I. INTRODUCTION

Tax Increment Financing (TIF) is a program where local government officials designate a geographic area for development and then finance certain aspects of the development with future growth in tax revenue generated within the designated TIF area. At its core, TIF assists development activities and subsidizes businesses in a TIF area using property or sales tax revenue generated in the TIF area to finance land acquisition, site preparation and cleanup, and infrastructure improvements that benefit private businesses that locate their operations on sites within the TIF area. Often, the financing arrangement involves a bond issue that provides upfront money to pay for the TIF programs. The debt service on the bonds is then paid from the tax revenue generated in the TIF. In most cases the revenue source for TIF programs is the property tax, but in some instances sales tax is used as a revenue source.
When a TIF area is designated, the property values within the TIF area are specified as the “base property values.” The property tax revenue subsequently generated from the base property values continues to be distributed to local government and school district programs. Property tax revenue generated from the growth in property values above the base property values is diverted to finance the TIF development programs in lieu of being distributed to local government and school district programs. This revenue stream is referred to as the “tax increment.”

Because TIF only diverts the tax increment to TIF programs and leaves in place the base revenue financing existing local government and school district programs, TIF has historically been advocated as a self-financing economic development program that does not reduce a local government’s base revenues.

The self-financing aspect of TIF both adds to its popularity and differentiates it from other economic development programs such as tax abatements, tax credits, and other tax incentives, enterprise zones, and direct subsidy programs. The programs that are alternatives to TIF either forego tax revenue (base revenue as well as revenue growth) or make expenditures from current tax revenue to subsidize and encourage development projects. In the case of TIF, the business continues to pay property taxes on its assessed value, part of which continue to flow to local government units. The same argument cannot be made for these other economic development programs.

While municipalities in California began using TIF in the early 1950s (Byrne, 2005), TIF began to grow on a large scale in late 1970s and 1980s. Since then, TIF was adopted by all states and the District of Columbia, although Arizona repealed its legislation in 1999 (Weber and O’Neill-Kohl, 2013) and California ended its use of TIF in 2012 (Lefcoe and Swenson, 2014). No other local government incentive program is used as much as TIF, but the policy reversal in California has already begun to trigger a re-examination of its use in other states, as California often serves as a policy pioneer. Thus, TIF is an important economic development tool to evaluate, and it is an opportune time to examine the empirical record on the use of TIF.

While a great deal has been written about some aspects of TIF, much less has been written about its success as a tool to help finance redevelopment activities. We focus on research that examines outcomes in order help make these findings more useful for policymakers. Almost all evaluations focus on outcomes in a particular metropolitan area or state. Here, we attempt to make sense of these findings and also perform some analysis using a 2009 survey of local governments across the entire country to examine what types of communities adopt TIF. We find that governments in the north-central part of the country are more likely to adopt TIF and that there may be some differences across the country in terms of the characteristics that help predict usage.

Next, we further document the popularity of TIF, review the empirical research that has evaluated TIF, discuss empirical examinations of TIF adoptions, and conclude with lessons learned and suggestions both for future research and policymakers.

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1 When a sales tax is the revenue stream for the TIF redevelopment programs, the tax increment is simply the sales tax revenue generated in the TIF above the base sales tax revenue specified when the TIF area is designated.
II. TIF USE

Notwithstanding the recent decision of California to terminate the use of TIF, the rate of growth of its use and its pervasiveness are dramatic. The number of states employing TIF grew from only eight in 1970 to 49 in 2010. This compares to only 37 states that employ property tax abatements (this has grown from 31 states in 1979) and 42 states that have adopted enterprise zones since their initiation in 1982 (Kenyon, Langley and Paquin, 2012).

International City/County Management Association (ICMA) economic development surveys of local governments are a popular way to measure use of various economic development tools. Warner and Zheng (2013) examined the change in use of economic development incentives between the 2004 and 2009 ICMA economic development surveys and found a sizable increase in the use of TIF among the survey respondents, from 31.8 to 49.1 percent. They found a corresponding increase in overall use of business incentives, which they partially attributed to the Great Recession. Although the use of all incentives has increased, TIF remains particularly popular. According to the 2009 ICMA survey, among county and municipal governments offering any incentives, TIF is used by about 55 percent of the local governments responding to the survey while tax abatement is used by 47 percent and grants by about 36 percent. Meanwhile, tax credits, low-cost loans, enterprise zones, and training support are used by half as many or fewer local governments (ICMA, 2009).

Paetsch and Dahlstrom (1990) suggest that the growth in TIF was spawned partly in response to federal government retrenchment from urban renewal programs. Kenyon, Langley, and Paquin (2012) suggest that property tax incentives have increasingly been employed by local governments because significant declines in transportation and communications costs have increased firm mobility and, as a result, increased the influence of these incentives on firm location decisions. They also suggest that the increasing use of TIF and other property tax incentives can be attributed to the dramatic increase in international competition for business along with the continuing competition for investment by states and localities.

