

Putting Transportation and Economic Development into Perspective

DAVID J. FORKENBROCK

Economic development occurs when the income and product generated within an area increase. Government policies can promote economic development by helping an area increase the returns from using resources there. They do this by providing services that produce benefits in excess of their costs. Transportation services generate benefits by serving as an economic tool used in transporting goods and people. The benefits of transportation investments are strictly related to reductions in transportation costs. These investments foster economic development by increasing net local income through cost reductions that exceed the cost of such investments. A series of important issues should be taken into account when examining the extent to which a transportation investment contributes to economic development. The issues include the scale of the impact area to be considered because some activity will move from one location to another, because of uncertainties in future economic circumstances, and for social objectives. For example, policy trade-offs must be made between maximizing overall economic development with a state and assisting a less-promising but needy area. Six paradigms illustrate the types of trade-offs that decision makers face when using transportation investments to foster local economic development. Finally, a series of decision screens are presented to provide a practical basis for applying the principles discussed.

As the U.S. economy undergoes a significant restructuring and the fortunes of various locations within the country rise and fall, increased attention is being placed on local and regional economic development. Transportation infrastructure is one of the principal policy levers that state and local governments can use to increase their attractiveness to business investors. The reason is simple—better accessibility to materials and markets contributes to a competitive advantage.

In order to place the relationship between transportation investments and economic development in perspective, certain economic principles related to public investment are presented as a means for stimulating private-sector activity. These principles can apply a sound conceptual base to the problem of how transportation investments can best be used to foster economic development at state and local levels. Emphasis is placed on strategies for state governments because most highway investment decisions related to economic development are made at these levels. A series of points is provided for consideration during the examination of possible investments. Approaches are formulated that will help those faced with deciding whether and how much to invest in a transportation facility and who should pay what portion of the costs.

EFFICIENT INVESTMENTS

Before considering the relationship between highway investment and economic development, establishing a working definition of economic development is useful. Economic development occurs when the income and products generated within an area increase. Increased production requires that either more resources (land, labor, materials, and capital) be used or that existing resources be used more productively.

Economic Development Process

As individuals and businesses decide where to use the resources they own, they also determine the pace of a state's economic development or growth. Resource owners base location decisions on their perceptions of the amount and certainty of the monetary income that their resources will earn in each location. They usually choose the location where they expect their resources to earn the highest income. But location decisions are not determined by monetary return alone. They also depend on environmental amenities or, more broadly, nonmonetary quality-of-life considerations. Because public-sector decisions and policies influence both the monetary and nonmonetary costs and benefits associated with each potential location, they also influence private-sector location decisions.

The question of where to use a resource does not arise unless the resource is mobile (not fixed in location). Owners of mobile resources can choose where such resources will be used. Land and most natural resources are immobile. Owners of farmland, for example, cannot move their resource to another state in response to a greater demand for land. Labor and capital are mobile, although location adjustments may take time, as demonstrated by the migration of people over the past few decades from the rust belt states to those in the sun belt. During the 1970s and early 1980s, the Mid-Atlantic and Great Lakes states lost 3.6 million people through migration. In contrast, the Southeast, excluding Florida, gained 2.9 million people.

Owners of mobile capital tend to locate where they expect the returns to their capital to be greatest, unless there are significant differences among potential locations in the certainty of returns. (The general economic and political environment in which businesses operate is likely to be similar in the various states. It is therefore plausible that differences in the certainty of returns to capital have little influence on where U.S. businesses choose to locate.) Owners of mobile capital tend to locate where the present value of the expected net return on their capital is greatest. In calculating this expected

value, they consider wage rates, taxes, public services, and transportation costs. Quality of life may also be important because plant locations are often chosen by managers who will be living and working at the site.

Similarly, workers locate where they perceive the returns from employment to be greatest. These returns are both monetary and nonmonetary and include after-tax wages, public services, and environmental amenities. The wages that workers demand in a particular state depend in part on the taxes and public services in the area. Therefore, the factors that make an area an attractive place to live and work also make it attractive to prospective businesses, because these factors affect wages. An area's attractiveness to workers is an important dimension of its business climate.

It is often said that investment creates jobs and that private investment must be stimulated to provide jobs for a growing labor force. It is more correct to say that the nationwide demand for goods and services creates both jobs and investment opportunities. As the owners of mobile capital and labor respond to this demand, they create jobs in a particular area by deciding to use their resources in that location.

