

Economic Development Incentives, Local Jurisdictions and Employment:

Does Creating Jobs Result in More Jobs?

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Abstract

In recent decades, state and local policy makers' role in fostering economic development and job creation within their jurisdictions has continuously become more active and expansive with local jurisdictions offering an array of economic incentives meant to attract and retain jobs, with tax increment financing (TIF) being one of the most popular of these incentives. In recent years some critics have questioned the incentives' efficacy, calling for greater oversight of their use and evidence of success at economic development and job creation. In response, the State of Missouri recently implemented reporting requirements for all Missouri TIF districts including, among other things, the number of jobs created and retained by each TIF district. However, the accuracy of these reported impacts depends on the extent to which the incentives draw new economic activity from outside the jurisdiction versus merely shifting existing activity from within the jurisdiction. This research studies the accuracy of the reported impact of TIF on job creation by examining the how the number of jobs reported by local TIF agencies impacts the number of jobs in the jurisdiction as measured by the Bureau of Labor Statistics.

1 Introduction

In recent decades both state and municipal governments have taken a more active and expansive role in fostering economic development within their jurisdictions and policy makers have come to view economic development incentives such as Industrial Development Bonds, Tax Abatements, Income Tax Credits and Tax Increment Financing as a necessity for fostering a strong local economy. The general public also appears to share the view that economic development programs are a necessary part of maintaining a vital local economy. When Arkansas, North Carolina, Washington, West Virginia, and a number of other states faced constitutional roadblocks in their attempts to implement Tax Increment Financing (TIF), the states amended their constitutions to allow for the use of the popular economic development incentive. That so many states undertook the arduous process of amending their constitutions to give municipalities the ability to use an economic development program highlights policy makers' view of such economic development programs in general, and TIF in particular, as a necessity for fostering economic development. In a statement following West Virginia's constitutional amendment and subsequent TIF legislation, then-Governor Wise described TIF as "an exciting new economic development tool...created to assist new businesses and expand existing businesses" (West Virginia Development Office, 2003). Governor Wise also declared that the ratification of the amendment "empowers local leaders promoting the future growth of every county and city in West Virginia" (Ibid).

Although few have questioned the governments' role in implementing and operating economic development programs, there has been increased pressure on economic development agencies to provide evidence on their effectiveness in fulfilling their objective of job creation and a greater emphasis has been placed on assessing incentive programs (Luger and Bae, 2005). In

2008, the Kansas Legislature asked the Legislative Division of Post Audit, the audit arm of Kansas government, to report on the effectiveness of the state's economic development programs. The report indicated that state agencies reported 131,000 jobs created or retained as a result of their economic development programs (Legislative Division of Post Audit, 2008). As the BLS estimated the state's private sector employment at approximately 1.1 million workers in 2008, the agencies' estimates would indicate that their programs had a significant impact on state employment. This is especially true given that the estimate excluded jobs created from incentives provided by local governments. This emphasis on documenting the efficacy of economic development incentives is not unique to Kansas. The Council of Development Finance Agencies' (2007) Tax Increment Finance Best Practices Reference Guide emphasizes the necessity of transparency, both in the adoption process and in reporting the benefits of TIF, for enhancing community buy-in. The guidelines encourage local officials to highlight TIF's positive impact on the area tax base and creation of jobs. Missouri, the subject of this paper, has followed the CDFA's advice. Beginning in 2007, all jurisdictions sponsoring TIF districts have been required to file a TIF report with the State Auditor of Missouri. In addition to reporting information regarding property values and other taxes impacted by the TIF district, administrators are also required to report the number of jobs created by the TIF project. Since economic development agencies often tout job creation as their primary objective, such reports are an important tool in measuring the efficacy of economic development incentives such as TIF. Although the TIF administrators can document the increase in the number of jobs within a TIF district, assessing the economic validity of these job estimates is more difficult. If the economic development incentive merely shifts economic activity from other areas within the sponsoring jurisdiction into the TIF district, then the decrease in jobs from other areas offsets

gains inside the TIF. Even in cases where TIF captures economic activity outside the local jurisdiction, the reported job number may overstate the economic impact of TIF if the new economic activity would have occurred with or without the economic incentive. This paper studies whether the number of jobs reportedly created by TIF districts represents true job creation in the local economy by examining whether the number of created jobs reported by TIF administrators has a significant impact on the Bureau of Labor Statistics' estimate of employment within the jurisdiction. If the reported number of jobs created is not fully offset by job losses in non-TIF areas of the jurisdiction then they should have a positive impact on overall employment within the jurisdiction.

2 Basic Structure of TIF

As state statutes empower local jurisdictions to enact TIF, certain details of TIF vary by state. Nonetheless, the fundamental structure of TIF is common across states. A local jurisdiction, typically a municipality, creates a TIF district by designating a group of properties as part of the district. Although most TIF districts consist of contiguous properties some states allow non-contiguous properties in close proximity to be part of a single TIF district. Figure 1 gives an example of a legally defined TIF district. It shows the College Hill TIF in Topeka, KS, consisting of approximately 35 parcels located in Topeka's central city that developers had acquired rights to purchase and planned on turning into a mixed-use retail and residential development. TIF supporters argue that TIF encourages development by allowing a municipal controlled TIF commission to use tax revenues generated through the growth in property values within the TIF district to finance developments costs necessary to encourage economic development.

