THE EFFECT OF STATE AND LOCAL TAX INCENTIVE PROGRAMS ON JOB GROWTH

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In the past several decades, various tax and financial incentives have been offered by state and local governments to stimulate economic development. These programs consume billions of dollars each year in expenditures and forgone tax revenues. Among the most commonly used tax incentives are property tax abatements, enterprise zones (EZ) and tax increment financing (TIF) programs. According to some recent studies, by 1992 at least 31 states had used property tax abatements for economic development (Wassmer, 1992); by 1991 about 37 states and the District of Columbia had established some form of enterprise zone programs (Papke, 1994); and by 1993 nearly 44 states had adopted TIF enabling legislation (Forgey, 1993).

Property tax abatements reduce the price of land and capital for industrial and commercial firms by exempting new investment and substantial rehabilitation from property taxation for a period of time. The amount of property tax reduction depends on the duration of the abatement and the percentage reduction in each time period. By offering tax abatements, state and local governments attempt to increase new construction and capital investment in the targeted areas and create more economic opportunities for their residents. Many state and local governments have also targeted certain depressed areas for revitalization by providing a combination of labor and capital tax incentives to firms operating in the designated enterprise zones. Besides property tax abatements and EZs, TIF programs have been used increasingly by state and local governments to finance public investments and infrastructure improvements, such as water and sewer lines, streets, lighting, parking lots, and land procurement, that are deemed necessary to induce private investment expansion or location in a specific geographic area designated as a TIF district.1 While these programs differ in specifics, each offers a tax incentive package devised to induce firms to locate or remain in targeted geographic areas and to enhance job opportunities for residents in the local jurisdiction.

Despite the pervasive use of these incentive programs and the commitment of considerable public resources to fund them, information on their effectiveness is scarce. One fundamental question remains: Can state and local tax incentive programs influence a firm’s location decision and stimulate local economic development?

Recently, a number of studies have focused on the evaluation of specific economic development policies. Anderson (1990) examined the association between property value growth and the establishment of TIF districts. He detected faster economic growth for those jurisdictions that adopt TIF than for those that do not. His study did not address the issue of growth induced or caused by the creation of a TIF program. Man and Rosentraub (1998) estimated the effect of TIF programs on property value growth and found that the municipal adoption of TIF increased the median owner-occupied housing value by 11 percent. Wolkoff (1985) examined the effect of tax abatements on firms’ investment decisions, using a sample in the City of Detroit from 1972-1979, and found that the potential for inducing urban economic development by using property tax abatements was limited and that the full tax abatement simply had too small an influence on firm investment. Wassmer (1992) estimated a system of simultaneous equations using a 1977-1987 panel data set from the Detroit metropolitan area and found that property tax abatements were effective at increasing nonresidential property bases, but at costs that were sometimes disregarded by local governments. Papke (1994) examined the effect of Indiana’s enterprise zone programs and demonstrated that zone designations reduced unemployment claims by 19 percent and led to increases in the value of firm inventories by 8 percent. Papke also found that the value of personal property declined by 13 percent.

Some researchers have conducted regression analysis to estimate the additive effects of various incentive programs on a community’s economic development. Ó hUallacháin and Satterthwaite (1992) examined employment growth in 37 disaggregated sectors across U.S. metropolitan areas between 1977 and 1984 in a regression model and found that enterprise zones and university research parks were associated with increased job growth.
Using a data set drawn from cities in the Detroit metropolitan area, Wassmer (1994) found that among the four local programs that had been available—industrial development bonds, commercial property tax abatements, a downtown development authority, and a tax increment financing authority district—only the variable for the tax increment financing exerted a positive effect on real retail sales. In their investigations of the effectiveness of 12 local development policies adopted by 900 cities in the United States, however, Green, Fleischmann and Kwong (1996) found no economic development policy to be statistically related to changes in the number of manufacturing and service jobs between 1982 and 1987.

