


Central City and Suburban Development: Who Pays and Who Benefits?

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Executive Summary

Synopsis

All firm locations create costs and benefits. Conventional wisdom holds that any negative effects of firms locating in the outer suburbs are greatly overshadowed by very large private benefits. The weight of the evidence presented here suggests this is not the case. For society as a whole, deconcentration of development to outer suburban areas brings few or no net gains while presenting significant inequities in the distribution of costs and benefits. Firms locating in outer suburban areas reap most of the benefits, while most of the costs (or benefits foregone) are borne by unemployed city residents, commuters who bear the cost of congestion, accidents, pollution and taxpayers who foot the bill for subsidies for transportation, home-ownership, and other public subsidies.

Approach

This paper draws heavily from our own comparative analysis of hypothetical plant locations in the central city and the outer suburbs. This work, in combination with the existing literature on social, public, and private costs and benefits, makes possible estimates of the total impact of each case from a societal point of view.

Social costs

Social costs include those associated with congestion, accidents, air pollution, loss of open space, housing abandonment, and the effects of the spatial mismatch in the labor market. Among these, auto-related costs are considerably higher for outer suburban developments, as is the spatial mismatch cost. In the central city, low-skilled jobs are likely to be filled by workers from low income families who otherwise would be involuntarily unemployed; their employment represents a gain to the economy. On the other hand, suburban workers are more likely to have attractive alternatives, and therefore their wages do not constitute a similar gain.

Public sector costs

In all areas, new low income households impose public costs and new high income households generate a surplus. Middle income households are subsidized in the suburbs, but generate a surplus in the city. Other public subsidies include highway costs paid by the federal and state governments and federal tax subsidies to owner-occupied housing. Businesses generate a net tax surplus, but this is greater in the city than in the suburbs. Taken together, the public costs are considerably higher for suburban development than for city development.

Private benefits

The largest benefit of suburban development is the low labor cost of the outer suburbs. The difference between wages in the central city and the outer suburbs is particularly large for skilled female workers. Taxes are also lower in the suburbs, so that suburban development produces private benefits about equal to the social and public costs.

Summation

Both the social and public sector costs of outer suburban development are large. These costs offset the private benefits, including those to households and firms. This suggests that a large part of the gains generated by new suburban development are simply redistributed away from taxpayers, current commuters, and many others who bear the burden of the social and public costs created in the development's wake. If private decision-makers bore more of the full cost of their location decisions, this would redirect some portion of growth back to the central city and reduce these inequities, at no loss in overall economic efficiency.

Introduction

As metropolitan regions have matured, both population and jobs have expanded out of central cities toward the open lands of the suburban periphery. Greenfield development -- building on lands formerly not used for urban purposes -- has accounted for an increasing share of industrial and office growth throughout the country. Some firms, by their very nature, must remain in the central city, while others require the low density of the outer suburbs. But a large majority of businesses are "footloose." These firms are free to pick their locations based on relative costs and benefits. The growing share of employment in more distant suburbs reflects profit decisions by such "footloose" firms. But even as they maximize profits, these firms are imposing large costs on the rest of society.

In making their location decisions, businesses consider their private costs and benefits associated with various sites within and outside of the metropolitan area. The results of these deliberations must weigh heavily in our evaluation of suburban employment decentralization. When competitive businesses seek to maximize profits, the result may mean lower prices and greater well-being for the community at large.

Nevertheless, businesses and individuals will make decisions that do not maximize well-being when the prices they face fail to reflect the full costs of the resources they use. The considerable literature on the social costs of pollution makes clear the importance of including such costs in the decision making process of businesses. The true regional efficiency of greenfield and brownfield development can only be judged if all costs and benefits are included. A host of social costs and public sector subsidies are generated by any form of development. For example, a new plant in the outer suburbs may give rise to greater traffic congestion on nearby arterial roads. These are real costs not paid by the firms undertaking development. Furthermore, a firm locating in a city location may employ more people who would otherwise be unemployed and make more use of existing infrastructure. To achieve an efficient distribution of economic activity, economic agents must face prices that include the social costs of their decisions.

