THE IMPACT OF TAX INCREMENT FINANCING PROGRAMS ON LOCAL ECONOMIC DEVELOPMENT

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ABSTRACT: The Tax Increment Financing (TIF) method has achieved widespread popularity as a funding source to finance local infrastructure investments and improvements. However, little research has been conducted to evaluate the effectiveness of such programs. This study undertakes a regression analysis to examine the effects of the municipal adoption of TIF programs on local economic development. The empirical results suggest that the adoption of TIF programs has a significant positive effect on local employment.

INTRODUCTION

To revitalize deteriorated sections of many urban areas at a time of declining federal grants-in-aid for urban redevelopment, many states have adopted a variety of innovative mechanisms to help stimulate economic activities within specific geographic boundaries. One such mechanism gaining increasing popularity is the tax increment financing (TIF).

First used as a funding technique in California in 1952, TIF did not achieve widespread popularity as the primary funding source for local development until the 1970s. But by 1993, at least 44 states in the United States had adopted TIF enabling legislation (Forgey, 1993).

The tax increment financing method enables cities to use the increased property tax revenues generated by an urban development (the

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tax increment) to pay for public investments and improvements. These investments and improvements may include government spending on water and sewer lines, streets, lighting, parking lots, land procurement, and necessary planning and engineering.

The increasing popularity of TIF programs has also raised several concerns on the use of TIF as an economic development tool. One such concern is over the programs' effectiveness in accomplishing their established goals of stimulating local economic development. In the literature of public policy study, economic development policies have been, and continue to be, a hotly debated subject. This debate is not limited to whether the benefits of such policies outweigh the costs but is also extended to whether those policies have any effect on economic development at all. Much of the existing works on TIF have assessed the planning, legal, political, and administrative issues associated with the implementation of TIF programs (Bingham, Hill and White, 1990; Davidson, 1979; Huddleston, 1981, 1982, 1984, and 1986; Klemanski, 1990; Lawrence and Stephenson, 1995). Anderson (1990) examined the relationship between property value growth and the establishment of TIF districts, but his study did not address the issue whether the growth is induced or caused by the creation of a TIF program. Therefore, this paper conducts a regression analysis to examine the effects of the municipal adoption of TIF programs on local employment.

AN OVERVIEW OF THE TAX INCREMENT FINANCING PROGRAM

Numerous policy issues have been raised in the analysis of TIF. Before identifying and discussing these issues, it is necessary to review briefly the designation process of a TIF program. Typically, a city first identifies and then designates a geographic area, usually a blighted or deteriorating area, as a TIF district. Most states require the establishment of “blight” or “slum” conditions as a prerequisite for the designation of an area as a TIF district. Once the district is established, a base assessed property valuation is determined. Local taxing jurisdictions that have taxing authority within the designated TIF district, such as the county, township, school district, continue to collect property taxes generated from the base assessed valuation, but taxes derived from an increase in the assessed values go into a special tax increment fund to pay for the necessary public infrastructure investments and improvements in the TIF district. The TIF process operates until all the projects are completed and all the debts incurred by the city to cover the costs of public improvements have been repaid. When the TIF district is
dissolved, the amount of the property tax based on the full increased assessed valuation of the area is returned to all taxing bodies. In this way, TIF has been described as a technique to disperse the costs of development to those government agencies that will benefit from the increased tax base that a TIF project will generate (Paetsch and Dahlstrom, 1990).

