

FINAL DRAFT

# Road Investment to Foster Local Economic Development

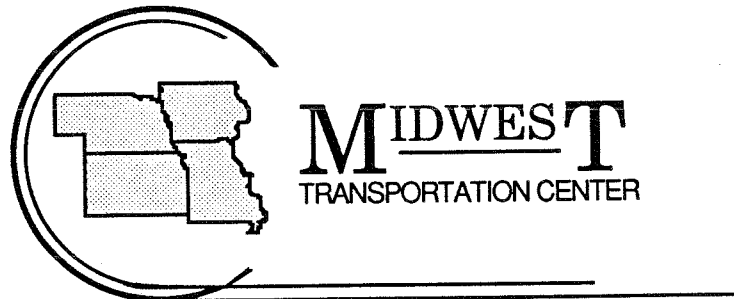
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## PREFACE

This report is the product of a first-year research project in the University Transportation Centers Program. The Program was created by Congress in 1987 to “contribute to the solution of important regional and national transportation problems.” A university-based center was established in each of the ten federal regions following a national competition in 1988. Each center has a unique theme and research purpose, although all are interdisciplinary and also have educational missions.

The Midwest Transportation Center is one of the ten centers; it is a consortium that includes Iowa State University (lead institution) and The University of Iowa. The Center serves federal Region 7 which includes Iowa, Kansas, Missouri, and Nebraska. Its theme is “transportation actions and strategies in a region undergoing major social and economic transition.” Research projects conducted through the Center bring together the collective talents of faculty, staff, and students within the region to address issues related to this important theme.

This particular project was carried out by an interdisciplinary research team at The University of Iowa’s Public Policy Center. This center is a reflection of the University’s renewed commitment to applied research that seeks to advance the public interest. The Center’s projects generally involve close interaction with decision makers and resource people in both the public and private sectors.

The project is central to the Midwest Transportation Center’s theme in that it examines the relationship between investment in roads and highways and local economic development. The principal investigator was Professor David J. Forkenbrock, Director of the Public Policy Center. Co-investigator was Professor Thomas F. Pogue of the Department of Economics. They were assisted by Norman S.J. Foster, a research associate at the Public Policy Center, and David J. Finnegan, a student in the Graduate Program in Urban and Regional Planning with a major in transportation.

## ACKNOWLEDGMENTS

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We also acknowledge the contributions made by staff of all 50 state departments of transportation who responded to our survey on how economic development objectives are taken into account in their highway planning and programming efforts. This information helped provide a useful context for our analysis.

We are especially grateful to our Project Advisory Committee. This four-person committee provided counsel throughout the project and carefully reviewed our draft final report. Members of the committee include Don Ward, Iowa Department of Transportation (chair); Debra Miller, Kansas Department of Transportation; Judy McCoy, a businesswoman from Dubuque, Iowa; and Derald Kohles, Nebraska Department of Public Roads. Their insights are found throughout this report.

The University Transportation Centers Program of the U.S. Department of Transportation deserves our thanks for making it possible for us to carry out this research. A matching contribution by the Iowa Department of Transportation also is gratefully acknowledged. We very much appreciate the funding provided by the Northwest Area Foundation to support Advisory Committee activities.

Terri Bell capably typed the report and provided good humor and support throughout the project. Our other colleagues at the Public Policy Center assisted us in untold ways. We thank them all.

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## **EXECUTIVE SUMMARY**

Highway investment is widely regarded by both policy makers and analysts as an effective tool for promoting regional economic development. Reflecting this, 24 states have established special programs under which highway investments are undertaken for the explicit purpose of fostering economic development. Furthermore, even when economic development is not the stated goal of highway investment, the effect of such investment on a state's economic development is nevertheless a major concern of policymakers. Highway planners throughout the nation therefore face the questions of how to define, measure, and evaluate the economic development effects of highway investment. The broad objective of this study is to provide the best available answers to these questions. These answers must be based on a sound understanding of what economic development is and how it is affected by highway and other infrastructure investment.

### **The Economic Development Process**

Economic development occurs when the real income generated by economic activity within a state or other area increases; it is the process by which real income is increased. The economic development effects of a road project (or any other infrastructure investment) are appropriately measured by the project-induced changes in the real incomes from economic activity within the state. Increases in real income are benefits and decreases are costs.

- A project is termed efficient if the present value of its expected benefits exceeds the present value of its expected costs, in which case it increases real incomes in the aggregate. Some persons may enjoy an increase in real income because of the project, while others experience a decrease. But if the project is efficient, the gains of the gainers more than offset the losses of the losers.
- In contrast, a project is termed inefficient if it decreases real incomes in the aggregate, in which case those who derive income from production in the state are as a group worse off.
- Economic development is not job "creation." Real income from economic activity within a state can increase even if employment does not; and employment can be increased by measures and policies that actually reduce real income.