Government's Role in Economic Development

Government influences a state's economic development by affecting the state's attractiveness as a place for employment of mobile capital and labor resources and by affecting resource productivity. Government can promote development by increasing the perceived returns from employing mobile capital and labor in an area or by improving the certainty of those returns. Most commonly, a state government affects the state's business climate.

Among the key options for promoting development through public policy is increasing the value of public services, including transportation services, relative to taxes on mobile resources. A state or local government can try to accomplish this goal by conducting its activities in an efficient manner. There are two general conditions for efficiency. The first is that government provide only those services that generate benefits in excess of their costs (foregone private goods), in which case the area's residents would be willing to pay for the services if they could be sold by government. Meeting this condition requires that government eliminate services whose benefits fall short of their costs. Such action may well reduce the level of public services, but the service reduction would be more than compensated by reduced taxation. The second condition is that government minimize the costs of those services it chooses to provide, regardless of whether the services meet the first condition. Consolidation of county governments to reduce costs and taxes is an example of an action that might meet both conditions.

For a variety of reasons, an area is limited in its ability to increase employment and incomes. First, national and international market forces as well as public policies primarily determine the economic environment within which state and local governments and businesses operate; they can do relatively little to affect that environment. Second, businesses and individuals have strong incentives to make the best use of the resources under their control, and they tend to do so. For

government to improve on these private decisions is difficult, yet that is exactly what it must attempt in its economic development activities. Government must identify instances in which the market activities of individuals and businesses fail to make the best possible use of scarce economic resources and then take actions that result in a net improvement. Third, identifying inefficiencies in the delivery of public services that can be eliminated to reduce the tax burden on mobile resources is difficult. Finally, fairness limits any redistribution of government costs from mobile to immobile resources.

Infrastructure Investment

Decisions to build a new infrastructure facility or replace an existing one should be guided by the efficiency criterion. In other words, an infrastructure investment should be made when those who will directly or indirectly use the services provided by the facility are willing to pay the cost of its construction, operation, and maintenance. If users are not willing to pay these costs, they are implying that the value of the services provided by the facility is less than its costs. Hence, resources used to provide the facility would generate more value in alternative uses.

The consequences of not following the efficiency criterion when making infrastructure decisions can be severe. Underbuilding infrastructure—that is, not providing services for which users would be willing to pay the full costs—can inhibit economic development. Problems arising from underbuilding include the costs associated with traffic congestion and longer-than-necessary travel times caused by substandard roads.

Overbuilt infrastructure can also deter growth. Facilities constructed at an earlier time often do not match current or future needs. Shifts in population and business activity, as well as changes in technology and demand, frequently render infrastructure economically or technologically obsolete. Maintaining facilities for which demand has fallen entails real costs that must be borne by infrastructure users (often, users of other facilities) or by taxpayers. The result is a loss of the fairness of cost-occasioned financing and an increase in the overall cost of doing business in the area. In fact, excess infrastructure costs function as a tax on economic activity and are therefore a barrier to economic development. To reduce this barrier, portions of overbuilt systems can be closed or allowed to decline to a lower level of service. With either action, the supply of infrastructure can be adjusted to meet the actual level of demand.

In summary, public policies intended to positively influence an area's economic development seek either to increase the perceived returns from mobile resources or to improve the certainty of these returns. For a government to markedly assist economic development, it must use its resources efficiently. Investing in transportation facilities only when the benefits would exceed the costs can improve the prospects for area development through public action. A trade-off of efficiency for other policy objectives, including equity, should only be made after an explicit public decision about whether and to what extent overall economic growth should be diminished to promote the other objectives.

TRANSPORTATION INVESTMENT AND ECONOMIC DEVELOPMENT

Transportation is best thought of as a tool used to transport goods and people from one place to another. Investments in highways or other facilities generate benefits only to the extent that they lower transportation costs. (Highways can be considered to be intermediate goods used in the production of final goods.) Reductions in transportation costs may be realized in numerous ways, including decreased travel time, increased safety, decreased fuel and other operating costs, and reduced noise or air pollution. But in the final analysis, all benefits of a road, and therefore the justification for building it, flow from using it for transportation. Road investments should be made only when they lower transportation costs (broadly defined to include safety and environmental impacts) enough to warrant their investment costs (including the present value of future maintenance and operation costs).

Basic Investment Principles

There are two fundamental types of transportation investments: new facilities and marginal improvements to existing facilities. Most future investments are likely to be of the latter variety because some level of transportation service exists almost everywhere. The underlying principles of transportation investment analysis are equally appropriate and valid in both circumstances. In practical terms, the difference is that in the case of investments to upgrade facilities, an incremental benefit-cost analysis is appropriate (the existing facility is a sunk cost). The key issue is whether the additional investment will lead to increases in benefits that exceed the relevant costs.