This paper is based on a detailed study that compared costs and benefits of locating hypothetical "footloose" firms in Chicago, the inner suburbs (Cook County outside of Chicago) or the outer suburbs (Du Page, Lake, McHenry, Kane and Will Counties) (Persky and Wiewel, 1995). In addition, we draw on the existing literature. The analysis considers a broad range of impacts of suburban business development when contrasted with central city alternatives. Included are impacts on traffic congestion, accidents, air pollution, open space, low skill labor markets, and housing abandonment. In addition, the public sector costs associated with central city and suburban developments are explored. Finally, the private gains and losses associated with city

development are considered.

These issues are important in the context of the debate about regional sprawl, as well as in regard to the issue of "brownfield" redevelopment. Brownfields -- older industrial sites that may have environmental contamination -- represent a lost opportunity to older urban areas. Programs to clean brownfields and bring new business activity to former industrial sites have obvious and significant benefits for city residents. Yet the net effects of such programs on a region wide, statewide or national basis are less certain. After all, the redevelopment of brownfield sites must generally come at the expense of development at so-called greenfield sites on the urban fringe, and vice versa. What is gained by just moving jobs around the metropolitan area? The question becomes particularly relevant in light of ongoing efforts to enlist state and federal support for brownfield clean-up programs. Throughout this paper, then, we will use the term brownfield and greenfield, along with central city and suburban. Since not all city development involves brownfields and not all outer suburban development involves greenfields, strictly speaking, the paper compares central city development with outer suburban development.

Social Costs and Benefits

Often private market decisions create secondary effects on individuals or firms who take no part in the primary decision. These effects may be either negative or positive, social costs or social benefits. In either case, a wedge is driven between market prices and the true resource cost of the decisions. For example, a driver taking an expressway considers only his or her time and dollar cost, but pays no attention to the real costs imposed on other drivers. In metropolitan areas, with their high population densities and intensive interactions, social costs occur in any number of market transactions. The location of new employment sites surely ranks near the top of the list.

For the purposes of this paper we consider the most significant social costs and benefits associated with greenfield and central city business locations. Three of these relate to automobile transportation: congestion, accidents and air pollution. In addition, we focus on three other commonly mentioned urban social costs: loss of open space, abandoned dwellings and the mismatch between low skilled central city workers and the relatively high skilled jobs of the central business district.

1. Congestion

A number of observers have linked the continuing congestion problems of metropolitan areas to the decentralization of jobs into greenfield locations (MacKenzie, Dower and Chen, 1992; Downs, 1992; OECD/ECMT, 1995). These critics emphasize that poorly developed public transit systems in the suburbs make commuting by automobile a virtual necessity. The jobs-population imbalance among suburbs further increases the amount of automobile commuting (Cervero, 1989a and 1989b).

The costs of congestion have been extensively studied (see Small, Winston and Evans (1989), Downs (1992), Mohring and Anderson (1994)). Individuals choosing to commute on a given route (and presumably choosing to live in a given location) know their private costs of transport. These private costs fall directly on commuters who take account of them in their private calculations of costs and benefits. However, they have no incentive to include in their calculations the cost they impose on other drivers by their commuting decisions. In practice, these costs imposed on others

can be considerably higher than the private cost.

Economists are almost unanimous in the conviction that efficiency requires that drivers pay the full costs of their transportation decisions (Vickrey, 1962). Tolls equal to the costs imposed on others would guarantee that commuters only take trips with a private value greater than full cost. Recent technological innovations make such schemes genuine possibilities. A number of studies estimating such costs are now available, as summarized in Table 1. These estimates are quite consistent with earlier studies of the 1960s and 1970s reviewed by Morrison (1986).

Table 1 Estimates of Unpaid Costs of Peak Hour Auto Travel

All values converted to 1995 dollars.

