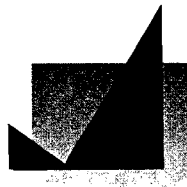# Does business development raise taxes?

William H. Oakland
and William A. Testa

Many suburban communities experienced rapid business development and employment growth during the 1980s.

Community planners and development officials tended to encourage business development not only because it promised increased employment, but also because they believed it would increase the tax base, drawing new taxes from nonresident business owners to the benefit of community residents.[1]

These beliefs have recently been challenged, however, by some urban planners and other analysts of the suburban growth process who maintain that business development brings along high costs in associated public services and infrastructure, and that intergovernmental aid to pay for these costs is too low.[2] Critics of urban land-use expansion further contend that job suburbanization isolates the urban poor from gainful employment, contributes to over-development of land and spoilage of agricultural land at the urban fringe, and raises overall metropolitan-area public service costs by requiring new infrastructure that duplicates what already exists in the urban core. In contrast, others argue that the "not in my backyard" response by communities has unduly constrained economic growth and standards of living. This article assesses the local fiscal impact of business development by first reviewing previous studies and then investigating the statistical relationship between business development and residential property tax rates for 115 Chicago suburbs during the 1980s.

What do previous studies tell us?

Previous studies have assessed the fiscal impact of business development using two different methodologies. One approach generalizes from the outcomes of many different case studies that tabulate the fiscal costs and benefits of individual business developments. The other examines the statistical relationship between general business growth and community fiscal well-being. So far, both approaches have produced ambiguous or contradictory findings; studies can be found suggesting that business development brings a net fiscal benefit, and that it does not.

Fiscal impact studies

So many local officials have become concerned about the fiscal impact of land development that an entire methodology has been developed to address the question in specific circumstances. This methodology, known as fiscal impact analysis, compares the public service costs of land development in a particular use to the public revenues that the development is expected to generate.[3]

Although most recent fiscal impact studies share this general methodology, these studies vary widely in sophistication.[4] Nonetheless, the findings of fiscal impact studies over the past four decades indicate a dichotomy between business and residential development with respect to fiscal impact. Generally

William H. Oakland is professor of economics at Tulane University, and William A. Testa is senior regional economist and assistant vice president at the Federal Reserve Bank of Chicago.

speaking, and with important exceptions, commercial and industrial development (hereafter referred to as "business development") appears to more than pay its way fiscally. Specifically, the public revenues generated from business development tend to exceed the costs of the public services they require. For example, some extensive studies of the impacts of individual developments, such as the Saturn plant, suggest that the local revenues generated by industrial development exceed the generated service costs by a factor of three.[5] In contrast to most business development, most types of residential development, especially single-family detached housing, are found to be losing propositions. The households inhabiting such housing tend to pay property and other local taxes that fall short of the costs of public services consumed. Elementary and secondary education is commonly implicated as the major public service cost associated with such households.[6] The divergence between the fiscal impact of residential development and that of business development can, in some instances, become irrelevant because people tend to follow jobs, and vice versa. Accordingly, for example, the fiscal benefits of business development can be subsequently negated as population in-migration responds to job growth. In other instances, however, communities act to exclude unrewarding types of development through zoning restrictions while admitting lucrative business development to the community.

While some studies conclude that business development showers community residents with fiscal benefits, others claim that those studies are flawed. They argue that cost-benefit methodologies do not fully account for the added costs of public infrastructure, and some important case studies find that when these costs are acknowledged, business development does not pay its own way.[7] This may explain why some communities that experienced rapid employment growth in the 1980s also experienced rising property tax rates. In addition, fiscal impact studies may be turning up more negative findings because revenue assistance from state and federal government has become less responsive to community growth.[8]

Statistical studies of fiscal impact

The majority of studies from the economic and professional planning literature have concluded that business development tends to pay

its own way. However, statistical evidence of fiscal impact is sometimes ambiguous. Some look for associations between business development and changes in local property tax rates. From the standpoint of community residents, falling property tax rates are a fiscal benefit because lower property tax rates allow a greater proportion of personal income to be devoted to consumption (assuming that public service consumption does not decline). However, evidence that residential property tax rates are rising can be more difficult to interpret.[9] Rising property tax rates imply either 1) that community residents have taken advantage of their enhanced ability to tax nonresident business property owners in order to increase public services, or to the contrary, 2) that business development has imposed higher costs on the community, which must now raise tax rates.

