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Are tax incentives for economic development rational?

Todd M. Gabe*

Ohio State University

Abstract. This paper analyzes the actions of a state economic development agency and 333 relocating and expanding firms that received financial incentives from the state between 1993 and 1995. Separate cost minimization and utility maximization models are developed for the firms and the state, and an empirical demand-supply model is estimated to analyze the agents' behavior predicted by the underlying maximization models. The empirical results suggest that the state and firms are rational (consistent with their underlying models) in their behavior of offering and accepting financial incentives. The state demands fewer jobs as incentive prices increase, while firms increase their supply of jobs as incentive prices increase. Although both demand and supply are fairly inelastic, incentives seem to be relatively more important to the state (as an economic development strategy) than firms (as a job locational factor).

1. Introduction

Offering tax incentives as an economic development strategy is controversial and complex. Although economists have varying opinions on incentive-based strategies, state development officials continue to offer large tax and other financial incentives to new, relocating, and expanding firms (Bartik 1991; Dabney 1991; Friedman *et al.* 1992). Some communities offer abatement packages that amount to expensive outlays for each job created or retained. Both losers and winners take notice when large incentives are awarded. For example, New York City officials reminded Connecticut taxpayers that their state government offered \$60,000 per job to entice the Swiss Bank to move from New York City to Stamford, Connecticut (Lueck 1994). Similarly, competing states complained that Alabama offered too much to attract the firm after the rural community of Vance, Alabama beat several other southern states for a new Mercedes automobile plant. In other cases abatement packages are met with resentment from local taxpayers and existing businesses in the area.

Although tax incentives across the United States are commonplace, their importance as a locational decision factor for business owners and managers still is debated

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and not fully understood. Some studies contend that local taxes are only one of the factors considered by management when making location decisions, and other studies dismiss local taxes as having little or no importance in such decisions. Other studies cite market proximity, local wage rates, unionization levels, business climate, and other factors as being more important to relocating firms (Schmenner *et al.* 1987; Dabney 1991). Nevertheless, the reality remains that most states offer financial incentives to attract firms; further empirical study of such incentives as an economic development strategy is warranted. This study does not judge whether tax incentives are good or bad or whether their use should be expanded or restricted. Rather, we examine the economic rationality of the agents involved in the abatement process.

This study attempts to determine the extent to which states offering, and firms accepting, tax incentives obey economic laws of supply and demand. Furthermore, the study examines if incentives are affected by geographic agglomeration factors. The study employs an econometrically estimated demand-supply model, where the market goods are jobs added through tax incentives. Firms supply jobs at various prices (incentive levels) and the state demands jobs through the offering of incentives in the model. The actions of the state (an agent who, among other things, attempts to provide jobs for its citizens) and firms (agents who, among other things, attempt to locate in a cost-minimizing location) can be identified and their decisions explained in terms of economic rationality. If the state demands fewer jobs as incentive levels increase, the state is defined as rational. Similarly, if firms supply more jobs as incentive levels increase, they are defined as rational. Defining the state as rational or irrational does not support or criticize the use of incentives as an economic development strategy—it takes the offering of incentives as a given and determines whether their use is consistent with cost minimization or utility maximization behavior.

The study draws from two separate bodies of economic development literature. First, the role of the state in economic development is examined. Traditional and new wave development policies are explained, and several recent studies that compare the means and goals of both strategies are reviewed. Other literature on the state's role in economic development examines why traditional incentive-based strategies are practiced today, in lieu of new wave means for development. Second, the literature on firm location decisions is reviewed. Studies from Due (1961) to Bartik (1992) show how perceptions on the importance of tax rates as a locational decision factor have evolved.

2. Literature

2.1. The role of the state and community in economic development

The role of the state in economic development has evolved over the last twenty years from a focus on industrial recruitment (traditional) to an emphasis on entrepreneurial strategies (new wave). Traditional policies (including financial and nonfinancial incentives to branch plants and marketing an area as a branch plant location) mainly

provide financial or other incentives to relocating or expanding businesses. New wave policies (including capital market programs, export promotion, education, technology, and information assistance) are targeted at existing businesses to encourage innovation, modernization, entrepreneurship, and expansion into export markets (Bartik 1991).