- Policies that simply shift economic activity from one location to another do not promote overall economic development.
- Infrastructure investment policy in general and road investment in particular can have an important effect on a state's economic development. But other policies, such as education, may be equally if not more important.
- Infrastructure usually plays a supportive role for businesses whose overall economic viability is determined by their success in matching production to consumer demand. Thus infrastructure policies will typically influence the location of but not create economic activity and employment.

### **The Role of Road and Highway Investment**

Road investment can have two opposing effects on a state's economic development. It can increase the real income derived from economic activity within the state by reducing the transportation costs involved in such activity; this promotes development. But road investment also entails costs, which are financed by increases in taxes and fees, that reduce real income and deter development. If a road project reduces transportation costs by more than the cost of the project (both stated as present values), the project promotes development, and it is also efficient. If the converse is true, the project deters development and is inefficient. Thus, when highway investment promotes economic development, it is also justified on efficiency grounds.

- A state can promote economic development by undertaking highway investments if and only if they are efficient.
- Roads are "tools" used in transporting goods and people from one place to another. A road project generates benefits only to the extent that it lowers transportation costs. It promotes development only if it produces transportation cost savings, broadly defined to include safety and environmental impacts, that exceed the project's costs (including the present value of future maintenance and operation costs).
- There is no separate "economic development" justification for highway investment. Even though a road project may be seen as an economic development tool, it must be justified on the basis of its transportation benefits alone. That is, all of the benefits of a road, and therefore the justification for building it, flow from using it for transportation.

- When a road project is being evaluated as a means of attracting a particular business to a certain location, it must be compared to alternative means of attracting the business, such as direct financial assistance in the form of a cash subsidy, a low interest loan, or a tax abatement. The road project is justified only if it is the *least costly* means of attracting the business; it will be least-cost only if it generates transportation cost savings in excess of its construction, operation, and maintenance costs.
- When assessing the benefits of road projects, it is necessary to recognize that building or improving a particular stretch of road may reduce the benefits derived from existing highways. That is, a project's benefit to the state as a whole usually cannot be determined by looking only at how it affects transportation costs for those using the road and the value of property along it.
- Road investment is sometimes seen as a means of redistributing income, wealth, and/or prosperity within a state, but it is a poor tool for doing so. Income and wealth redistribution is better effected by the direct transfer of income.

We apply the general principles of efficient highway investment in six paradigms. 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.

- Sixth City. If undeveloped sites already exist, investing in access to still others will not promote areawide investment.
- Gold Mine. Highway investments that would benefit a small number of persons, investments that would be made by them absent public action, are unlikely to foster economic development.
- Raise the Ante. The total incentive package offered to a particular firm that is being recruited should not be whatever it takes to attract it. Rather, the level of net economic benefits it would bring should be the basis for any incentives, including roads.
- Spread It Out. A difficult policy decision must be made as to whether a highway investment program should seek to spread out development to declining areas. Doing so will not allow overall state-level economic development to be maximized.

- Open Up the Amazon. building or improving highways in less developed areas is inherently speculative. Rarely will it contribute to economic development in the short run, and longer-term gains are problematic.
- The Carnival. Investing in roads to attract foot-loose industries is generally unwise. The investment is fixed, but the business may leave if only marginally better circumstances avail themselves elsewhere.

### **Workable Guidelines for Efficient Road Investment**

If it is to promote economic development, a road project must generate transportation cost savings that exceed its costs, both broadly defined to include the road's effects on safety, equipment wear, and the environment and both stated as expected present values. This criterion applies whether the project is large or small and whether the project has economic development as an explicit goal.

Although this criterion is in principle well-defined, determining whether it is satisfied for an particular project can be costly and difficult. We have suggested five questions that can be asked about a project when making a judgment about whether it meets the criterion. These questions serve as screens for identifying projects that have a high probability of promoting economic development.

- Does the firm in question have to operate within the particular state because of the product or service it is selling?
- Is there a site outside the state that the firm is considering that has a cost advantage over the best available site in the state if the road investment were not made?
- Is there a cost advantage for the firm at this site in comparison to other sites in the state?
- If the first three screens suggest that the firm would not locate at the site without assistance, is the proposed road investment the most cost-effective way to assist the firm?
- Are the total benefits of building the road and attracting the firm to the site greater than the cost of the road project and any other assistance to the firm?