	<u>Study</u>	<u>Location</u>	<u>\$/Mile</u>
1.	Decorla-Souza (1992)	Generic	.30 - .55
2.	Mohring and Anderson (1994)	Minneapolis	.50 peak urban express .10 - .15 peak suburban express
3	Pozdena (1988) (Based on Keeler Small (1977)	San Francisco	.80 peak urban highway .25 peak suburban .20 fringe road .03 - .06 off peak
4.	Small, Winston, Evans(1989)	Summary of British and N. Amer. studies	.10 - .60 peak

Of course not all metropolitan commuting problems can be traced to the increasingly suburban location patterns of businesses. A larger and larger fraction of central city jobs are held by suburban residents. These workers most often commute by auto from their suburban homes to their jobs in the central city. In many metropolitan areas, peak-hour travel from the suburbs to central cities is the most congested and hence most costly (see Pozdena (1988) and Mohring and Anderson (1994)). If the jobs of these suburban-central city commuters were to relocate to the suburbs many of these workers might well drive shorter distances.

Our own estimates for the congestion costs generated by new central city or greenfield plant locations in Chicago reflect this phenomenon. Our study suggests significant savings associated with central city sites, amounting to between \$150 and \$500 per worker per year.

2. The Social Costs of Accidents

While highly annoying, congestion is not the only cost imposed on others by automobiles. Of perhaps equal significance are the high number of accidents and deaths associated with automobile traffic. Suburban workers are more likely to live in the suburbs than central city workers. Suburban residents own more cars and drive more miles than central city residents. The net result is more automobile accidents.

While often auto accidents affect only the driver of a vehicle, they also impose high costs on others. Mark DeLuchi (as reported in Office of Technology Assessment (1994)) presents a national cost of about \$135 billion in 1990 prices for the "pain, suffering and lost quality of life inflicted on others due to accidents." A major fraction of this large number originates in valuing the numerous lives lost in traffic accidents. Adjusting DeLuchi's figures to 1995 prices and dividing by the number of vehicles in the United States suggests that, on average, vehicles can be expected to impose costs of almost \$1000 per year on other individuals.

Using this approach and estimating the number of new vehicles put on the road as the result of central city and suburban locations, our study for the Chicago area estimates a net annual accident cost difference ranging from \$30 to \$450 per employee, per year. The wide range here reflects uncertainty concerning the proportion of new employees drawn from existing residents. The greater this proportion, the fewer the number of new cars on the road. The lower figure assumes that most new greenfield employees will come from households already in the suburbs, while the higher figure assumes that more will be new to the region.

3. Air Pollution

While air pollution from automobiles imposes great costs on society, considerable uncertainty remains as to the precise dollar value of these costs. Again we turn to the work of Mark DeLuchi (Office of Technology Assessment, 1994) for national estimates of the range of damages from auto pollution. DeLuchi suggests a figure anywhere from \$46.8 to \$234 billion per year in 1995 dollars. Per vehicle that ranges from about \$280 to \$1400.

Our own estimates of the number of new vehicles associated with brownfield and greenfield plants further broaden the range of expected impacts. For Chicago we estimate that a new greenfield employee as compared to a new brownfield worker will be associated with an additional \$10 - \$650 per year in pollution costs.

4. The Value of Open Space

By definition, suburban sprawl means that farmland and other open spaces in the metropolitan area are replaced by suburban residential, commercial and industrial uses. A new greenfield plant directly absorbs such land. A significant fraction of new employees from the plant and from related development will seek out new housing, thus further threatening open space. This process may generate significant impacts on city and suburban residents who find themselves ever further removed from open lands.

Lands kept in agriculture and other very low density uses provide a positive benefit to metropolitan residents. The private land market will not generally reflect this secondary benefit from open space. When private developers convert open space to higher density uses, there is no price in the system to make clear the loss to those who enjoy their proximity to open spaces.

Two possible exceptions to this conclusion should be noted. First, preferential treatment of farm land for property tax purposes implies a subsidy for maintaining land in agricultural uses. Second, public and non-profit bodies can purchase open lands to guarantee a more pleasant environment in the metropolitan area. In some states these purchases can be of so-called "development rights" and hence allow land to remain in agriculture. Perhaps then it might be argued that public

and quasi-public mechanisms for maintaining open space already exist. If these mechanisms are not being used more aggressively, one might conclude that remaining benefits from open space are not that great. Such a conclusion represents an important empirical challenge to those who suspect that the social costs associated with declining open spaces are large.