One recent statistical study examined 365 contiguous municipalities of northern New Jersey that gained 400,000 new jobs and 150,000 new residents during the 1980s.[10] The study assessed whether growth in jobs and population affected several indices of fiscal and nonfiscal benefits. In general, the authors concluded that employment growth benefited local communities while population growth was largely detrimental. With specific regard to fiscal benefits, community employment growth significantly lowered property tax rates while raising local government revenues per capita.

While lower property tax rates strongly suggest fiscal benefit to community residents, evidence showing increased local government revenues and services is more ambiguous. New businesses may necessitate increased public expenditures for services such as police and fire protection, thereby offsetting increased revenues that derive from an augmented property tax base. Some ambiguity can be reduced by focusing on the growth of those public expenditures that more directly benefit community residents, such as local school spending. While an educated work force benefits the broader business sector to some degree, no individual business will draw its entire labor force from the immediate community, as table 4 below indicates. Accordingly, school spending at the community level largely benefits residents rather than community businesses.

Studying the educational spending decisions of communities in the Boston metro-

politan area, Ladd found that a greater proportion of commercial and industrial property signals local voters that they face a lower "tax price" for education.[11] That is, for every additional dollar that voters decide to spend, they behave as if part of the additional costs will be borne by out-of-community people associated with the business property.[12] A study of 56 Bergen County (New Jersey) communities found similar results.[13] In a recent study of northern New Jersey, community employment growth was found to increase per pupil school spending significantly; in contrast, population growth tended to depress it.[14]

The Bergen County study looked at both the tax rate and local education expenditures. It found that 70 percent of commercial and 52 percent of industrial property tax payments benefited residents in the form of lower taxes and higher educational expenditures per household.[15] In particular, a hypothetical $1,000 extra of commercial property was estimated to have resulted in $8.60 lower property tax payment per household, and an extra $8.10 in educational expenditures per household.

Some empirical studies do not support the hypothesis that community pursuit of commercial and industrial property is advantageous. Margolis examined both the real effective property tax rate of municipalities in the San Francisco Bay area in 1953-54 and their total property value per resident.[16] Margolis classified cities according to their intensity of commercial/industrial property land use, and then compared the distribution of property value and real tax rate by type of city. He found that "dormitory" cities (that is, those choosing to specialize in residential property) tended to display lower property tax rates than did "balanced" cities (those with substantial proportions of both nonresidential and residential property). However, the evidence for this conclusion is not compelling. First, the study entirely excluded the type of community—so-called industrial enclaves—that contains the largest proportion of commercial and industrial property. It is arguable whether such communities should have been excluded from the comparison sample, that is, whether there is any good reason to treat them as essentially nonresidential. In any case, as discussed earlier, higher property tax rates do not necessarily indicate fiscal benefits accruing to community residents.

More recently, a study by the staff of the DuPage County (Illinois) Development Department (1991) has received much public attention for its finding that the growth of nonresidential property has had a major negative impact on the fiscal situation of 133 communities. Specifically, the study finds that both residential and nonresidential land uses have significant impacts on property tax revenues and that the areas of the county that experienced the most rapid change from residential to nonresidential bore additional service provision costs that required higher tax levies. The DuPage study did not distinguish among types of property tax payers, but considered all residential and non-residential property tax payments together. However, increased payments by nonresidential property owners are not likely to be a burden to local residents; in fact, they may compensate or benefit residents. Moreover, the study examined the growth of the tax levy in absolute dollar amounts (and not the "price" or "tax rate" effect of growth and development).

The empirical analysis

We begin the empirical analysis with an examination of the following question: Has business development been associated with reductions in tax burdens? We used correlation analysis to address this question. If the analysis indicates a relationship between business development and reduced tax burden, then the burden of proof for the claim that business development has either a negative or no fiscal impact would seem to rest with those who take such a position.