If a project were to pass successfully through all five of the screens, it would be an efficient means for promoting economic development. At that point, three other policy-related questions would warrant consideration.

- Is the assistance equitable in terms of who would receive the benefits from the project?
- Is the firm being attracted foot loose?
- Are in-state targeting objectives met?

### **Investment Guidelines of Iowa's RISE Program**

The case study analysis in this report is Iowa's RISE (Revitalize Iowa's Sound Economy) program. In 1985, the Iowa Legislature authorized RISE to promote economic development through road investments. The \$33 million annual program provides for three different types of projects, one of which is Immediate Opportunity. These projects involve grants or loans to a local government that is actively negotiating to attract a specific business, and roads are an issue. A total of 56 projects has been approved to date.

Our analysis of RISE Immediate Opportunity projects focuses on 18 of the earlier projects for which we have data on eventual impacts. We apply the two measures used by the Iowa Department of Transportation (Iowa DOT) in evaluating applications, RISE cost per job assisted and non-RISE capital investment per RISE dollar. We also examine the suitability of the two measures in light of our conceptual work. Our findings include:

- At the time of their approval, the 18 projects had projected costs per job ranging from \$298 to \$7,429, with a weighted average of \$2,509.
- The RISE cost per job does not address the fact that a business may also receive assistance from other state programs or from a local government. On average, an additional \$729 per job was provided from non-RISE sources.
- The applicant's estimates of the jobs created or retained by a project is not an accurate indicator of the project's economic development impact. Questions remain as to wage rates, the extent to which the jobs were new or relocated from another place, and the project's effects on taxes and non-wage income.
- The other measure, capital investment ratio, pertains to the extent to which RISE Immediate Opportunity projects helped stimulate capital investment. The ratio of

private and other, non-RISE public investment to RISE investment for the 13 projects for which complete cost data are available was projected to be 14 to one at the time of application. The actual ratio for these projects was slightly over 11 to one.

- Like the cost per job measure, the capital investment ratio is a gross, not a net, measure. It is difficult to determine the extent to which new capital investment was stimulated rather than shifted from another location within the state.

In short, the governing statutes and administrative rules governing RISE are not capable of determining whether in fact a project promotes economic development.

### **Application of Guidelines to Evaluation of Iowa RISE Projects**

Efforts to apply our suggested screens or guidelines to evaluation of a set of RISE projects point to several conclusions.

- If successful, local programs oftentimes only shift or direct activity from one part of the state to another, rather than increasing statewide activity.
- It is difficult to assess the payoff to local projects.
- Outcomes are highly variable. As with any fairly large number of ventures involving business risk, some firms will perform better than expected and some worse. Those using projections of future economic gains should allow for the inherent riskiness of business forecasts.

### **What Other Studies Say**

Previous research on the relationship between highway investment and economic development is relatively sparse. Completely absent are studies examining the effects of state-level highway investment programs on increasing income at the local level. Yet there is a limited amount of previous work that is germane to our analysis.

- The results of various studies amount in large measure to a demonstration that the incomes received by immobile factors depend on where roads are built. It is difficult to quarrel with this conclusion.

- The fact that other necessary factors of production must also be present or able to be attracted for a road investment to spur local economic development has been shown by several quasi-experimental studies.
- Studies of industrial location decisions typically acknowledge the importance of good highway access, but they rate it as less of a factor than educational institutions, quality of labor, climate, quality of life, and certain other attributes.
- Input-output models and most other analytic approaches can approximate the impacts of a highway investment on a local economy, but they typically do not measure the extent to which this growth is a net increase in or a relocation of existing activity.

In short, previous studies strengthen our conclusion that applying sound principles of project evaluation offers the best guidance. Focusing on net transportation cost savings is the surest way to foster economic development through road investments.

## CHAPTER 1 INTRODUCTION

The 1970s and 1980s brought great economic change to much of the United States. A gradual shift from manufacturing and agriculture to services has been accompanied by a rise and fall in the economic fortunes of many communities. In an effort to attract badly needed economic activity, communities and the states in which they are located have embarked upon unprecedented efforts.

One of the key policy levers used to make an area more attractive for mobile economic activity is improvements in infrastructure. Foremost among these improvements, and by far the greatest in cost, has been the construction of new or upgraded roads and highways. Most state departments of transportation are under considerable pressure to approve projects that local communities hope will make them more attractive. Yet a great deal of uncertainty exists as to whether and when these investments actually lead to local economic development.