In practice, valuing the loss of open space requires knowledge of the metropolitan population's aggregate willingness-to-pay to preserve an acre of open space on the urban fringe. To the best of our knowledge, only three serious studies of amenity benefits of open land have been carried out (Beasley, Workman and Williams, 1986; Bergstrom, Dillman, and Stoll, 1985; and Halstead, 1984.) Recent work by Lopez, Shah, and Altobello (1994) has attempted to generalize the results of these earlier studies. The approach of Lopez et al., but with the population-to-open space ratio of Chicago area, suggests an amenity benefit from open space of about \$180 per acre per year.

Of course, different types of greenfield development will absorb differing amounts of open space. And notice that even central city developments will result in some loss of open space as a portion of new workers seek outer suburban residences. Taking these factors into account, our own estimate is that a worker in a new greenfield location can be expected to impose additional costs from \$2 to \$70 per year in the form of reduced access to open space, when compared with an additional worker in a central city location.

The above estimates suggest that, at the present time, the costs associated with greenfield developments' absorption of open space are not large relative to other social costs. Only a major upward revision of the \$180 per acre/per year figure would significantly change this conclusion.

5. Housing Abandonment

In major metropolitan areas, population decline has been accompanied by the abandonment of residential housing units. Of course, residential structures have a finite lifetime and even in a growing housing market some structures will be demolished to make way for new development. The social costs of abandonment hinge not on housing units being withdrawn from the stock of housing, a normal market phenomenon, but on the costs created for others when such withdrawals are carried out in the chaotic fashion associated with abandonment.

When low income households obtain employment, they obviously increase their ability to pay for housing maintenance. As a result, fewer housing units are abandoned. In the process, society gains since neighbors avoid a loss when nearby at-risk properties are saved from abandonment. The extent of such gains may vary with the locational decisions of business firms.

A search of the literature on housing abandonment and neighborhood quality uncovered no data on the costs associated with abandoned units. The following rough calculation produces a tentative estimate. Assume an abandoned house causes a 10-20 percent decline in the value of four neighboring properties. If each of these properties is worth between \$20,000 and \$50,000, then the abandonment imposes costs between \$8000 and \$40,000 on nearby property owners. These are capital costs. Since all other costs enumerated above are annual flows, these figures are annualized by assuming a loss of 5 percent per year on the lost capital value, or \$400 to \$2000 per year, per abandoned unit.

The likely number of abandonments forestalled by a central city location (as opposed to a greenfield location) can only be roughly approximated. Our own estimates focus on the proportion of new employees at each site whose households avoid poverty status as the result of their employment. This proportion is 4.5 to 7 percentage points higher for the city location. Coupling these figures to the above costs of abandonment gives an estimate between \$25 and \$300 in savings per new central city worker.

These figures must be considered crude first approximations of the underlying social costs. Given the considerable emphasis neighborhood residents place on abandoned structures, one might reasonably ask whether the impacts of abandonment are as spatially limited as suggested here. The true costs might be considerably higher.

6. Spatial Mismatch

The drift of more and more jobs to outer suburban areas, coupled with the concentration of low income households in the central city and some inner suburbs, can give rise to a serious spatial mismatch in the labor market. First identified by Kain (1968) and more recently researched by Kasarda (1988), Blackley (1990), Ihlanfeldt and Sjoquist (1990) and Holzer, Ihlanfeldt and Sjoquist (1994), spatial mismatch refers to a separation between low wage jobs and low skilled workers in the central cities.

From the regional perspective adopted here, the basic efficiency issue centers on the opportunities available to workers employed in low wage jobs. In an economy characterized by persistent involuntary unemployment, low skilled job holders from low income households may have few alternative prospects for employment. In the extreme case, such a worker's entire product can be viewed as a real gain associated with his or her employment. In the absence of his or her job, the worker in question would have produced no product.

