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Urban Growth, Rural Land Conversion and the Fiscal Well-Being of Local Municipalities

By

Steven Deller

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Steven Deller
Department of Agriculture and Applied Economics
University of Wisconsin-Madison/Extension
Madison, WI 53706
deller@aae.wisc.edu

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Steven Deller
Department of Agriculture and Applied Economics
University of Wisconsin-Madison

Abstract

The economic and fiscal impact of five alternative economic development events are compared and contrasted using a conjoined input-output/econometric modeling system. The five hypothetical events include retail, services (hospital) and manufacturing developments along with two housing developments. For the case study the simulation results suggest that impacts can vary wildly across the types of development and that scenario development plays a key role in the analysis. Along this line, experimental simulations must take care to make scenarios comparable. In the end there are seldom "rules of thumb," such as the Cost of Community Service Studies (COCS) offered by the American Farmland Trust, which can be applied in the community setting.

Introduction

As urban areas grow in terms of population, income, and wealth the value of land surrounding these places increases. Returns to developing the land for housing and commercial enterprises exceed the returns to farming. Some of the most productive agricultural areas become attractive sites for development (Morris, 1998). Prior to the 1960s, the conversion of farmland was considered part of the natural process of spatial economic growth. Rapid suburbanization of cities due in part to the completion of the interstate highway system and the draw of suburban lifestyles caused many environmentalists to call into wisdom the allowance of unregulated growth. As observed by Rome (2001) the 1960s and 1970s witnessed the emergence of two conflicting mega trends: first, massive migration to the suburbs and high amenity ex-suburban rural areas and second, the rise of the environmental movement.

Throughout the 1960s and early 1970s environmentalists and others concerned with the rapid unregulated growth argued for more restrains on growth due to nebulous environmental concerns, broad quality of life issues and accusations of the demise of the family farm. While the general public were aware of these concerns there was little for local decision makers to use to off set the positive economic impacts taunted by developers and the strong sense of private property ownership rights. The tone of the discussion shifted rapidly in 1974 with the release of the infamous *Cost of Sprawl* study prepared by the Real Estate Research Corporation (RERC 1974a) for the U.S. Department of Housing and Urban Development. For the first time the public was made aware of differential fiscal impacts on local governments from alternative land use patterns. The major conclusion of this study was that "for a fixed number of households, 'sprawl' is the most expensive form of residential development…[t]his cost difference is particularly significant for that proportion of total costs which is likely to be borne by local governments" (RERC 1974a:7).

In a follow up study in Wisconsin, the RERC (1974b) analyzed the cost implications of accommodating projected future growth under different development scenarios. The study compared the public costs associated with accommodating a forecasted statewide population increase of almost one million persons under three different growth scenarios: compact, high density "containment;" "suburban extension;" and "exurban dispersion." On the basis of the study, RERC concluded that "[i]f saving money on community facilities is important to citizens and local government officials, an increase in density and a reduction in leapfrogging will save significant sums" (p.7). Environmentalists and concerned planners who before the RERC studies had been able to point to qualitative concerns about unregulated growth now had tangible "hard" evidence upon which to plead their case.

More recent examples of studies supporting the notion that planning and growth management can save taxpayers money include the work of researchers at Rutgers University's Center for Urban Policy Research (CUPR). The CUPR study (1992) calculated the public costs that would result from following the New Jersey growth management plan compared to unregulated growth. The Rutgers researchers found that over a twenty-year period $1.3 billion in infrastructure costs could be saved. More remarkable about the Rutgers study is that the New Jersey growth management plan did not limit the amount of growth to occur but rather simply alter the pattern, density, and location of development. While the CUPR study covered a range of environmental and social issues, the fiscal calculation attracted by far the greatest publicity and public comment. Other large scale studies that have drawn significant attention in the planning arena and the public's eye include the Builders Association of the Twin Cities study (1996), the Kelly (1993) study of the Maryland "Vision" plan, and the infamous DuPage County Planning Department study (1992) of the rapid growth west of Chicago. In each case, low-density growth often associated with "sprawl" in which a given amount of population and business growth consumes larger amounts of land has significantly higher capital costs born by local governments.

Within the academic literature, the work of Helen Ladd (1990, 1994 and 1998) and her colleagues represents perhaps the most systematic and rigorous analysis of alternative growth patterns. In her 1990 study, for example, she examined 248 large counties and found that counties with higher rates of growth, and larger increases in tax-paying new development, had higher levels of public expenditure and higher tax rates than slower growing communities. The work of Ladd and other economists associated with the Lincoln Institute of Land Policy have consistently found that more rapidly growing areas tend to have greater increases in expenditures and tax burden than slower growing areas. These results are intuitive because rapid growth areas require greater and speedier investments in new infrastructure and government services generally not previously supplied. While Ladd points out that her work is not intended to assess the impacts of one type of development over another, her work has been viewed as supporting evidence for the advocates of managed, or more recently "smart growth."

As noted by Bunnell (1997, 1998), fiscal impact assessment has moved from unbiased information used in the public debate over land use and growth patterns into the realm of advocacy against unmanaged growth and for farmland and open space preservation. Planners working in the field quickly learned of the findings of the DuPage County study in a special Planning Advisory Service Memo (American Planning Association 1991 headlined "Does Development Really Pay for Itself?" Similarly, a 16 page report issued by the Sierra Club's Midwest Office titled "Sprawl Costs Us All: How Uncontrolled Sprawl Increases Your Property Taxes" presents findings from a number of fiscal impact studies which show that development is fiscally "unbeneficial" to local governments and therefore should be severely limited. It argues that a "Property Tax Impact Statement" should be required when any new development is proposed. "With the Property Tax Impact Statement, we will know up front what we will be paying for and we will decide if this development is beneficial or detrimental to the community" (Hulsey, 1996: 13).

Perhaps the clearest example of the use of fiscal impact studies to support an advocacy argument related to growth management is the American Farmland Trust's (AFT) sponsorship and promotion of Cost of Community Services (COCS) studies. The AFT offers an alternative to the widely used methods of fiscal impact assessment offered by Buschell and Listokin (1978, 1980 and 1994) and Burchell, Listokin and Dolphin (1985). The COCS approach assesses a community's overall balance of sheet revenues and expenditures at any given point in time and attempts to determine the proportion of municipal revenues and expenditures attributed to major categories of land. The final product of a COCS study is a set of ratios expressing the proportion of revenues and costs for various land uses. The ease of interpretation and the aggressive marketing of the COCS approach by the American Farmland Trust has thrust it into the mainstream of America's thinking about the fiscal impacts of alternative land use patterns. The success of the AFT's COCS studies can be viewed in the "new conventional wisdom" that it has created: "…everyone knows housing development doesn't pay for itself but commercial development does…"

But this conclusion is not without some rigorous evidence. Danielson and Wolpert (1991) examined the growth of 365 contiguous municipalities in northern New Jersey during the 1980s. They assessed whether growth in employment and population affected several indices of fiscal and non-fiscal benefits. In general they concluded that employment growth benefited local communities while population growth was largely detrimental. With specific regard to fiscal impacts, employment growth significantly lowered property tax rates while raising local government revenues per capita.