The type of development costs TIF finances varies by state, but often include infrastructure improvements, land acquisition costs, demolition of existing structures, abatement of environmental contamination, landscaping costs, general construction costs and the planning process itself. Table 1 illustrates a basic model of how TIF finances improvements for a hypothetical development. Columns two and three show the assessed value of the parcels within the designated TIF district. For this hypothetical development the initial assessed value of the property is \$250,000. Columns four and five show the property taxes paid by the property owner(s). The property is subject to a total property tax rate of 10% initially generating \$25,000 in property taxes annually. In this example, the municipality creates the TIF district in 1997, when the assessed value of the property was \$250,000. The creation of the TIF district limits the amount of property taxes passed on to the overlapping jurisdictions to the amount of tax applied to the base year property values, often referred to as the Base Assessed Value (Base AV). In this example, the TIF supported development occurs in 1998 and increases the property value within the district from \$250,000 to \$2,000,000.

What distinguished TIF from property tax abatement is that the property owner is still required to pay property taxes on the full \$2,000,000 in assessed value, which in this case is \$200,000 based on the 10% property tax rate. The manner in which TIF finances development is through the TIF commission's ability to divert the tax revenue assessed on the growth of property values above the Base AV. Although the property owner pays \$200,000 in annual property taxes from 1998 onward, the various taxing jurisdictions continue to receive \$25,000 in taxes based on the 1997 assessed property value of \$250,000. The TIF commission then uses the remaining \$175,000 in annual property taxes, the difference between the total tax collections and

the tax collections from the Base AV, to pay for the infrastructure improvements and other reimbursable development costs.

The initial infrastructure improvement and development costs could have been financed by TIF bonds issued by the TIF commission or by the developer. One should note that the extent to which TIF financed improvements are necessary for the development to take place is not always clear cut and is addressed below. While municipalities allow some TIF districts to dissolve after the initial improvements are paid off, some states allow TIF to finance development in a pay as you go basis, with the TIF commission financing additional infrastructure or development costs as the tax increment grows. The number of years in which a TIF commission may divert the tax increment can vary by district, although state law sets a maximum time period for which the TIF may exist, typically between 20 and 30 years.¹ In this hypothetical example, when the TIF district expires the full \$175,000 in annual taxes is passed on to the overlapping jurisdictions. Although this example focuses on TIF diverting revenue from a district's property tax base, Missouri and a number of other states have allowed taxes on a broader range of economic activities to be included in a district's tax increment, such as local sales and income taxes. The basic model of TIF is more or less unchanged when applied to these other taxes.

Although, policy makers initially discovered TIF as a useful means to fund public infrastructure improvements in blighted areas TIF has evolved from a blight fighting tool to an economic development tool. In Chicago, perhaps the most prodigious user of TIF, then Mayor Richard Daley defended TIF as an indispensable tool in employment retention and job creation.

¹ Missouri's limit is 23 years. Some state legislatures have also extended the life of individual TIF districts that reached their normal statutory limit.

In the Lincoln-Belmont-Ashland Corridor TIF financing has helped attract major retailers. . . . Down in the Stockyards, TIFs have led to an expansion of industrial facilities, creating 2,000 new jobs. . . . [TIF] helped attract the Home Depot on West Fullerton Avenue in Montclare. (Washburn & Martin, 1997)

In Kansas City, the Pershing Road TIF is credited with creating 6,268 new jobs (State Auditor of Missouri, 2011) and when St. Louis County's Lambert Airport Perimeter TIF was formed the county's TIF commissions overwhelmingly supported the project emphasizing the estimated 12,000 jobs the TIF would create over its lifetime (Harris, 2004).

Missouri's reporting requirements highlight the preeminence of TIF's role in job creation over blight reduction. TIF administrators are required to report the estimated new and retained jobs at TIF creation and the actual new and retained jobs to date. On the other hand, there is no requirement for documenting TIF success at blight reduction. TIF's role as a job creator extends well beyond the Midwest. In North Carolina, where a 2004 constitutional amendment allowed the legislature to implement TIF, economic development officials touted TIF as a necessary tool for creating jobs and growth (Elkins, 2005). In Washington State, then Governor Locke undertook a long campaign to adopt a TIF statute that was permissible under its constitution in order to eliminate his state's perceived disadvantage at attracting firms resulting from its failure to adopt TIF (Erb, 2002).

2.1 Shifting of Economic Activity and the But-For Provision

The ultimate objective of economic development incentives such as TIF is to attract economic activity into a particular area that would otherwise occur elsewhere. That many TIF

districts experience incredible growth within their boundaries is undeniable. A more difficult and important task is determining whether such growth is both attributable to the TIF and beneficial to the jurisdiction as a whole. Two often obscure issues have considerable impacts on assessing the success of TIF. First, proponents of TIF frequently overlook the extent to which TIF shifts economic activity from areas outside of the TIF district. Second, fairly attributing increased economic activity to TIF requires that the economic activity would not occur but for the presence of TIF.