TIF is used by local governments for many of the same reasons as these other spatially targeted economic development incentives: generally to correct market failures in an attempt to improve efficiency (for example, by attempting to preempt urban sprawl or attempting to foster agglomeration economies), to address spatial inequities, to address equity concerns (for example, to address concentrated poverty or concentrated infrastructure decay), or to respond to the myriad of incentives offered by other local governments in an effort to remain competitive. One risk, however, that is inherent in the use of such incentives is the potential dilution in their effectiveness as they grow in popularity, particularly when their use is spread to less distressed areas (Greenbaum and Bondonio, 2004). There is indeed evidence of this with TIF. Some governments have greatly relaxed the need to demonstrate blight. For example, in Iowa in 1985, TIF economic development activities no longer required blight criteria to be met (Swenson and Eathington, 2002), and in Chicago in 1995, TIF usage was allowed in
conservation areas that did not require the same level of blight as other uses (Lester, 2014).

Not surprisingly, given the popularity of TIF during the six decades that it has been used to help finance economic development, a great deal has been written about it. We turn next to that literature.

III. LITERATURE REVIEW

The TIF literature includes primers on how they work, editorials, locally commissioned reports, magazine and newspaper articles, academic journal articles, and books. In addition, numerous bibliographies have been assembled over the years. Our review is not intended to be comprehensive. Instead, we focus on some of the more recent empirical examinations. Almost all of the evaluations focus on outcomes in a particular state or city, and we attempt to put these findings into context.

The examination of the characteristics of the governments that adopt TIF is important for at least two reasons. First, most states still require some evidence of blight to enable TIF designation (Weber, 2013). Thus, examining the extent of blight helps evaluate whether local government officials have stayed true to the intent of the legislation. Second, accounting for the socioeconomic conditions of TIF areas is an essential step for studies performing outcomes evaluations. To conduct such analysis, researchers attempt to control for the counterfactual of what might have happened in the TIF districts had they not been designated (the “but for” question). The TIF areas would likely grow more slowly than comparable areas in cases in which local officials do indeed select blighted areas for redevelopment with TIF. However, there also exists the possibility that local officials choose areas likely to grow more rapidly in order to capture a larger tax increment. Thus, there may be unobserved factors that could cause TIF areas to grow faster or slower than other areas (Merriman, Skidmore, and Kashian, 2011). Such selection bias threatens the validity of the outcomes analysis. To address these selection issues, researchers often use Heckman selection correction or propensity scores.

While a number of papers have examined these selection issues, we highlight only a few. In his evaluation of the impact of TIF on property values in Michigan municipalities, Anderson (1990) first tested for sample selection issues and found that cities growing in population were more likely to adopt TIF. However, Man (1999a) examined the factors affecting adoption of TIF in Indiana municipalities and did not find evidence that prior growth increased the probability of adopting TIF. She did find that factors such

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2 Johnson and Man (2001) provide a discussion of the TIF literature.
3 For example, in 1980, CPL Bibliographies listed over 20 articles and reports, as well as links to research notes and citations for state laws (Hartz and Huddleston, 1980); in 1987, Vance Bibliographies listed two pages of references to state law, over 60 articles, and over 40 reports (Vander Meer, 1987); and in 1997, the Urban Land Institute compiled photocopies of 37 articles and monographs related to TIF (Urban Land Institute, 1997).
4 Chicago is one of the more pervasive users of TIF, and it is also one of the most-studied cities.
5 Smith (2009) and Lester (2014) provide a description of this approach.
as economic distress and fiscal pressure increased the likelihood of TIF adoption, as did tax competition, the composition of the economic base, expected gains in property values, and availability of alternative programs. Likewise, examining municipalities in the Chicago metropolitan area, Dye and Merriman (2000) did not find a relationship between TIF adoption and pre-adoption growth and, in their case, in property values. They did find that the municipal tax rate, population, and share of non-residential property were all positively associated with TIF adoption.

Byrne (2006) examined Chicago-area neighborhoods rather than entire municipalities in order to perform a more fine-grained analysis. While the TIF initiating legislation in Illinois did not provide specific blight criteria for designating TIF districts, Byrne found that the TIF neighborhoods did typically have higher mean vacancy rates, older buildings, and lower-income residents. However, a number of TIF neighborhoods were less distressed than the average neighborhood.

Much of the outcomes evaluation research focuses on the impact of TIF on property values, as the funding mechanism is dependent on the growth in property values to generate the incremental tax revenue necessary to repay the debt issued to finance the initial development. However, in placing the tool into the broader economic development literature, others examine outcomes such as employment growth, sales, production, and tax revenues. We begin by examining the literature that analyzes property values before turning to the other outcomes and a review of the literature examining budgetary implications of TIF.

A. Property Values

Weber and O’Neill-Kohl (2013) contend that in Illinois much of the push behind TIF came from real estate consultants who stood to gain by helping to facilitate property transactions. By helping to reduce the cost of developing properties within the TIF districts, these tax benefits and the public goods they support are likely to be capitalized into the local real estate market. Much of the literature attempted to measure whether this indeed occurred. The most careful studies controlled for factors that were likely to affect whether a particular location was selected as a TIF district, often based upon previous growth trends, and attempted to establish how much of the subsequent growth was due to the TIF district. The set of papers examining property value outcomes generally found some positive outcomes in the TIF districts, although most were unable to quantify whether such growth was sufficient to allow the TIF districts to be self-financing.