In the end, however, the "new" conventional wisdom has results in a unique scramble for "fiscally productive tax bases" that can produce undesirable and bizarre patterns of land use. Many communities try to attract industrial and commercial developments but try to avoid housing for employees, especially those with low incomes and large families. Taken to its logical conclusion, the new conventional wisdom fostered by the American Farmland Trust is a world with farms, but no farmers, businesses, but with no employees: a community of farms and businesses, but no residents.

This intent of this chapter is fourfold. First, a critical review of the AFT COCS approach is provided. Then, a review of what impact assessment is, is not and the potential confusion impact assessment can cause is provided. Third, a case study examining the economic and fiscal impact of five alternative land use options is provided. Using a conjoined input-output/econometric model of Wisconsin counties five alternative economic development (i.e., land uses) are compared and contrasted. The chapter closes with an outline of one potential research agenda.

Cost of Community Service Studies

One collection of studies that have contributed the most to the current state of confusion over the economic and fiscal impact of alternative land use patterns is the AFT COCS studies. While often referred to as fiscal impact analysis, the COCS method allows the community to assess their fiscal position at any one point in time in terms of "demands" placed on the locality by different land use categories. The studies are snapshots of the net fiscal costs of differential land uses. They are snapshots in that they measure one year at a time and not make projections into the future. The COCS approach compares annual revenues to annual expenditures on public services for various land uses. Local revenues and expenditures are appropriated to major categories of land use, and the result is a set of ratios purporting to show the proportional relationship of revenues and expenditures for different land uses at one point in time.

Kelsey (1996) expresses a common formulation of the ratio as:

$$RATIO_u = \frac{\sum((TAXSD_{ut} + NONTAXSD_{ur}) + (TAXMCD_{ut} + NONTAXMCD_{ur}))}{\sum(EXPENDSD_{uj} + EXPENDMCD_{uj})}$$

where

$RATIO_u$ = ratio of revenues to expenditures for land use *u*
$TAXSD_{ut}$ = school district revenue from tax *t* and land use *u*
$NONTAXSD_{ur}$ = school district revenue from non-tax source *r* and land use *u*
$TAXMCD_{ur}$ = municipal revenue from tax *t* and land use *u*
$NONTAXMCD_{ur}$ = municipal revenue from non-tax source *r* and land use *u*
$EXPENDSD_{uj}$ = school district expenditure *j* related to land use *u*
$EXPENDMCD_{uj}$ = municipal expenditure *j* related to land use *u*.

The ratio is said to provide an easy to understand measure of the net fiscal impact from a particular land use. When net fiscal impact is neutral (i.e., expenditures exactly equal revenues) the ratio will be 1:1. If expenditures exceed revenues, then the ratio will be less than one. The ratio is generally calculated on four different types of land uses: residential, commercial, industrial and farmland.

The critical part of these studies is the determination of which revenues and expenditures should be allocated to what types of land use and in what proportions. Some allocations decisions are straightforward such as property tax revenues. Determining the allocation of certain expenditures can be accomplished through detailed analysis of community records, such as the number of fire department calls to alternative land uses or refuse collection based on tonnage collected from different land uses.

Others are more difficult if not completely arbitrary such as the allocation of general administrative costs of running the local government. Here the AFT suggests using the percentage of all tax revenues arising from each land use as a default. For example, if residential properties account for 50 percent of property taxes, 50 percent of all non-directly allocable revenues and expenditures are attributed to residential land.

In the end, the allocation of revenues and expenditures depends on the availability and completeness of local records, the willingness of local staff and officials to participate in interviews and help in the allocation process, and *the objectiveness of the analyst* conducting the analysis. This latter point is vital because inherent to the COCS approach, judgment calls on the part of the analyst are inevitable. As argued by Bennell (1997, 1998) in the current environment of using fiscal impact assessment in an advocacy setting the objectivity of the analyst has been called into question.

COCS studies consistently show that for residential land, the cost of service ratio is greater than one. The average of ratios of previous studies range from about $1.05 to $1.50 for residential development for every dollar of revenue generated (Table 1). COCS ratios for commercial and industrial properties are typically below one, costs ranging between 30 and 65 cents for every dollar of revenue generated. For agricultural land and open space, ratios are typically smaller, ranging from 10 to 15 cents for every dollar of revenue generated. COCS studies across the board have concluded that farmland and open space provide more revenue to a community that is incurred in expenditures, resulting in a net fiscal benefit to a community. A new conventional wisdom is born.

COCS studies, however, are fraught with problems and critics often discount them because of the many underlying assumptions. Most notable, the conventional studies often fail to acknowledge that the residential category includes the homes of most people who farm or work on farms in the study area. This means that the costs associated with servicing farmers, resident agricultural workers, and their families are apportioned to the residential category, and many kinds of costs—such as street maintenance, garbage collection or protective services are not assigned to any agricultural uses. As a result of this approach, the overall costs associated with agriculture and other natural resource industries will necessarily be low or nonexistent. Since the traditional AFT methods discount the human service costs with agricultural activities, conventional COCS ratios may not provide a clear picture of the different fiscal impacts associated with farming versus residential land uses.

Gross Land Use Categories By averaging across land types, key distinctions between different land uses within the same category are lost and thus the method may unintentionally influence the conclusions about which development policies and subsequent land use patterns are cost effective from a fiscal perspective. For example, the aggregate group residential makes no distinction between mobile homes, single-family dwellings, apartment buildings or smaller retirement homes. Additionally, the method gives no insight into the differences between small low intensity manufacturing development and large-scale operations or different types of agricultural operations such as intensive large scale confined livestock operations and open crop fields. Clearly, the level of specificity in COCS is sufficiently gross that little insight into fiscal impacts is gained.

Basis Measure Bias Because COCS uses a gross dollar basis to make comparisons, intensity of land use is lost. In COCS studies farmland and open spaces appear to have the most favorable fiscal impact. This is because the ratios are estimated on a dollar basis. If the ratios were calculated on a per acre basis, industrial and commercial land would seem much more important. One acre of industrial land on average will contribute much more to the tax base than

one acre of agricultural land. Here, methodological flaws in COCS predetermine the study's outcome.

Capacity to Develop is Ignored The notion of excess capacity in the provision of local public services is vital to understanding the impact of any particular development. For example, a sewer treatment plant operating at 80 percent capacity may be able to absorb 100 new single-family dwellings with little if any additional costs. The 101st dwelling, however, may exceed the capacity of the treatment plant and expensive expansions may be required. In this example, the first 100 dwellings more than paid for themselves, but the 101st did not. This error is commonly seen when using averaging analysis when marginal analysis is preferred. COCS studies fail to capture this important notion.