The shifting of economic activity diminishes the benefits of TIF when growth in jobs or taxes within the TIF district comes at the expense of non-TIF areas of a jurisdiction. For example, the Pershing Road TIF referred to above involved the consolidation of the IRS's operations in the Kansas City area. While the IRS had no previous presence within the TIF district, most of the jobs existed at its Bannister Road office complex located within Kansas City (Collinson, 2003). The TIF district itself clearly experienced a significant growth in economic activity, jobs and related taxes, however, when considering the impact on the entire municipality the decrease in economic activity, jobs and related taxes from the Bannister Road location offsets a large portion of these gains. This example highlights the importance of defining the geographical area for which one is attempting to measure TIF's benefit. For example, approximately 1,800 jobs at the IRS center relocated from Overland Park, KS (Ibid). Although the 1,800 jobs represent a loss to the Overland Park and Kansas economies, the jobs represent a true economic gain to the Kansas City and Missouri economies.

Even when TIF does not finance relocation, it can facilitate a more subtle shifting of economic activity. If TIF adoption increases economic activity within the district by attracting spending that had previously occurred with firms located outside the TIF district, the decrease in

economic activity outside the district tempers the increase in economic activity within the TIF district. Since many Missouri TIF districts support retail establishments, failing to consider the shifting of economic activity from existing firms within a jurisdiction can result in a significant overstatement of TIF's impact on job creation.

Even in cases where no economic shifting within a jurisdiction's boundaries occurs, the but-for condition is another caveat that must be considered when assessing TIF. The but-for provision refers to the statutory requirement that an incentive cannot be awarded unless the supported economic activity would not occur but for the incentive being offered. This provision has economic importance. If a relocating firm would locate in a particular jurisdiction with or without receiving the economic incentive then the economic impact of offering the incentive is nonexistent even when the firm does not divert spending from other local firms. Although the but-for provision represents the legislature's attempt at preventing local jurisdictions from awarding more than the minimum incentive necessary to attract a firm, it also has an important impact on empirical estimates of TIF's efficacy at job creation.

3 Previous Literature

Self-selection bias is an important concern when assessing the impact of TIF. If TIF is more likely to be used in areas experiencing or expecting to experience growth, statistical results will overestimate TIF's impact. Conversely, if TIF is more likely to be used in areas experiencing or expecting to experience economic decline, statistical results will underestimate TIF's impact. Both biases are possible as overestimation can occur when municipalities engage in tax capturing or if high value developers regularly extract incentives from municipalities. Underestimation can occur if TIF is regularly used in areas in an attempt to counteract economic

decline. Because the primary means by which TIF finances economic development is through the property value increment it is not surprising that empirical studies of TIF have focused on TIF's impact on property values. Anderson (1990) looks at the effect of TIF on municipal property values in Michigan and finds that municipalities that adopt TIF experience higher property value growth, although he did not control for self-selection bias. Man and Rosentraub (1998) use a slightly different approach, measuring TIF efficacy by looking at the growth in median housing value (rather than aggregate value) for Indiana municipalities. Like Anderson, Man and Rosentraub find that TIF adoption leads to increases in property value growth. Dye and Merriman (2000) study municipalities in the metropolitan Chicago area and, in contrast to the previous studies, find that TIF adoption has a negative impact on a municipality's aggregate property value growth. This finding highlights the importance of considering the shifting of economic activity. Although Dye and Merriman find significant property value growth within TIF districts, the growth was more than offset by decreased growth in the non-TIF areas of municipalities. Weber (2003) examines the impact the intensity of TIF use has on school district revenues in Cook County, IL and finds that more intensive use of TIF, measured as the amount of the property tax base included in TIF, negatively affects the property tax revenue of public schools. Although a portion of the decrease is offset by increases in state school aid.

Byrne (2010) is the lone study that examined the impact of TIF on employment finding that Illinois TIF districts supporting industrial development have a positive impact on employment growth in whereas those supporting retail development have a negative impact on municipal employment. Byrne's finding of a positive impact for industrial TIF on employment is consistent with these firms being less reliant on local spending and thereby less likely to shift economic activity from within the jurisdiction. Byrne hypothesizes that the finding of a negative

employment effect from TIFs supporting retail development is consistent with these developments shifting local spending to more labor efficient national chains.

One shortcoming of Byrne's (2010) study is that Illinois TIF districts lacked any type of detailed reporting requirements. As a result, the paper examined whether municipalities experienced an increase in employment in the years following the adoption of a TIF district. One drawback of this approach is that it could be the case that there was a lag between the creation of the TIF district and the beginning of development. The data limitation also meant that the paper could not take into account the variation in the size of the development occurring within the TIF district or whether the primary benefit was employment or expansion of the property or sales tax base. The current study has the benefit of utilizing the number of actual jobs that the TIF administrator has reported that the TIF incentive has created, as such it does not suffer from the problem of potentially misidentifying the treatment period and can control for the magnitude of each TIF districts purported employment impact from year to year. Although Byrne (2010) is the only previous study to examine the employment impact of TIF, previous studies have examined the employment impact of other economic development incentives. Billings (2009) studied the employment impact of enterprise zones finding no impact on firm location but a positive impact on employment. Faulk (2002) examined the impact of employment tax credits in North Carolina and found a positive impact on employment.

4 Data

This paper utilizes two key measures of a TIF districts' employment impact reported by TIF administrators in the Annual TIF Reports filed with the State of Missouri Auditor. Each report is required to state the number of actual jobs created and retained within the TIF district.