Leicht and Jenkins (1994) define strategies concerned with qualitative growth that promote high value-added production as *entrepreneurial*. These methods contrast with industrial recruitment strategies aimed at quantitative growth achieved through lower production costs. The primary focus of traditional development strategies between the 1930s and 1970s was regional economic growth through industrial recruitment and business attraction. Regions offered incentives to firms as a means for job growth and economic development. More recent new wave strategies have stressed development through productivity and increased innovation spurred by technological gains and diffusion at the regional level.

Reese (1994) explains that county governments are well-suited to offer demand-side economic incentives to achieve growth through the promotion of entrepreneurial risk-taking and the development of product markets. These strategies contrast with traditional supply-side strategies aimed at attracting mobile capital through tax incentives, debt financing, infrastructural improvements, and other means of lowering production costs. Rosenfeld also challenges communities to encourage development through similar new wave strategies. Governments should "revise their role ... from salesman and bank teller to catalyst, broker, and signaler" (Rosenfeld 1992, p. 307).

Although new wave development strategies increasingly are being employed in regions across the United States, the use of traditional industrial recruitment strategies is still popular and widespread. Although new wave economic development policies have gained popularity with academics, local development officials still devote the majority of their resources to traditional policies to promote job growth for a state or local area (Bartik 1991). The continued use of enterprise zones, tax credits, and abatements is evidence that state and local development officials believe they are effective in creating jobs and increasing the local tax base. Thus, while new wave methods described by Rosenfeld (1992), Leicht and Jenkins (1994), and others may be favored by economists, many communities continue to employ traditional industrial recruitment strategies. Traditional strategies may be employed in response to local perceptions that such strategies have a greater ability to stimulate economic development and job growth than new wave methods. A third explanation is that as long as some regions offer abatements and incentives, citizens in other regions will expect their leaders to offer incentives to firms as well.

Studies by Holmes (1995), Wolman (1988), and Anderson and Wassmer (1995) explain tax incentives as a prisoner's dilemma strategic game. Although overall economic welfare may improve if all regions choose not to offer abatements, the Nash equilibrium outcome is one with every region offering incentives. Thus, the game theory explanation for community behavior is that every region defects and offers incentives, which may lower overall welfare. Empirical research by Anderson and Wassmer (1995) shows that tax abatements are offered by governments to emulate the behavior of neighboring areas. This rejects the notion that incentives are used

only to attract businesses to areas that repel business. Alternatively, they find communities offer incentives in a prisoners' dilemma game and "not as a compensating differential that allows them to compete on equal grounds with other communities" (Anderson and Wassmer, p. 755).

Holmes (1995) views the game as strictly welfare-lowering. Wolman (1988) allows for a zero-sum game or even an increase in overall welfare if abatements increase entrepreneurship or allow firms to develop that otherwise would have failed. Thus, positive-sum entrepreneurial enhancing abatements are based on new wave strategies. Black and Hoyt (1989) believe that welfare gains are possible if abatements reduce distortions from average cost pricing of public services. Furthermore, Oechssler (1994) demonstrates that a firm lobbying for incentives in a signaling game can improve, under certain conditions, expected welfare for the city and firm.

Bartik (1991) posits that even if tax incentives merely move jobs from one place to another, the movement may benefit the national economy. If high unemployment regions are more likely to pursue incentive-based strategies and if a movement of jobs occurs from areas with low to high unemployment, jobs are shifted to regions where the social benefits of lowering unemployment are higher. Furthermore, the shifting of jobs may affect inflation by easing pressures from high employment areas (prone to rising wage and price levels) and transferring jobs to areas with low employment levels (thus potentially lowering the national inflation rate).

Wolman (1988) and Burnier (1992) explain the use of traditional financial locational incentives within the context of a community's political environment. State development officials believe that enterprise zones are necessary for a state to remain competitive and that development may be lost if incentives are not promised to relocating firms (Burnier 1992). Wolman (1988) explains that politicians believe they are responsible for local economic conditions and are compelled to respond to unemployment and local job loss. Finally, Wolman (1988) and Wasylenko (1981) stress the importance of tax abatements as a symbolic (and perhaps political) gesture. Communities offer incentives as a symbol of good will.