Economies of Scale are Ignored Local public services have been documented to exhibit economies of scale. Providing public services carry a high fixed cost. As a community grows these fixed costs can be spread over more residents and per resident costs decline. For example, a community with road maintenance responsibilities must have a minimum of equipment regardless of road mileage. For smaller communities, equipment sits idle and is very expensive. For larger communities, that same equipment can be used more fully. High fixed costs can be spread over more residents. Again, this error is commonly seen when using averaging analysis when marginal analysis is preferred. COCS studies fail to capture this important notion.

Nature of Public Goods Ignored Public goods are very different than most other goods. Private goods are characterized as rival and excludable. If I consume an apple, you cannot consume the same apple. Consumers are rivals for private goods. Consumers can also be excluded from private goods through market mechanisms, most notably price. I am excluded from the market for Ferrari automobiles because of prices. Public goods, however, are characterized as being non-rival and non-excludable. If an effective police department deters crime, all residents of the community consume that public service simultaneously. Nor can any one resident be excluded from the sense of security the police provide. COCS studies are flawed because they treat public goods and services as if they are private in nature. In a public setting, adding a new industrial park or residential development will not deter prior residents or new residents from continuing to enjoy the same level of the public service. At some point, however, congestion in the consumption of the public good will prevail and additional investments (expenditures) for the good will be required. Here congestion is similar to capacity discussed above. COCS studies fail to capture this important notion.

In addition to these specific short coming, it has been noted that the results of COCS studies are often interpreted incorrectly. For example, although a general class of land use may be associated with a net fiscal benefit or loss, it is also true that any individual piece of property may have an impact that can be significantly different from the overall averages. Finally, fiscal impact assessment and COCS studies in particular, can be criticized as a tool for local decision making on that grounds that, in contrast to social cost-benefit analysis, it focuses attention on a narrow view of benefits and costs. Benefits of development are measured only in terms of the additional revenues that accrue to the local government. Similarly, costs include only those that affect local governments.

As noted by Ladd (1998), most economists agree that fiscal impact assessment as advocated by the American Farmland Trust is a bastardized of cost—benefit analysis, and consequently cannot by itself provide appropriate signals about whether a new development should be allowed. Because local residents care so much about their tax burdens, however, such analysis will often be requested. Even sadder, with the “new conventional wisdom” dominating land use discussion, the call for analysis may not even be forthcoming. At best, fiscal impact analysis should be regarded as an input into a more comprehensive analysis of the costs and benefits of new development.

Impact Assessment: What It Is and Is Not

When a community undertakes an impact assessment there are several elements of the assessment that the community must consider, including what it is and what it is not. These include an understanding that:

- Impact assessment is a process to comprehensively evaluate the consequences of development on a community.

- Impact assessment is a process that provides extensive documentation of the anticipated economic, fiscal, environmental, and social related impacts of a proposed development.

- Impact assessment is a process that makes use of existing information where possible.

- Impact assessment is a process that employs techniques to gather additional, new information, where necessary.

- A process that provides a framework to integrate data, models, spatial and statistical analysis and the impacts of alternatives.

What is vital to this view of impact assessment is that it is a process through which a community gathers and thinks about information about the proposed development. Within the community development literature the idea of sustainable development hinges on grassroots development and adoption of specific proposals. While outside consultants can play an important role in providing technical expertise, the community should not be held hostage to the opinions of the developer or outside advocates. An understanding and appreciation of the process of impact assessment is almost as important as the technical merits of the assessment itself.

The benefits of impact assessment are wide ranging and include:

- Impact assessment is designed to enhance sound land use management at the local level and includes a number of important characteristics, not just fiscal impacts.

- Impact assessment provides an opportunity for communities to gain advance understanding of a particular development so that they may plan to both efficiently meet new service demands and avoid potential environmental or social costs.

But impact assessment is only beneficial if it leads to sound decisions such that the development minimizes adverse environmental impacts, is suitable for the location, makes efficient use of existing community infrastructure and services, accounts for community costs in the broadest context, and is the product of broad public consensus and is consistent with the community's economic, cultural and regional character. Impact assessment is particularly beneficial if the proposed development is large, unique or precedent setting and may have a substantial impact on a community's financial, environmental and cultural resources. But in the end, the decision to allow or dismiss the proposed development must be founded in the community's vision of itself.

Elements of a "proper" impact assessment should include:

- Evaluations of both the positive and negative impacts of the proposed development in all of the elements that a community defines as important in its vision of itself.

- Focus on the significant impacts, not on the nominal effects of the proposed development. In other words, impact assessment should draw attention away from "red herring" issues and onto the noteworthy impacts.

- The impact assessment should consider the direct as well as the indirect impacts of the proposed development.

- The assessment process gives high priority to community values, long-term goals and self-vision when assessing impacts.

- Impact assessment involves the community in evaluating impacts, especially when considering social and cultural impacts.

While impacts should be comprehensive and draw on local knowledge when at all possible, there are several things it will not do, including:

- Impact assessment does not provide *THE* answer.

- Accounting for the possibility of spill-over into other communities.

- Should not be used to evaluate community values and/or vision of itself.

- Tends not to be cumulative in that impact assessment evaluates proposed development on a case-by-case basis.

Because impact assessment, when properly conducted, includes a wide range of both quantitative and qualitative information, it is important to realize that impact assessment in and of itself cannot provide the answer. While impact assessment should be comprehensive covering a range of issues, it should not be confused with cost-benefit analysis. Impact assessment is a process that draws information into the decision-making process where as cost-benefit analysis is an attempt to quantify all costs and benefits of the proposed development. Seldom does a community have the time, energy or resources to conducted a full cost-benefit study for every proposed development.

A successful impact assessment, particularly the decision that comes at the end of the process, hinges on the notion that the community has an up-to-date and well thought out vision and comprehensive plan in place. The plan should guide the impact assessment to focus on issues relevant to the community. In addition, the plan should outline the weights the community places on elements of the impact assessment. Without a vision or comprehensive plan in place, the impact assessment itself can inadvertently steer the decision making process. In the extreme, the impact assessment can dictate the community's vision of itself. The latter makes for bad public policy.

While in theory, impact assessments should consider the longer cumulative impacts of a proposed development on the community, in practice impacts assessments tend to focus on individual development proposals on a case-by-case basis. In the absence of a long-term comprehensive plan or vision of the community, short-term decisions on the basis of impact assessment can result in poor long-term policies. In addition, the decisions of any individual community seldom consider the impact of the proposed development within the context of the larger urban area. A reasonable decision by any one community at a given point in time may have unpredictable consequences on the larger urban area.

For example, within the planning literature land use patterns described as leapfrogging is generally considered to have negative fiscal impacts (RERC 1974b). Rigorous monocentric urban density analysis, however, points out the short-comings of short-term views of urban structure. Peiser (1989) for example, empirically demonstrates that areas that are skipped over and subsequently developed are developed at higher land use densities than they would have been had they not been skipped over. Peiser notes that "[t]he driving forces behind the hypothesis is that land values on vacant infill parcels increase faster than land values at the urban fringe, and therefore developers must build at higher densities to achieve the same level of return" (p.197). Ohls and Pines (1975) further suggest that skipping over central city locations to build low-density housing at the fringe is efficient from a regional perspective by saving central

locations for more intensive uses. In the end, impact assessment properly conducted can provide invaluable information into the decision making process notwithstanding some of the shortcomings discussed above. Incomplete, poorly executed or conducted within an advocacy setting can result in poor public policy.