Data on jurisdiction employment come from two separate BLS surveys. The bureau's Quarterly Census of Employment and Wages (QCEW) and the Local Area Unemployment Statistics (LAUS). The data differ along a number of characteristics that are relevant to the current empirical study. First the QCEW measures employment at the county level, whereas the LAUS measures employment at the municipal level. The geographical area used is important since TIF has the potential to shift economic activity within a local economy. A TIF district that shifts economic activity from one municipality in a county to another could have a positive impact on municipal employment but no impact on county employment. Figure 2 illustrates one such example. In 2007, the State of Kansas approved the use of STAR bonds (Kansas' sales tax TIF) for a redevelopment project in Mission, KS. The project, among other things, included the relocation and expansion of a Wal-Mart Supercenter from neighboring Roeland Park, KS. This relocation could certainly result in increased employment in Mission, KS. However, Roeland Park and Mission are both located in Johnson County. As a result the relocation would have no impact on county employment. A second key distinction between the QCEW and LAUS is that the QCEW is an establishment survey and the LAUS is a household survey. In large metropolitan areas with multiple municipalities, such as Saint Louis and Kansas City, there is a higher probability that workers may not live in the same municipality or county of their employer. Since TIF Reports document the employment impact at the establishment level, the QCEW is more comparable to TIF Reports. The final difference between the QCEW and LAUS is that the LAUS does not include municipalities with populations below 25,000, as a result the survey estimates employment for only 26 Missouri municipalities. The QCEW, on the other hand, includes employment estimates for all 115 Missouri counties. Information on municipal and county sales and property tax rates come from the Missouri Department of Revenue.

Variables on population, educational attainment, age, sex, race and ethnicity come from the Census Bureau's American Community Survey and the share of manufacturing establishments within a county come from the Census Bureau's County Business Patterns.

Although the general population in Missouri may not be conscious of prevalence of TIF, as is the case in most states, TIF plays a major role in economic development. Table 2 shows the number of TIF districts in the state in 2010. Missouri's two largest cities, Saint Louis and Kansas City, lead the state in the use of TIF with 123 and 99 TIF districts. The third column of the table shows the payments in lieu of taxes (PILOTs) received by all of the active TIF districts in a jurisdiction over its lifetime. PILOTs are the property taxes from the tax increment that would have otherwise been passed on to overlapping jurisdictions. In Missouri, TIF can also capture other taxes generated within the TIF districts. These economic activity taxes (EATs), shown in column 4, consist mostly of sales taxes. The final column shows the total assessed property values that are included in the jurisdictions' TIF increments. Although Saint Louis has the most TIF districts, Kansas City TIF districts encompass include a greater amount of property values. The 99 TIF districts in Kansas City have received \$281 million in diverted property tax revenue and \$243 million in EATs. \$570 million of Kansas City's property values are included in the tax increment of its TIF districts, property value which thereby is not taxable by overlapping jurisdictions until the respective TIF districts expire. All told, the 434 Missouri TIF districts that filed reports in 2010 have received \$1.39 billion in PILOTs and EATs over their lifetime. In 2010, TIF districts captured \$1.65 billion in property values within their tax increments, 75% of the TIF total property value within the TIF districts. Much of the public debate that exists over the efficacy of TIF centers on proponents and opponents of TIF having differing views over what the \$1.65 billion tax increment represents. Proponents of TIF view the

\$1.65 billion as the return to TIF, property tax base that would not exist but for the TIF investment. On the other hand, opponents of TIF view the increment as lost tax revenue for overlapping jurisdictions that would otherwise be used to provide valuable public goods to residents.

Just as TIF has a large influence over Missouri's property tax base, it also has a large influence over many jurisdictions' labor markets. Table 3 shows the number of new and retained jobs supported by Missouri TIF districts since 2007. Between 80 and 110 thousand jobs in Missouri were attributable to TIF districts, representing 2.9% to 4.2% of total employment in the state. TIF can have an even more pronounced impact on the labor markets at the local level. Table 4 shows the count and proportion of TIF supported jobs by county. Panel A shows the 20 Missouri counties with the highest percentage of their employment attributable to TIF and Panel B should the 20 Missouri counties with the highest number of jobs attributable to TIF. In Buchanan County, located just north of Kansas City, the 6,998 jobs created or retained by its TIF districts represents 15% of its employment. In Jackson County, the largest of the counties in the Kansas City metropolitan area, TIF Reports attributed 43,528 jobs created or retained by TIF districts, 13% of the county's total employment. Table 5 presents the same information for Missouri municipalities. Hazelwood, in northwestern St. Louis County, attributes 3,088 jobs to TIF, which is equivalent to 24% of its employed residents.² Grandview, in suburban Kansas City, reports similar TIF employment numbers with 2,485 new and retained jobs, which is equivalent to 21% of its employed residents. TIF districts in Kansas City and Saint Louis report the largest number of new and retained jobs supported by TIF with 31,493 and 7,328 jobs

² Once again, it should be noted that municipal employment data comes from the LAUS household survey, whereas new and retained jobs in the TIF report is based on establishment employment, which makes the county wide employment data from the QCEW more comparable to the TIF Reports.

respectively. Even in these large municipalities TIF supported jobs account for 15% of Kansas City’s employment and 5% of St. Louis’ employment.