In contrast, the employment of a worker with strong alternative job prospects (or attractive opportunities in school, home or leisure) produces little net gain for either the worker or society as a whole. Without this specific job, the worker would be about as well off. Similarly, society would have some other product, almost as great as the product produced in this job. Hence, the employment of such a worker creates little benefit. In general, workers of moderate or high skill have meaningful employment alternatives. Even if the metropolitan area does poorly, such workers can seek employment elsewhere.

The essence of the mismatch hypothesis is that low skilled, low income inner city workers have great difficulty in obtaining employment in the growing suburbs. This phenomenon has obvious distributional consequences. But from the point of view of economic efficiency, such mismatches create a real cost only if the low skilled workers who fail to obtain employment have few alternative job opportunities, while those workers who take the suburban jobs have attractive alternatives. This is likely to be the case. A high proportion of low skilled, outer suburb jobs go to individuals from middle and high income suburban families with many options. Low skilled jobs at inner city sites are more likely to go to individuals from low income city households.

Given the above discussion, central city development should help to limit the efficiency costs associated with mismatch. Greenfield development will employ relatively few low-skilled workers from low income households.

Working with census data from the Chicago metropolitan area, we estimate that a city location results in a 3 to 5 percentage point increase in the proportion of low-wage (\$8 per hour or less) employees drawn from low income households. Assuming that these workers only have alternatives worth less than 50 percent of their wage gives an estimated mismatch cost of a greenfield site of between \$300 and \$900 per employee.

Taking all six categories of social costs and benefits into account, greenfield development, in contrast to central city redevelopment, imposes considerable costs on others. Depending on the industry in question and allowing for the uncertainties of the estimation methods, these costs range from \$500 to \$2850 per worker per year.

Public Sector Costs

In this section we address the public sector costs associated with outer suburban and city developments. For years, urban planners and urban economists have emphasized the high costs created by low density development. A key early effort to measure the costs of decentralized residential development is the Real Estate Research Corporation's *The Costs of Sprawl*. That large and ambitious study set a high standard for others to follow. More recently, the Office of Technology Assessment, drawing on the work of Burchell and Listokin (1995), has provided a review of this literature (OTA, 1995). They find that planned higher density developments save 25 percent on roads, 15 percent on utilities and 5 percent for schools and more than \$10,000 per dwelling on the cost of capital facilities. In all they conclude, "There are significant cost differences between planned higher-density growth and low-density sprawl" (p. 205).

While extremely useful, such studies cannot tell us whether the higher cost of decentralized residential development is "worth it." Presumably, if those who pay the public sector costs are the same as those who benefit, they do so because they expect benefits of local services to exceed costs. But if large subsidies are involved, this simple logic no longer holds. Subsidies can easily redirect locational choices into an inefficient pattern. Net subsidies represent a cost to the rest of society. The key question becomes: is greenfield development associated with greater public sector subsidies than central city development?

Researchers, community planners and public officials have devoted considerable energy to determining whether local economic development pays for itself. More specifically, the question has been posed as whether the taxes, fees and other revenues generated by development are sufficient to cover the capital and operating costs of the services required by the associated new businesses and residents. The general consensus is that industrial and commercial developments more than pay their way, but residential development may fall short and low or moderate income residential probably falls far short (Oakland & Testa, 1995; Burchell & Listokin, 1993; OTA, 1995).

Our own recent work (Persky and Wiewel, 1995) on the Chicago metropolitan region suggests that only households with high incomes (>\$75,000/year) are likely to generate local revenues in the outer suburbs greater than the expenditure costs they impose. In the central city, middle income households (\$30,000-\$75,000) also pay their way (see Table 2). These estimates indicate that new middle income households in the outer suburbs are imposing net public costs

between \$900 and \$1500 annually. These costs are paid by other suburban residents, as well as state and federal governments. The lower figure includes an explicit allowance for impact fees. At the same time, new middle income households in the central city of Chicago are estimated to make a net contribution of between \$600 and \$800 per year. Thus, locating such a household in the suburbs as opposed to the central city costs society, on net, between \$1500 and \$2300 per year.