The Impact of Alternative Land Uses

One of the intents of this chapter is to use a comprehensive regional economic modeling system to explore the variation in socioeconomic and fiscal impacts of alternative economic development options within a land use framework. Five alternative development proposal will be compared and contrasted including: a high and middle income residential development, a commercial retail development, a service based development, and a manufacturing development. Issues concerning consistency in scenario development will be explored as well as issues in comparison of simulation results. A case study approach will be adopted for ease of comparison using Walworth County in southeastern Wisconsin.

The economic and fiscal impacts of different types of economic growth events and corresponding land use patters on local economies is modeled using an integrated (or conjoined) input-output/econometric modeling framework. The model--dubbed the Wisconsin Economic Impact Modeling System (WEIMS) (Deller and Shields 1996; Shields and Deller 1997, 1998; Shields 1998; Shields, Stallmann and Deller 2000)--closely resembles a plethora of regional models constructed for policy simulations (e.g., Kort and Cartwright (1981) for US states, Conway (1990) for Washington state, Coomes, Olson and Glennon (1991) for the Louisville SMSA, Treyz, Rickman and Shao (1992) for user-defined regions, and Rey (1997) for San Diego).

For conjoined models, the IO component is used to determine industry outputs and primary factor demands. The econometric component estimates final demands, factor prices, and primary factor supplies. The aim is to retain the sectoral detail afforded by IO techniques and close it with a system of endogenous econometric relationships (Dewhurst and West, 1990).
As noted above, many studies looking at the impact of alternative land use patterns are limited because they offer only partial analysis. Using an integrated approach to assess the economic and fiscal impact of alternative land use patterns is a marked improvement over these previous studies because it moves toward the “holistic” approach that is often lacking in this literature. In particular, our approach recognizes the economic relationships among all agents in the economy, thus provides a better understanding of wide reaching impacts.

The Wisconsin System is a rather complex model, consisting of more than 50 stochastic equations. Because many of the details of the complete model are not relevant for the purpose of this study, discussion is limited to the demographic and fiscal modules. Additionally, since I want to keep the presentation as intuitive as possible, I approach this section by considering how the impacts of alternative land are specifically examined in the model framework.
A graphical overview of the Wisconsin System is presented in Figure 1. Six modules compose the model: 1) production, 2) labor, 3) demographics, 4) retail, 5) housing and 6) local government (fiscal). All modules, save the production module, consist of a series of stochastic econometric equations. To capture interrelationships, the modules are linked by one or more endogenous variables. Similar to other models of its type, the Wisconsin model recognizes two sources of economic demand, external and local. While county growth is driven primarily by export production, the model also contains a number of local policy variables that allow users to model locally induced demand shocks.

Intermediate production relationships in the local economy are examined in the input-output (IO) component. The IO model provides a very detailed family of production functions, albeit reliant on a number of fairly strong assumptions. A common way to initiate a policy simulation in the Wisconsin System is to specify a demand shock—the scenario often involves reducing or increasing output for a single industry. The IO core is used to estimate changes in output by industry due to changes in final demand.

The labor market components of the model are linked to the production sector via industry output as determined by the production module. Part one of the labor module is used to estimate industrial employment and wages while part two examines unemployment, commuting

patterns, population (including migration), total personal income and income distribution responses to the initial change in economic activity.

The remaining induced demand modules incorporate information provided by the labor market modules. Local retail sales rely on personal income, population and commuting patterns. Income and population change, among other things, drives the local housing market. Key forecasts from the housing sector include housing starts and property values. Income, population, and income distribution drive local government expenditures and revenues. Local government is also closely integrated with the local housing sector through property values (i.e., the property tax base).

To date WEIMS has been used to assess the economic and fiscal impact of retirement migration (Shields, Deller and Stallmann 2000; Stallmann, Shields and Deller 2000), the affects of commuting on local retail markets (Shields and Deller 1999), the operation of a state prison (Deller 1999) and a public airport (Deller and Koles 1998). In addition, the modeling system has served as the foundation for an extension outreach educational program aimed at helping local officials better understand the economics of alternative policies and events (Deller and Shields 1998).

The Case Study and Scenarios

For the purpose of this case study, five alternative land use patterns are examined within the context of alternative economic development options. The scenarios are designed to be as compatible as possible but sufficiently different to allow for contrasts between alternative policy options. The hypothetical scenarios center on a 100 acre parcel of land on the edge of a representative community. It is assumed that the public construction costs (e.g., new road construction, water and sewer line extensions, etc.) are comparable across the five development options. Therefore, the comparison/contrasts will emphases changes in operational expenditures and revenues of the hypothetical developments. In addition, a minimal number of assumptions are made about the structure of each scenario allowing the greatest flexibility for the model and comparisons.

The five alternative scenarios include: 1) commercial retail development, specifically a general merchandise type store such as a Wal-Mart or K-Mart; 2) a service development, specifically a health care facility or small hospital; 3) a manufacturing facility that is consistent with the study area, a food processing facility, specifically a condiment making plant; 4) a residential development marketed at households earning more than $75,000 annually (high income); and 5) a residential development targeted at households earning $35,000 annual (middle income). Each development is assumed to employ 100 persons paying prevailing wages. The two residential developments are assumed to include 100 homes each. For consistency in comparisons, it is assumed that all of the retail, service and manufacturing jobs are taken from in-commuters while each of the 100 workers associated with the residential developments out-commute. While this latter assumption represents an extreme oversimplification, it is required in this experimental framework to ensure comparability across scenarios.

As outlined above, each scenario is constructed to be readily recognized by IMPLAN, the input-output component of WEIMS. In turn, the general merchandise (IMPLAN sector 449) sector, hospital (IMPLAN sector 492) sector and condiment food processing (IMPLAN sector 69) sectors are shocked by 100 jobs. For the residential scenarios, income was injected into the local economy using the expenditure patterns for the high- and middle-income household institutions. For the high income, $7.5 million is injected into the region while for the middle income $3.5 million is injected. The expenditure pattern for these two institutions represents the spending patterns that each of these new households represent (see Wagner, Deller and Alward 1995 for details). For population estimates, each household is assumed to be composed of one worker and two and a half persons.

The region used for this experiment is Walworth County in the southeastern portion of Wisconsin. Walworth County has a population of about 88,000 persons with a per household income of slightly less than $62,000. Perhaps best known for the recreational area Lake Geneva, it is has historically been a weekend retreat destination for higher income residents of Chicago.

Today, the southern part of the county, which boarders on the Illinois-Wisconsin state line, is starting to experience the ex-suburban growth pressures from the north-northwest growth of metro Chicago. The northern and western parts of the county are traditional agricultural with fairly large scale (relative to Wisconsin) crop production farms. Scattered throughout the county is a large and growing Hispanic population that supports a number of low to average paying manufacturing jobs. In short, Walworth County represents a community that has a balance of economic activity and as the Chicago metro area grows from the south and the Milwaukee metro area from the north-east, an area that will be facing increased demands for alternative land use decisions.