The study sample and period

We drew our sample communities from suburbs within a six-county Chicago area.[17] The unit of observation was the municipality. We defined sample communities by municipal boundaries rather than, say, school districts, because significant control over land use is vested with municipal governments. Our sample included incorporated municipalities with populations of more than 10,000 in Cook County and the six counties that border it. We excluded the city of Chicago because of its size and economic maturity. The 115 suburbs we included account for just over two-thirds of the suburban population. Because the sample excluded the many smaller municipalities in the six-county region, our results may not apply to

TABLE 1

Trends in population, employment, and total equalized assessed value

Place name	Population 1970-80	Population 1980-90	1990 population
	(percent change)		
Chicago	-10.7	-7.4	2,783,726
Cook County	-4.3	-2.9	5,105,067
Cook County suburbs	5.8	3.1	2,321,341
DuPage County	33.9	18.6	781,666
Kane County	10.9	14.0	317,471
Lake County	15.1	17.3	516,418
McHenry County	32.6	23.9	183,241
Will County	30.9	10.1	357,313
Suburbs	13.6	9.2	4,477,450
SMSA	1.8	2.2	7,261,176

Place name	Employment 1972-81	Employment 1981-90	1990 employment
	(percent change)		
Chicago	-9.1	-1.9	1,201,136
Cook County	1.6	8.2	2,247,098
Cook County suburbs	22.3	22.7	1,045,962
DuPage County	68.7	91.9	380,334
Kane County	17.3	30.8	120,331
Lake County	24.5	61.8	183,823
McHenry County	23.9	55.4	52,778
Will County	15.1	21.1	75,145
Suburbs	26.8	37.4	1,858,373
SMSA	6.8	18.7	3,059,509

Place name	Equalized assessed value 1980-90	1990 EAV
	(percent change)	(billions)
Chicago	90.9	$23.1
Cook County	103.9	56.0
Cook County suburbs	114.2	32.9
DuPage County	145.0	13.6
Kane County	89.1	3.5
Lake County	127.9	8.7
McHenry County	107.1	2.4
Will County	112.1	4.6
Suburbs	119.7	65.7
SMSA	111.4	88.8

SOURCES: U.S. Department of Commerce, Bureau of the Census, *Census of Population and Housing*, various issues; Illinois Department of Employment Security, *Where Workers Work*, 1981 and 1990; and Illinois Department of Revenue, *Property Tax Statistics*, various issues.

such areas. The period of observation was roughly 1980-90. We say "roughly" because some data were available only for the Census years 1979 and 1989, or for the fiscal years 1981 and 1991.

During the period under study, population in the overall suburban area surrounding the city of Chicago grew by a robust 9.2 percent, while the city's population fell by 7.4 percent (see table 1). All suburban counties experienced population growth, as did Cook County, in which Chicago is located. Population grew most rapidly in the farthest-outlying suburbs. It grew more slowly nearer the center of the six-county area and declined in the inner-ring suburbs immediately surrounding Chicago (see figure 1).

Consistent with the experience in much of the nation during this time, employment growth greatly exceeded population growth. Several noted demographic trends contributed to this development. Generally, the large baby-boom generation continued to enter the labor force during the decade, and labor force participation of females continued to rise. Consequently, many suburbs saw their commercial and industrial base expand, many experienced population growth, and many experienced both.

In most of the municipalities we sampled, numerous local taxing jurisdictions overlap. Therefore, we found it necessary to estimate an aggregate tax rate or tax burden for each municipality, reflecting the combined burden of all the levies imposed within the municipality's boundaries.[18] We refined these aggregate tax burdens further to reflect differences in assessment practices and in the incidence of major tax exemptions, such as the homeowner's exemption.

FIGURE 1

Change in population, 1980-90
(Six-county Chicago area)