Although the studies of the effects of tax incentives on local economic development have shed light on the effectiveness of these policy tools, the empirical evidence from these studies is conflicting and inconclusive. None of these studies have answered the basic policy issue of central concern to public administrators: Do tax incentive programs spur job growth beyond the level that would have been expected had the programs not existed? To answer this question, according to Boviard (1992), “estimation of the gross direct effects of LED [local economic development] initiatives requires data for the ‘before’ and the ‘after’ periods and a way of controlling for the effects of external changes not connected to the initiatives.” Heckman and Hotz (1989) also suggested that the consistent estimate of the program effect can be obtained by comparing outcomes before and after the designation of the program in a first difference model.

This study attempts to examine the effects of various tax incentive programs on employment growth by comparing job levels before and after the implementation of these programs. This before and after perspective compares the level of employment at the two points and assumes the difference is due to the adoption of these policies. Because the model can separate the general pattern of employment growth from the reaction to the tax incentive programs, such a method is the most appropriate to identify the direct impact of local economic development policies (Boviard, 1992; Heckman and Hotz, 1989).

The model uses pooled cross-section time series data for Indiana cities from 1977 to 1992 to analyze the pattern of employment change before and after the designation of tax incentive programs. The year 1977 is the pre-program year; the first property tax abatement program was implemented in Indiana in 1978. The years 1985 to 1992 are selected as the “after” period because, due to wide variations in the years of adopting tax incentive programs among municipalities, the designation of one particular post-program year cannot capture the duration of the programs and changes in the size of tax incentives over time. The comparison of the employment changes among cities between the pre-program year of 1977 and the post-program years of 1985 to 1992 enables a test of the breadth and duration of the incentive programs’ effectiveness by allowing the influence of these programs to change over time. Such pooled cross-section and time-series analysis controls for external influence over time and across jurisdictions and is less likely to overestimate the program effects than a simple cross-section analysis.

DATA USED
Panel data for Indiana cities during 1977-1992 are used to estimate the impact of local incentive programs on job growth. In 1977, the state adopted a legislation allowing counties, cities, and towns to grant property tax abatements in designated Economic Revitalization Areas. Local governments may declare an Economic Revitalization Area where there is a lack of economic development and property value growth or obsolete industrial facilities that could lead to declining employment levels and tax revenues. Non-retail businesses located in a redevelopment area can apply for abatements on rehabilitated or redeveloped real property and/or on newly purchased manufacturing equipment for a period of three to ten years. Since 1978, when Indianapolis first adopted a property tax abatement
program, an increasing number of cities in Indiana has utilized such a tax incentive program. By 1992, 119 cities had granted abatements.

Local governments in Indiana also grant tax reductions on the increased assessed value of rehabilitated real property, including residential property and buildings and structures 10 or more years old. A rehabilitation deduction is available for five years with maximum deducations ranging from $5,000 for single family dwellings to $25,000 for other structures. By 1992, some 158 cities had granted rehabilitation deductions.

Indiana passed TIF enabling legislation in 1975, but a legal challenge and administrative complexity delayed adoption of programs. In 1985, the city of South Bend implemented the first TIF program. By 1992, there was a total of 53 TIF districts in 32 cities and towns and seven counties. As a mechanism of financing infrastructure investment and improvement, it is expected that TIF may reduce private firms' production costs, increase business profits, and attract firms to the jurisdiction that adopts TIF programs.

Indiana enacted legislation in 1983 to permit the designation of selected depressed inner city areas as enterprise zones. In order to qualify for enterprise zone designation an area must meet the unemployment rate and poverty rate standard set by the legislation. Businesses that locate within the zone may claim employment tax credits, gross income tax exemption, and a tax credit against local property tax imposed on all business inventories. From 1985 to 1990, the number of cities that adopted the EZ program increased from 10 to 22.

Despite differences, all these programs are used as incentives to attract or retain businesses and bring in jobs and other economic benefits to the targeted areas and the entire community. Local officials commonly believe that tax incentives provided through these programs will put their respective communities in an advantageous position in competition for desirable local or regional businesses and will generate jobs for local residents, enhance local tax base, and stimulate economic growth. To what extent does this widespread belief in the benefits of the incentive programs reflect their performance? This study estimates an empirical model for employment level determination to evaluate the direct effects of tax incentive programs on job growth.