Proponents of the TIF mechanism claim that such programs have made significant contributions to local economic development. First, TIF can provide significant capital to some types of development projects that are economically feasible but would not have occurred without TIF. Second, TIF programs have worked as a strong unifying force in the economy, which induces normal antagonists -- developers, neighborhood groups and local government officials -- to form a public-private partnership to deal with urban problems and to restructure the otherwise deteriorating areas. Third, TIF district development may create economic growth both inside and outside the TIF district, especially if the development is industrial or commercial (DeBoer, McNamara and Gebremedhin, 1992). The market value of the property tax base of both the enacting and overlapping governments may increase. In addition, economic and population growth associated with the TIF district may generate increases in other local government revenue sources, such as local income taxes, sale taxes and motor vehicle excises taxes. Fourth, development projects are financed from increased tax revenues that the project generates rather than being subsidized by taxes from other overlapping governments (Greuling, 1987). Under TIF, property owners do not pay more than the normal tax burden. Therefore, no real loss to the community occurs from using the incremental tax dollars for incentives or infrastructure. Finally, TIF is also a flexible and politically popular tool. The TIF process can be initiated at any time when a city perceives a development opportunity, and project funds can be used for almost any incentive purposes. In addition, because the TIF enabling legislation requires that the enacting government spend money for projects only when enough revenues have accumulated in the TIF fund, many people believe that a TIF project will pay for itself.

By contrast, its critics have raised many arguments criticizing the use of TIF. One fundamental criticism is that TIF program is ineffective and inefficient, because tax incentives provided through TIF usually account for only a small portion of a firm’s production cost so that they are unlikely to affect business location choices or expansion decisions (Cummings, 1988). Other criticisms focus on either the general regressive nature of many
inducement packages or the lack of economic returns for jurisdictions which offer incentive packages (Cummings, 1988; Rosentraub and Swindell, 1991). They maintain that because TIF does not allow other overlapping jurisdictions to use tax revenue increases resulting from the property value growth in the designated area for a long period, the TIF method constitutes a subsidy from overlapping jurisdictions to the enacting government. In addition, economic development in the TIF district is likely to increase demands for government services provided by all overlapping governments, such as school, fire protection, and public safety. As a result, school districts and other overlapping jurisdictions within a redevelopment area appear to become the most vocal critics of TIF. They believe that they are forced to lose tax revenue and increase spending on public services due to the increased demand generated by growth in the TIF district. Therefore, some critics charge that TIF is little more than a budget manipulating tool adopted by growing cities to capture property tax revenues that would otherwise have gone to the township, school corporation or other overlapping jurisdictions.

These competing views over the value of TIF districts suggest the importance of evaluating the effectiveness of the TIF program in stimulating local economic development. By undertaking a regression analysis of the data drawn from Indiana cities, this study attempts to examine the effect of the TIF program on local economic development.

**MODEL AND ESTIMATION**

Local governments adopt TIF programs in an attempt to spur economic activity, which is expected to result in higher property values, more jobs, lower unemployment, higher wages, and more tax revenues. The benefit to property owners and developers in the TIF district derives from the local government’s pledge to use all increases in property tax revenues generated from new development to finance infrastructure improvements or other development projects in their own district, rather than to pay for the general cost of local government services. In the absence of TIF, these costs would be borne by the developers. Thus, TIF acts as an inducement to a location as private investors are assured that their property taxes are used to pay for infrastructure needs and development expenditures that directly benefit their businesses.

Local economic development is defined here as the level of business activity in a community, which is commonly measured as the level of
employment (for example, the familiar phase “jobs, jobs, jobs”. Storey (1990) argued that one of the desired goals of state and local incentive policies is to create local employment. Thus, whether this goal has been achieved or not is a proper measure of the effectiveness of local tax incentive policies. For a given city, employment level determination can be written as follows:

\[ \ln E_{it} = a_0 + \beta X_{it} + \alpha TIF_{it} + \bar{G}_{it} + \bar{c}_i + \bar{c}_t + e_{it} \]  

(1)

Where \( \ln E_{it} \) is the observed level of employment in logarithms for city \( i \) in year \( t \). \( X_{it} \) is a vector of observation on exogenous factors determining the level of employment, such as input cost, market demand, composition of industries. \( TIF_{it} \) is a dummy variable to indicate whether the city has or does not have at least one TIF district in year \( t \). \( G_{it} \) is a matrix of observations on government spending and taxes levied by the local government in city \( i \) and year \( t \). \( \bar{c}_i \) and \( \bar{c}_t \) represent jurisdiction-specific fixed effects and time effects, respectively. \( \alpha, \beta, \bar{a}, \bar{a}, \) and \( \bar{a} \) are vectors of unknown coefficients. \( e_{it} \) is a normally distributed error term. The estimated coefficient of \( \bar{e} \) measures the effect of the TIF program on local employment. The log specification is chosen because such a functional form reduces the sum of squared residuals. Meanwhile, such a functional form serves well in the control for nonlinearity of the estimation model.