In summary, traditional industrial recruitment methods define the role of the state in economic development as a job attractor. Recent new wave literature promotes economic development methods aimed at increasing local innovative capacity through technological increases and other means. New wave strategies, for the most part, discourage the use of tax incentives. The continued use of incentives by development officials, however, is explained partially by political arguments that elected and other state officials feel responsible for providing jobs for state residents. The game theory explanation perhaps explains the use of incentives best. Incentives may reduce overall welfare in some cases, but all other regions will offer them as long as one region offers incentives. Thus, it does not appear that new wave practices will replace traditional recruitment strategies soon.

2.2. The effects of local taxes and other factors in firm locational decisions

Researchers disagree on the importance of local taxes as a factor in firm location decisions. Due (1961) summarizes the literature prior to the 1960s and finds no significant relationship between local taxes and manufacturing employment and capital spending growth. Schmenner *et al.* (1987) model location decisions as a two tiered process and find taxes to be generally insignificant in both stages. Dabney (1991) finds that financial incentives provided through enterprise zones have only a small effect on firm location. Dabney's explanation for the inability of enterprise zones (often located in depressed inner cities) to attract businesses is consistent with several paradigms of industrial location theory. Transportation infrastructure often has deteriorated in inner cities which increases transportation costs and provides disincentives for location according to traditional normative location theory. Furthermore, in depressed areas agglomeration benefits may be lower, and nontraditional location factors such as proximity to recreational amenities, quality education, and affordable housing are less likely to be present.

Other recent studies, however, conclude that state and local taxes negatively affect the economic growth of states and regions. Bartik (1992) summarizes the recent literature and finds that 40 of 57 studies have at least one tax variable negatively related to a measure of economic growth. Friedman *et al.* (1992) find that local taxes deter foreign investment and that they have an especially strong negative effect on the location of Japanese multinational corporations. Bartik (1985) finds that taxes have a modest effect on locational decisions and estimates that a 10 percent increase in state business property tax rates decreases the number of new plant openings 1 percent to 2 percent.

Tax incentives are believed to have a greater impact on firm location decisions at an intraregional level than at an interregional level. Wolman (1988) explains that factors such as market proximity, transportation, and labor and energy costs determine location at an interregional level. Wasylenko (1981) concludes that taxes are statistically significant for industrial location at an intraregional level, although market and cost variables are more important at an interregional level. Finally, Bartik (1992) explains that states and regions are becoming substitutes from the perspective of a firm in an era of decreasing transportation costs. Thus, within a region tax differentials may play a more decisive role in locational decisions.

The two branches of the literature provide some background on the use of tax incentives as an economic development strategy. Although the literature does not fully explain why incentives are used, it is evident that they are offered in abundance across the United States. Thus, this study takes incentives as a given. It builds on the existing literature to determine how incentives are being used and examines the relationship between the size of tax credits and the number of jobs added by the firm. This relationship is analyzed to determine whether the state and firms act rationally in offering and accepting tax incentives.

3. The model

Wolkoff (1992) finds that offering tax incentives is consistent with rational economic behavior. Community actions are rational given the complex strategic relationships between actors and the asymmetric information problem that characterizes the economic development game. In this study rationality is defined in terms of the actions taken by the state and firms within the context of simple individual-maximizing models.

The state development authority is assumed to have an objective (utility) function of:

$$V = V(X_1, X_2); \quad \delta V / \delta X_1 > 0, \quad \delta V / \delta X_2 > 0; \quad (1)$$

subject to a constraint of:

$$R = P_1 X_1 + P_2 X_2 \quad (2)$$

where:

- X_1 = Number of jobs added through traditional incentives (tax abatements);
- X_2 = Number of jobs added through new wave strategies;
- R = State resources devoted to economic development;
- P_1 = Price of job added through tax incentives (size of tax incentive per job);
- P_2 = Price of job added through new wave strategies.

Jobs are the primary determinant of state utility because politicians and voters believe that job creation is the primary measuring stick of both traditional and new wave development policies (Bartik 1991).

The first order conditions (given a well-behaved utility function V) from the state's optimizing model imply:

$$Q_1^d = q(R, P_1, P_2); \quad \delta Q_1^d / \delta P_1 < 0; \quad (3)$$

where:

- Q_1^d = State's demand for labor added through tax incentives.