Highway benefits may accrue not only to individuals and businesses who use the highway. Lower transportation costs may be passed on to consumers as lower prices for consumer goods, to workers as higher wages, or to owners of businesses as higher net income. Thus, individuals may benefit from a highway without traveling on it, for example, when travel on the highway by others increases the income they derive from their resources or when such travel increases the purchasing power of that income (by reducing the prices paid for commodities).

Although all highway benefits are derived from lower transportation costs, they can also be represented as increases in the real incomes of individuals in their roles as consumers and producers. (Real income includes the value of environmental amenities, safety, and other goods that are not ordinarily traded in the marketplace. Therefore, real income is not simply the purchasing power of monetary income generated by transactions.) Highway benefits can be considered increases in real income regardless of how they are initially realized and regardless of the extent to which they are passed on to consumers and resource owners who do not directly use the highway. Furthermore, increases in real income may in some cases be capitalized into asset values; for example, the value of land at a particular location may increase when road transportation to the location is improved. It is important when estimating highway benefits not to double count by including both the transportation cost savings and the increases in real income and asset values that these cost savings induce.

The increases in income that individuals receive as producers and the increases in the purchasing power of that income that they enjoy as consumers are the basis of their willingness to pay the costs of highway investments. This use of the term "willingness to pay" presumes that a person would be willing to pay up to the full amount of the increase in real income that a highway investment would generate rather than have the investment not take place. Of course, the person would prefer to pay less than the full amount. If the costs of the highway improvement are lower than the real income gains that it generates, then the improvement has the potential for benefiting some or all of the population and is therefore said to be economically efficient.

Building or improving a stretch of road may reduce the benefits derived from existing highways. Therefore, a project's benefit to an entire state usually cannot be determined by looking only at how the project affects transportation costs for those using the highway and the value of property along it. For example, upgrading an existing highway to four lanes may lead some businesses to locate along the upgraded highway. But this relocation does not mean that the project increases business activity in the state as a whole if the businesses would have located at sites on an existing four-lane road. Instead, the project in this case simply diverts activity from already available sites to the new sites. That is, a project cannot be credited with bringing new economic activity to the state if the sites on the upgraded highway are essentially duplicates of unused sites on existing four-lane roads. In this case, there is no shortage of sites for commercial and industrial businesses, and there is no economic development justification for the project. Although the project increases income and property values for owners of property along the upgraded road, it does so at the expense of owners of property along existing roads. Furthermore, in addition to transferring income and wealth from one group of property owners to another, the project generates a net loss for the state unless its benefits exceed its cost. If the project's benefits, measured by people's willingness to pay for the safer and faster travel that it provides, exceed its costs, then the project satisfies the efficiency criterion and promotes development (broadly defined as increasing the real income generated within the state). Once again, there is no need to appeal to a separate economic development justification for the project.

Impact Area

A transportation investment contributes to economic development if it significantly reduces transportation costs, thereby improving the net return on mobile resources in the area. By helping to produce a better return than would be realized at competing locations, the investment helps attract mobile resources. If the impact area of interest is a rather narrow corridor along the facility, those benefiting significantly may be able to compensate those negatively affected and still enjoy net gains. From the perspective of the corridor, the project will then be efficient.

If state funds are used to finance the transportation improvement, the impact area of interest is the entire state. In this case the project will be efficient only if the state residents as a whole experience benefits that exceed their costs.

If any of the economic activity attracted to the corridor is shifted from other sites within the state, that activity cannot be viewed as new economic development but rather as a transfer from one place to another (more properly, from one group of people to another). This simple fact is widely appreciated, and states typically do not credit in-state relocations as benefits from a particular project.

However, many states attempt to recruit businesses from locations in other states. From the narrow perspective of the gaining state, this recruitment constitutes an increase in product generated and, hence, economic development. But from a national perspective, no new economic growth is likely to occur from the transfer. (It may be that the new location is conducive to increased productivity on the part of the business. In this case the net benefit of the transfer is this productivity increase minus the costs of the move.) Any public investments to encourage a move are a net loss to the nation as a whole unless other users of the new facilities benefit sufficiently to warrant the cost. From a national perspective, states working to draw industry away from one another do little, if anything, to foster national growth.