A number of studies found positive associations between TIF adoption and subsequent growth in property values. When controlling for selection, Anderson (1990) found growing Michigan cities were more likely to adopt TIF. He hypothesized that cities were attempting to capture growing property values rather than to stimulate new growth. He also found that TIF adoption was associated with faster subsequent growth in aggregate property values from 1985 to 1986, but he was not able to attribute TIF adoption to that growth. Man and Rosentraub (1998) also corrected for selection and found a positive association between TIF adoption and subsequent growth in Indiana median housing
values in municipalities from 1980–1990. Indiana is an interesting case, as it does not explicitly require blight designation, thus making it more difficult to establish whether the growth would have occurred absent the TIF districts.

Overcoming some of the limitations of using aggregate property values or median values, Smith (2006) used hedonic regressions to examine the impact of TIF designation on individual residential properties in Chicago from 1992–2000. He also found positive associations between TIF designation and property value growth, but cautioned that although the TIF districts were in more blighted areas, the particular properties included in the analysis were potentially more marketable (hedonic modeling depends on observing the prices of properties that have sold), which could cause selection bias. Examining TIF districts in 2007 and 2008 in Dallas-Fort Worth, Hall and Bartels (2014) found evidence that better-managed (a factor that many others have overlooked in their examination of property values and projected revenues) TIF districts had superior performance.

However, when examining aggregate assessed property values in Chicago-area municipalities between 1980 and 1995, Dye and Merriman (2000) cautioned that looking at changes in property values only within the TIF districts may lead to misleading conclusions. It could be that growth in the TIF districts may be attributable to inefficient intra-city redistribution of commercial activity into the TIF areas. Even after addressing selection issues, they found that cities that adopt TIF subsequently grew more slowly. When making distinctions across types of TIF districts across municipalities throughout Illinois, Dye and Merriman (2003) found evidence that commercial activity inside TIFs acted as a substitute for such activity outside the districts, whereas the industrial TIF districts were less likely to lead to such redistribution. Dardia (1998) found that evidence of growth in property values within a TIF district does not necessarily mean the policy was a success. He examined California’s redevelopment agencies (RDAs) between 1983 and 1996. After matching TIF areas to non-TIF areas based upon characteristics of census block groups in the same city, he found that the property values in parcels inside TIF districts grew faster than their matched pairs. However, he also found that when correcting for trends in real estate prices, that faster growth was not, in most cases, large enough to allow the projects to be self-financing.

Moving beyond residential property values, the results in the literature are mixed depending on the type of property, type of development, or location. For example, Merriman, Skidmore, and Kashian (2011) used data from Wisconsin municipalities to examine aggregate property values and residential, commercial, and manufacturing property values separately. While they did not find evidence of aggregate increases in property values, by separating out the various types of properties, they found positive impacts in the commercial TIF districts but no similar increases in residential or manufacturing property. Byrne (2006) also found important differences when using more fine-grained neighborhood data. While the average TIF district in Chicago municipalities during the early 1990s grew almost 30 percent faster than their overall municipality, there was also substantial variation across districts. TIF districts that were found to have faster property value growth, on average, were industrial, were located closer to down-
town Chicago, were lower-density, were more blighted, were larger, and had a higher proportion of white residents. Using propensity score matching to attempt to address the counterfactual, Smith (2009) found positive associations between TIF designation and commercial property values in Chicago between 1992 and 2000. Also focusing on Chicago over a similar time period (1993 to 1999), Weber, Bhatta, and Merriman (2003) examined industrial property values. They found positive (but not statistically significant) effects on property values for properties inside mixed-use TIF districts, but negative effects associated with commercial or manufacturing districts. When instead focusing on single family homes, they similarly found that homes proximate to mixed-use developments saw increased appreciation, while homes proximate to industrial TIF districts saw reduced appreciation (Weber, Bhatta and Merriman, 2007). Using panel data and similar methods to Weber, Bhatta and Merriman (2003), Carroll (2008) examined assessed business property values in Milwaukee between 1980 and 1999 using a two-step semi-log fixed effects model to help correct for selection. Selection was found to be an issue, as higher valued properties were more likely to be in a TIF district. She did find an increase in business property values associated with TIF adoption.

While the evidence is somewhat mixed and may depend on the methods used, the particular outcome examined, and the focus of the TIF development, the majority of the studies find evidence of some positive associations between TIF districts and growth in property values. Next, we turn to a smaller subset of the research that examines whether TIF districts are associated with faster economic development.

B. Economic Development Outcomes

While growth in property values is valuable to the property owners, the associated increase in rents may represent a higher cost of business for potential tenants. Weber (2013) also cautions that the local businesses and residents may not be adequately prepared for the increases in property taxes that would be associated with increased property values. Thus, one would expect more positive impacts on property values than other measures of development.