Percent change
in population

- ■ 18.01 to 104.7
- ▓ 0.01 to 18.0
- ░ −0.01 to −16.7
- □ Not in sample
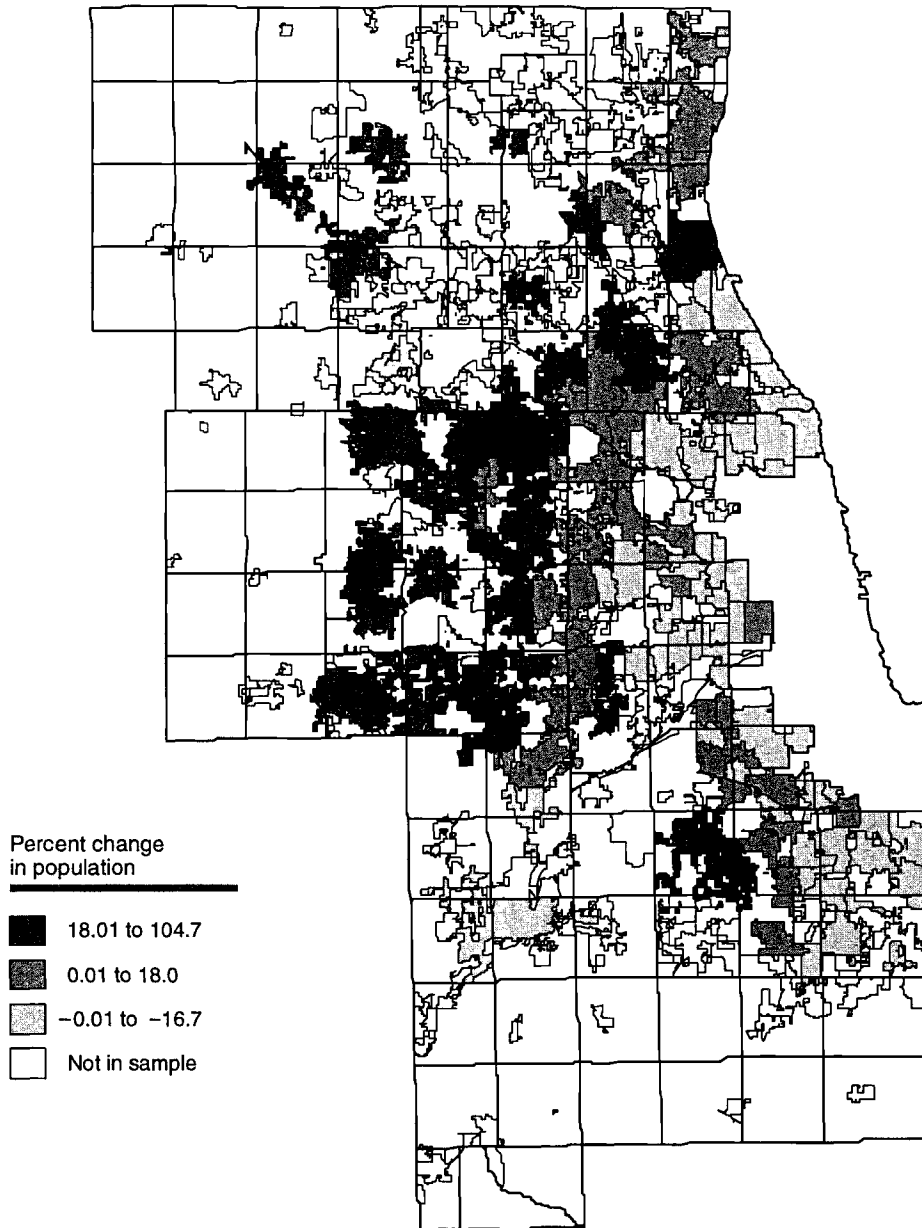
Source: U.S. Department of Commerce, Bureau of the Census, *Census of Population,* 1980 and 1990.

Measures of tax burden

We considered three measures of tax burden: 1) the statutory property tax rate,[19] which is applied to equalized assessed value (EAV), and hereafter denoted as *trate*; 2) effective tax rate on owner-occupied housing, denoted as *rate*; and 3) effective tax rate in terms of income, denoted as *burden*. Each of these

measures is interesting in its own right. *Trate* is of interest because it is the measure set by local governing authorities; it is also the tax rate applied to commercial and industrial property. *Rate* is of interest because it reflects the degree to which residential property is taxed, and is relevant to decisions to build or improve residential property. It reflects residential tax

payment in relation to full market value. Finally, *burden* measures property tax payments by residential property owners in relation to their personal income and thus measures the average sacrifice required of homeowners within a community. Increases in this measure imply that fewer funds are available for private consumption.

Mathematically, these measures can be represented as follows:

$$trate = RPTAX / EAVRES$$

$$rate = RPTAX / FVRES$$

$$burden = RPTAX / INC,$$

where

RPTAX = aggregate residential property tax payments,

EAVRES = aggregate equalized assessed value of residential property,

FVRES = aggregate market value of residential property, and

INC = aggregate homeowner income.

Simple algebraic manipulation reveals the following relationships among these measures:

$$trate = rate * (EAVRES / FVRES)$$

$$burden = rate * (FVRES / INC).$$

The term *EAVRES / FVRES* is commonly known as the assessment ratio, while *FVRES / INC* is the average ratio of house value to income. The assessment ratio differs among

communities despite efforts by the State Board of Equalization to keep them uniform. The ratio of housing value to income will differ because of underlying differences in land values and the average age of housing stock.