If transportation investments intended to foster economic development in a particular area do not promote national growth, the only rationale for federal funding is income redistribution. In this instance, two tests must be passed. First, income levels in the benefiting area should be comparatively low. Second, the project should be efficient. If it is not, the low-income area would be better off with a cash subsidy equal to the benefits of the transportation investment, as would the federal government, because the subsidy would be less than the cost of the investment.

If for political reasons transportation investments are made in the guise of promoting area economic development, the nation becomes less well off if these investments are not efficient. From a national viewpoint, then, inefficient investments have the opposite effect than their supposed intent.

Uncertain Future

Perhaps the most vexing issue in transportation investment analysis is uncertainty about future conditions, including demand for the facility. A thorough benefit-cost analysis depends on accurate estimates of future demand for the transportation facility. However, previous long-range forecasts have been inaccurate enough to raise doubts about the probability that great accuracy will be achieved in the future.

Given an uncertain future, should society err on the side of overbuilding transportation facilities or on the side of foregoing potentially valuable improvements when their efficiency cannot be absolutely ensured? This question is especially germane in less populated areas, where the long-term economic future is particularly unclear. One useful way of viewing the issue is to apply the analogy of portfolio management. In other words, there is room for a certain level of calculated risk as long as the overall strategy is sufficiently prudent.

A distinction must be drawn between highly speculative investments based on an assumption that mobile resources will follow a road, regardless of its placement, and more prudent investments. Analyzing the likelihood of attracting the other factors of production (capital, labor, and materials) necessary to enable growth is a good place to begin.

Competition and Duplication

As stated earlier, transportation investments can contribute to economic development only when they generate sufficient benefits to offset their costs. Truly duplicative facilities compete for traffic; they are less likely to be efficient unless the demand level for each is high. But are there conditions when competition between public facilities can actually contribute to cost-effective service?

Consider the example of competing ports along a coastline. The ports function much like private businesses in that the cost and quality of service greatly affect the choices made by the operators of vessels. Because of competition, the ports have an incentive to operate in a cost-effective manner. If a port cannot attract vessels because of poor management or a competitive disadvantage, it may not be able to continue operating. The more efficient ports will prevail and will strive to remain competitive.

In this example, some degree of duplication probably leads to a higher overall level of service than would exist without competition. A more difficult example might be two competing rail lines, each of which serves a series of businesses and receives a subsidy. Public decision makers could judge one line to be superior and end the subsidy to the other, creating hardship for those affected. Or, if both lines are efficient (benefits exceed costs), they could both be maintained. Maintaining only the most efficient facility is not always good policy; the costs and benefits of maintaining, downgrading, or closing other facilities deserve careful attention.

Efficient Investment Versus Other Objectives

An area can promote economic development by undertaking highway investments that are economically efficient. It is unclear whether the objective of economic development is also served by making investments that cannot be considered efficient but are intended to satisfy some other criterion. Such investments have opposing effects on the area's economic growth and development.

On the positive side, the investment probably would lower transportation costs involved in carrying out production in the area, which would favor economic growth. But the investment would also mean higher taxes and fees, which might increase the cost of doing business in the state and discourage growth. Owners of mobile resources (labor and capital) would have an incentive to find a more attractive post-tax return elsewhere. If an area fails to attract and retain mobile resources, economic development is impossible.

An alternative criterion to economic efficiency for guiding highway investments is that of income redistribution. Investments in highways and roads are used to influence the pattern of investment across regions or within a particular region. In other words, a redistributive policy would be aimed at place prosperity rather than people prosperity. Resources would be invested not to maximize the welfare of society as a whole but, rather, that of a designated place.

Some analysts are skeptical about using highway investments to foster economic development in lagging areas, contending that the relative lack of development in areas with weak or stagnant economies is much less likely to be due to inadequate transportation than to a shortage of factors such

as labor, location, and agglomeration economies (lower costs caused by an aggregation of activities). If highway investment in a declining area would cost more than the value of the resulting benefits, it would be inefficient even if the objective were to aid the area. That is, deploying the resources to benefit residents of the declining area in other ways would be more cost effective. For example, a block grant cash transfer to these residents would benefit them more than the same dollar amount invested in an inefficient highway. If the highway does not carry particularly high traffic volumes or is not able to reduce costs significantly, the benefits to area residents, both users and nonusers, will not be great.

APPLYING THE PRINCIPLES: SIX PARADIGMS

The previous discussion defines the general conditions under which transportation investments may foster economic development in substate areas. To further clarify these conditions and to relate them to specific circumstances likely to be encountered by planners and policy makers, six paradigms were developed. The paradigms illustrate a variety of situations that frequently confront policy makers when assessing the potential effects of a highway project on an area's economic development. Similar reasoning applies to other modes.