Equation (3) implies that the state will demand more jobs through tax incentives as the price of incentives decreases. For simplicity, state revenue and the price of new wave policies are assumed to be constant across the relevant time period so the number of jobs added through abatements is expected to be determined primarily by the price of adding jobs through traditional means (incentives).

Firms are assumed to minimize costs according to:

$$C = WL + RK - PL \quad (4)$$

with a production technology of:

$$Y = f(L, K); \delta Y / \delta L > 0, \delta^2 Y / \delta L^2 < 0, \delta Y / \delta K > 0, \delta^2 Y / \delta K^2 < 0; \quad (5)$$

where:

- C = Cost of production;
- W = Wage rate of labor;
- L = Labor usage;
- R = Rental rate of capital;
- K = Capital usage;
- P = Size of tax incentive per job;
- Y = Firm output.

The first order conditions (given a well-behaved production function f) from the firm's optimizing model imply:

$$Q^s = q(W, R, P); \delta Q^s / \delta P > 0, \delta Q^s / \delta W < 0; \quad (6)$$

where:

Q^s = The firm's supply of labor.

Equation (6) shows that as the abatement level per job increases (holding wage and capital rates constant), firms are expected to add more jobs.¹

The state and firm optimization problems support the use of a demand-supply model to empirically test the hypotheses of state and firm rationality. The study model is a standard demand-supply simultaneous system with job prices and quantities determined endogenously. The model is of the form:

$$\text{Demand:} \quad Q^d = \alpha_0 + \alpha_1 P + \alpha_2 U + \alpha_3 I + \alpha_4 S + \varepsilon_1 \quad (7)$$

$$\text{Supply:} \quad P = \beta_0 + \beta_1 Q^s + \beta_2 E + \beta_3 W + \beta_4 M + \beta_5 \text{Prod} + \beta_6 A + \beta_7 D + \beta_8 \text{Envir} + \beta_9 B + \varepsilon_2 \quad (8)$$

$$\text{Equilibrium:} \quad Q^d = Q^s = Q^* \quad (9)$$

The variables are defined as:

- Q^d, Q^s, Q^* = Total number of jobs created and retained through a tax credit project. (Q^d = quantity demanded by the state; Q^s = quantity supplied by firms; Q^* = equilibrium quantity);
- P = Price of job created or retained, as proxied by the credit on corporate franchise taxes (business benefit) offered by the state divided by the number of jobs created by each abatement project;
- U = County annual (1993) unemployment rate;

¹ Firms may be constrained by the amount of employment growth they can promise at any price. For example, although firms can alter the number of added jobs by changing their level of initial capital investment, it is unlikely that a firm would increase the size of an expansion significantly merely to increase its tax credit.

- B = Rural-urban continuum (Beale) codes for metro and nonmetro counties from 0 (central counties of metro areas of 1 million population or more) to 9 (completely rural or fewer than 2, 500 urban population, not adjacent to a metro area);
- I = Capital investment made by firm receiving tax benefit;
- S = State benefit of abatement project as proxied by estimated state income taxes to be collected from employees added or retained by abatement project;
- E = County education index;
- W = County wages and salaries divided by county population;
- M = Total county income contributed by manufacturing sector;
- Prod = Total county income contributed by producer service industries;²
- A = Total county income contributed by recreational/amenity service industries;³
- D = Total county income contributed by distributive service industries;⁴
- Envir = County environmental quality measure, as proxied by an indicator variable equal to 0 if county is labeled *attainment* for six pollutants or 1 if county is labeled *non-attainment*.⁵

4. Data

All tax credit data are from the Ohio Job Creation Tax Credit Authority of the Ohio Department of Development. The program began in 1993; the data are from 333 projects in 1993, 1994, or 1995. The program attracted or retained a total of 90,631 promised jobs in the 333 projects. Business benefits are tax credits granted on the basis of projected increases in state income tax withholdings from additional employment. Tax credits are figured with terms ranging from five to ten years, and tax credit rates from 40 percent to 80 percent. State benefits are the added income taxes not credited to the firm over a ten year period. County population, wage, and sector income figures are from the Regional Economic Information System (REIS) data. The county education index is computed from 1990 Census figures and the environmental data are from the *1994 Ohio Air Quality Report* published by the Ohio Environmental Protection Agency.