Table 2 Net Local Fiscal Impact per New Household by Household Income and Location

Household Income 1989 Dollars	Central City Chicago	Outer Suburbs
Low (<30,000)	- 1306 to - 1087	- 1676 to - 2248
Medium (30-75,000)	562 to 781	- 1459 to -887
High (>75,000)	4787 to 5005	1303 to 1875

Suburbanites are also likely to enjoy implicit subsidies through their higher rates of home ownership. Home ownership allows a household to earn untaxed income in the form of a return on their housing capital. For a middle income family this amounts to a net difference between outer suburbs and central city of about \$350 per year. This difference arises because such a family in the outer suburbs is more likely to own a home and that home is likely to be of higher value.

Finally, suburbanites receive greater public subsidies than city residents in the form of highway construction and maintenance. This is true even after accounting for their greater gasoline tax payments. DeLuchi's (OTA, 1994) estimates of automobile subsidies imply that every vehicle on the road costs taxpayers somewhere between \$30 and \$450 per year (Persky and Wiewel, 1995). Since suburban households own about one more car than city households, this translates into a relatively higher per household subsidy in the suburbs.

Of course, not every new employee results in a new household. While new jobs attract immigrants, a portion of new jobs are taken by the unemployed or those out of the labor force. And not every employee of a suburban firm lives in the suburbs, while on the other side many city workers are suburban residents. Taking account of these adjustments, we estimate that the total residential subsidies for a new outer suburban worker consists of \$250-\$1350 more in annual public sector costs than a new central city employee.

To what extent are these residential subsidies offset by net gains from nonresidential taxes? In both city and suburbs, businesses pay taxes in excess of the services they receive. To some extent these revenues offset the residential subsidies. However, since new firms locating in the city are likely to generate greater net surpluses for local governments, including the nonresidential sector tends to widen the difference in subsidies between greenfield and brownfield development. In our study, we estimate that new city businesses will generate anywhere from \$200 to \$600 more in taxes per employee than similar firms in the outer suburbs.

All told, public sector subsidies to outer suburban development are substantial. Including both residential and non-residential subsidies yields an estimated difference for Chicago of between \$450 and \$2000 per employee per year. These are additional costs to the public sector, borne by taxpayers, most of whom do not benefit from greenfield development. Such subsidies are difficult to justify on any grounds and surely interfere in business site selection decisions.

Private Benefits

While greenfield development imposes costs on the broader community, it also generates significant private benefits. Chief among these are 1) consumption benefits to residents, 2) benefits to owners of land and structures, and 3) benefits to businesses. Under the last category fall differences in wage costs, construction costs and taxes. To judge the overall efficiency of greenfield development we must include these private benefits and costs in the calculation.

1. Residents

A new facility's location has little affect on the net residential benefits enjoyed by its employees. The labor market guarantees that at the margin the net advantages (including differences in taxes, amenities, public subsidies and social costs) of working in the suburbs cannot be significantly greater than the net advantages of working in the city. If this were not the case wage rates would change to take account of the difference. They would fall at the more attractive location and rise at the less attractive one. Thus, we make no entry for private resident benefits in our analysis.

Notice that this conclusion doesn't mean that people like suburbs and cities equally well. Rather, if most people favor one type of location or another, their demand will be revealed in the prices of land and labor around the metropolitan areas. Once such price differences are established, workers have no systematic incentive to change their workplace or residential location. On net then, residents do not gain or lose by an individual facility picking a greenfield location. But, the price differences that support this equilibrium do bring benefits to other economic actors. In particular, we must follow the benefit trail to the owners of land and the employers of labor who may be affected by the prices in question.

2. Land/Structure Owners

Clearly, one of the major private benefits of the conversion of rural to suburban land flows from the increased market value of the converted acres. In bidding for attractive locations, new suburban households will bring benefits to land owners. Where suburbs offer attractive amenities and/or subsidized public benefits, land owners will enjoy even more substantial appreciation associated with local growth. A comprehensive measure of private costs and benefits associated with suburban employment growth must consider this capture of benefits in land values.

As greenfields are used for residential and non-residential uses, owners of the rural parcels involved will experience a sharp rise in their value. This process may take several steps as developers hold promising sites in anticipation of their appreciation. Whatever the chain of owners, the land moves from farm uses to residential, commercial and industrial uses.

