697
New Manufacturing	0.179	0.550	0.346	0.618
Existing Manufacturing	7.286	19.867	12.236	19.609
New Transportation	0.122	0.348	0.207	0.409
Existing Transportation	4.513	10.654	6.926	10.301
New Wholesale	0.153	0.539	0.270	0.554
Exiting Wholesale	7.752	26.676	12.454	22.616
New Retail	0.648	1.085	1.103	1.475
Existing Retail	27.851	38.889	43.455	45.584
New FIRE	0.168	0.472	0.386	0.702
Existing FIRE	10.850	27.825	20.459	29.641
New Services	1.091	2.383	2.200	2.132
Existing Services	56.630	105.411	96.070	113.977

**Table 3a: 2002 Business Summary Statistics** 

	Ratio betwee	n 0.70 and 0.80	Ratio between	n 0.80 and 0.90
	Mean	Std. Dev.	Mean	Std. Dev.
All New Businesses	3.135	5.113	3.710	5.098
All Existing Businesses	145.104	190.498	170.422	187.841
New Construction	0.371	0.701	0.452	0.829
Existing Construction	13.102	17.845	16.552	20.053
New Manufacturing	0.212	0.521	0.252	0.475
Existing Manufacturing	8.521	15.651	9.943	13.865
New Transportation	0.149	0.371	0.168	0.343
Existing Transportation	5.363	10.306	6.062	8.018
New Wholesale	0.169	0.555	0.184	0.433
Exiting Wholesale	8.508	22.372	9.491	15.826
New Retail	0.750	1.069	0.886	1.226
Existing Retail	32.307	35.107	37.830	40.066
New FIRE	0.183	0.417	0.219	0.448
Existing FIRE	12.260	20.405	14.552	18.756
New Services	1.221	2.332	1.448	2.113
Existing Services	62.388	81.489	72.630	90.947

Table 3b: 2002 Business Summary Statistics

		Eligibility Ratio	Eligibility Ratio					
	Entire Sample	0.70 to 0.90	0.75 to 0.85					
	Panel A: 2002 Q2 to 2004 Q2							
NMTC Qualified	-0.021**	0.051***	0.013					
Census Tract	(0.008)	(0.018)	(0.030)					
Controls	Yes	Yes	Yes					
Fixed Effects	Yes	Yes	Yes					
Observations	5,871,385	898,157	443,444					
R-squared	0.000	0.001	0.002					
	Panel B: 2002 Q	2 to 2006 Q2						
NMTC Qualified	-0.057	0.041	0.066**					
Census Tract	(0.045)	(0.042)	(0.033)					
Controls	Yes	Yes	Yes					
Fixed Effects	Yes	Yes	Yes					
Observations	5,874,040	899,042	443,916					
R-squared	0.000	0.001	0.001					
Standard errors are clust	ered at the MSA lev	el and are reported in	parentheses. ***,					
**, and * denote p<0.01, p<0.05, and p<0.1, respectively. Only tracts located within								
an MSA are included in this table. State and industry fixed effects are included in								
the regressions. Control variables include the percent of the population that is								

**Table 4a**: Effect of New Market Tax Credit Qualification Status on the Change in

 New Employment in Census Tracts in MSAs

\*\*, and \* denote p<0.01, p<0.05, and p<0.1, respectively. Only tracts located within an MSA are included in this table. State and industry fixed effects are included in the regressions. Control variables include the percent of the population that is female, the percent of the population that is black, the percent of the population that is Hispanic, the average age of the population, the percent of the population without a high school diploma, the percent of the population with some college, the percent of the population with a college degree, the average income, the unemployment rate, and the percent of female headed households with children within the tract.