² Producer services include finance and insurance; banking; real estate; business services; and legal services.

³ Amenity services include eating and drinking establishments; miscellaneous retail; hotels and motels; personal services; amusement and recreational; and motion pictures.

⁴ Distributive services include general transportation; railroad trucking; water transportation; other transportation; transportation services; communications; wholesale trade; and retail trade.

⁵ The six pollutants classified as attainment or non-attainment by the Ohio Environmental Protection Agency are particulate matter less than ten microns in diameter; sulfur dioxide; nitrogen dioxide; carbon monoxide; ozone; and lead.

5. Model rationale

The model simultaneously analyzes state and firm decisions with respect to offering and accepting tax credits. A demand-supply model is appropriate because the tax credit projects have many features similar to that of a typical goods market. For example, job prices (tax credit terms) and quantities (number of added jobs) are negotiated between a buyer (the state) and seller (the firm). Furthermore, within the demand-supply framework there are nonprice factors that affect (shift) employment demand and supply. Thus, it is possible using a demand-supply model to estimate (holding price and other factors constant) the effect of county education (or any other exogenous variable) on the amount of jobs supplied by a firm. Finally, as tax credit terms and firm employment decisions are determined simultaneously, a demand-supply model that accounts for simultaneity is appropriate.

Economic and industrial location theories provide a rationale for the inclusion of the 11 explanatory exogenous variables in the model. On the demand side, the state optimization problem predicts a negative relationship between abatement level and the quantity of jobs added or retained through incentive projects. Furthermore, unemployment levels are expected to be positively associated with the demand for jobs. It seems reasonable that the state would provide larger incentives for firms to locate or expand in counties with high unemployment (Bartik 1991).

Similarly, as levels of firm investment and the state's benefit from the tax credits increase, one would expect the state's demand for jobs to increase as well. It is assumed *ceteris paribus* that as a firm's investment level increases, its commitment to the local/state economy increases as well. Thus, the state is expected to reward firms that make large investments by offering larger incentives per each new job added to support the firm's physical investment.

On the supply side, the firm's cost minimization problem implies that a positive relationship should exist between the abatement level and the number of jobs promised by the firm. Incomes contributed by manufacturing, producer services, and distributive services sectors are expected to be positively related to the incentive price. These sectors are likely to affect supply through agglomeration effects. That is, firms are expected to supply more jobs in areas with strong existing industrial and service bases where presumably local labor and factor market conditions are conducive to business activity. Specifically, the effect of manufacturing sector income on job supply may indicate the presence of localization economies. Income from the producer services and distributive services sectors may capture the effects of urbanization economies on job supply. Likewise, industrial location behavior theory predicts that amenity levels are positively associated with job supply. Firms managers are expected to locate firms and create jobs in counties with higher qualities of living (as measured by local amenities).

Increased levels of ruralness, lower environmental quality, and high county wage rates are expected to be negatively related to the supply of jobs offered by firms. Market proximity is assumed to decline in more rural areas. Thus, firms should add less labor in more ruralized areas (Wolman 1988). In regard to the environment, firms are expected to create fewer jobs in counties classified as non-attainment for air pollu-

Table 1. Descriptive statistics of study data

Variable	Mean	Std. dev.	Maximum	Minimum
Quantity	272.16517	350.52426	2776.0000	25.000000
Price	2259.2720	2695.4499	21263.690	95.531580
Manufacturing	1687502.4	2171227.2	7083337.0	21544.000
Producer services	1159488.4	1883176.5	5650507.0	3159.0000
Amenities	416355.57	562141.41	1592031.0	3913.0000
Distributive services	1726715.7	2339441.5	6857205.0	12187.000
Education	12.396148	0.36860932	13.134330	11.437450
Wages	10812.973	3822.4553	18401.450	3243.1720
Unemployment	6.7426426	1.2561589	12.700000	4.6000000
Investment	12061834.	30284997.	4.7200e+08	126520.00
State benefit	255435.67	250617.69	1968697.0	33573.000

tants. This seems reasonable for two reasons. Firm managers wish to live in areas with clean environments, and many manufacturing firms need to locate in areas under safe minimum standards for air pollution so their own productive activities are not prohibited. A negative relationship between wage rates and job supply is expected as rational firms minimize costs [see equation (6)] by locating in low wage regions (Wasylenko 1981).