Scenario Results

The results of the simulation are presented in Tables 2 through 7. The estimated changes in industrial demand from the input-output model (IMPLAN) are provided in Table 2. Immediately, one can see significant differences in the scale and variation in impacts across the five scenarios. The middle-income residential development has the smallest total impact on industrial output at only $1.5 million, a level significantly below the $3.5 million in injected income. This "loss" of economic activity comes from effective margining of retail expenditures and non-local spending associated with out-commuters (Shields and Deller 1998). The commercial retail development impacted total regional activities by $3.7 million in industrial output, followed by the high-income residential development at $4.4 million and the hospital development at $8.4 million in industrial output. The manufacturing scenario, however, generated a significantly higher change in industrial output: 100 jobs in the food-processing sector generated $41 million in additional industry sales. This dramatic difference can only be attributed to high output per working in this particular sector. Care must be taken because this disproportionately large impact for manufacturing will follow throughout the rest of the analysis.

From the econometric components of WEIMS estimates that the change in employment levels will range from 27 jobs with the middle-income residential development to 340 for the manufacturing scenario (Table 3). Eighty jobs are generated for the high-income scenario, only 110 for the commercial retail development and 173 for the hospital scenario. The difference in the two residential developments seems reasonable given the assumption of 100 percent out-commuting and differences in income levels and spending patterns. The 100 hospital jobs resulting in 173 total jobs imply an employment multiplier of 1.73, which seems reasonable. The small increase in additional jobs from the retail development, with an implied employment multiplier of only 1.10, is reflective of the lower pay scale often offered at general merchandise type stores and the leakage of profits from the area. The 100 additional jobs in food processing manufacturing translates into 340 total jobs for an implied multiplier of 3.40, an estimate that seems unreasonably high.

Since no structure is imposed within the various scenarios on the location of persons taking jobs created, other than all workers from the residential development out-commuting, the model is given complete flexibility. Changes in population range from 139 persons for the retail development to 447 persons for the manufacturing scenario (Table 4). The residential developments result in population increases of 351 and 285 persons for the high- and middle-income scenarios respectively.

There are also changes in the level of unemployment and net-commuting patterns. Across all five scenarios, the number of unemployed persons decreases from between five for the middle-income residential development to 54 for the manufacturing development (Table 4). In terms of unemployment rates, these declines in the number of unemployed translate into modest reductions in the unemployment rates going from about 2.6 to 2.5 percent. In each of the scenarios there is a noticeable change in commuting patterns from an increase in out-commuting across all five, modest reductions in in-commuting, save for the manufacturing scenario. The balance of the jobs are taken from in-migrants.

The changes in commuting patterns is best explained within WEIMS by relative changes in regional wages (per capita income) and housing prices. The econometric results of WEIMS suggests that increases in housing prices (median house value) relative to housing prices in surrounding counties, increases the tendency of new jobs to be taken by in-commuters as

opposed to in-migrants. The econometric results also suggest that changes in local wages (per capita income) relative to wages in surrounding counties will affect net-commuting patterns. In four of the five scenarios, per capita income declined, ranging from a decline of $42 for the middle income scenario to a modest decline of slightly more than $5 for the hospital scenario. Interestingly, the general merchandise retail scenario saw a decline of about $7.5 which is smaller declines than either residential developments. The manufacturing scenario results in an increase of almost $24 in per capita income. But even the largest absolute change in per capita income is only 0.23 percent of the original level.

From the housing module of WEIMS there are small changes in median housing values (Table 5), which feed into commuting patterns. In four of the five scenarios, the median price (value) of housing increased by almost $11 for the retail scenario to $170 for the manufacturing scenario. Only in the middle-income residential development saw a decrease in market values with a $65 decline. But with an original median house value of nearly $68,000, these changes represent less than a one percent change. Still, this is a sufficient change to influence commuting flows describe above. Also reported in Table 5 are simulated changes in the value of new residential construction (New Housing Permit Value) and the change in the rate of flow of new housing construction (Increase in New Construction). It is important to note that these latter measures do not directly reflect the two residential development scenarios, but rather the level of ripple or multiplier affect from the initial shock (scenario).

While these changes in income and housing values may appear to be small, specifically less than half a percent, these variables a drivers in the labor market modules of WEIMS. It is the latter module that absolute changes in population are derived and "getting population right" is critical in assessing fiscal impacts. The econometric results, numerous applications of WEIMS and other CPAN-like models (e.g., Deller 1999), all suggest that the level and magnitude of impact assessment hinges on correctly estimated population changes. In the end, population changes drive the impacts.

The fiscal impacts of the five alternative economic development options, and corresponding land use patterns, are reported in Tables 6 and 7. Consistent with the rest of the analysis, the food processing manufacturing scenario has the largest increase in local government expenditures at about $350,000 exclusive of K-12 public schools. General government administration expenditures is the largest single category of expenditures followed by expenditures on safety related items including police and fire protection. The smallest increase for the manufacturing example is health and human services with only a $7,000 increase. The small increase in the latter category is a direct result of the estimated increase in per capita income and the relatively large decrease in the number of unemployed. Total revenues are estimated to increase by over $800,000 hinting at a net positive impact. Care must be taken, however, because the expenditures estimated here do not include any capital expenditures (e.g., road construction, sewer and water lines, etc.) and the costs of servicing any debt incurred to finance the capital items.

The high- and middle-income residential develops increase total local expenditures by $317,000 and $231,000 respectively. For the high-income scenario, expenditures on policy and fire protective services is single largest category increase at almost $90,000 and for the middle-income residential development protective service expenditures increased by almost $65,000. It is most interesting to note that the two types of residential developments does not produce parallel expenditure impacts. For example, protective expenditure increases for middle-income residential development is about three-quarters that of the high-income scenario. But road maintenance expenditures, at $26,000 for the high-income is almost four times higher than the middle-income residential development. Health and human services expenditures is nearly the same for both types of development ranging from about $54,000 to $59,000. As with the manufacturing example, total revenues are expected to increase by about $645,000 for the high-income development and almost $500,000 for the middle-income. In both cases, the developments appear to more than pay for themselves. It is particularly important to note that in additional to capital expenditures not being captured, these analyses do not include public schools.

The retail development places modest demands on local public services with an estimated increase of just over $100,000 yet generates revenues of $240,000. The service

development, in this case a modest size hospital increases local government expenditures by $167,000 and revenues of $385,000. Again, both the general merchandise type development and the hospital development more than pay for themselves.

For each of the five different types of economic development options, and corresponding land use decisions, the demand for services provided by local governments increases. But given the size of local government in the case study area, Walworth County, Wisconsin, these increases represent less than half of one percent increases. Modest impacts given the relative size of the county. Increases in revenue outpace increases in expenditures by 2 to 2.3 times in every example scenario. For this county example, development does seem to pay for itself if congestion in services is not an issue.