Numerous studies have found that economic development outcomes vary across location and type of development, much like the research examining property value outcomes. Man (1999b) examined employment outcomes in Indiana cities between 1985 and 1992 and generally found positive associations between TIF adoption and local employment. Wassmer (1994) examined a number of economic development outcomes, including employment and sales in manufacturing, retail, and service industries at the city level in metropolitan Detroit between 1947 and 1987. He found that outcomes in response to industrial incentives differed across cities, thus emphasizing that local characteristics matter. Variation across cities was much smaller for non-industrial incentives such as TIF districts. There was a positive and statistically significant association between TIF districts and retail employment and a positive and insignificant association with retail sales. Byrne (2010) examined employment growth in Illinois municipalities between 1981 and 1999. Somewhat at odds with Wassmer (1994), he found that the TIF
districts that focused on retail development had a negative association with employment. This is consistent with the hypothesis that retail employment services primarily local markets, and the TIF districts may have resulted in some intra-municipal shifting of retail activity. However, Bryne (2010) found that those TIF districts that focused on industrial development had positive associations with employment. The businesses inside these districts were less likely to compete as directly with other local businesses outside the boundaries. These results were consistent with the earlier work of Dye and Merriman (2003) in Illinois that examined property values over a similar time period. Worried that some of the earlier work may have been biased due to inadequate treatment of selection issues, Lester (2014) examined employment, business creation, and building permits at the block group level in Chicago between 1990 and 2008. Using establishment-level panel data, he controlled for selection bias and used propensity-score matching to estimate difference-in-difference estimates. He did not find evidence that the TIF districts led to greater levels of economic development compared to the control areas, nor did he find that TIF designation led to greater private investment in blighted neighborhoods.

This smaller set of papers examining economic development outcomes finds less clear evidence of positive associations with TIF district designation than the studies examining property values. However, even if a TIF district leads to higher property values, it is not clear whether the properties have increased in value by enough to generate sufficient tax revenue to fully finance the bonds that were used to finance the new development. If the property values do not rise by enough to generate these property taxes, there is a risk of default (Weber, Bhatta, and Merriman, 2003). An even smaller subset of papers examine whether the TIF districts actually generate the additional tax revenue to be “self-financing.”  

C. Fiscal Outcomes

As noted earlier, Dardia (1998) estimated the property tax revenue attributable to TIF areas in California and assessed how the revenue attributable to the TIF compared to the property tax increment actually captured by the TIF. He compared TIF areas in California to similarly situated non-TIF areas, comparing the property value growth in each from the year the TIF was initiated. In less than 25 percent of the TIFs Dardia examined did the revenue attributable to the TIF equal or exceed the property tax increment captured by the TIF. In these cases, the TIFs were not capturing the taxes from the underlying growth in property values that existed prior to the TIF. Dardia found the revenue attributable to the TIF fell substantially short of the property tax increment

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6 Interestingly, of the 414 governments that offer TIF in 2009 ICMA survey, only 155 (37.44 percent) report that they use cost/benefit analysis to measure the effectiveness of business incentives. That compares to 281 (67.87 percent) that measure the amount of jobs created by new business, although the number using cost/benefit analysis is more than the 117 (28.26 percent) that measure the number of new businesses relocating or expanding in the jurisdiction.
captured by the TIF for about 50 percent of the TIF areas and that 25 percent of the TIFs generated none of the property tax increment being captured. Thus, for most of the TIFs, local governments were losing revenue attributable to property value growth they would otherwise have received in the absence of the TIF.

Kriz (2001) used Monte Carlo simulations to model the net impact of TIF. He made assumptions about property value growth, public expenditures, tax rates, and other policy variables based on data on local governments in Minnesota. He found that under reasonable assumptions TIF is likely to result in a net financial loss to local government. He also found that TIF generates a net financial gain only when property value growth prior to TIF is relatively high (more than 2 percent) and there was zero probability that the project would occur in the absence of TIF. Likewise, Huddleston (1982) investigated 16 TIF projects in local governments and counties in Wisconsin from the mid 1970s and found that 10 of 16 would break even within 20 years assuming the TIF generated 5 percent annual growth in property values (using a 6 percent discount rate). All but two of the projects would break even within 30 years. With the assumption of only 1 percent growth in property values (and a 12 percent discount rate), the results deteriorate substantially with only 10 of the 16 projects breaking even in 30 years. Lawrence and Stephenson (1995) used data beginning in the early 1970s from Des Moines to make revenue projections through 1998. Their models showed that generally taxpayers subsidized the projects in the early years but benefited from lower property taxes in later years.

These studies suggest that under reasonable circumstances, TIF may not generate a net gain to local governments if benefits are limited to the property tax revenue generated within the TIF. Because of the way the TIF increment is established, local governments may lose property tax revenue to the TIF in two ways: (1) property tax revenue being captured by the TIF that is attributable to economic development that would have occurred in the absence of the TIF; and (2) property tax revenue captured by the TIF that is attributable to growth in property values that would have occurred without the TIF. However, local governments losing the TIF increment may at the same time be beneficiaries of other tax revenue from growth in employment, income, and business activity in TIF areas. Consequently, analyzing the net fiscal impact of TIF could, and probably should, be extended to consider the potential impact of these other tax revenues. Only a small number of studies have examined these broader economic impacts of TIF (Byrne, 2010; Lester, 2014; Man, 1999b; Wassmer, 1994). These studies suggest that TIF may positively impact employment, business establishment, and certain sales activity.

Increased employment and wages within a TIF area could translate into personal income tax revenue for local governments impacted by the TIF. This would depend on whether these local governments are authorized to impose personal income taxes and the extent of commuting by the employees in the TIF area. The impact of commuting by employees would be eliminated if the tax is imposed where the employee works instead of on the basis of the employee’s place of residence. The offsetting impact could be increased to the extent that non-corporate business income is also taxed. Currently, 13 states authorize local governments to impose income taxes, and only a few
states authorize school district income taxes (U.S. Census Bureau, 2010–2011). Thus, the potential for local personal income taxes to offset TIF increment losses to local governments appears to be limited.