Simple regression analysis

We began by testing for a simple correlation between business development and percentage change in tax burden. As our measure of business development (*chbus*) we used the change in the inflation-adjusted equalized assessed value of commercial and industrial property divided by total assessed value:

$$chbus = (EAVBUS91-EAVBUS81) / EAV91,$$

where

EAVBUS = inflation-adjusted equalized assessed value of business property, and

EAV = inflation-adjusted total equalized assessed value.

This measure reflects the maximum potential reduction in *trate* afforded by the growth in taxable business property. The model tested then takes the form

$$(1) \quad ch(taxmeasure)_i = a + b * chbus_i + e_i,$$

where e_i is an error term, and the subscript i denotes the various sampled communities. The results displayed in table 2 indicate no significant relationship between *chbus* and *trate*, a marginal negative relationship with *rate*, and a

TABLE 2					
Ordinary least squares regression of economic development on tax burden					
	Parameter estimate	**Standard error**	**t-statistic**	**Prob > ltl**	**Adj. r^2**
CHTRATE					
INTERCEPT	13.97	1.30	10.73	0.0001	
CHBUS	–0.05	0.32	–0.15	0.8786	–0.0086
CHRATE					
INTERCEPT	13.86	1.58	8.75	0.0001	
CHBUS	–1.22	20.39	–3.12	0.0023	0.0712
CHBURDEN					
INTERCEPT	21.03	2.05	10.23	0.0001	
CHBUS	–5.50	0.05	–10.59	0.0001	0.4940

strong negative relationship with *burden*. Whether business development is associated with a reduction in tax burden therefore depends on which measure of burden one adopts. If one is most interested in burden relative to housing value, assessed or otherwise, one must conclude that there is at best a weak negative association between business growth and tax burden. On the other hand, if one is more interested in tax sacrifice, there appears to be a much stronger negative association.

Multiple regression analysis

The lack of a strong relationship between business development and two of the three measures of tax burden may be due to intervening changes in other elements of the tax base. For example, business development may sometimes be accompanied by increases in residential investment. If such a pattern is uneven among communities, the true relationship between business investment and tax burden may not be revealed by simple correlation measures. Multiple regression can often overcome this difficulty, since it controls for the intervention of confounding factors.

Accordingly, we decomposed the change in residential EAV into a capital gain element (*capgain*) and a new housing component

(*chres*). Like changes in business EAV, these changes in residential EAV were expressed relative to total EAV. By construction, therefore, the three components exhaust the change in total EAV over the period.

We introduced these added variables into the relationship between *ch(taxmeasure)* and *chbus*, as follows:

(2) $ch(taxmeasure)_i = a + b * chbus_i + c * capgain_i + d * chres_i + e_i.$

Table 3 presents estimates of equation 2. A significant negative relationship now emerges for all three measures. Thus, if the effects of changes in residential EAV are taken into account, changes in business EAV have been associated with decreases in residential tax burdens. It is noteworthy that the capital gain component of the change in residential EAV also is significantly associated with tax burden changes. However, in the case of *chburden*, the correlation is positive. This might reflect the failure of taxing authorities to fully roll back property tax rates for increases in EAV caused by housing appreciation. Under such circumstances, tax bills would increase even though income did not, leading to greater tax sacrifice.

TABLE 3					
Multiple regression of economic development on tax burden					
	Parameter estimate	Standard error	t-statistic	Prob > ltl	Adj. r^2
CHTRATE					
INTERCEPT	19.82	1.30	15.2	0.0001	
CHBUS	−1.53	0.345	−4.4	0.0001	
CAPGAIN	−2.46	0.325	−7.5	0.0001	
CHRESNET	−0.18	0.433	−0.4	0.6683	0.36
CHRATE					
INTERCEPT	16.15	1.97	8.1	0.0001	
CHBUS	−1.83	0.52	−3.5	0.0006	
CAPGAIN	−1.00	0.49	−2.0	0.0439	
CHRESNET	−0.01	0.65	−0.02	0.9829	0.09
CHBURDEN					
INTERCEPT	14.37	2.32	6.1	0.0001	
CHBUS	−3.61	0.61	−5.8	0.0001	
CAPGAIN	2.89	0.58	4.9	0.0001	
CHRESNET	0.07	0.77	0.09	0.9233	0.59

It is further noteworthy that for *chtrate*, capital gain has a larger coefficient (in absolute value) than *chbus*. This might reflect the need for public services to accommodate economic development, whereas no expenditure needs may arise from housing appreciation. It might also reflect the tendency to spend some of the fiscal benefits of economic development by raising community consumption of public services. By contrast, housing appreciation per se seemingly provides no fiscal benefits.