Due to the limitation of data availability, this study for the period from 1977 to 1992 included 53 cities with populations of at least 10,000 in 1990. In 1985, among the sample cities, only one city had created a TIF district, nine cities designated an enterprise zone, 14 cities granted tax abatements in the targeted areas, and 33 cities offered a tax deduction for rehabilitated real property. By 1992, some 22 cities had created at least one TIF district, 14 cities had at least one active enterprise zone, 35 cities had offered property tax abatements, and 45 cities had granted the rehabilitation tax deduction.

The dependent variable, which is defined as the difference in the level of employment before and after the possible adoption of the tax incentive programs, is regressed on the tax incentive variables and other variables that may influence the job growth. The independent variables used in the estimation of the employment change equation measure the local tax incentive programs, input costs, labor market conditions, agglomeration forces, taxation, public expenditures, and time effects due to varying business cycles.

Local Tax Incentive Variables. Local tax incentives provided through TIF, EZ, property tax abatements, and real property rehabilitation programs are measured in two ways. In the first specification, I follow previous studies to use dummy variables as proxies for tax incentive programs. They take value one if the city had adopted a program of specific categories in the post-program years of 1985 to 1992 or zero otherwise. As discussed earlier, this measure assumes away the differences in the size of tax incentives and therefore cannot quantify the extent to which the tax incentives have been used. In fact, there are wide variations in the size of incentives granted by jurisdictions. For example, the size of Indiana TIF districts measured by the assessed property value varied from $18,000 to $110 million in 1992. The percentage of a city's property tax base located in TIF areas ranged from less than 1 percent to nearly 13 percent. The amount of assessed value abated away from property taxation varied from a few thousand dollars to $50 million, with an average of $13 million in 1992.

In order to measure more precisely the effects of local tax incentive programs, I employ an alternative specification that accounts for the relative size of the various tax incentives. The degree of local property tax abatement is measured as a percentage of the city's property tax base abated away. The amount of the assessed property value in enterprise zones as a ratio to a city's entire property tax base is used to measure the size of EZ areas.

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relative to the host community. The variable on the size of TIF programs is defined as the amount of debt issued and/or the amount of "pay-as-you-go" public spending for TIF developments divided by the value of the city's property tax base. The local tax incentives provided through real property rehabilitation programs are measured by the percentage of rehabilitated real property assessed value reduction in a city's property tax base. If the tax incentive programs can indeed influence interjurisdictional business location decisions, the incentive variables are expected to have positive relationships with job growth.

**Input Costs and Labor Market Conditions.** The variable measuring changes in the average wage rate for manufacturing production workers was included to account for the variation in labor costs across cities. This variable and the following income, tax, and expenditure variables were all deflated by the Consumer Price Index (CPI) to eliminate the inflation effect. Higher average wages of production workers may reflect higher direct costs of labor in a jurisdiction, resulting in lower employment and lack of economic activity. In order to account for the influence of productivity differences of labor force on local employment growth, I include in the model a variable to measure changes in the percentage of the population that completed college education (COLLEGE). Previous studies (Plaut and Pluta, 1983) showed that the high quality of a labor force reflected productivity of workforce that could attract firms and thus increase economic activities in a jurisdiction.

**Agglomeration and Market Strength Variables.** Firms may want to locate near a potential labor supply and tend to agglomerate into the same location to reduce transportation and information costs and increase their access to better qualified personnel. The cost savings and other agglomeration benefits may draw firms in a particular industry to larger cities or to cities that have more of that industry. I follow Ó Hallán and Satterthwaite (1992) to use initial employment level of the city as a control variable in the model to measure the size of a local labor force and general agglomeration effects. The change in real per capita personal income is included as an independent variable in the employment growth equation as a proxy for potential consumer market demand. Since large and affluent cities usually yield greater market opportunities, the two variables are expected to be positively related to job growth. The concentration of certain industries in a city may stimulate industry expansion and job creation. Thus, this model includes variables on the industrial mix measured as the percentage of workers employed in manufacturing, service and whole-sale and retail sectors, respectively.