Sixth City

Consider a circumstance in which a community aggressively pursues an out-of-state company that intends to build a new plant. In its negotiations with the company, the community finds that a major issue is the inadequacy of a road connected to an Interstate highway. The community requests funds from the state department of transportation (DOT) to build a connecting road.

The state DOT determines that five similar communities within the state also have the necessary attributes. However, these five communities would not require the connecting road because adequate access already exists to an Interstate highway. Should the state DOT fund the project even though the road would be duplicative with a number of existing roads?

New facilities that serve the same function as existing ones are inefficient because no additional incremental benefits to society result. However, a sizable capital cost must be defrayed. The example illustrates, of course, that local communities are usually the applicants in state highway programs related to economic development. It would be difficult politically to redirect the company from the community that is trying to recruit it to another that already has the needed connecting road. Programs that promote competition among communities within a state for economic activity are likely to fund projects that are duplicative and, from a state perspective, inefficient.

Gold Mine

A second paradigm relates to a situation in which a business owns a parcel of land with a unique potential for economic development. For example, the parcel could be adjacent to

a beautiful lake, making it an opportune site for a tourist facility, or it could be endowed with a special natural resource (e.g., oil or ore). The business owning the parcel determines that the present value of the income stream of the parcel, net of taxes and expenses, is about \$10 million.

To recover this \$10 million, however, a road would need to be built—at a cost of \$2 million. Few others than the business would use the road, although it could be built as a public road. Without government assistance, the rational choice would be for the business to build the road; a net income of \$8 million is far better than earning nothing without the necessary access. Instead, however, the business requests that the state DOT build the road, arguing that jobs would be created, the local economy diversified, and taxes paid.

Several key points are at issue, one of which is whether government should subsidize the development of immobile resources. As previously discussed, immobile resources cannot be transferred to another location where demand might be greater; hence, incentives to develop them are unneeded. If developing a site is not economical for the private sector, public-sector subsidies are unlikely to be efficient. Conversely, if the site has a unique resource that is in demand, as in this example, no public subsidy is needed or warranted.

Devoting public funds to enhance the private return on the profitable site amounts to a transfer from taxpayers to the owners of the business. Unless a transfer can be defended on the grounds that the business produces a good that benefits society to a greater extent than is reflected by the market, the transfer is inefficient. As such, it increases the tax burden on other businesses and households, which is deleterious to economic development.

A highway investment program should not devote its resources to building a road whose benefits are mainly increased profits to owners of immobile resources, especially if the benefits would accrue to a small number of people.

Raise the Ante

The third paradigm relates to the practice that has emerged whereby state and local governments wage bidding wars with their counterparts elsewhere to attract desirable businesses. Consider a situation in which a community seeks to attract a light industrial plant that is nonpolluting and would employ several hundred workers. Such an activity would be coveted by nearly all communities.

In order to improve its prospects for attracting the plant, the community requests that the state DOT substantially upgrade a public highway serving the proposed plant site. The community also requests job training funds from another state agency and offers a local property tax abatement. Lacking a coordinated or single-point funding approach, the total value of these incentives could be sizable.

More important is that the incentive package could well be inefficient if its total value exceeds the present value of the wealth enhancement brought about by the plant. An assessment should be carried out that considers distributional impacts—the effects on area households and businesses. The assessment should take into account the extent to which jobs would be created by the plant, as opposed to shifted there from other locations. If jobs are merely shifted, society does not gain, and the incentives amount to a net cost that actually

worsens overall economic development prospects regionally or nationally.

The total ante offered should not be whatever it takes to attract the business but, rather, only that which is not greater than the economic benefits of having the plant.

Spread It Out

The fourth paradigm pertains to a desire for state government to help spread out economic development. Specifically, the state DOT is asked to do what it can to build highways that better serve less prosperous areas. The hope is that improved accessibility will lead to the attraction of economic activity and will balance development across the state.

Most states have significant geographical variations in prosperity. One or a few urban areas often dominate the state's economy. Scale economies (larger plants, office complexes, and the like), agglomeration economies (shared capabilities, such as law firms and printing services), and superior locations (explaining the urban area's initial settlement and growth) give certain urban areas competitive advantages in attracting mobile resources.

The return on mobile resources such as labor and capital is superior in certain growing urban areas, so these resources congregate there. Because the greater density of economic activity already present in more viable urban areas and the growth taking place in them leads to escalating traffic volumes, road investments in these urban areas tend to be more efficient than typically is the case in more remote rural areas or urban areas experiencing decline. If other key factors of production do not exist and are unlikely to be attracted to depressed areas, building improved transportation facilities is unlikely to contribute much to economic development.