		Eligibility Ratio	Eligibility Ratio				
	Entire Sample	0.70 to 0.90	0.75 to 0.85				
Panel A: 2002 Q2 to 2004 Q2							
NMTC Qualified	-0.006***	0.007***	0.007				
Census Tract	(0.001)	(0.002)	(0.005)				
Controls	Yes	Yes	Yes				
Fixed Effects	Yes	Yes	Yes				
Observations	5,871,385	898,157	443,444				
R-squared	0.095	0.059	0.063				
	Panel B: 2002 Q	2 to 2006 Q2					
NMTC Qualified	-0.009***	0.009***	0.008				
Census Tract	(0.001)	(0.002)	(0.006)				
Controls	Yes	Yes	Yes				
Fixed Effects	Yes	Yes	Yes				
Observations	5,874,040	899,042	443,916				
R-squared	0.101	0.078	0.085				
Standard errors are cluste	ered at the MSA leve	el and are reported in	parentheses. ***,				
**, and * denote p<0.01,	p<0.05, and p<0.1,	respectively. Only tra	acts located within				
an MSA are included in this table. State and industry fixed effects are included in the							
regressions. Control variables include the percent of the population that is female, the							
percent of the population	that is black, the pe	rcent of the populatio	n that is Hispanic,				
the average age of the po	the average age of the population, the percent of the population without a high school						

**Table 4b**: Effect of New Market Tax Credit Qualification Status on the Change in

 New Firms in Census Tracts in MSAs

diploma, the percent of the population with some college, the percent of the population with a college degree, the average income, the unemployment rate, and the percent of female headed households with children within the tract.

	Constr	Manufact	Transport	Wholesale	Retail	FIRE	Services
Panel A: 2002 Q2 to 2004 Q2							
NMTC Qualified	0.108*	0.005	0.017	0.065	0.045**	0.035*	0.128***
Census Tract	(0.061)	(0.022)	(0.034)	(0.044)	(0.017)	(0.019)	(0.045)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	45,669	304,460	60,892	30,446	121,784	106,561	213,122
R-squared	0.008	0.001	0.001	0.002	0.001	0.001	0.004
		Panel E	B: 2002 Q2 t	o 2006 Q2			
NMTC Qualified	0.044	-0.014	0.026	-0.006	0.023	0.038*	0.140*
Census Tract	(0.034)	(0.107)	(0.016)	(0.066)	(0.015)	(0.023)	(0.071)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	45,714	304,760	60,952	30,476	121,904	106,666	213,332
R-squared	0.021	0.001	0.002	0.003	0.001	0.001	0.001
Standard errors are clustered at the MSA level and are reported in parentheses. ***, **, and *							
denote p<0.01, p<0	).05, and p	<0.1, respec	tively. Elig	ibility ratio c	utoff of 0.	70 to 0.90	included
in all columns in this table. State and industry fixed effects are included in the regressions.							
Control variables include the percent of the population that is female, the percent of the							
population that is black, the percent of the population that is Hispanic, the average age of the							
population, the percent of the population without a high school diploma, the percent of the							

population with some college, the percent of the population with a college degree, the average income, the unemployment rate, and the percent of female headed households with children

within the tract.

**Table 5a**: Effect of New Market Tax Credit Qualification Status on the Change in New Employment in a Census Tract with an Eligibility Ratio between 0.70 and 0.90 Classified by Industry.

•							
	Constr	Manufact	Transport	Wholesale	Retail	FIRE	Services
Panel A: 2002 Q2 to 2004 Q2							
NMTC Qualified	-0.181	-0.033	-0.069	-0.111	0.068*	0.043	0.126*
Census Tract	(0.229)	(0.055)	(0.081)	(0.166)	(0.040)	(0.040)	(0.064)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,548	150,320	30,064	15,032	60,128	52,612	105,224
R-squared	0.017	0.001	0.001	0.002	0.001	0.002	0.006
		Panel B	: 2002 Q2 to	o 2006 Q2			
NMTC Qualified	0.027	0.045***	0.002	0.105**	0.020	0.036**	0.159
Census Tract	(0.057)	(0.015)	(0.020)	(0.047)	(0.039)	(0.014)	(0.121)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,572	150,480	30,096	15,048	60,192	52,668	105,336
R-squared	0.026	0.001	0.008	0.010	0.002	0.012	0.004
Standard errors are	clustered a	at the MSA l	level and are	reported in j	parenthese	S. ***, **	, and *
denote $p<0.01$ , $p<0.05$ , and $p<0.1$ , respectively. Eligibility ratio cutoff of 0.70 to 0.90 included							

**Table 5b**: Effect of New Market Tax Credit Qualification Status on the Change in New Employment in a Census Tract with an Eligibility Ratio between 0.75 and 0.85 Classified by Industry.