Local sales taxes also may provide an offset to local governments, but with a much broader reach. Currently, 33 states allow local governments to impose sales taxes (U.S. Census Bureau, 2010–2011). Economic development within a TIF could affect local sales tax revenue due to: (1) retail development in the TIF, assuming there is limited displacement of retail activity in the local government jurisdiction in which the TIF area is located; (2) spending on taxable items by businesses operating in the TIF area; and (3) spending by employees of businesses operating in the TIF area.

Next, we turn to a national perspective and analyze the characteristics of governments that adopt TIF.

IV. ANALYSIS

To further examine the characteristics of governments that adopt TIF, we make use of data from the 2009 ICMA Economic Development Survey.7 As can be seen in the bottom row of Table 1, of the 844 municipal and county governments that responded to the 2009 survey, 414, or just over 49 percent, reported that they offered TIF. The survey response rate was only 22.2 percent (ICMA, 2009), so these figures may not be entirely representative of even the largest city and county governments. With that caveat, we proceed to aggregate to the state level all the cities and counties that offer TIF as a fraction of all governments that returned the survey. As seen in Figure 1, states

<table>
<thead>
<tr>
<th>Region</th>
<th>Number Offering TIF</th>
<th>Total</th>
<th>Percent Offering TIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>27</td>
<td>112</td>
<td>24</td>
</tr>
<tr>
<td>North Central</td>
<td>202</td>
<td>273</td>
<td>74</td>
</tr>
<tr>
<td>South</td>
<td>112</td>
<td>265</td>
<td>42</td>
</tr>
<tr>
<td>West</td>
<td>73</td>
<td>194</td>
<td>38</td>
</tr>
<tr>
<td>Total</td>
<td>414</td>
<td>844</td>
<td>49</td>
</tr>
</tbody>
</table>

Source: ICMA (2009)

7 The survey was administered to the 3,283 municipalities with populations of at least 10,000 and the 556 counties with populations of at least 50,000.
in the middle of the country report a higher fraction of governments using TIF.\textsuperscript{8} These geographic patterns differ from the distribution of governments using other economic development incentives such as grants, which are more intensely utilized in southern and southeastern states, and loans, which are also heavily used in north-central states as well as some western and northeastern states (Greenbaum and Bondonio, 2011).

In almost all of the previous research, examination of the decision to adopt TIF is done at a very local level. In this analysis, we use national data to examine whether factors such as location (indicators for the north-central part of the state, whether the reporting government is a county, and whether the government is core central city),\textsuperscript{9}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure1.png}
\caption{Geographic Distribution of County and Municipal Governments Offering TIF in 2009}
\end{figure}

Percent offering TIF

\begin{itemize}
\item 0–16.66%
\item 16.66–46.55%
\item 46.55–53.33%
\item 53.33–73.91%
\item 73.91–100%
\end{itemize}

Note: Hawaii and West Virginia had no survey responses.
Source: ICMA (2009)

\textsuperscript{8} One worry is that the map may be misleading because of small numbers of survey responses in some states, but aggregating the responses by region leads to similar conclusions, as is displayed in Table 1.

\textsuperscript{9} For counties, this is an indicator of whether the county includes a central city.
size (estimated 2009 Census population and size of the economic development budget), self-assessments of previous and future economic performance (as measured in terms of reporting previous slow, moderate or rapid decline, and predictions of future decline), measures of current socio-economic conditions (per-capita personal income, unemployment rate, and per-capita property tax revenue), and an indicator of whether the local official reported that infrastructure is a barrier to economic development. These are all categories of factors that the previous literature has identified as being important drivers of the decision to adopt TIF.

Descriptive statistics for 262 municipal and county governments for which there are no missing observations for any of the variables are presented in Table 2. As shown in the “All” column, 54 percent of these governments, or 142, offered TIF in 2009. The “TIF” and “Non-TIF” columns present the variable means for those 142 governments that offered TIF and the 120 that did not. While approximately one-quarter of all sample governments (27 percent) were in the north-central region, 43 percent of the TIF-offering governments and only 8 percent of the non-TIF-offering governments were in the north-central region. Of the TIF-offering governments, 10 percent were counties compared to 21 percent of the non-TIF-offering governments, which may partially explain why the non-TIF-offering governments tended to have larger average populations (119,109 compared to 96,471). The other noticeable differences are that TIF-offering governments had larger economic development budgets on average ($1.68 million versus $1.11 million) but lower average per-capita personal income ($34,000 versus $40,057) and lower per-capita property tax revenue ($802 versus $1,203) than non-TIF-offering governments in 2009. This is an indication that the TIF-offering communities were on average less prosperous but more generous in terms of their economic development efforts. The mean unemployment rate differed little between TIF adopters (8.74 percent) and non-adopters (8.88 percent), although, somewhat surprisingly given the focus of many TIF districts on infrastructure, TIF non-adopters were more likely to report infrastructure as a barrier to economic development (38 percent) as compared to the TIF adopters (29 percent). In terms of assessments of past economic performance and predictions of future economic performance, there appear to be only minimal differences between TIF adopters and non-adopters.