**Taxes and Other Revenues.** Local government taxes, especially local property taxes, may affect local employment. If the tax on business is not fully shifted forward to consumers or shifted backward to labor or capitalized into the price of land, taxes may reduce the net profit to capital owners. Because the ultimate goal for private firms is profit maximization, 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 have indicated that state and local taxes indeed have a strong negative effect on the economic development. To capture the tax effect on employment growth, I include variables measuring changes in property tax rate and per capita total tax liability, and the adoption of an optional local income tax. Other revenues, such as changes in real per capita federal aid and state aid received by the city, are also included to control for the effect of variations in intergovernmental aid on job growth.

**Public Spending.** Public services may also affect economic activities in a jurisdiction. Higher level and quality of public services may attract firms to locate and expand their businesses in the jurisdiction. Previous studies (Helms, 1985; Bartik, 1989; Munnell, 1990; Duffy-Deno and Eberts, 1991) have suggested that 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 cause growth in state personal income and state private employment. Public services of concern to businesses are measured by per capita expenditures on police protection, fire protection, and highways and roads in the municipality. Generally, the signs of the coefficients of the expenditure variables are expected to be positive. However, the preference of firms for public services may be ambiguous, especially for safety,
because high expenditures for police protection may result from high crime rates. Firms may not locate in high crime rate municipalities.

**Economy-Wide Cyclical Variables.** Since the time span selected in the model covers a dynamic era when the U.S. economy was experiencing major structural changes and varying business cycles, yearly dummy variables are used to control for cyclical effects due to time changes.

**ESTIMATION RESULTS**

I estimated the employment growth equation with the four tax incentive variables (TIF, enterprise zone, targeted property tax abatement, real property rehabilitation) treated as endogenous. Estimates of the coefficients of the employment growth equation use two-stage least squares with two different measures of the tax incentive. Both models have high predictive power and explain about 60 percent of variations. The hypothesis that all the coefficients in the model are zero is rejected on the basis of the F test value.

The coefficient estimates of the dummy variables on the municipal adoption of TIF and targeted property tax abatement programs are positive and significantly different from zero at the 5 percent level or less. But the coefficient estimates for the dummy variables on the municipal adoption of enterprise zones and real property rehabilitation program are not statistically different from zero at the 10 percent level. The results suggest that after controlling for a series of external variables, the tax incentives provided through TIF and targeted property tax abatement programs stimulate job growth. If everything else is held constant, on average, about 2,440 jobs are attributed to the municipal adoption of TIF programs, while about 1,364 jobs are attributed to the adoption of targeted property tax abatement programs. Evaluated at the mean of the pre-program employment level of the sample, that was 21,489 in 1977, the estimates indicate that the municipal adoptions of TIF and revitalization area property tax abatements lead to 11.4 percent and 6.4 percent increases in the level of local employment, respectively.

Similar results are obtained when the relative sizes of local tax incentives are taken into account. According to the regression results, the coefficient estimates for the relative size of TIF and property tax abatements are positive and statistically significant, while those measuring the relative size of enterprise zones and real property rehabilitation programs are not. The results suggest that the higher proportion of the city's property tax base abated away for businesses located in the targeted areas, the higher job growth in the city. In addition, the larger amount of government loans and public spending for TIF projects, the more jobs created. The evidence demonstrates that TIF and targeted property tax abatement programs yield substantial spillover benefits to host communities.

Of the nonpolicy variables frequently discussed and tested, urbanization, wage rate, market strength and composition of population and industries have the expected signs and most are statistically significant. The positive coefficient of the urbanization variable suggests that an increase in a city's initial employment base leads to an increase in the number of jobs created, everything else being equal. It provides additional evidence to support the location theory that a firm sites its facilities in the location that minimizes its cost in serving its demand. This result is consistent with the finding of Ó hUallacháin and Satterthwaite (1992) that location economy is an important determinant of employment growth.