	Constr	Manufact	Transport	Wholesale	Retail	FIRE	Services
		Pane	el A: 2002 Q2	2 to 2004 Q2			
NMTC Qualified	0.012*	0.001**	0.001	0.011**	0.008***	0.004***	0.015***
Census Tract	(0.006)	(0.001)	(0.002)	(0.004)	(0.003)	(0.001)	(0.004)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	45,669	304,460	60,892	30,446	121,784	106,561	213,122
R-squared	0.066	0.009	0.028	0.024	0.049	0.038	0.058
		Pane	el B: 2002 Q2	2 to 2006 Q2			
NMTC Qualified	0.011	0.002***	0.006**	0.014***	0.011***	0.008***	0.017***
Census Tract	(0.009)	(0.001)	(0.003)	(0.004)	(0.004)	(0.002)	(0.005)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	45,714	304,760	60,952	30,476	121,904	106,666	213,332
R-squared	0.075	0.021	0.030	0.029	0.048	0.049	0.078
Standard errors are clustered at the MSA level and are reported in parentheses. ***, **, and * denote							
p<0.01, p<0.05, and p<0.1, respectively. Eligibility ratio cutoff of 0.70 to 0.90 included in all							
columns in this table. State and industry fixed effects are included in the regressions. Control							
variables include the percent of the population that is female, the percent of the population that is							

**Table 6a**: Effect of New Market Tax Credit Qualification Status on the Change in New Firms in a Census Tract with an Eligibility Ratio between 0.70 and 0.90 Classified by Industry.

	Constr	Manufact	Transport	Wholesale	Retail	FIRE	Services
		Panel	! A: 2002 Q2	to 2004 Q2			
NMTC Qualified	0.012	0.001	-0.001	0.002	0.010*	0.004**	0.017*
Census Tract	(0.014)	(0.001)	(0.007)	(0.017)	(0.005)	(0.002)	(0.010)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,548	150,320	30,064	15,032	60,128	52,612	105,224
R-squared	0.071	0.012	0.034	0.031	0.054	0.043	0.061
		Panel	B: 2002 Q2	to 2006 Q2			
NMTC Qualified	0.017	0.003***	0.003	0.014	0.016***	0.004	0.011
Census Tract	(0.018)	(0.001)	(0.008)	(0.010)	(0.006)	(0.005)	(0.015)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,572	150,480	30,096	15,048	60,192	52,668	105,336
R-squared	0.081	0.023	0.040	0.034	0.052	0.055	0.085
Standard errors are clustered at the MSA level and are reported in parentheses. ***, **, and * denote							
p<0.01, p<0.05, and p<0.1, respectively. Eligibility ratio cutoff of 0.70 to 0.90 included in all							

**Table 6b**: Effect of New Market Tax Credit Qualification Status on the Change in **NEW** Firms in a Census Tract with an Eligibility Ratio between 0.75 and 0.85 Classified by Industry.

		Eligibility Ratio	Eligibility Ratio			
	Entire Sample	0.70 to 0.90	0.75 to 0.85			
	Panel A: 2002 Q	2 to 2004 Q2				
NMTC Qualified	-0.358	0.623	1.889			
Census Tract	(0.418)	(1.465)	(1.447)			
Controls	Yes	Yes	Yes			
Fixed Effects	Yes	Yes	Yes			
Observations	5,948,429	911,834	450,477			
R-squared	0.017	0.010	0.015			
	Panel B: 2002 Q	2 to 2006 Q2				
NMTC Qualified	-0.477	0.867	2.022			
Census Tract	(0.408)	(1.292)	(1.376)			
Controls	Yes	Yes	Yes			
Fixed Effects	Yes	Yes	Yes			
Observations	5,948,429	911,834	450,477			
R-squared	0.015	0.009	0.012			
Standard errors are cluste	ered at the MSA leve	el and are reported in	parentheses. ***,			
**, and * denote p<0.01, p<0.05, and p<0.1, respectively. Only tracts located within						