The state DOT faces a critical public-policy dilemma as an agency charged with promoting the public welfare. Through its highway investments, it can either work to maximize overall state economic growth and development through efficient investments or it can seek to spread out development. The latter often means foregoing more efficient investments, thereby reducing the aggregate economic development potential for the state. In simple terms, trying to spread out development will diminish statewide growth. The state's residents, overall, will be less well off if resources are spread out as a policy objective.

Open Up the Amazon

A paradigm somewhat related to the previous one pertains to a policy objective to make less-well-served parts of the state more accessible. Unlike the previous paradigm, however, the objective is not to raise the incomes of depressed areas, *per se*, but to foster growth in undeveloped areas. By its nature, the practice of providing access to these areas is speculative. It could bring about new opportunities, or it could result in serious inefficiencies.

The effects of railroads on opening up the West during the late 1800s are legendary. Can the same be true of highways today? Almost 30 years ago, analysts first argued that further major investments would not greatly influence the spatial pattern of private investment. Recent industrial location surveys

have led to the conclusion that education, unionization, physical amenities, business climate, energy, and tax rates define a region's developmental prospects to a much greater extent than do highways.

Rarely will the high construction costs of adding new regional highways to the nation's highway system be justified on efficiency grounds, even in less-developed areas. Because a sufficient number of developable sites remain, providing highway access to others is unlikely to advance economic development. Arguments of place prosperity and geographic redistribution, and not efficiency, must form the basis for highway investments under these circumstances.

The Carnival

The final paradigm is concerned with "foot-loose businesses"—those for whom the transaction costs of relocating are low. Foot-loose businesses tend to make minimal investments in immobile facilities; they are more likely to lease buildings and less likely to purchase bulky machines. If only slightly more favorable economic circumstances avail themselves at another location, foot-loose businesses will likely depart. Over time, such businesses are analogous to a carnival; they move from place to place.

Care should be taken when making a permanent improvement in the area's road system to attract a foot-loose business. Reasonable certainty should exist that an equally beneficial activity will occupy the facility if the business leaves. Failing this, investments in fixed transportation facilities should be deferred until objective forecasts portend efficiency-ensuring traffic volumes.

One useful indicator of commitment by the business is the level of capital expenditures. If the ratio of private capital expenditures on a facility to be served by a road investment compares favorably with the cost of the road, a stronger argument can be made for a public-sector expenditure. Thus, private-sector capital expenditure should be an important element in analyses of potential local road investments, especially if the expenditure is long lived and fixed to the site.

Implications of the Paradigms

The six paradigms apply the central points presented earlier to a series of real-world circumstances likely to be encountered by planners and policy makers. The paradigms convey a stern message, that many pitfalls exist when seeking to stimulate state or local economic development by investing in highways. In the end, the wisdom of such investments depends on how they fare when the efficiency criterion is applied. In other words, will the investment lead to a net economic gain to society? The surest way to an efficient investment is to concentrate on the benefits for users of the highway and those who stand to gain through reduced transportation costs.

Is there room for speculative investments under any circumstances? The answer clearly depends on the certainty and size of the investment's potential payoff. Careful forecasts of future travel demand are a critical element in gauging the probable efficiency of an investment in a new or significantly upgraded facility.

STATE-LEVEL HIGHWAY INVESTMENT PROGRAMS

One of the more common elements in state and local government efforts to stimulate economic development is the investment in roads and highways. At present, 24 states have special programs to provide funds for such investments. A recent survey of the 50 states indicated that when specific criteria are applied to evaluate proposed projects, they tend to include the following: number of jobs projected to be created, cost per job, and the amount of capital investment per state program dollar. Several problems are examined using these measures, and an alternative strategy is offered on the basis of the efficiency-based concepts presented earlier.

Number of Jobs Projected

This criterion is based on the correct idea that a public investment in a road should facilitate the more effective use of resources, in this case labor. Presumably, additional jobs imply more aggregate spending and a generally stronger economy. The difficulty with this measure is that employment increases on the part of the business being assisted may not result in a net increase in total state employment. It is difficult to ascertain how many of the projected jobs will be new and how many will simply be transferred from another location within the same state. Moreover, if the jobs are low paying, they may not lead to increased income within the state, especially when the need for public assistance is considered. In short, using this measure as an investment criterion cannot ensure efficient projects.