The education level is expected to increase a firm's supply of jobs. Regional endogenous growth theory emphasizes the importance of human capital as a determinant of regional production and growth (Barro and Sala-i-Martin 1995).

6. Results

The two simultaneous equations are estimated with two stage least squares regressions. The relevant descriptive statistics and regression results are presented in Table 1 and Table 2. White tests for heteroskedasticity reject the null hypothesis of no heteroskedasticity, so white standard errors are computed to correct for the detected heteroskedasticity. The model seems to explain the supply equation well, with all explanatory variables significant at a 0.95 confidence level. The results confirm a direct relationship between job price and job quantity, consistent with firm rationality and cost minimization. Education is positively associated with supply, while county wages exhibit a negative relationship. The education result shows that education levels (human capital) have a positive association with job supply and, subsequently, with regional economic growth. The relationship between wage rates and supply is negative, as expected. Cost-minimizing firms accepting incentives supply more labor in areas with lower labor costs.

The producer services, manufacturing, and distributive services variables are significant alone and as a group. Contrary to expectations, however, the producer services relationship is negative. The positive relationship between manufacturing income and the firm's supply of jobs supports the hypothesis of agglomeration (localization) economies. The evidence for urbanization economies is mixed. The direct relationship between the distributive sector and job supply supports urbaniza-

Table 2. Estimated coefficients for demand-supply model (corrected for heteroskedasticity)

Variable	Coefficient	t-stat (white)	Significant at .10 level
2SLS estimated coefficients for demand equation			
Constant	58.086832	0.47878150	No
Price	-0.118970	-2.6876059	Yes
Unemployment	24.126098	1.4701983	No
Investment	2.001e-06	1.6897790	Yes
State benefit	0.0011590	4.0979943	Yes
2SLS estimated coefficients for supply equation			
Constant	-16743.838	-2.7628430	Yes
Quantity	13.892864	7.5052940	Yes
Education	1593.5465	3.2301984	Yes
Wages	-0.3733034	-4.4818792	Yes
Manufacturing	0.00123566	4.8659291	Yes
Producer services	-0.00291242	-4.2176566	Yes
Amenities	-0.01927225	-5.4826190	Yes
Distributive services	0.006206249	6.8456164	Yes
Environment	-2159.6671	-5.8037718	Yes
Ruralness	-306.08379	-3.0265689	Yes

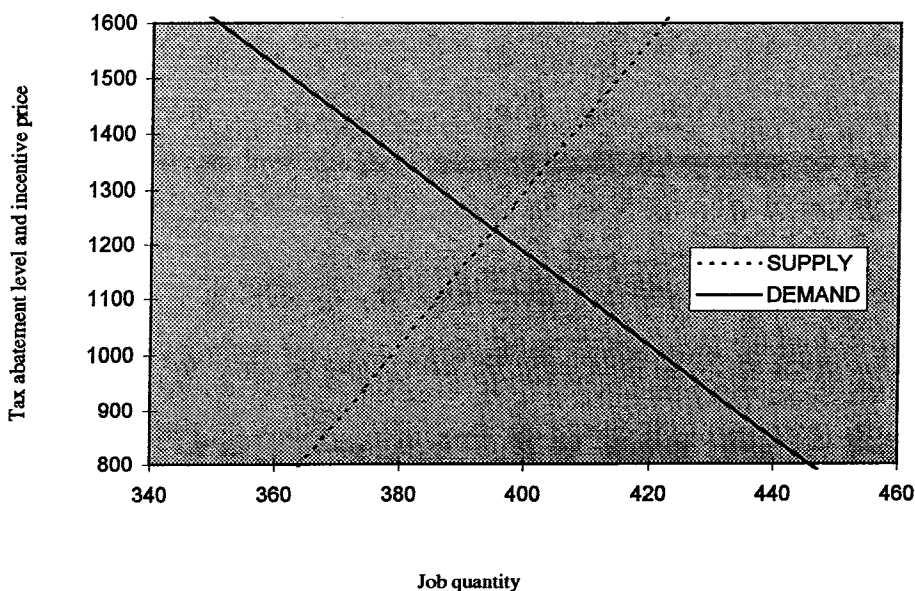
t-statistics greater than 1.645 in absolute value are significant at a .10 confidence level