**Table 7**: Effect of New Market Tax Credit Qualification Status on the Change in

 Existing Employment in Census Tracts in MSAs

	Constr	Manufact	Transport	Wholesale	Retail	FIRE	Services	
Panel A: 2002 Q2 to 2004 Q2								
NMTC Qualified	2.372**	0.165	0.496	0.781	1.401***	-0.274	0.904	
Census Tract	(1.125)	(1.544)	(0.701)	(2.175)	(0.513)	(2.360)	(2.303)	
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Observations	45,981	306,540	61,308	30,654	122,616	107,289	222,119	
R-squared	0.018	0.003	0.005	0.006	0.022	0.003	0.012	
		Panel E	B: 2002 Q2 t	o 2006 Q2				
NMTC Qualified	2.323**	0.108	0.444	1.391	1.296**	0.855	1.446	
Census Tract	(1.065)	(1.577)	(0.674)	(2.071)	(0.596)	(1.376)	(2.038)	
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Observations	45,981	306,540	61,308	30,654	122,616	107,289	222,119	
R-squared	0.021	0.003	0.004	0.007	0.015	0.003	0.013	
Standard errors are	e clustered	at the MSA	level and ar	e reported in	parentheses	8. ***, **,	and *	
denote p<0.01, p<0.05, and p<0.1, respectively. Eligibility ratio cutoff of 0.70 to 0.90 included								
in all columns in this table. State and industry fixed effects are included in the regressions.								
Control variables include the percent of the population that is female, the percent of the								
population that is black, the percent of the population that is Hispanic, the average age of the								
population, the percent of the population without a high school diploma, the percent of the								
population with some college, the percent of the population with a college degree, the average								
income, the unemployment rate, and the percent of female headed households with children								

within the tract.

**Table 8a**: Effect of New Market Tax Credit Qualification Status on the Change in Existing Employment in a Census Tract with an Eligibility Ratio between 0.70 and 0.90 Classified by Industry.

	Constr	Manufact	Transport	Wholesale	Retail FIRE		Services		
Panel A: 2002 Q2 to 2004 Q2									
NMTC Qualified	1.363	1.099	0.675	2.581	2.188**	2.479**	2.992		
Census Tract	(3.553)	(0.704)	(0.954)	(3.360)	(1.050)	(1.194)	(3.586)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	22,716	151,440	30,288	15,144	60,576	53,004	109,737		
R-squared	0.030	0.002	0.007	0.010	0.038	0.004	0.023		
		Panel B:	• 2002 Q2 to	2006 Q2					
NMTC Qualified	2.012	1.206**	1.423**	2.299	2.378**	3.284*	2.580		
Census Tract	(2.215)	(0.575)	(0.645)	(3.375)	(1.055)	(1.756)	(3.526)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	22,716	151,440	30,288	15,144	60,576	53,004	109,737		
R-squared	0.036	0.002	0.008	0.013	0.016	0.005	0.024		

**Table 8b**: Effect of New Market Tax Credit Qualification Status on the Change in Existing Employment in a Census Tract with an Eligibility Ratio between 0.75 and 0.85 Classified by Industry.

		Eligibility Ratio	Eligibility Ratio
	Entire Sample	0.70 to 0.90	0.75 to 0.85
	Panel A: 1994 Q	2 to 2002 Q2	
NMTC Qualified	-0.012***	0.010**	0.010
Census Tract	(0.003)	(0.004)	(0.010)
Controls	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes
Observations	3,009,944	459,138	226,619
R-squared	0.133	0.078	0.076
	Panel B: 1994 Q	2 to 2004 Q2	
NMTC Qualified	-0.006***	0.004**	0.003
Census Tract	(0.001)	(0.002)	(0.005)
Controls	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes
Observations	5,871,385	898,157	443,444
R-squared	0.054	0.029	0.032
	Panel C: 1994 Q	2 to 2006 Q2	
NMTC Qualified	-0.009***	0.006***	0.004
Census Tract	(0.001)	(0.002)	(0.006)
Controls	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes
Observations	5,874,040	899,042	443,916
R-squared	0.061	0.042	0.048

Table 9: E	Effect of New	Market Tax	Credit Qua	alification	Status o	n the Ch	nange in I	New
Firms in C	ensus Tracts	in MSAs usin	ng 1994 as	Base Yea	ır			