5 Empirical Model and Results

Since the utilization of TIF is a deliberate policy decision implemented by municipal leaders, simple OLS regression is likely suffer from omitted variable bias. One possibility is that TIF utilization is primarily developer driven, that is developers make location decisions independent of the presence of an existing TIF district and then, ex-post, successfully lobby for a TIF district at the desired development site. In this scenario OLS estimates of TIF’s impact on employment will have a positive bias as municipalities or counties that developers choose to locate in will have both higher employment and higher TIF activity. Another possibility is that local jurisdictions that find it more difficult to attract employers may be more likely to utilize TIF. In this case, OLS will underestimate the impact of TIF on employment. This paper estimates the impact of TIF on employment using panel data allowing for estimation of the model using both a random-effects (RE) and fixed-effects (FE) estimation approach. The panel data model of employment is

$$E_{it} = \alpha + \beta X_{it} + \theta J_i + \gamma Z_i + u_{it} \quad (1).$$

E_{it} is the natural log of employment in jurisdiction i in period t , X_{it} are time-varying covariates (sales tax rates, property tax rates, manufacturing share and the natural log of TIF supported jobs), J_i are observed time-invariant jurisdiction effects and Z_i are unobserved time-invariant jurisdiction effects, and u_{it} are idiosyncratic errors. Estimating equation (1) using a pooled-OLS or RE approach leads to consistent estimates under the assumption that the unobserved jurisdiction effects, Z_i , are uncorrelated with the observed explanatory variables. However, pooled-OLS and RE results in biased estimates if any unobserved jurisdictional effects in Z_i are correlated with any of the observed explanatory variables. For modeling the effect of TIF on local employment, it may be reasonable to expect the RE assumptions to be

violated, as a likely problematic omitted variable could be the jurisdiction's desirability to developers. If developers successfully lobby for TIF in jurisdictions they intend to locate in regardless of receiving the incentive then a jurisdiction's desirability will positively impact both employment growth and the reported number of TIF supported jobs. In this case, omitting the desirability of a jurisdiction leads to an upward bias of the estimated coefficient for TIF supported jobs. The RE estimates could also suffer from a downward bias if policy makers in less desirable jurisdictions attempt to improve their employment by utilizing TIF. In this case the unobserved desirability variable is negatively correlated with TIF supported employment resulting in a negative bias to the estimate of the observed variable. The standard fixed-effect estimator transforms equation (1) by subtracting the jurisdictional mean value from each variable as follows:

$$E_{it} - \bar{E}_i = \beta(X_{it} - \bar{X}_i) + \theta(J_{it} - \bar{J}_i) + \gamma(Z_{it} - \bar{Z}_i) + u_{it} - \bar{u}_i \quad (2).$$

Since the unobserved Z_i is time-invariant, its value in each time period is equal to the jurisdictional mean and drops out of equation (2). So whereas OLS and RE requires that desirable(undesirable) jurisdictions are not more(less) likely to report TIF supported jobs, the only requirement for consistent FE estimates is that reported jobs attributed to TIF be uncorrelated with deviations of u_{it} from the average over the time period thus eliminating any bias from time invariant omitted variables (Wooldridge 2001). The drawback of the FE model is that the observed explanatory variables that are constant across time also drop out of the equation, meaning the FE approach does not yield estimates of θ .

Tables 7 and 8 show the regression results using the QCEW county employment data as the dependent variable. The first specifications show the results of the pooled OLS regression, the second specifications show the results from the RE regression and the last specifications show the results from the FE regressions. TIF Reports include data on both the number of new jobs supported by the TIF and the number of retained jobs supported by the TIF. In Table 7 the variable Total Jobs, which is the sum of these two jobs numbers, is an independent variable. In Table 8, New Jobs and Retained Jobs are included

separately as the type of economic activity supported by TIF may have different effects on employment. Other explanatory variables include the sales and property tax rates, the share of manufacturing firms in the county, population, percent of the population between the ages of 18 and 64, the percent of the population with a bachelor's degree, the percent of 18 to 64 year olds that are male and variables on the racial and ethnic makeup of the county. The pooled-OLS results indicate that TIF supported employment has a statistically significant positive effect on county employment. The estimated coefficient of 0.022 would indicate that a 1% increase in the number of TIF supported jobs would increase county employment by 0.022%. Since the mean of TIF supported jobs is 794.7, this would suggest that a 7.9 worker increase in TIF supported jobs in a county would increase county wide employment by 5.0 workers. Although the pooled-OLS model indicates that TIF supported employment has a significant impact on county employment, it relies on the strong assumption that counties do not systematically differ from one other, i.e. they all share a common Z_i that is absorbed into the intercept term α . The RE model in the second specification is based on the more realistic assumption that counties have different intercepts Z_i . In the RE model the coefficient for TIF supported jobs is no longer statistically significant, which is consistent with TIF supporting jobs that either would have been created or retained regardless of TIF or that come at the expense of jobs in other areas of the jurisdiction. Of the other explanatory variables in the model, sales tax rate, population, percent of population with a bachelor's degree, percent of Black population and percent of Hispanic population have statistically significant impacts on county employment. The coefficient for sales tax rate is -10.198. For the county data, the mean employment and sales tax rate is 22,508 and 0.059, respectively. Therefore the coefficient indicates that a one standard deviation change in the county sales tax rate from 0.059 to 0.065 would result in a -0.06%, or 14 worker drop, in county employment. The coefficient for percent of population with a bachelor's degree is 0.016 indicating that at the mean, a one standard deviation change in the percent of the population with a bachelor's degree from 15.9 to 22.6 would increase county employment by 0.11% or 24 workers. The FE estimates has the benefit over RE in that its estimates of coefficients of variables that change over time is consistent even in the case of omitted variables, so long as the omitted variables are constant over time.