Cross-section time series data from Indiana cities from 1985 to 1992 are used to estimate the impact of TIF on local employment. Indiana passed TIF enabling legislation in 1975, but it was not until the mid-1980s that cities began to exercise this option. By 1992, governments in 21 counties had created 53 TIF districts. Due to the limitation of data availability, the sample study includes 53 cities with population greater than 10,000 in 1990. Among them, 22 cities had created at least one TIF district by the end of 1992. The 31 cities without the TIF programs are used as the control group in the estimation of the effect of TIF programs on employment.

The level of employment in logarithms is used here as the dependent variable, which is similar to other studies using employment level as dependent variable to examine the effects of policies on economic development (Wassmer, 1994). The pooled cross-section and time series analysis is conducted to provide more efficient parameter estimates of the model. Independent variables include (1) local market conditions; (2) taxes and other revenues; (3) public spending; (4) economic-wide cyclical variable; and (5) local incentives.
Local Market Conditions

A lagged employment variable measured as the level of the city’s employment in 1980 (EMPL80) is used as a control variable in the model to measure the size of a labor force and potential consumer market. This variable is expected to be positively related to the dependent variable. A variable defined as percentage of population that completed college education (COLLEGE) is used to measure the quality of the local labor force. Generally, cities with better educated workers are thought to be more attractive to businesses and, consequently, result in higher employment level. Local specific amenities are also likely to be important location factors to firms. Thus, the population density (DENSITY) and the real per capita personal income in 1985 (PCY85) are employed to account for local amenities on firms’ location decisions and level of economic activities in a jurisdiction. The literature suggests that composition of local economies can affect the level of employment through the possible agglomeration effect. Thus, this model also includes variables on the industrial mix measured as percentage of workers employed in manufacturing, service, and wholesale and retail sectors (EMPLMPC, EMPLSPC, EMPLWRPC), respectively.

Taxes and Other Revenues.

Local government taxes, especially local property tax, may reduce after-tax returns to capital owners. As firms seek to maximize their profit as their ultimate goal, if everything else is equal, high taxes in a jurisdiction may discourage firms from locating their businesses there or drive away the existing businesses to low-tax jurisdictions, causing capital relocation. Thus, the differences in the local taxes across jurisdictions may affect business location and expansion decisions and, consequently, the level of employment in a jurisdiction. Previous studies suggest that state and local taxes indeed have a strong negative effect on the economic development. In his review of 57 studies produced after 1979 on interjurisdictional business location decisions, Bartik (1991) found that 40 of these studies (about 70 percent) reported evidence of state and local tax effects on state and local business activities. He estimated that the average tax effects on state and local business growth range from -0.15 to -0.85. This implies that if all state and local business taxes were reduced by 10 percent from their usual level, local employment, output, business capital stock, the number of new branch plants and other measures of business activity would increase by between 1.5 percent and 8.5 percent in the long run. To capture the tax effect on
employment, included in the model are variables on real property tax revenue per capita (PROPTAX), real local income tax revenue per capita (INCTAX), real local sales tax revenues per capita (SALNTAX) and real local miscellaneous fees and charges per capita (USERFEE). Other revenues, such as real per capita federal aid and state aid received by the city (FEDAID, STAID), are also included to control for the effect of intergovernmental aid on local economic activities.

Public Spending.