Cost per Job

By itself, this measure reveals little about the effectiveness of a state highway investment program. Even if it is assumed that all of the jobs are new to the state, determining a reasonable amount to pay for a new job is difficult. Unfortunately, the data needed to make this determination are unattainable. The per-job average increase in income generated by the project could be estimated, but the associated costs cannot be accurately measured. Furthermore, to determine the extent of economic development (increases in state residents' wealth) per job would be nearly impossible. Finally, because jobs are not of equal value, it is difficult to scale the value of a particular job in a specific circumstance.

Private Investment

To gauge the efficacy of a road investment intended to foster economic development, this criterion uses the ratio of private capital invested at the site to the public cost of the road. On the one hand, a high ratio implies that the carnival paradigm is avoided because a commitment is being made. Yet, as in the paradigm of the gold mine, being sure that the private investment would not have occurred anyway is exceedingly difficult. Furthermore, like the number of jobs, this measure is an indicator of economic activity at the site, not of net gains in such activity within the state.

Decision Screens: An Alternative Approach

During the research, a series of evaluation screens was developed. As shown in Figure 1, these screens are an operational approach to applying the road investment concepts discussed earlier. As presented, the screens apply to the rather typical circumstance in which a firm requests assistance from the state DOT either directly or through the community in which it intends to locate. Proposed investment projects can be evaluated by applying the screens sequentially. A project passing through all five screens will likely be efficient and help foster economic development. A brief explanation of each screen follows:

1. Does the firm have to operate within this particular state because of the product or service it is selling? For example, a retail store responds to demand; if sufficient demand exists, retail stores will appear without government incentives. Thus, if the answer to this question is yes, no public investment is warranted.

2. Is there a cost advantage for the firm at this site compared with other sites within the state? If other sites within the state are equivalent to the improved site from the firm's perspective, the investment is not warranted on efficiency grounds.

3. Is the project cost-effective? In other words, are road improvements the least expensive way to give to the firm the level of benefits necessary to attract it to the state? For example, a cash subsidy well less than the cost of the road may be of equal value to the firm.

4. Is there an out-of-state site that provides a cost or profitability advantage over the best available site in the state if the road investment is not undertaken? The state can only benefit from funding a road investment project to help attract a firm if the project actually changes the firm's location decision. A firm could be asked to specify the location of the better site and explain why that location is preferred.

5. Are the benefits of the project concentrated? A project that benefits only a small number of people but whose costs are shouldered by many is not desirable unless aiding these particular beneficiaries is a distributional policy objective.

These five screens attempt to make the basic concepts discussed earlier operational. Certain data and measurement problems remain, but the evaluation screens suggested can help identify efficient projects, even if further simplification becomes necessary. The key point is that longer-term economic development is best served by systematically evaluating project costs and benefits, not by being caught up in arguments about the benefits of "image-building" roads, for example. If a project cannot be justified on the basis of efficiency, a careful assessment should be made of the extent to which it contributes to the attainment of other policy objectives.

CONCLUSIONS

The relationship between transportation investments and local economic development is subtle and difficult to measure accurately. Estimating the probable developmental impacts of a