Finally, it is noteworthy that new housing capital as measured by *chres* is not correlated with any of the burden measures. This dichotomy with business investment may well reflect the greater expenditure needs that added population places on local government relative to its contribution to government revenues. This finding is in harmony with the view that people "simply don't pay for themselves."

Discussion and conclusions

Simple correlation analysis indicates that business development and tax burden are, if anything, inversely associated in the suburban six-county area during the period under study. Although correlation does not necessarily imply causation, this finding would seem to ease the burden of proof from those who believe that business development is associated with fiscal benefits, unless it is shown that there are intervening forces that may be causing the observed correlation.

One such intervening force may be the growth of population and residential property that often accompanies business development. When we included residential growth in our correlation analysis, we found that the inverse relationship between residential property tax rates and nonresidential development was strengthened rather than diminished. Nonetheless, the observed relationship between business development and property tax rates may fail to tap some important indirect impacts of the former on the latter. For example, fiscal benefits of business development may be partly reflected and hence capitalized into the value of residential property. If so, the coefficient attributing lower tax rates to business development may actually understate that beneficial impact. We can begin to understand such complexities only by fully modeling and estimating the important interrelationships among land uses and other important factors.

Another important relationship may be that business development induces residential growth as people follow jobs so as to reduce the distance between home and work. Such migration has been observed in other studies that focus on the aggregate city versus suburban location of jobs and people.[20] Recently, such migration has been observed among suburban communities around Philadelphia.[21] This behavioral relationship may be important for two reasons. First, population in-migration to a community in response to jobs may be accompanied by residential public service costs. In turn, those added public service costs may offset fiscal benefits derived from expanding the business property tax base. Perhaps more important, population in-migration can have spillover impacts on neighboring communities. As table 4 illustrates, in most suburban municipalities, employees tend to work outside

TABLE 4
Percentage of employed residents who worked elsewhere, 1990

Top ten

Rank	Municipality	Percent
1	Justice	96.2
2	Country Club Hills	95.3
3	Sauk Village	94.3
4	Hanover Park	92.9
5	Riverdale	92.8
6	Palos Hills	92.4
7	Calumet Park	92.2
8	Woodridge	91.9
9	Glendale Heights	91.7
10	Hazel Crest	91.6

Bottom ten

Rank	Municipality	Percent
106	Chicago Heights	68.3
107	Naperville	66.8
108	Crystal Lake	65.6
109	St. Charles	65.1
110	Waukegan	64.2
111	Elgin	61.4
112	Aurora	61.0
113	Evanston	57.4
114	Joliet	51.0
115	North Chicago	24.0
Average for suburban municipalities in the study		81.7

Source: U.S. Department of Commerce, Bureau of the Census, *Census of Population*, 1990.

of their community of residence. Accordingly, a community that brings in business development may not bear the attendant population increase and residential fiscal burden of their actions. If all or many adjacent communities similarly follow their own self-interest in attracting business development, the resulting area-wide impact may be to raise population pressures in a wider region, thereby lowering or negating the fiscal benefits attendant to business development. Such hypotheses can be tested only with a more complete model of community behavior.

NOTES

[1]Fiscal benefit is defined from the perspective of a typical household in the home community. Broadly construed, fiscal benefit means an enhanced ability of a representative household to consume more publicly provided goods and services, such as education and parks, and private goods and services. A fiscal benefit can arise from an increase in the community's taxable resources or, on the expenditure side, from a reduced need for public services. For example, a new business development typically adds to a community's tax base—property or other. As the community levies taxes on this addition to the tax base, new revenues will be generated. If these revenues exceed the public service demands that accompany the new development, then the community household will be able to 1) lower its own tax rate, thereby enabling increased consumption of private sector goods, 2) consume more residential services as financed from the added tax base, or 3) both. Note also that the accrual of fiscal benefit does not necessarily imply greater overall levels of general welfare for community residents. Business development may cause congestion and environmental degradation that lower the quality of life for residents.