The purpose of this study is to examine the relationship between road investments and local economic development. More specifically, our objective has been to incorporate the best available theory on this illusive relationship into a workable approach that is capable of guiding those faced with making road investment decisions. To provide a sense of the types of projects state-level highway administrators must evaluate and to apply the approach we develop, a specific state program is used as a case study. Iowa's RISE program is a propitious case study because its earlier projects were in place before our research was conducted. RISE was designed to be evaluated in that extensive data are collected at the time a project is selected and after it has been in place long enough for the impacts to be assessed.

Our analysis begins with a discussion in Chapter 2 of the economic development process. We draw a distinction between mobile and immobile resources, stressing that the former must be attracted for economic development to occur. The government's role in economic development is then discussed. We stress the importance of efficient public policies that make an area more attractive to economic activities that are able to locate in any of many locations.

In Chapter 3 we relate highway investment to local and regional economic development. Our contention is that highways are "tools" used in transporting goods and people and that highway investments generate benefits only to the extent that they lower transportation costs. We present the argument that highway investments contribute to economic development by reducing



the cost of doing business in the area, and this favors growth. Inefficient highway investments have the opposite effect; they discourage growth by raising net costs. The principles we present are applied in six illustrative paradigms that replicate situations likely to be faced by decision makers.

Chapter 4 provides a review of previous research on the connection between highway investment and economic growth and development. We discuss earlier studies by category--macro-scale, quasi-experimental, input-output, and industrial location. Also in Chapter 4 we report a survey we conducted of all 50 state departments of transportation. The survey enables us to gauge the importance that the states place on economic development in their highway capital improvement programs, as well as the priority given to specific types of highway investments. We also discuss the features of special economic development highway programs found in 24 states, and we examine their ability to promote efficient investments.

Iowa's RISE program is examined in Chapter 5. We first explain the details of the program and summarize its funding experience to date. Then we focus on 18 projects approved more than three years prior to our evaluation. Performance measures used by the Iowa DOT--cost per job assisted and capital investment ratio--are applied to compare projected and reported results. We critique these two performance measures as bases for making investment decisions.

In Chapter 6 we apply the framework presented in Chapters 2 and 3 to assess the economic development impacts of the 18 case study RISE projects. Our conceptual work is synthesized with a systematic evaluation of RISE to yield a series of questions or screens. These screens constitute a sequential series of considerations that should be taken into account at the state level when evaluating a proposed road improvement if the objective is local economic development. Particular attention is given to making our approach for evaluating projects generalizable to other states.

## **CHAPTER 2**

### **ECONOMIC DEVELOPMENT POLICIES: CONCEPTS AND ISSUES**

Before considering the relationship between highway investment and economic development, we consider it essential to discuss the economic development process itself. Our discussion begins with a definition of economic development that will be applied throughout the report. We then examine government's role in the process of facilitating economic development and criteria for determining the success of government policies and programs. This chapter provides the conceptual basis for Chapter 3 which examines in greater detail the effects of highway investment on economic development.

#### **The Economic Development Process**

Economic development occurs when the income generated within an area increases. Increased income requires either that more resources (land, labor, materials, and capital) be employed in the area or that existing resources be employed more productively.

As individuals and businesses decide where to employ the resources they own, they also determine the pace of an area's economic development. Resource owners base location decisions on their perceptions of the amount and certainty of the market (monetary) income that their resources will earn in each location. For a given degree of certainty, they will ordinarily prefer 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 government (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 nature of this influence is the subject of this chapter.

#### **Mobile and Immobile Resources**

The question of where to employ a resource does not arise unless the resource is "mobile." Resources are said to be mobile if they are not fixed in location; owners of mobile resources can choose where such resources will be employed. Land and most natural resources are immobile. Hence owners of farmland, for example, cannot "move" it to another place in response to greater demand for land there. Labor and capital are mobile, but location adjustments may take time. Witness the migration of people over the last few decades from the "Rust-bowl" states to the "Sun-

belt”.<sup>1</sup> It is true, however, that the degree of labor mobility varies. Secondary workers in a household may be relatively immobile in that they locate where the primary worker locates. Farm households are particularly immobile; they must stay near the land to farm, but some members may be willing to work off the farm if employment is available.

Owners of mobile capital tend to locate where they expect (or perceive) the returns to their capital to be greatest, unless there are significant differences among potential locations in the certainty of returns.<sup>2</sup> They tend to locate where the present value of the expected net return on their capital is greatest. In calculating this expected value, owners 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; they include after-tax wages, public services, and environmental amenities. The wages that workers require to work in a particular state depend in part on the taxes that they pay and the public services that they receive. 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.”<sup>3</sup>

Income gains from development may accrue to nonresident resource owners as well as to residents. It follows that resource owners can gain as a group even though residents do not. Likewise, residents of an area, such as Iowa, can gain from development that occurs in other areas if they own resources that are employed in those areas. Policies that promote development in other states can therefore increase the incomes of resident Iowans. Similarly, residents of other states

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<sup>1</sup>Over 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 through migration. See Levy (1988, pp. 108-109).