An informal survey of real estate brokers in the outer Chicago suburbs suggested that on

average rural land in the process of conversion moves from a price of about \$3,000 per acre to one of \$ 15,000 per acre. Thus, an acre can be expected to appreciate about \$12,000. Based on land use data in Persky and Wiewel (1995), this capital figure implies an annualized gain of about \$100 to \$250 per new employee at a greenfield location as opposed to one at a city location.

Against these gains to landowners in the suburbs must be weighed the private gains to structure owners in the city when development prevents housing abandonment. Central city redevelopment has a stronger effect on surrounding real estate values than greenfield development. This difference amounts to between \$50 and \$150 per employee. Thus, the net effect of greenfield development on all owners of land and structures as a group may actually be negative.

3. Businesses

Wage Costs

The chief gain to businesses from locating in the suburbs comes in the form of lower wages for labor of equal quality or, what amounts to the same thing, higher quality for labor at equal wages. Suburban residents who otherwise would commute to the central city are generally willing to accept lower wages in exchange for a reduction in their commuting time (Mills, 1972; White, 1976). How much lower depends heavily on the value suburban residents place on commuting time. The extensive literature on commuting emphasizes the link between wage levels and the value of commuting time. However, another major influence on this evaluation centers on an individual's responsibilities toward home production and child care. More specifically, we have good reason to think that women, with their greater involvement in home activities, will put a high value on their commuting time. (Dubin, 1991).

Our findings for Chicago are consistent with the work of Dubin and others. Workers of otherwise similar characteristics earn lower wages at suburban workplaces than at city workplaces. For men this reduction is less than 1.5 percent in the inner suburbs and less than 2.5 percent in the outer suburbs. For women the effect is considerably larger: about 7 percent in the inner suburbs and 10 percent in the outer suburbs. These estimates strongly support the hypothesis that businesses pay lower wages for labor of a given quality in suburban locations. All these differentials are smaller for low skilled labor and higher for college educated labor.

These numbers imply that employers can save \$2300-2900 annually per employee by taking an outer suburban location as compared to a central city site.

Land and Construction Costs

Construction costs are generally higher in the central city than in the suburbs. Informal estimates place the figure at 10 to 15 percent less in suburbs. The largest part of the difference in construction costs is due to differences in wages on central city projects and suburban projects. Thus the gain to the businesses involved is offset by losses to the workers. This represents a transfer and thus nets out in any calculations.

Taxes

In the calculation of the fiscal impacts of business location, business taxes are counted as a benefit. Clearly, from the point of view of the businesses in question these taxes are a cost. Per employee, these amount to \$500 to \$600 more in the central city than the suburbs.

Overall private benefits of locating in the outer suburbs as compared to the central city amount to between \$2750 and \$3700 annually per employee. Most of these benefits accrue to the firms involved or to their customers in the form of lower prices.

The Inner Suburbs

In addition to the comparisons between Chicago and the outer ring of suburbs, this approach can yield comparisons between the city and its inner ring of suburbs (Cook County outside of Chicago). The following summarize highlights of such estimates:

1. In all cases the inner suburbs actually generated more congestion costs than similar facilities in the outer suburbs. This result reflects the fact that inner suburban employers draw large numbers of employees both from the city and from the outer suburbs. These workers have little choice but to commute by car.
2. For all other social costs the inner suburbs show modestly lower numbers than those of the outer suburbs.
3. For social costs as a whole, then, facility locations in the inner suburbs impose just about the same burden as those in the outer ring.
4. With respect to public sector costs, inner suburbs rank between the central city and the outer suburbs. For both highway subsidies and subsidies to owner occupied housing they are close to the values for the outer suburbs.
5. Private benefits of facility locations in the inner suburbs fall between the central city and outer suburbs. In particular, wage rates in the inner suburbs are lower than Chicago proper but higher than those of the outer ring.

Taken together these observations underscore the predicament of inner suburban communities, which increasingly suffer from the problems of both the central city and the suburbs.