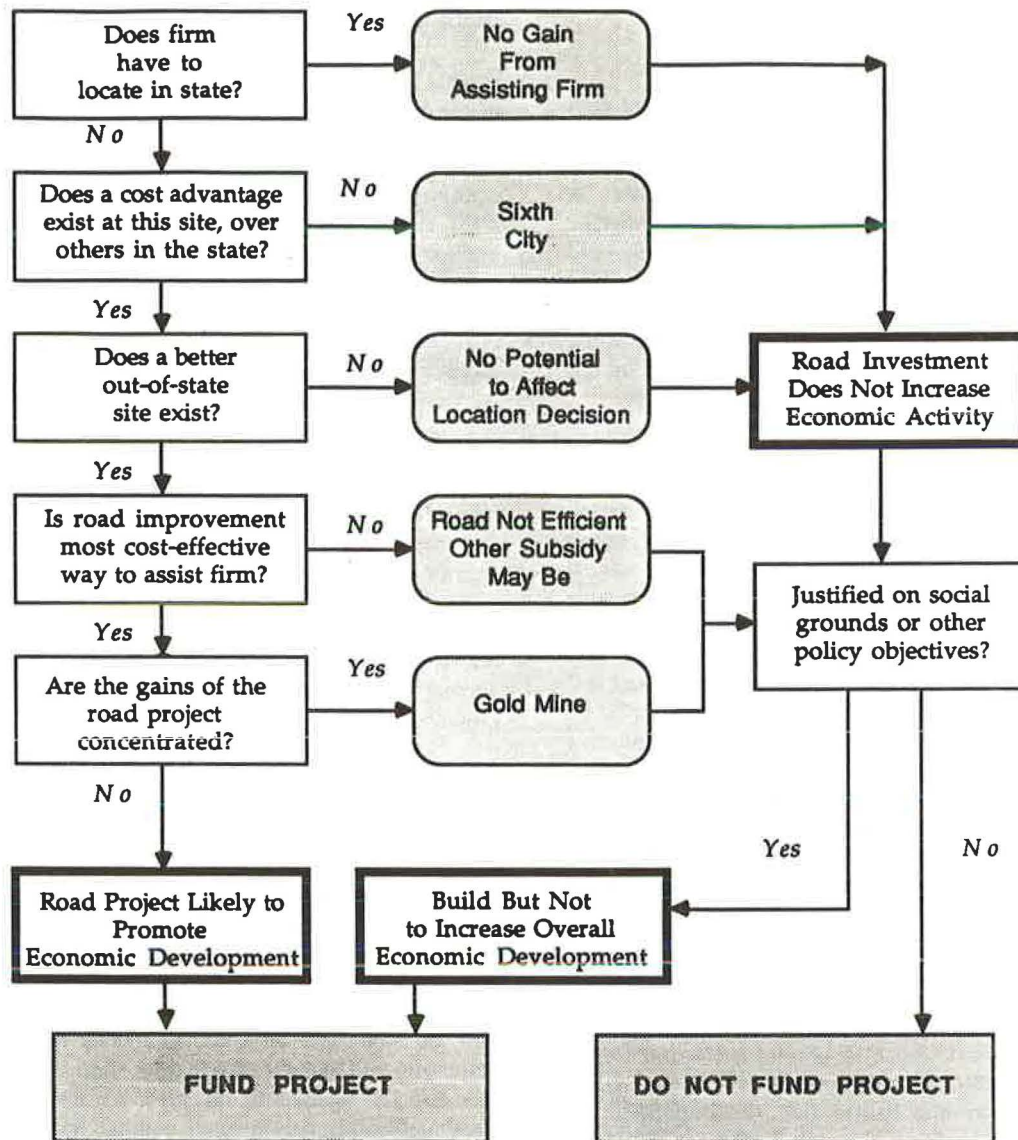


FIGURE 1 Application of decision screens.

proposed investment (a new facility or an upgrade) is as difficult as examining the actual effects of an existing facility. In part, the complexity stems from the significant effects on the economic fortunes of cities and regions by external forces beyond the control of state and local policy makers.

Despite great uncertainty about future conditions, and hence the value of transportation facilities, certain guiding principles can be applied. Fundamentally, the ability of a transportation facility to contribute to economic development is solely dependent on the traffic it carries. Reduced transportation costs help make the area served by the facility attractive to businesses.

Good transportation facilities are not enough to ensure that economic development will occur. The area must be able to attract the necessary factors of production, labor, capital, and materials. Without such factors, even a good transportation facility will accomplish little, as evidenced by the miles of Interstate highways that run through many rural areas.

Investing in transportation facilities whose benefits exceed their costs is critical to make an area attractive for development. Failing to invest in what could be efficient facilities will retard growth as surely as investing in those that are not efficient. However, estimating the long-term benefits of a facility is not an easy task. Neither is determining when facilities are likely to compete in an efficiency-enhancing manner rather than robbing each other of their reason for existence.

Particularly vexing are the competing roles of efficiency and other social objectives. Specifically, a state could invest in (or continue to operate) facilities that are not efficient, according to the traffic carried. Although doing so may improve an area's accessibility and even its development potential, it will also require a subsidy from other, more efficient facilities or from taxpayers in general. The result is higher user fees or taxes than otherwise would be the case, which is deleterious to economic development. The policy trade-offs are complex but should be treated explicitly.

The six paradigms are intended to illustrate variations of these policy trade-offs. They show the attention to developmental objectives that must underlie investment decisions. To help guide the evaluation of projects, a series of five decision screens was submitted (see Figure 1). The screens shed further light on considerations that can guide state-level transportation investment decisions and transform the principles discussed into investment guidelines.

The relationship between transportation investments and economic development is complex. The surest way to foster economic development through transportation investments is to focus on cost savings to users and consumers. Improve-

ments that yield transportation cost savings in excess of the costs they impose lead to real increases in income—the essence of economic development.

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