Public services may also affect economic activities in a jurisdiction. Most recent studies that examine the effects of public services on economic growth have discovered a statistically significant positive effect of public services on economic development. Recently, economists (Bartik, 1989; Munnell, 1990, Duffy-Deno and Eberts, 1991; Helms, 1985; Plaut and Pluta, 1983) have suggested that a tax increase, if used to finance public services other than welfare (such as local schools, highways, water and sewer lines and other public infrastructure), may actually raise the number of small business start-ups and spur growth in state personal income and state private employment. Hence, public services such as real spending in fire protection (FIREXP) and police protection (POLICEXP) are included in the regression estimation to capture the effects of public services on economic development.

Local Incentives.

Researchers (Green, Fleischmann and Kwong, 1996; Wassmer, 1994) commonly use a dummy variable as a proxy for tax incentive policy. Like most other studies, incentives provided are measured through TIF by a dummy variable, which takes value one if the city has at least one TIF district by 1992, or zero otherwise. Since TIF is a mechanism of financing infrastructure investment and improvement, it is expected to reduce private firms' production costs, increase business profits, and attract firms to the jurisdiction that adopts a TIF program. Therefore, if the TIF program is effective in stimulating economic development, it is more likely to have a positive relationship with local employment. However, the probability exists that cities that experience economic distress are more likely to adopt incentives such as TIF programs to spur growth and create more jobs (Green, Fleischmann and Kwong, 1996). Thus, the municipal adoption decision of TIF may be correlated with the level of employment. This study follows
Wassmer (1994) to use of one-year lag TIF variable to control for possible simultaneity bias.

**Economy-wide Cyclical Variable.**

As the time sample selected in the model covers the period of 1985 to 1992, a dynamic era when the U.S. economy was experiencing major structural changes and varying business cycles, a variable on the level of U.S. employment from 1985 to 1992 is included to control for cyclical effects due to time changes. This method is similar to using time dummies in the model to control for time effects.

**ESTIMATION RESULTS**

Estimates of the coefficients of the employment equation using the ordinary least square (OLS) are reported in Table 1. The estimated model using OLS is highly significant. The hypotheses that all the coefficients in the model are zero are rejected on the basis of the F test value, that is, $F(17, 353) = 1195$.

The coefficient estimate of the variable of primary interest, the TIF dummy variable, is positive and significantly different from zero at the 0.01 levels. It indicates that after controlling for a series of other variables including tax and expenditure, industrial and demographic composition, and socioeconomic conditions, TIF programs in Indiana increased the level of total employment in the TIF adopting cities as compared with the cities without TIF. On average, cities that adopt TIF programs created 4 percent more jobs than those non-TIF cities. This result supports the argument that TIF programs have a strong positive effect on employment in the community that adopts TIF.

The property tax rate has a statistically significant negative effect on local employment. Consistent with other studies (Oates, 1969; Rosen, 1982), this result shows that a high property tax makes the high-tax jurisdiction less attractive for industrial location and expansion and lowers the economic activities including employment within the jurisdiction. The income tax rate is statistically insignificant. This result may be attributed to the fact that the local income tax is an optional tax in Indiana, and the burden of local income tax is relatively small. As expected, the coefficient estimate for the user charges and fees is statistically significant and negatively related to the employment level.
of a city. But the sales tax variable is positively related to employment. A possible explanation is that the sales tax revenue is positively associated with economic development, so higher levels of economic activities yield higher level of sales tax revenues.