**CONCLUSIONS**

This study has examined the differential effects of state and local tax incentive programs on job growth by comparing the level of employment before and after the designation of tax incentive programs in 53 Indiana cities. The first difference model of the employment growth is specified to capture the effects of enterprise zones, TIF, property tax abatements, and real property rehabilitation programs, and at the same time to control for other factors, including input costs, labor market conditions, agglomeration effects, taxes and public expenditures, and business cycles. The empirical results suggest that the tax incentives provided through TIF and targeted property tax abatement programs have statistically significant positive effects on employment growth. According to the estimates, on average, the Indiana TIF programs created 2,440 more jobs, equivalent to a 11.4 percent employment growth relative to what the cities would have had without the program. The property tax abatements targeted at the economically distressed areas created 1,364 more jobs, representing about a 6.4 percent increase in employment in the cities that adopted such programs from 1977 to 1992.

By contrast, this study yields little evidence to support the hypothesis that tax incentives provided through enterprise zones and real property reha-
bilitation have statistically significant effects on employment growth. This finding, however, is by no means conclusive with respect to the effectiveness of these programs. The failure of these tax incentives to show substantial effects could reflect the small size of the programs relative to the entire community that adopts them or the crudeness of the measures employed in this study. For example, the designation of an enterprise zone might reduce unemployment claims in the zones relative to what they would have been without the program, as Papke (1994) found, but the zone designation might not affect the employment growth of the entire city that adopted the EZ. The empirical results also demonstrate that various tax incentive programs have differential employment effects in the cities that adopt them. The local tax incentive programs that emphasize infrastructure improvements and capital investments in a targeted geographic area have significant positive impact on industrial location and employment growth. This analysis provided empirical evidence that the infrastructure improvements and tax incentives in the targeted areas are effective in generating jobs and stimulating economic growth in the host community.

This study is limited to addressing the employment effects of four tax incentive programs used in Indiana without considering their indirect tax revenue effects. It has not addressed whether the benefits of the tax incentives exceed the administration and implementation costs. In addition, this study focuses on the municipal level, instead of on smaller areas such as individual targeted areas or districts; it may not have captured the growth that is induced by the state and local tax incentive programs but is concentrated in relatively small areas. Furthermore, although employment growth is one of the most desired outcomes of state and local tax incentive programs, we should not just count jobs when we evaluate such policies (see Courant, 1994). In light of the increasing popularity of tax incentives among state and local governments, additional research is warranted to address the efficiency, effectiveness, and equity issues of these policies.

Notes

1 Usually a blight area is identified and created as a TIF district. The assessed property value of this designated area is frozen for a specified period of time. Property taxes generated from the frozen value continue to be collected by local taxing jurisdictions whose tax boundaries overlap the TIF district, but taxes derived from increments in the assessed values are used to pay for public infrastructure to support development in the TIF district.

2 Real property taxes may be abated for a period of three, six or ten years on a percentage of the increased in assessed value that results from rehabilitation or redevelopment. Personal property taxes may be abated for a period of five or ten years. Percentage deductions for each year of the abatement are established by state statute.

3 According to Papke (1991), in 1987, 1,068 firms in the ten Indiana designated enterprise zones claimed a total of $11.96 million in tax savings from the package of investment and employment incentives including the inventory tax credit for local property tax, the exemption from the gross income tax of the incremental corporate gross income generated in the EZs, the employment expense credit and the loan interest credit.

4 The year 1991 was omitted from the sample due to the lack of certain fiscal variables.

5 The explanation for such variations may be found from the nature and size of the targeted projects that TIF is designed to attract and the socio-economic and political factors that influence the municipal decisions to adopt TIF.

6 However, as Carroll and Wasylenko (1989) argued, higher wages may also associated with higher worker quality and productivity.

References