tion economies, but the negative relationship between the producer services industry and job supply does not support this hypothesis. This negative relationship is surprising, but it may be caused partially by multicollinearity among the four industry income variables. The relationships between supply and environmental quality and increased levels of ruralness are negative, as expected.

The model has less success explaining the behavior of the state and the demand equation. As predicted, a negative relationship exists between price and quantity, implying that state behavior is consistent with its maximization problem. The effects of the firm investment level and the number of jobs created or retained are positive. As the state's expected gain from a tax credit project increases, the state is willing to pay more per job. The results confirm that the state rewards firms for levels of investment. Surprisingly, the results show no significant effect of local unemployment on job demand by the state.

7. Conclusions and extensions

Ohio's tax credit agency and relocating and expanding firms seem to act rationally when offering and accepting tax credits. The job market is consistent with the cost minimization and utility maximization problems of firms and the state. The state demands fewer jobs as incentive prices increase, while firms increase their supply of jobs as incentive prices increase. Several significant factors that shift demand and supply are identified; in many cases the direction confirms the *ex ante* predictions. The results offer limited support for agglomeration effects predicted by industrial location theory. The results indicate the presence of localization economies, but not urbanization economies. Previously existing manufacturing and distributive services

Figure 1. Market for abatement-related jobs

industries tend to increase job supply, whereas producer and amenity services have an inverse relationship with job supply. This result may be explained by partial multicollinearity.

The demand-supply relationship between abatement levels (price) and the number of jobs added per incentive project (quantity) is shown in Figure 1. With the exogenous variables fixed at mean values, the abatement job market equilibrium is at $P^* = \$1,226.08$ per job and $Q^* = 395.11$ jobs per project. At equilibrium the elasticities $[\delta Q / \delta P \times P / Q]$ of demand and supply are estimated at .37 and .22, respectively. This implies that the number of jobs demanded by the state is slightly more responsive to changes in abatement levels than the number of jobs supplied by firms, although both demand and supply are relatively inelastic.

The higher elasticity of demand vis-à-vis supply may illustrate the relative importance that the state (as an economic development strategy) and firms (as a locational decision factor) place on tax incentives. Because tax incentives are only one factor (along with market proximity, labor costs, etc.) in location decisions made by firm managers, a marginal change in abatement level is not expected to increase the number of jobs supplied by firms significantly. Thus, while both the state and firms appear to be rational in their behavior, tax abatements have at best a modest effect on the number of jobs created. On the other hand, the higher elasticity of demand for jobs by the state may reflect the importance that regions place on the

use of incentives. In the economic development strategic game between the government and firms, the firm often has several advantages over the state in the negotiation process. Several studies (Wolkoff 1992; Oechssler 1994; Wohlgemuth and Kilkenny 1995) mention the asymmetric information problem the community has with respect to the relocation intentions of the firm. The community's lack of information hinders its ability to prudently offer incentives.

Cox (1995) further explains the community's disadvantage in the context of *new urban politics*. Competition arises because cities are place-bound and immobile, whereas many firms requesting incentives are mobile. Cox suggests "there is significant redistribution from immobile communities to mobile capital" (p. 315). Communities, therefore, are disadvantaged both by their restricted mobility and lack on information vis-à-vis subsidy-seeking firms. Thus, the government may be relatively more responsive to the level of incentive changes within the negotiation process.

In conclusion, the purpose of this study is to examine the market for labor added through tax credits, taking the use of tax incentives by the state as a given. The study examines the interactions between the state and firms and finds that both agents exhibit normal economic behavior. Furthermore, the results imply that firms value educated labor, a clean environment, low wages, and large manufacturing and distributive services sectors. Although this study begs the question of the appropriate relationship (third wave or traditional recruitment) between state and firms, it does indicate a level of rationality in the offering and accepting of tax incentives.

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