From a local decision making perspective each economic development scenario has positive and negatives. For example, the manufacturing development will have the greatest impact in terms of jobs and income, but will increase local government expenditures the most. On the other hand, the manufacturing development may have a net revenue windfall of $460,000 dollars. But will the manufacturing development impact the community to such an extent that the characteristic of the community may be altered? Four of the five scenarios have a positive net fiscal impact, yet per capita income declines, albeit modestly. Only one development scenario, manufacturing, has a modest positive impact on median housing value and the middle-income residential development actually lowers median housing value. Other than the manufacturing example, which may be overstated with an implicit employment multiplier of 3.4, each of the example scenarios has both positive (e.g., fiscal) and negative (e.g., per capita income) economic impacts. In the end, local officials must balance multiple and often contradictory economic impacts.

An Outline of a Research Agenda

Part of the difficulty in making decisions about alternative development proposals and corresponding land uses is the inherent complexity of each decision. It is somewhat human nature to try to simplify complex issues into more manageable problems. Further, if we can be offered a simple solution or answer to these oversimplified problems, all the better. Fiscal impact assessment, and Cost of Community Services studies in particular, can offer what appear to be black and white answers to complex issues. Indeed, COCS have provided a “rule of thumb” that be applied blindly to a range of development alternatives. As outlined in detail above, COCS studies are not only inherently flawed they narrowly focus attention on only the fiscal element of impact assessment.

In the light of this critical assessment, several research agenda items can be advanced:

- A sampling of communities for which COCS ratios have been calculated should be the focus of a selection of in-depth broad-based studies. Using a range of impact assessment methods, four hypothetical development scenarios should be rigorously examined.

- A collection of community impact assessment-modeling tools covering a range of impact areas (e.g., economic, fiscal and environmental) that are based on rigorous theory and empirical dimensions needs to be developed. These tools can then be used to systematically examine the impact of alternative development patterns. The work of the Community Policy Analysis Network (CPAN) is an example of this type of effort.

- More rigorous methods of modeling the elusive notion of quality of life need to be explored. If quality of life can be proxied and modeled, then impacts of alternative development patterns could potentially be assessed.

- Spatial modeling that is now possible in light of GIS technologies, needs to be focused on assessing the true impacts of alternative development patterns. In addition to modeling impacts, insights into what drives growth and the policies that effectively affect growth can be achieved.

- Develop clearer links between public service provision levels and government expenditure patterns. Due to the lack of a better method, impact studies link services provisions directly to expenditures: more spending is equated to better services.

- Explore the potential insights that modern game theory can provide on the "winners and losers" of alternative development proposals.

- Develop stronger links between alternative development patterns and land use decisions to notions of fiscal stress and health.

In the end, the results of the most rigorously crafted and executed research program can not have the desired affects if there is not a complementary outreach educational program. The advocacy environment in which much of the public discussion takes place today, I fear that even the best research may collected dust on the selves of university libraries.

Conclusions

As urban fringe and high amenity rural areas experience increased pressure for the development of open spaces, local officials are asking increasingly more complex questions concerning the economic and fiscal impact of alternative land uses. Unfortunately, these officials often seek simple answers to their complex questions. Regrettably, simple answers are not available and "rules of thumb" that have been advanced by advocacy groups such as the American Farm Land Trust and their Cost of Community Services studies are widely misused and often wrong. Each community is unique as are each development proposal. Indeed, the same proposed development on opposite sides of the same community may have vastly different impacts because of the current provision of infrastructure and other public services will differ.

The analysis presented in this chapter is intended to 1) critique the current approaches to conducting impact assessment of alternative land uses, 2) offer an example of how complex impact assessments can be, 3) provide a reasonable range of impacts for reasonable alternative development options, and finally 4) offer a research agenda to advance our ability to provide local decision makers with the best information possible.

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Figure 1. The Wisconsin Economic Impact Modeling System