In the FE model, the coefficient for sales tax rate is slightly smaller but still statistically significant at -9.669. As with the RE model, in the FE model the coefficient for TIF supported jobs is statistically insignificant.

Table 8 separates the number of TIF supported jobs into retained jobs and new jobs. Retained jobs are jobs that already existed within a jurisdiction but would have been lost in the absence of TIF, whereas new jobs are jobs that did not previously exist within the jurisdiction. These results follow a similar pattern to the results in Table 7. In the pooled OLS, the number of new jobs supported by TIF is positive and statistically significant, indicating that a 1% increase in the number of new jobs supported by TIF (5.4 jobs at the mean) results in a 0.017% increase in county employment (3.8 jobs at the mean), while the number of retained jobs does not have a statistically significant impact on county employment. However, in both the RE and FE models the coefficients for both new and retained TIF supported jobs is statistically insignificant.

Since the FE model is consistent in the presence of time-invariant omitted variables and the RE model is biased under such assumptions, a Hausman test can be used to test whether the differences in the coefficients from the FE and RE models are not systematic. The coefficients from the two models not being significantly different would suggest that using the RE model, which estimates coefficients for time-invariant explanatory variables, is appropriate. The p-values for the Hausman test on the RE and FE coefficients is 0.23 for Table 7 and 0.46 for Table 8 supporting the use of the RE model.

Tables 9 & 10 show the results of estimating the model using LAUS municipal employment as a dependent variable. The LAUS data has the benefit of measuring employment at the municipal level. Since municipalities make the decision to utilize TIF, one could argue that this is the appropriate level of investigation. The significant drawback of the LAUS data is that TIF Reports state employment at the establishment level, whereas LAUS data is a household survey. As mentioned previously, residents do not necessarily work within the same municipality as their residence. LAUS data also has the drawback of only estimating employment for 26 Missouri municipalities. In each of the specifications, the coefficients of total TIF supported jobs are not statistically significant. For new and retained TIF

supported jobs the coefficients in all of the models are not statistically significant, with the exception of the coefficient for retained jobs in the RE model. The coefficient is -0.01, but is only significant at the 10% level. The negative sign would indicate that a 1% increase in the number of jobs retained by TIF (10.2 jobs at the mean) reduces a municipality's employment by 0.01% (3.9 jobs at the mean). This finding could be consistent with TIF subsidizing the shifting of economic activity from more labor intensive businesses to more capital intensive businesses, as Byrne (2010) found for TIFs supporting the retail industry in the Chicago metropolitan area. However, the coefficient is insignificant in the FE model and the Hausman test on the coefficients of the two models not being significantly different has a p-value of 0.099, indicating that the FE model may be more appropriate.

Conclusion

Economic development practitioners view TIF as an indispensable tool for promoting local economic development. Not surprisingly then, local policy makers in Missouri, like those in other states, have aggressively utilized TIF in an attempt to attract jobs into their jurisdictions. As a result, TIF has come to cast a large shadow over local finances as \$1.652 billion of the state's property tax base is part of the state's TIF districts. In addition, the 434 TIF districts that filed annual reports in 2010 had diverted \$1.394 billion in sales and property taxes over their lifetimes. A large part of the justification for the diversion of these revenues is the 91,096 jobs the state's TIF districts supported in 2010. However, results indicate that the number of jobs supported by TIF does not have a significant effect on county or municipal employment. These results are consistent with TIF supported jobs either coming at the expense of other areas of the jurisdictions or that TIF supported jobs would locate in the sponsoring jurisdiction regardless of the existence of Missouri's TIF districts.

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Table 1: Hypothetical TIF District's Assessed Values and Tax Collections

Year	Property Values		Tax Collections	
	Total AV within TIF District	Base AV within TIF District	Total Tax Collections	Tax Collections from Base AV
1997	\$250,000	\$250,000	\$25,000	\$25,000
1998	\$2,000,000	\$250,000	\$200,000	\$25,000
1999	\$2,000,000	\$250,000	\$200,000	\$25,000
2000	\$2,000,000	\$250,000	\$200,000	\$25,000
2001	\$2,000,000	\$250,000	\$200,000	\$25,000
2002	\$2,000,000	\$250,000	\$200,000	\$25,000
2003	\$2,000,000	\$250,000	\$200,000	\$25,000
2004	\$2,000,000	\$250,000	\$200,000	\$25,000
2005	\$2,000,000	\$250,000	\$200,000	\$25,000
2006	\$2,000,000	\$250,000	\$200,000	\$25,000
2007	\$2,000,000	\$250,000	\$200,000	\$25,000