Table 3 presents the results of logistic regressions predicting whether the local government adopted TIF. The dependent variable is a dichotomous variable that equals 1 if the government reported in the 2009 survey that it offered TIF as a business incentive, and the independent variables are the set of variables listed in Table 2. While use of self-assessments is not as accurate as actually measuring previous growth, the self-assessments may be more relevant in terms of capturing the state of mind of local decision-makers. Per-capita property tax revenue is used in the analysis rather than the measured tax rate because it is clear from the range of survey responses that some communities misinterpreted the survey question. The continuous variables have all been (natural) logged.
### Table 2
Characteristics of Local Governments by TIF Offering Status

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>TIF</th>
<th>Non-TIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIF dummy</td>
<td>0.54</td>
<td>0.43</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>(0.50)</td>
<td>(0.50)</td>
<td>(0.28)</td>
</tr>
<tr>
<td>North-central region dummy</td>
<td>0.27</td>
<td>0.43</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>(0.45)</td>
<td>(0.50)</td>
<td>(0.28)</td>
</tr>
<tr>
<td></td>
<td>(285,523)</td>
<td>(181,219)</td>
<td>(373,647)</td>
</tr>
<tr>
<td>Central/core city in an MSA dummy</td>
<td>0.28</td>
<td>0.26</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>(0.45)</td>
<td>(0.44)</td>
<td>(0.46)</td>
</tr>
<tr>
<td>Economic development budget</td>
<td>1.42</td>
<td>1.68</td>
<td>1.11</td>
</tr>
<tr>
<td>(FY09 $million)</td>
<td>(3.60)</td>
<td>(4.07)</td>
<td>(2.92)</td>
</tr>
<tr>
<td>Economy reported to have</td>
<td>0.10</td>
<td>0.10</td>
<td>0.09</td>
</tr>
<tr>
<td>declined in past 5 years dummy</td>
<td>(0.29)</td>
<td>(0.30)</td>
<td>(0.30)</td>
</tr>
<tr>
<td>Economy predicted to decline next</td>
<td>0.10</td>
<td>0.10</td>
<td>0.11</td>
</tr>
<tr>
<td>five years dummy</td>
<td>(0.30)</td>
<td>(0.30)</td>
<td>(0.31)</td>
</tr>
<tr>
<td>Per-capita personal income 2009$</td>
<td>36,774</td>
<td>34,000</td>
<td>40,057</td>
</tr>
<tr>
<td></td>
<td>(21,307)</td>
<td>(17,093)</td>
<td>(25,089)</td>
</tr>
<tr>
<td>Unemployment rate 2009 (%)</td>
<td>8.80</td>
<td>8.74</td>
<td>8.88</td>
</tr>
<tr>
<td></td>
<td>(3.85)</td>
<td>(3.36)</td>
<td>(4.36)</td>
</tr>
<tr>
<td>Per-capita property tax revenue 2009$</td>
<td>985.27</td>
<td>801.51</td>
<td>1,202.71</td>
</tr>
<tr>
<td></td>
<td>(1,679.4)</td>
<td>(1,094.3)</td>
<td>(2,163.1)</td>
</tr>
<tr>
<td>Infrastructure reported as a</td>
<td>0.33</td>
<td>0.29</td>
<td>0.38</td>
</tr>
<tr>
<td>development barrier dummy</td>
<td>(0.47)</td>
<td>(0.45)</td>
<td>(0.49)</td>
</tr>
<tr>
<td>County government dummy</td>
<td>0.15</td>
<td>0.10</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td>(0.36)</td>
<td>(0.30)</td>
<td>(0.41)</td>
</tr>
<tr>
<td>Observations</td>
<td>262</td>
<td>142</td>
<td>120</td>
</tr>
</tbody>
</table>

Notes: For counties the MSA dummy represents whether the counties contain a central city. Standard errors are in parentheses.
Source: ICMA (2009)
**Table 3**