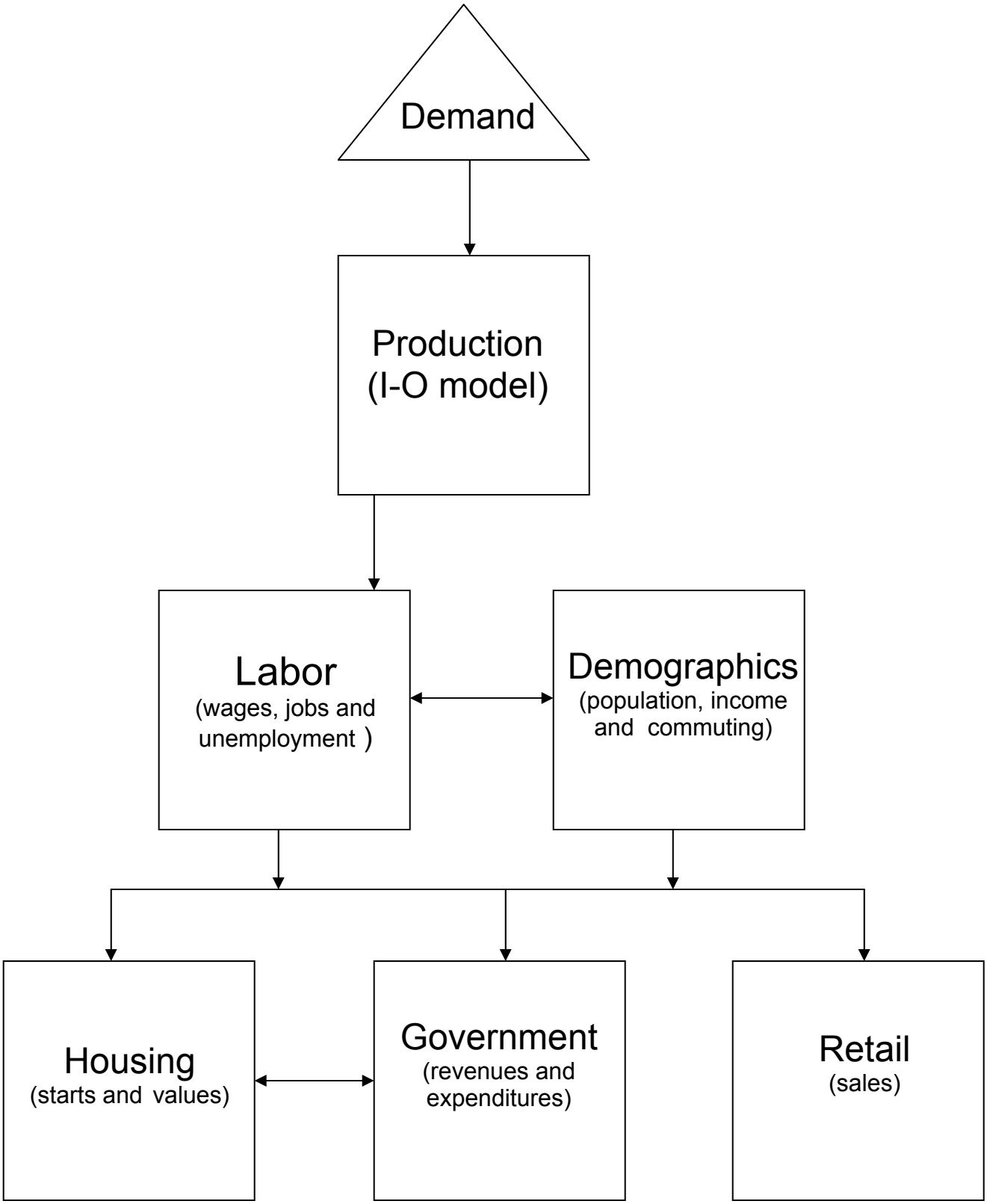

Table 1. Cost of Community Service Studies

	Residential (with farm homes)	Combined Commercial & Industrial	Farmland, Forest and Open Lands	Study Source
Connecticut				
Bolton	1 : 1.05	1 : 0.23	1 : 0.50	Geisler, 1998
Durham	1 : 1.07	1 : 0.27	1 : 0.23	Southern New England Forest Consortium, 1995
Farmington	1 : 1.33	1 : 0.32	1 : 0.31	Southern New England Forest Consortium, 1995
Hebron	1 : 1.06	1 : 0.47	1 : 0.43	AFT, 1986
Litchfield	1 : 1.11	1 : 0.34	1 : 0.34	Southern New England Forest Consortium, 1995
Pomfret	1 : 1.06	1 : 0.27	1 : 0.86	Southern New England Forest Consortium, 1995
Idaho				
Canyon County	1 : 1.08	1 : 0.79	1 : 0.54	Hartmans and Meyer, 1997
Cassia County	1 : 1.19	1 : 0.87	1 : 0.41	Hartmans and Meyer, 1997
Kentucky				
Lexington-Fayette	1 : 1.64	1 : 0.22	1 : 0.93	AFT, 1999
Maine				
Bethel	1 : 1.29	1 : 0.59	1 : 0.06	Good, Antioch New England Graduate School, 1994
Maryland				
Carroll County	1 : 1.15	1 : 0.48	1 : 0.45	Carroll County Dept. of Management & Budget, 1994
Cecil County	1 : 1.12	1 : 0.28	1 : 0.37	Cecil County Office of Economic Development, 1994
Frederick County	1 : 1.14	1 : 0.50	1 : 0.53	AFT, 1997
Massachusetts				
Agawam	1 : 1.05	1 : 0.44	1 : 0.31	AFT, 1992
Becket	1 : 1.02	1 : 0.83	1 : 0.72	Southern New England Forest Consortium, 1995
Deerfield	1 : 1.16	1 : 0.38	1 : 0.29	AFT, 1992
Franklin	1 : 1.02	1 : 0.58	1 : 0.40	Southern New England Forest Consortium, 1995
Gill	1 : 1.15	1 : 0.43	1 : 0.38	AFT, 1992
Leverett	1 : 1.15	1 : 0.29	1 : 0.25	Southern New England Forest Consortium, 1995

Table 1 (cont). Cost of Community Service Studies

	Residential (with farm homes)	Combined Commercial & Industrial	Farmland, Forest and Open Lands	Study Source
Middleboro	1 : 1.08	1 : 0.47	1 : 0.70	AFT, 2001
Southborough	1 : 1.03	1 : 0.26	1 : 0.45	Adams and Hines, 1997
Westford	1 : 1.15	1 : 0.53	1 : 0.39	Southern New England Forest Consortium, 1995
Williamstown	1 : 1.11	1 : 0.34	1 : 0.40	Hazler et al., 1992
Michigan				
Scio Township	1 : 1.40	1 : 0.28	1 : 0.62	University of Michigan, 1994
Minnesota				
Farmington	1 : 1.02	1 : 0.79	1 : 0.77	AFT, 1994
Lake Elmo	1 : 1.07	1 : 0.20	1 : 0.27	AFT, 1994
Independence	1 : 1.03	1 : 0.19	1 : 0.47	AFT, 1994
Montana				
Carbon County	1 : 1.60	1 : 0.21	1 : 0.34	Prinzing, 1999
Gallatin County	1 : 1.45	1 : 0.16	1 : 0.25	Haggerty, 1996
Flathead County	1 : 1.23	1 : 0.26	1 : 0.34	Citizens for a Better Flathead, 1999
New Hampshire				
Deerfield	1 : 1.15	1 : 0.22	1 : 0.35	Auger, 1994
Dover	1 : 1.15	1 : 0.63	1 : 0.94	Kingsley et al., 1993
Exeter	1 : 1.07	1 : 0.40	1 : 0.82	Niebling, 1997
Fremont	1 : 1.04	1 : 0.94	1 : 0.36	Auger, 1994
Groton	1 : 1.01	1 : 0.12	1 : 0.88	New Hampshire Wildlife Federation, 2001
Stratham	1 : 1.15	1 : 0.19	1 : 0.40	Auger, 1994
Lyme	1 : 1.05	1 : 0.28	1 : 0.23	Pickard, 2000
New Jersey				
Freehold	1 : 1.51	1 : 0.17	1 : 0.33	AFT, 1998
Holmdel	1 : 1.38	1 : 0.21	1 : 0.66	AFT, 1998
Middletown	1 : 1.14	1 : 0.34	1 : 0.36	AFT, 1998
Upper Freehold	1 : 1.18	1 : 0.20	1 : 0.35	AFT, 1998
Wall	1 : 1.28	1 : 0.30	1 : 0.54	AFT, 1998
New York				
Amenia	1 : 1.23	1 : 0.25	1 : 0.17	Bucknall, 1989
Beekman	1 : 1.12	1 : 0.18	1 : 0.48	AFT, 1989
Dix	1 : 1.51	1 : 0.27	1 : 0.31	Schuyler County League of Women Voters, 1993
Farmington	1 : 1.22	1 : 0.27	1 : 0.72	Kinsman et al., 1991
Fishkill	1 : 1.23	1 : 0.31	1 : 0.74	Bucknall, 1989
Hector	1 : 1.30	1 : 0.15	1 : 0.28	Schuyler County League of Women Voters, 1993