Table 2: Summary of TIF Use in Missouri

Endorsing Jurisdiction	Number of TIFs	PILOTs Received to Date	EATs Received to Date	Total AV Captured by Increment
St. Louis	123	\$78,500,835	\$46,270,770	\$167,711,812
Kansas City	99	281,020,950	242,955,452	569,658,359
Independence	17	38,025,196	25,953,290	122,141,439
Grandview	14	10,455,264	5,571,393	19,587,761
St. Joseph	10	9,153,388	12,329,861	48,424,380
Blue Springs	9	1,761,027	2,894,737	10,622,095
Lee's Summit	9	34,525,913	34,537,083	75,392,735
Jennings	7	3,149,502	1,888,346	7,637,630
St. Louis County	6	775,845	566,151	9,499,281
Belton	5	3,195,276	7,815,130	37,265,095
Brentwood	5	11,756,520	30,652,191	42,231,549
St. Charles	5	20,311,842	7,680,744	64,288,200
Liberty	4	1,435,687	3,248,283	10,436,990
Riverside	4	10,499,006	2,007,900	28,359,665
Remainder of State (74 Jurisdictions)	113	19,5428,221	270,429,962	438,923,857
State Total	434	\$699,994,471	\$694,801,294	\$1,652,180,848

Table 3: TIF Supported Employment in Missouri

Year	New and Retained Jobs Attributed to TIF	Percent of State Employment
2007	80,043	2.9%
2008	86,460	3.2%
2009	109,786	4.2%
2010	91,096	3.5%

Table 4: New and Retained Jobs by County

Panel A		Panel B	
County	% of County Employment Attributed to TIF (2010)	County	County Employment Attributed to TIF (2010)
Buchanan County	15%	Jackson County	43,528
Jackson County	13%	St. Louis County	15,652
Madison County	12%	St. Louis City	7,328
Taney County	12%	Buchanan County	6,998
St. Genevieve County	11%	Taney County	3,411
Holt County	10%	St. Charles County	2,063
Howell County	6%	Clay County	1,231
Camden County	5%	Jefferson County	1,145
Pulaski County	5%	St. Francois County	1,045
St. Francois County	5%	Jasper County	972
Atchison County	5%	Howell County	928
Scott County	4%	Camden County	858
St. Louis City	3%	Pulaski County	750
Livingston County	3%	Greene County	715
Barry County	3%	St. Genevieve County	606
St. Louis County	3%	Scott County	561
Mississippi County	3%	Cape Girardeau County	510
Jefferson County	2%	Barry County	470
Perry County	2%	Madison County	420
Gasconade County	2%	Platte County	361

Table 5: New and Retained Jobs by Municipality

Panel A		Panel B	
Municipality	% of Municipal Employment Attributed to TIF (2010)	Municipality	Municipal Employment Attributed to TIF (2010)
Hazelwood	24%	Kansas City	31,493
Grandview	21%	St. Louis	7,328
St. Joseph	19%	St. Joseph	6,998
Kansas City	15%	Independence	4,587
Independence	9%	Lee's Summit	3,510
Lee's Summit	9%	Hazelwood	3,088
St. Peters	7%	Grandview	2,485
Liberty	5%	St. Peters	1,971
St. Louis	5%	Joplin	954
Joplin	4%	Blue Springs	909
Blue Springs	3%	Liberty	785
Raytown	3%	Springfield	680
Ballwin	2%	Raytown	365
Springfield	1%	Ballwin	273

Table 6: Summary Statistics

Variable	County		Municipality	
	Mean	Standard Deviation	Mean	Standard Deviation
Employment	22,508	68,700	38,698	44,775
Population	51,498	120,951	80,209	96,952
Property Tax Rate	0.049	0.012	0.007	0.005
Sales Tax Rate	0.059	0.006	0.074	0.004
New Jobs	541.0	3,195	1,789	4,973
Retained Jobs	253.7	2,253	1,020	4,526
Total Jobs	794.7	5,366	2,809	9,400
% of Firms in Manufacturing Sector	5.4	2.5	Na	Na
% of Population with Bachelor's Degree or Higher	15.9	6.7	34.6	14.1
% of Population between Ages of 18 and 64	59.6	3.5	48.8	1.3
% of Population between Ages of 18 and 64 that is Male	50.3	3.1	48.8	1.3
% of Population White, Non-Hispanic	91.8	8.0	77.6	14.6
% of Population Black, Non-Hispanic	3.3	6.6	13.3	13.7
% of Population Asian, Non-Hispanic	0.5	0.7	2.5	2.3
% of Population Hispanic (White or Black)	1.4	1.5	2.6	1.3
% of Population Other	2.8	2.0	2.5	0.9
Observations	460	460	104	104

Table 7: Impact of Total TIF Jobs on County Employment

	(1)	(2)	(3)
Variable	Pooled-OLS	Random-Effects	Fixed-Effects
Sales Tax Rate	-12.048*** (2.281)	-10.198*** (2.177)	-9.669*** (2.443)
Property Tax Rate	0.839 (1.256)	0.300 (1.394)	-0.441 (1.691)
Ln (total jobs)	0.022*** (0.006)	0.001 (0.003)	-0.0001 (0.003)
Ln(Population)	1.008*** (0.021)	1.039*** (0.039)	
% Manufacturing	-0.565 (0.584)	-0.187 (0.454)	-0.113 (0.489)
% Bach. or Higher	0.014*** (0.004)	0.016** (0.007)	
% 18to64	0.012* (0.007)	0.009 (0.013)	
% Male(18to64)	-0.009 (0.006)	-0.007 (0.012)	
% Black	0.013*** (0.002)	0.014*** (0.005)	
% Hispanic	0.050*** (0.011)	0.056*** (0.022)	
% Asian	-0.005 (0.031)	-0.005 (0.062)	
% Other	-0.005 (0.008)	-0.010 (0.015)	
constant	-1.256*** (0.355)	-1.580** (0.636)	9.365*** (0.167)
observations	460	460	460
R^2	0.958	0.957	0.044