[2]See Gomez-Ibanez (1993), Ladd (1994), DuPage (1991), and White (1975).

[3]An extensive handbook details how to measure the fiscal impact associated with any particular property development; see Burchell and Listokin (1993).

[4]See Testa (1995), Gomez-Ibanez (1993), and Burchell and Listokin, ibid.

[5]Bartik (1991), citing Fox and Neel (1987) and Bartik et al. (1987).

[6]On average, and with much variation, education accounts for 40 percent of local government spending in the U.S. (Advisory Commission on Intergovernmental Relations 1993).

[7]See, for example, Gomez-Ibanez (1993).

[8]Gomez-Ibanez (1993); Ladd (1994).

[9]If a growing business property tax base tends to reduce residential property tax rates, this does not necessarily mean that a business development has paid its own way in the host community. Nonproperty taxes borne by community residents may increase at the same time that property tax rates decline and service demands by the business sector rise. In such a situation, the rising service demands from business could crowd out the public services enjoyed by the community's households. Such crowding out is unlikely, however. The greatest demands on local governments are not usually for services to business but for education.

[10]Danielson and Wolpert (1991).

[11]Ladd (1975). Commercial and industrial property is defined by most local governments as that land and building used (and assessed for tax purposes) in profit-making enterprises. Hence it is closely aligned with what we refer to in our empirical work as "business development." Of course, some job-creating businesses are not subject to the local property tax—for example, government operations and private colleges—and hence are not included in measurements of commercial and industrial property.

[12]Unlike the assumption of some statistical studies and most fiscal impact studies, Ladd's study suggests that local residents comprehend that part of local taxes imposed on businesses is shifted forward to local consumers or backward to local wage earners or landowners. Ladd found that in their selection of property tax rates, communities act as if 39 percent to 45 percent of the property taxes paid by industrial property are borne by that property rather than by local residents.

[13]Fischel (1975).

[14]Danielson and Wolpert (1992).

[15]Some studies, including Fischel (1975), posit that fiscal surplus attendant to business development represents an implicit price or compensation that businesses pay to gain entry into communities. Fiscal benefit compensates for environmental noxiousness (see Fischel 1975, McGuire 1987, and White 1975). Under some conditions of competitive bidding among communities to attain fiscal surpluses associated with business, the surplus itself may be bid down to zero; that is, an observed fiscal surplus may be exactly compensating a community for environmental noxiousness (White 1975).

[16]Margolis (1956b and 1957).

[17]This area is not identical to the present Metropolitan Statistical Area as defined by the U.S. Department of Commerce; rather, it is the former SMSA area that continues to be used by local government-related planning agencies.

[18]We did this by overlaying maps of each type of jurisdiction upon that of the municipality in question. The fraction of a municipality's tax base that was subject to the property tax levy of an overlapping jurisdiction of a particular type (for example, school district) was assumed to equal the fraction of municipal land area accounted for by that particular jurisdiction. A detailed description of the methodology and the data themselves will appear in a forthcoming working paper, "Does business development raise taxes? An empirical analysis of Chicago's suburbs," Federal Reserve Bank of Chicago, working paper, 1995.

[19]The statutory tax rate reflects all the property tax rates imposed by all overlapping governments on real property in the sample community. Equalized assessed value is the taxable base against which the statutory rate is applied. After the assessor has assigned an "assessed value," the state of Illinois applies a county-wide multiplier factor to all assessed values within each county in order to bring the aggregate assessed value in each county to approximately one-third of fair market value. This process is called equalization. After this, certain exemptions are deducted to arrive at a taxable base against which all local property tax rates are applied.

[20]For a recent review, see McDonald (1989) and Thurston and Yezer (1994).

[21]Luce (1994).

REFERENCES

Advisory Commission on Intergovernmental Relations, *Significant Features of Fiscal Federalism,* Vol. 2, 1993.

Bartik, Timothy, "The effects of property taxes and other local public fiscal policies on the intrametropolitan pattern of business location," in *Industry Location and Public Policy,* Henry W. Herzog, Jr., and Alan Schlottmann (eds.), Knoxville: The University of Tennessee Press, 1991.

Bartik, Timothy, et al., "Saturn and state economic development," *Forum for Applied Research and Public Policy,* Vol. 2, 1987, pp. 29-40.

Burchell, Robert W., and David Listokin, *The Development Impact Assessment Handbook and Model,* Cambridge, MA: Urban Land Institute, 1993.