Table 1. Cost of Community Service Studies

	Residential (with farm homes)	Combined Commercial & Industrial	Farmland, Forest and Open Lands	Study Source
Kinderhook	1 : 1.05	1 : 0.21	1 : 0.17	Concerned Citizens of Kinderhook, 1996
Montour	1 : 1.50	1 : 0.28	1 : 0.29	Schuyler County League of Women Voters, 1992
Northeast	1 : 1.36	1 : 0.29	1 : 0.21	AFT, 1989
Reading	1 : 1.88	1 : 0.26	1 : 0.32	Schuyler County League of Women Voters, 1992
Red Hook	1 : 1.11	1 : 0.20	1 : 0.22	Bucknall, 1989
Ohio				
Madison (V)	1 : 1.67	1 : 0.20	1 : 0.38	AFT and Lake County Ohio SWCD, 1993
Madison (T)	1 : 1.40	1 : 0.25	1 : 0.30	AFT and Lake County Ohio SWCD, 1993
Shalersville	1 : 1.58	1 : 0.17	1 : 0.31	Portage County Regional Planning Commission, 1997
Pennsylvania				
Allegheny (T)	1 : 1.06	1 : 0.14	1 : 0.13	Kelsey, 1997
Bedminster (T)	1 : 1.12	1 : 0.05	1 : 0.04	Kelsey, 1997
Bethel (T)	1 : 1.08	1 : 0.17	1 : 0.06	Kelsey, 1992
Bingham (T)	1 : 1.56	1 : 0.16	1 : 0.15	Kelsey, 1994
Buckingham (T)	1 : 1.04	1 : 0.15	1 : 0.08	Kelsey, 1996
Carroll (T)	1 : 1.03	1 : 0.06	1 : 0.02	Kelsey, 1992
Maiden Creek (T)	1 : 1.28	1 : 0.11	1 : 0.06	Kelsey, 1998
Richmond (T)	1 : 1.24	1 : 0.09	1 : 0.04	Kelsey, 1998
Stewardson (T)	1 : 2.11	1 : 0.23	1 : 0.31	Kelsey, 1994
Straban (T)	1 : 1.10	1 : 0.16	1 : 0.06	Kelsey, 1992
Sweden (T)	1 : 1.38	1 : 0.07	1 : 0.08	Kelsey, 1994
Rhode Island				
Hopkinton	1 : 1.08	1 : 0.31	1 : 0.31	Southern New England Forest Consortium, 1995
Little Compton	1 : 1.05	1 : 0.56	1 : 0.37	Southern New England Forest Consortium, 1995
Portsmouth	1 : 1.16	1 : 0.27	1 : 0.39	Johnston, 1997
West Greenwich	1 : 1.46	1 : 0.40	1 : 0.46	Southern New England Forest Consortium, 1995
Texas				
Hays County	1 : 1.26	1 : 0.30	1 : 0.33	AFT, 2000

Table 1. Cost of Community Service Studies

	Residential (with farm homes)	Combined Commercial & Industrial	Farmland, Forest and Open Lands	Study Source
Utah				
Cache County	1 : 1.27	1 : 0.25	1 : 0.57	Snyder and Ferguson, 1994
Sevier County	1 : 1.11	1 : 0.31	1 : 0.99	Snyder and Ferguson, 1994
Utah County	1 : 1.23	1 : 0.26	1 : 0.82	Snyder and Ferguson, 1994
Virginia				
Augusta County	1 : 1.22	1 : 0.20	1 : 0.80	Valley Conservation Council, 1997
Clarke County	1 : 1.26	1 : 0.21	1 : 0.15	Piedmont Environmental Council, 1994
Northampton County	1 : 1.13	1 : 0.97	1 : 0.23	AFT, 1999
Washington				
Skagit County	1 : 1.25	1 : 0.30	1 : 0.51	AFT, 1999
Wisconsin				
Dunn	1 : 1.06	1 : 0.29	1 : 0.18	Town of Dunn, 1994
Dunn	1 : 1.02	1 : 0.55	1 : 0.15	Wisconsin Land Use Research Program, 1999
Perry	1 : 1.20	1 : 1.04	1 : 0.41	Wisconsin Land Use Research Program, 1999
Westport	1 : 1.11	1 : 0.31	1 : 0.13	Wisconsin Land Use Research Program, 1999

Table 2 Industry Output Impacts

	RETAIL Gen Merch	MANUFACTURING Food Proc.	SERVICES Hospital	RESIDENTIAL High Income	RESIDE Middle
Agriculture	$11,073	$594,022	$39,873	$63,596	
Mining	$0	$0	$0	$0	
Construction	$37,194	$332,762	$91,662	$124,072	
Manufacturing	$91,915	$32,970,794	$187,176	$195,181	
TCPU	$65,819	$1,858,257	$186,075	$262,877	
Trade	$2,997,778	$2,405,768	$566,242	$1,198,233	$
FIRE	$251,944	$1,187,299	$669,846	$1,287,400	$
Services	$248,046	$1,820,859	$6,569,279	$1,184,897	$
Government	$33,330	$171,835	$101,019	$127,752	
Total	$3,737,099	$41,341,595	$8,411,173	$4,444,008	$1

Simulation: 100 new jobs or households

Table 3. Employment Impacts

	RETAIL Gen Merch	MANUFACTURING Food Proc.	SERVICES Hospital	RESIDENTIAL High Income	RESIDE Middle
Agriculture	0	11	1	1	0
Mining	0	0	0	0	0
Construction	0	2	1	1	0
Manufacturing	1	197	1	1	0
TCPU	1	17	2	2	1
Trade	100	72	17	36	1
FIRE	2	8	5	9	3
Services	5	40	144	26	9
Government	1	5	3	4	1
Total	110	341	173	80	2

Simulation: 100 new jobs or households

Table 4. Labor Market Impacts

	RETAIL Gen Merch	MANUFACTURING Food Proc.	SERVICES Hospital	RESIDENTIAL High Income	RESIDENT Middle Inc
Population	139	447	219	351	285
Per Capita Income	($7.54)	$22.78	($5.45)	($9.17)	($42.13
Total Income	$2,582,479	$8,318,355	$4,069,254	$6,520,651	$5,285,1
Unemployment	-19	-54	-29	-13	-5
In-Commuters	-18	111	-5	-5	-17
Out-Commuters	42	91	60	72	52

Simulation: 100 new jobs or households

Table 5. Housing Market Impacts

	RETAIL Gen Merch	MANUFACTURING Food Proc.	SERVICES Hospital	RESIDENTIAL High Income	RES Mid
Median House Value	$10.76	$170.16	$35.55	$17.90	(
New Housing Permit Value	($10.69)	$32.31	($7.73)	($13.00)	(
Increase in New Construction	18	59	29	46	

Simulation: 100 new jobs or households

Table 6. Fiscal Expenditure Impacts

	RETAIL Gen Merch	MANUFACTURING Food Proc.	SERVICES Hospital	RESIDENTIAL High Income	RES Mid
Health and Human Services	$7,123	$6,930	$9,057	$58,971	
Government Administration	$36,562	$102,777	$55,668	$66,494	
Safety Services	$22,746	$92,175	$38,493	$89,654	
Road Maintenance	$8,774	$49,034	$16,689	$26,535	
Solid Waste and Sanitation	$9,251	$37,528	$15,660	$25,050	
Cultural and Amenities	$19,610	$67,167	$31,504	$50,424	
Total	$104,067	$355,612	$167,071	$317,129	

Simulation: 100 new jobs or households

Table 6. Fiscal Revenue Impacts

	RETAIL	MANUFACTURING	SERVICES	RESIDENTIAL	RES
	Gen Merch	Food Proc.	Hospital	High Income	Mid
Intergovernmental Aids/Revenues	$32,271	$115,304	$52,495	$112,931	
Property Taxes	$208,152	$700,908	$332,753	$531,513	
Total	$240,422	$816,212	$385,248	$644,444	

Simulation: 100 new jobs or households