Note: standard errors in parentheses; *** indicated significance at the 1% level; ** indicates significance at the 5% level; * indicates significance at the 1% level

Table 8: Impact of New and Retained TIF Jobs on County Employment

	(1)	(2)	(3)
Variable	Pooled-OLS	Random-Effects	Fixed-Effects
Sales Tax Rate	-12.085*** (2.301)	-10.186*** (2.180)	-9.641*** (2.443)
Property Tax Rate	0.871 (1.278)	0.230 (1.422)	-0.509 (1.734)
Ln (New Jobs)	0.017** (0.008)	0.0002 (0.003)	-0.0008 (0.003)
Ln (Retained Jobs)	0.008 (0.011)	0.001 (0.005)	0.001 (0.005)
Ln(Population)	1.010*** (0.022)	1.039*** (0.040)	
% Manufacturing	-0.588 (0.584)	-0.191 (0.454)	-0.115 (0.490)
%Bach. or Higher	0.014*** (0.004)	0.016** (0.007)	
% 18to64	0.013* (0.007)	0.009 (0.013)	
%Male(18to64)	-0.009 (0.006)	-0.007 (0.012)	
%Black	0.01*** (0.002)	0.013*** (0.005)	
%Hispanic	0.051*** (0.011)	0.056*** (0.022)	
% Asian	-0.006 (0.031)	-0.005 (0.062)	
%Other	-0.006 (0.008)	-0.011 (0.016)	
constant	-1.284*** (0.362)	-1.572** (0.642)	9.367*** (0.168)
observations	460	460	460
R^2	0.959	0.957	0.045

Note: standard errors in parentheses; *** indicated significance at the 1% level; ** indicates significance at the 5% level; * indicates significance at the 1% level

Table 9: Impact of Total TIF Jobs on Municipal Employment

	(1)	(2)	(3)
Variable	Pooled-OLS	Random-Effects	Fixed-Effects
Sales Tax Rate	-5.607* (2.831)	-5.411* (3.153)	-3.865 (3.265)
Property Tax Rate	8.789*** (2.270)	7.570* (4.463)	-14.339 (10.745)
Ln (total jobs)	-0.003 (0.003)	-0.005 (0.003)	-0.004 (0.003)
Ln(Population)	0.940*** (0.013)	0.945*** (0.024)	
%Bach. or Higher	-0.001 (0.001)	-0.001 (0.002)	
% 18to64	0.014*** (0.003)	0.011** (0.005)	
% Male(18to64)	-0.001 (0.007)	-0.000 (0.007)	
%Black	-0.019** (0.001)	-0.018 (0.013)	
%Hispanic	0.010 (0.019)	0.007 (0.037)	
% Asian	0.001 (0.005)	0.002 (0.009)	
%Other	-0.024** (0.012)	-0.020 (0.022)	
constant	-0.097 (1.182)	0.213 (2.252)	9.365*** (0.167)
observations	104	104	104
R^2	0.989	0.989	0.2028

Note: standard errors in parentheses; *** indicated significance at the 1% level; ** indicates significance at the 5% level; * indicates significance at the 1% level

Table 10: Impact of New and Retained TIF Jobs on Municipal Employment

	(1)	(2)	(3)
Variable	Pooled-OLS	Random-Effects	Fixed-Effects
Sales Tax Rate	-5.566* (2.814)	-5.328* (3.129)	-3.855 (3.259)
Property Tax Rate	7.978*** (2.721)	6.191 (4.586)	-14.326 (10.752)
Ln (New Jobs)	0.0003 (0.003)	0.0002 (0.004)	-0.0004 (0.005)
Ln (Retained Jobs)	-0.007 (0.005)	-0.010* (0.006)	-0.007 (0.006)
Ln(Population)	0.948*** (0.015)	0.955*** (0.025)	
%Bach. or Higher	-0.001 (0.001)	-0.001 (0.002)	
% 18to64	0.0134*** (0.003)	0.0108** (0.005)	
% Male(18to64)	0.002 (0.007)	-0.001 (0.007)	
%Black	-0.002** (0.001)	-0.001 (0.001)	
%Hispanic	0.013 (0.019)	0.012 (0.038)	
% Asian	-0.000 (0.005)	-0.001 (0.010)	
%Other	-0.020 (0.012)	-0.016 (0.022)	
constant	-0.175 (1.176)	0.094 (2.299)	10.622*** (0.250)
observations	104	104	104
R^2	0.990	0.989	0.2310

Note: standard errors in parentheses; *** indicated significance at the 1% level; ** indicates significance at the 5% level; * indicates significance at the 1% level

Figure 1: College Hill TIF District, Topeka, KS



Figure 2: Mission, KS TIF District