Danielson, Michael N., and Julian Wolpert, "Distributing the benefits of regional economic development," *Urban Studies,* Vol. 28, No. 3, 1991, pp. 393-413.

_____, "Rapid metropolitan growth and community disparities," *Growth and Change,* Fall 1992, pp. 494-515.

Downing, P. B., and R. D. Gustely, "The public service costs of alternative development patterns: A review of the evidence," in *Local Service Pricing Policies and Their Effects on Urban Spatial Structure,* Vancouver: University of British Columbia, 1977.

DuPage County Development Department, Planning Division, *Impacts of Development on DuPage County Property Taxes,* prepared for the DuPage County Regional Planning Commission, October 9, 1991.

Fischel, W., "Fiscal and environmental considerations in the location of firms in suburban communities," in *Fiscal Zoning and Land Use Controls,* E. S. Mills and Wallace E. Oates (eds.), Lexington, MA: Heath, 1975.

Fox, William F., and C. Warren Neel, "Saturn: The Tennessee lessons," *Forum for Applied Research and Policy,* Vol. 2, 1987, pp. 7-16.

Gomez-Ibanez, Jose A., "Does development pay its own way?" in *Regulation for Revenue: The Political Economy of Land Use Exactions,* Alan A. Altschuler (ed.), Washington, DC: Brookings Institution, 1993.

Homer Hoyt Associates, *Economic Survey of the Land Uses of Evanston, Illinois,* prepared for the Evanston Plan Commission, September 1949.

Illinois Department of Employment Security, *Where Workers Work,* annual (various issues).

Illinois Department of Revenue, *Assessment-Sales Price Ratio Studies,* annual (various issues).

_____, *Property Tax Statistics,* annual (various issues).

Ladd, Helen F., "Local education expenditures, fiscal capacity, and the composition of the property tax base," *National Tax Journal*, Vol. 28, No. 2, June 1975, pp. 145-158.

_____,"Fiscal impacts of local population growth: A conceptual and empirical analysis," *Regional Science and Urban Economics*, Vol. 24, No. 6, December 1994, pp. 661-686.

Luce, Thomas F., "Local taxes, public services, and the intrametropolitan location of firms and households," *Public Finance Quarterly*, Vol. 22, No. 2, April 1994, pp. 139-167.

Margolis, Julius, "On municipal land policy for fiscal gains," *National Tax Journal*, Vol. 9, September 1956a, pp. 247-257.

_____, "The variation of property tax rates within a metropolitan region," *National Tax Journal*, Vol. 9, December 1956b, pp. 326-330.

_____, "Municipal fiscal structure in a metropolitan region," *Journal of Political Economy*, Vol. 64, June 1957, pp. 226-236.

McDonald, John F., "Econometric studies of urban population density: A survey," *Journal of Urban Economics*, Vol. 26, 1989, pp. 361-385.

McGuire, Therese J., "The effect of new firm locations on local property taxes," *Journal of Urban Economics*, Vol. 22, September 1987, pp. 223-229.

Miranda, Rowen A., and Ronald D. Picur, *Taxation Without Explanation, The Illinois Property Tax System*, Springfield: Taxpayers Federation of Illinois, 1993.

Oakland, William H., and William A. Testa, "Does business development raise taxes? An empirical analysis of Chicago's suburbs," Federal Reserve Bank of Chicago, working paper, forthcoming 1995.

Palumbo, G., S. Sacks, and M. Wasylenko, "Population decentralization within metropolitan areas: 1970-80," *Journal of Urban Economics*, Vol. 27, 1990, pp. 151-167.

Thurston, Lawrence, and Anthony M. J. Yezer, "Causality in the suburbanization of population and employment," *Journal of Urban Economics*, Vol. 35, 1994, pp. 105-18.

U.S. Department of Commerce, Bureau of the Census, *Census of Population*, 1980.

_____, *Census of Population*, 1990.

White, Michelle J., "Firm location in a zoned metropolitan area," in *Fiscal Zoning and Land Use Controls*, Edwin Mills and Wallace Oates (eds.), Lexington, MA: Lexington Books, 1975.

_____, "Property taxes and firm location: Evidence from Proposition 13," in *Studies in State and Local Public Finance*, Harvey S. Rosen (ed.), Chicago: University of Chicago Press, 1986, pp. 83-107.