Logistic Regression Results Predicting TIF Adoption

<table>
<thead>
<tr>
<th>Variable</th>
<th>All states</th>
<th>North-central</th>
<th>Rest of United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>North-central region</td>
<td>2.632***</td>
<td>0.699</td>
<td>0.812***</td>
</tr>
<tr>
<td>Population (ln of 2009 estimate)</td>
<td>0.830***</td>
<td>0.699</td>
<td>0.812***</td>
</tr>
<tr>
<td></td>
<td>(0.244)</td>
<td>(0.865)</td>
<td>(0.262)</td>
</tr>
<tr>
<td>Central/core city in an MSA dummy</td>
<td>–1.121**</td>
<td>–0.386</td>
<td>–1.187**</td>
</tr>
<tr>
<td></td>
<td>(0.437)</td>
<td>(1.944)</td>
<td>(0.465)</td>
</tr>
<tr>
<td>Economic development budget (ln of FY 2009 $millions)</td>
<td>0.127</td>
<td>0.160</td>
<td>0.108</td>
</tr>
<tr>
<td></td>
<td>(0.0898)</td>
<td>(0.344)</td>
<td>(0.0952)</td>
</tr>
<tr>
<td>Economy reported to have declined past 5 years dummy</td>
<td>0.468</td>
<td>–1.100</td>
<td>0.543</td>
</tr>
<tr>
<td></td>
<td>(0.531)</td>
<td>(2.179)</td>
<td>(0.557)</td>
</tr>
<tr>
<td>Economy predicted to decline next five years dummy</td>
<td>–0.305</td>
<td>0.532</td>
<td>–0.355</td>
</tr>
<tr>
<td></td>
<td>(0.529)</td>
<td>(1.820)</td>
<td>(0.579)</td>
</tr>
<tr>
<td>Per-capita personal income (ln of 2009$)</td>
<td>–1.009***</td>
<td>–0.651</td>
<td>–1.033**</td>
</tr>
<tr>
<td></td>
<td>(0.360)</td>
<td>(0.985)</td>
<td>(0.407)</td>
</tr>
<tr>
<td>Unemployment rate 2009 (%)</td>
<td>0.0184</td>
<td>0.204</td>
<td>0.00639</td>
</tr>
<tr>
<td></td>
<td>(0.0407)</td>
<td>(0.167)</td>
<td>(0.0429)</td>
</tr>
<tr>
<td>Per-capita property tax revenue (ln of 2009$)</td>
<td>0.201</td>
<td>0.730**</td>
<td>0.0900</td>
</tr>
<tr>
<td></td>
<td>(0.130)</td>
<td>(0.368)</td>
<td>(0.143)</td>
</tr>
<tr>
<td>Infrastructure reported as a development barrier dummy</td>
<td>–0.299</td>
<td>0.865</td>
<td>–0.562</td>
</tr>
<tr>
<td></td>
<td>(0.317)</td>
<td>(1.185)</td>
<td>(0.353)</td>
</tr>
<tr>
<td>County government dummy</td>
<td>–1.678***</td>
<td>–3.426**</td>
<td>–1.201**</td>
</tr>
<tr>
<td></td>
<td>(0.523)</td>
<td>(1.738)</td>
<td>(0.557)</td>
</tr>
<tr>
<td>Constant</td>
<td>–1.250</td>
<td>–5.799</td>
<td>0.261</td>
</tr>
<tr>
<td></td>
<td>(4.018)</td>
<td>(11.06)</td>
<td>(4.441)</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.21</td>
<td>0.27</td>
<td>0.11</td>
</tr>
<tr>
<td>Percent correctly classified</td>
<td>74.43</td>
<td>90.14</td>
<td>70.16</td>
</tr>
<tr>
<td>Observations</td>
<td>262</td>
<td>71</td>
<td>191</td>
</tr>
</tbody>
</table>

Notes: For counties, the MSA dummy represents whether the counties contain a central city. Standard errors are in parentheses. Asterisks denote significance at the 1 percent (***) , 5 percent (**), and 10 percent (*) levels.
consistent with the cross tabulations. All else equal, governments in the north-central states are much more likely to adopt TIF. Being a central city (as opposed to a suburban government or a city or county not located in a metropolitan area), having higher per-capita personal income, or being a county government all reduced the probability of TIF adoption. One difference in the multivariate analysis from the descriptive statistics is that governments with larger populations are more likely to adopt TIF. This finding may reflect the fact that the multivariate analysis controls for whether the government is a county government.

In order to examine whether factors that affect TIF adoption differ across regions, the model was re-estimated separately for the 71 local governments from the north-central states and the 191 local governments from the other three regions of the United States. These results are displayed in the second and third columns of Table 3. A Chow test (Chow, 1960) comparing the separate regressions in columns 2 and 3 to a pooled regression indicates that the models for the north-central states and the rest of the country are indeed different (F= 5.94, p<0.01).\(^{13}\) Coefficients on population, central city, and per-capita personal income are all statistically significant in the model for the rest of the country (column 3), while the coefficients on the same variables are not statistically significant in the north-central state model (column 2).\(^{14}\)

The model fit for the north-central states is better, as this model correctly classified 90 percent of the observations versus 70 percent in the model for the rest of the United States. Further, it is notable that the coefficient on per-capita property tax revenue is statistically significant at the 5 percent level in the north-central states, while it is not significant at even the 10 percent level in the other two specifications. This finding that governments in these states with higher property tax revenues are more likely to adopt TIF is in line with many other empirical analyses, which have predominately examined north-central states. Further, while not statistically significant, the coefficient on infrastructure as a barrier to development is positive, as expected, in the north-central states regression, while it is negative for the rest of the states.

Finally, in all specifications, the coefficient on the central city indicator is negative, and it is statistically significant at the 5 percent level in the regression on all states and in the model for the rest of the country. This is an indication that suburban or rural governments are more likely to use TIF, which may be at odds with a policy designed to re-develop central cities.

V. SUMMARY

TIF, like other local incentive programs, has multiple economic development and redevelopment goals, including spurring investment in distressed areas that otherwise

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\(^{13}\) To implement the Chow test, the models were re-estimated using the linear probability model (LPM). The results of the LPM models were very similar to the logit specifications.