	Constr	Manufact	Transport	Wholesale	Retail	FIRÉ	Services		
Panel A: 1994 Q2 to 2002 Q2									
NMTC Qualified	0.021	0.002	0.002	0.003	0.005	0.008***	0.027***		
Census Tract	(0.017)	(0.001)	(0.004)	(0.009)	(0.007)	(0.003)	(0.008)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	23,346	155,640	31,128	15,564	62,256	54,474	108,948		
R-squared	0.114	0.009	0.045	0.017	0.079	0.039	0.081		
		Panel	B: 1994 Q2	to 2004 Q2					
NMTC Qualified	0.013*	0.00003	-0.001	-0.0002	0.0012	0.003***	0.012***		
Census Tract	(0.007)	(0.0004)	(0.002)	(0.005)	(0.003)	(0.001)	(0.003)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	45,669	304,460	60,892	30,446	121,784	106,561	213,122		
R-squared	0.032	0.002	0.010	0.003	0.009	0.015	0.037		
		Panel	C: 1994 Q2	to 2006 Q2					
NMTC Qualified	0.012	0.001	0.005*	0.004	0.003	0.008***	0.014***		
Census Tract	(0.009)	(0.001)	(0.003)	(0.004)	(0.003)	(0.002)	(0.004)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	45,714	304,760	60,952	30,476	121,904	106,666	213,332		
R-squared	0.043	0.006	0.018	0.003	0.014	0.028	0.052		
Standard errors are	clustered	at the MSA	level and an	re reported in	parenthese	es. ***, **, *	and *		
denote p<0.01, p<0.05, and p<0.1, respectively. Eligibility ratio cutoff of 0.70 to 0.90 included in									
all columns in this table. State and industry fixed effects are included in the regressions. Control									

**Table 10a**: Effect of New Market Tax Credit Qualification Status on the Change in New Firms in a Census Tract with an Eligibility Ratio between 0.70 and 0.90 Classified by Industry.

Consus Thee with an Engloting Radio between 0.75 and 0.05 Classified by industry.									
	Constr	Manufact	Transport	Wholesale	Retail	FIRE	Services		
Panel A: 1994 Q2 to 2002 Q2									
NMTC Qualified	0.021	0.002	0.003	0.014	0.007	0.006	0.024		
Census Tract	(0.026)	(0.002)	(0.009)	(0.016)	(0.014)	(0.005)	(0.021)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	11,523	76,820	15,364	7,682	30,728	26,887	53,774		
R-squared	0.115	0.011	0.054	0.023	0.080	0.041	0.078		
		Panel I	B: 1994 Q2 t	o 2004 Q2					
NMTC Qualified	0.011	-0.0003	-0.003	-0.007	0.001	0.001	0.012		
Census Tract	(0.012)	(0.001)	(0.007)	(0.015)	(0.005)	(0.002)	(0.010)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	22,548	150,320	30,064	15,032	60,128	52,612	105,224		
R-squared	0.038	0.003	0.017	0.005	0.010	0.018	0.040		
		Panel (	C: 1994 Q2 t	o 2006 Q2					
NMTC Qualified	0.016	0.002***	0.001	0.005	0.007	0.002	0.006		
Census Tract	(0.016)	(0.001)	(0.008)	(0.006)	(0.004)	(0.005)	(0.015)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	22,572	150,480	30,096	15,048	60,192	52,668	105,336		
R-squared	0.051	0.009	0.026	0.005	0.016	0.034	0.059		
Standard errors are	clustered a	t the MSA l	evel and are	reported in pa	arentheses.	***, **, a	nd *		
denote p<0.01, p<0	.05, and p<	<0.1, respect	ively. Eligił	oility ratio cut	toff of 0.70	to 0.90 in	cluded in		
all columns in this	table. State	e and industr	y fixed effect	ets are include	ed in the re	gressions.	Control		
variables include the percent of the population that is female, the percent of the population that is									
black, the percent of the population that is Hispanic, the average age of the population, the percent									

**Table 10b**: Effect of New Market Tax Credit Qualification Status on the Change in New Firms in a Census Tract with an Eligibility Ratio between 0.75 and 0.85 Classified by Industry.

the percent of the population with a college degree, the average income, the unemployment rate, and the percent of female headed households with children within the tract.

of the population without a high school diploma, the percent of the population with some college,