### TABLE 1

**Regression Estimates of the Employment Equation**

<table>
<thead>
<tr>
<th>Variables</th>
<th>OLS</th>
<th>t-Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-15.93***</td>
<td>(4.41)</td>
</tr>
<tr>
<td>TIFDUM</td>
<td>0.045***</td>
<td>(2.59)</td>
</tr>
<tr>
<td>LEMPL80</td>
<td>0.621***</td>
<td>(7.94)</td>
</tr>
<tr>
<td>LEMPLUS</td>
<td>0.759***</td>
<td>(3.92)</td>
</tr>
<tr>
<td>LSTAX</td>
<td>-0.033</td>
<td>(1.13)</td>
</tr>
<tr>
<td>LFEDAID</td>
<td>-0.002</td>
<td>(0.57)</td>
</tr>
<tr>
<td>LPROPTAX</td>
<td>-0.082***</td>
<td>(3.25)</td>
</tr>
<tr>
<td>LINCTAX</td>
<td>0.002</td>
<td>(0.71)</td>
</tr>
<tr>
<td>LSALTAX</td>
<td>0.030***</td>
<td>(4.26)</td>
</tr>
<tr>
<td>USERFEE</td>
<td>-0.044***</td>
<td>(2.74)</td>
</tr>
<tr>
<td>FIREX</td>
<td>0.044***</td>
<td>(5.11)</td>
</tr>
<tr>
<td>LPCY85</td>
<td>-0.041***</td>
<td>(2.66)</td>
</tr>
<tr>
<td>COLLEGE</td>
<td>0.004***</td>
<td>(4.50)</td>
</tr>
<tr>
<td>DENSITY</td>
<td>0.9E-06</td>
<td>(0.09)</td>
</tr>
<tr>
<td>EMPLMPC</td>
<td>0.001***</td>
<td>(4.04)</td>
</tr>
<tr>
<td>EMPLSPC</td>
<td>-0.002</td>
<td>(0.98)</td>
</tr>
<tr>
<td>EMPLWRPC</td>
<td>0.002*</td>
<td>(1.84)</td>
</tr>
</tbody>
</table>

Adjusted $R^2$: 0.983
Sample size: 371

Note: The dependent variable is LEMPL, the natural log of employment in each city in the period of 1985-1990 and 1992. L in front of a variable name denotes the natural logarithm. Jurisdiction specific fixed effects and time effects were compiled but not reported here.

*** significant at the 0.01 level or less at the two-tail test.  
** significant at the 0.05 level.  
* significant at the 0.1 level.
In addition, firms are attracted to cities with a highly productive labor force measured as percentage of residents with college education (COLLEGE). Firms and employees are also attracted to cities that have relatively higher concentration of manufacturing industry (EMPLMPC), due to agglomeration effects and labor migration effects. Furthermore, the empirical results support the argument that the level and distribution of government expenditures also affect business location decisions and, consequently, the level of employment. The positive coefficient estimate for government expenditure on fire protection (LFIREXP) implies that cities that provide higher level and quality of fire protection services are more attractive to private business as their site for firms location and expansion, resulting in more jobs in the jurisdiction. The negative coefficient of the variable on local spending on police protection (LPOLICEXP) is statistically significant from zero at the 0.01 level, which may reflect high demand for civilian safety services in high-crime municipalities. The results reveal that the variables of initial employment (EMPL80) and per capita income (PCY85) are both positive and statistically significant at the 0.01 level, indicating that bigger and more affluent cities produce more jobs than other places during the period of 1985 to 1992.

CONCLUSIONS

This study has examined the relationship between the municipal adoption of TIF program and local employment using a cross-section time series regression model for a data set drawn from Indiana municipalities. The empirical results show that TIF programs have statistically significant positive effect on local employment. This finding indicates that the targeted public investment in a TIF district yields substantial positive impact on local economic development. Therefore, TIF is an effective tool in creating more jobs and stimulating local economic activities.

However, the effectiveness of TIF as an economic development tool is only a necessary, but not a sufficient condition for the policy adoption. This criterion does not consider either the efficiency requirement that the benefits of TIF programs exceed the costs associated with the administration and implementation of the TIF district, or the equity requirement that TIF does not create financial disparity among taxpayers by benefitting one group more than another. Additional research is needed to address current debates over the issues concerning whether taxes and incentives are effective in influencing
the location of capital investment and whether the benefits of such policies outweigh the costs to taxpayers.

REFERENCES


DeBoer, L., McNamara, K. T. and Gebremedhin, T.G., (1992), *Tax Increment Financing: An Infrastructure Funding Option in Indiana*, Purdue, IN: Department of Agricultural Economics, Purdue University.