\(^{14}\) It is worth noting that the sample size for the north-central state regression (71) is much smaller than for the rest of the country regression (191), which leads to less precise coefficient estimates.
would not occur, inducing growth in property values, and possibly a broader revitalization within the TIF area. In addition, one could assume that if these goals are achieved, increased growth in employment, income, and business activity would be achieved in the TIF area. The literature investigating the property value impacts of TIF has generated somewhat mixed results, often suggesting that TIF programs have a positive impact on property values (Anderson, 1990; Byrne, 2006; Dardia, 1998; Man and Rosentraub, 1998; Smith 2006, 2009). However, the literature also suggests a great deal of variation among TIFs and the extent to which TIF programs generate property value growth, likely depending upon varying local circumstances and program design. In particular, TIF districts focused on commercial activity were found to compete more directly with other local businesses than districts focused on industrial activity (Dye and Merriman, 2003). There is also evidence of positive effects on property growth due to mixed-use districts (Weber, Bhatta and Merriman, 2003).

Regarding economic development outcomes, the evidence is more mixed. There may be multiple explanations. If the unit of analysis is larger than the TIF district, it could be that the district is not large enough relative to the entire local economy to register a meaningful difference in growth rates. Additionally, TIF district financing could potentially lead to redistribution of activity within a city, particularly in industries such as retail (Byrne, 2010). However, when looking at more disaggregated data, Lester (2014) did not find evidence of increased economic activity in TIF districts compared to similar non-TIF Census block groups in Chicago. Further, differences in outcomes can also be explained by differences in local characteristics (Wassmer, 1994). Finally, the TIF financing mechanism is purposefully designed to help raise property values in order for it to be self-financing (and, a cynic might add, to help reward those landowners pushing for the designation), so it may not be best-suited to accomplish other economic development goals, particularly if the increased property values represent a cost that is avoidable elsewhere.

One important factor that the evaluation literature largely ignores is that TIF districts typically accompany other economic development incentives. For example, among the governments we have examined with the 2009 ICMA data, 120 of the 199 governments that offer enterprise zones also offer TIF, and 224 of the 359 governments that offer tax abatements also offer TIF. Failure to control for these non-TIF incentives may both lead to biased coefficient estimates and may help explain some of the variation in findings across papers and locations.

Does TIF financing generate enough new activity to be self-financing? Here, the evidence is less mixed. While there is variation from district to district, many of the studies conclude that the projects do not pay for themselves (Dardia, 1998; Kriz, 2001) or they take a long time to break even (Huddleston, 1982; Lawrence and Stephenson, 1995).

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15 Wassmer (1994) is a notable exception.
16 Similarly, 61 percent that provide infrastructure improvements, 59 percent that provide grants, and 62 percent of those that provide loans also provide TIF.
Our own analysis shows that there is indeed a great deal of variation in TIF implementation across the country, with an average of almost half of the governments responding to the 2009 ICMA economic development survey offering TIF. This varied, however, from 74 percent of north-central governments offering TIF compared to only 24 percent of governments in the northeast. Our descriptive analysis comparing the mean characteristics of governments offering TIF to those that did not uncovered numerous differences between TIF-offering and non-TIF-offering governments. Those offering TIF tended to have larger economic development budgets but have lower average income and property taxes. Across all states, the factors that tended to lead governments to adopt TIF included being a municipality rather than county government, being larger, having lower average personal income, and not being in the central city. Consistent with much of the literature examining differences within a particular state, we also found that the importance of these characteristics varied based upon the part of the country examined.

VI. RECOMMENDATIONS

Our own reading of the TIF literature and descriptive analysis leads to a number of recommendations for both academic researchers and practitioners. It is important to examine overall community economic impacts, whether they be property value or other economic indicators. However, it is also very important to continue the trend of the more recent research to use more disaggregated data, whether at the individual parcel level or at the actual TIF district level, to help distinguish exactly where the economic activity occurs. Our own empirical analysis must be interpreted with caution, as the unit of analysis is the municipality or county government. Further, when examining economic trends, it is not enough to answer the “but-for” question and try to quantify changes in trajectory attributable to policy. It is also important to attempt to measure whether any increases in growth are large enough to justify the redirection of incremental tax revenues into TIF projects. Finally, given that TIF districts also coincide with other economic development efforts such as enterprise zones, it is also important for future research to control for other local incentives that affect business and residential investment decisions.

In the event that local policymakers are indeed re-evaluating their TIF policies in response to the recent changes in California, we conclude with a number of suggestions for such policymakers to consider. First, include all overlapping tax jurisdictions in the approval process in order to limit the ability of one local government that may benefit from other revenue sources stimulated by the TIF development to reduce the ability of overlapping jurisdictions to increase their property taxes without their approval. Second, use an inflation factor based on pre-TIF property value growth or coincident property value growth in similarly situated non-TIF areas to allow affected governments to receive some annual growth in property tax not attributable to the TIF. Third, require any incremental property tax revenue not needed for debt service in a year to be distributed to the affected governments. Fourth, place limits on the amount or percentage
of assessed value in an affected government jurisdiction that can be allocated to a TIF. Fifth, limit TIF to distressed and blighted areas where benefits to property owners and workers may be highest. Sixth, in lieu of issuing bonds, require developers to pay the cost of infrastructure and other improvements, with the cost paid back in ensuing years with incremental property tax revenue from the TIF. This would eliminate the potential for local governments to be unable to pay debt service from incremental property taxes and shift the risk for such projects back to firms and investors (Weber, 2013). Seventh, conduct periodic assessments of TIF areas.

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DISCLOSURES

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REFERENCES


The Effectiveness of Tax Increment Financing