Summing Up

Employment decentralization to greenfield sites generates significant unpaid costs. For the most part, these take the form of costs imposed by the high automobile use of suburban residents. The one positive indirect effect, the utilization of involuntarily unemployed workers, also favors central city locations over suburban ones.

Turning to the fiscal impact of employment decentralization on the public sector, development produces net public sector costs both at outer suburban and central city sites, but these are considerably higher in the outer suburbs. Expenditures for new residents are split more or less evenly between the subsidy for owner occupied housing and the net deficit for local governments. Both of these are larger with a location in the suburbs.

The private benefits realized at alternative locations show a story very different from that of the social costs and public sector impacts. Here there are considerably larger private benefits

realized at greenfield sites. Chief among these, by far, are the benefits accruing to firms from lower suburban wages. Unless a firm has a particular reason for locating in the central city, this large difference in operating costs can easily dominate the private benefit calculation. Business taxes, a private cost, also favor the suburbs in comparison to the central city. There are strong private incentives pulling toward the outer suburb locations.

Similar calculations for the inner suburbs suggest that those communities fall between the city and the outer suburbs. Development there generates social costs at about the same rate as outer suburbs, but both public sector costs and private benefits are smaller than those realized in the outer ring.

The common wisdom and de facto public policy has been that suburban expansion reflects economic efficiency (see, for instance, Becker, 1996). This analysis suggests common wisdom is incorrect. Taking a summary view of all the benefits and costs discussed above, we conclude that there are very large unpaid costs and foregone benefits generated by greenfield locations. At best, the private benefits realized there are approximately of the same magnitude.

At the current time, putting a precise number on final costs and benefits of employment decentralization remains uncertain. However, the largest portion of private gains from greenfield industrial development are clearly made at the expense of the substantial unpaid costs and foregone benefits imposed on others. Equity suggests that these costs be included clearly in private calculations. Forcing private decision makers to face the full implications of their decisions would surely have the effect of slowing the pace of employment decentralization. Alternatively, the public sector at the regional, state and national levels should act to offset the inefficiencies generated by unpriced social costs and public subsidies.

Just as public policy has had a significant effect on metropolitan deconcentration, it could also be redirected to take into account the negative effects of this process. The analysis presented here suggests this can be done without noticeable efficiency losses to the economy as a whole, while garnering large distributional benefits.

Some policies are more promising than others in achieving a redirection of metropolitan growth, either because of their effectiveness or their political viability. Among the main types of policies are those that constrain growth or allocate costs more accurately to those who cause them; policies that redistribute benefits more equitably; and policies that enhance the efficiency of places that are presently not efficient from a market perspective.

The first group, consisting of the imposition of impact fees or institution of growth controls, is in fairly broad use. Expansion of such policies would have beneficial effects in redirecting growth, but there are also side-effects. It is not always clear where growth will go instead. Also, the geographic level at which impact fees are collected does not neatly match the area within which impacts occur. Those who bear costs but are located outside of the municipality where new development is located have no way to assess impact fees. Regional or state-level fees would be more appropriate.

The second group of policies attempts to redistribute benefits of growth through programs such as tax-base sharing or providing better access to new economic opportunities through reverse

commuting or affordable housing strategies. These programs essentially leave the current patterns of deconcentration unchallenged, but aim to share the benefits more broadly. Except for reverse commuting, they are very controversial, because they are seen as redistributive, without increasing the size of the pie for everyone.

The third category of policies aims to enhance the opportunities to produce efficiently in locations where this is now difficult. Programs aimed at reinvestment in central city and inner-ring suburban neighborhoods intend to take away the disadvantages to firm location and efficient production there. These programs include infrastructure investment (including brownfield clean-up), and, perhaps most importantly, educational investment. Our analysis shows that the biggest efficiency advantage to private firms locating in the outer suburbs is the availability of relatively high-skilled, low cost labor, in the form of a large female labor force. If central city and inner suburban neighborhoods could match the skill characteristics of this labor force, one of the major disadvantages of these locations would be removed.

In sum, policy tools are available to address the problems posed by employment deconcentration. Using these tools is justified both on equity and efficiency grounds.

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