<sup>2</sup>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 within the United States businesses choose to locate.

<sup>3</sup>For example, suppose that all workers are similar and can be employed in every state of the U.S. For there to be no pressure for wage change, the distribution of workers among employment opportunities (locations) must be such that no worker is able to change his or her well-being by changing the place of employment. Taking everything into account, workers who live where the climate is pleasant can be no better off than those who live where the climate is harsh. If they were, all workers would want to work where the climate is favorable. But that desire would lead to a competitive bidding down of wages in places with favorable climates relative to wages in those with unfavorable climates.

may gain from Iowa's development and the policies that promote it; the benefits of development within an area may be "exported."

It is often said that investment creates jobs and that private investment must be stimulated to provide jobs for a growing labor force. But it is more correct to say that the nationwide demand for goods and services creates both jobs and investment opportunities. As they respond to this demand, owners of mobile capital and labor together create jobs in a particular area as they decide to employ their resources in that location rather than elsewhere. When assessing the benefits of an economic development policy, we must also recognize that such policies do not in themselves create jobs. The demand for goods and services creates jobs, and development policies cannot significantly increase that demand. *Successful policies attract, rather than create, jobs.*

### **Income Versus Production**

Development *should not* be defined and measured as the increase in total production taking place within an area, even though such is common practice. Total production within an area can be increased by measures that in effect take income from owners of immobile resources and give it to owners of mobile resources in order to attract them to or to retain them in the area. For example, by offering sufficiently generous subsidies, an area may be able to attract industry that would otherwise locate elsewhere, and in doing so increase total production in the area. In this case, the income accruing to mobile and immobile resources may not increase *in total* even though production within the area is greater. Owners of mobile resources gain, otherwise they would not locate in the area; but owners of immobile resources may lose more than the owners of mobile resources gain. This does not, of course, have to be the case. But it should be clear that defining development as increased production within an area, rather than as increased income for owners of resources employed within the area, opens the door to policies that worsen the lot of the area's residents and the owners of resources employed in the area at a given time.

### **Job Growth and Worker Gains**

A common assumption is that workers gain when a business locates or expands in an area, with their gains from the business investment being approximated by the wages paid to the business' employees. But total wages paid to the employees of a new business greatly overstate the benefits of having that business in the state. Most workers are mobile and would have found employment elsewhere if that business had not located in the area. Mobile workers gain because they do not have to move to the job and thereby incur perhaps substantial moving costs; but otherwise they gain relatively little from increased economic activity in the area. For example, a

new manufacturing worker in Iowa is unlikely to be paid greatly higher wages in Iowa than in most other states.

The increase in areawide employment and job availability resulting from increased economic activity will not be significantly greater if it occurs in high unemployment rather than low unemployment areas. Even if the new employment is initially in an area with low unemployment, higher labor demand in that area will ultimately draw labor from the ranks of the unemployed or underemployed if there is in fact an increase in total job availability in the area. Workers may be drawn from the area's unemployed or they may come from other places. In either case, the increase in total employment will be approximately the same as when the workers are drawn from the community in which the new business is located. Focusing assistance on localities with high unemployment does have the advantage of bringing jobs to workers rather than creating jobs to which workers have to move at costs that are often significant in both financial and human terms. Bringing jobs to workers can be important when they are immobile, as might be the case for secondary workers in farm households.

Because employment of labor and capital ordinarily increase together, development usually means an increase in the number of jobs available within an area. However, development can occur without job expansion, for example, if output per worker increases because of technological progress or increased capital per worker. Job growth is therefore an imperfect indicator of development. In the long-run, living standards are directly linked to increases in output per worker, that is to say, to productivity. Job growth has relatively little effect, by itself, on overall living standards.

### **Exports and Import-substitutes**

Economic growth occurs when the businesses in an area produce more goods and services in total. The expansion of an existing business or the founding of a new one, in and of itself, does not necessarily lead to greater economic growth for an area and to more total production in the area as a whole. If a new business supplies goods that other businesses in the area were already supplying, then development has not occurred. For example, if a new shopping center opens in a city that already has an adequate number of retail outlets, economic activity and jobs have merely been shifted from one location to another. The key question in determining whether a given business expansion represents economic development is whether the new business displaces existing activity. Such displacement is very likely when the new business supplies goods and services that are necessarily produced within the state or region, in which case the demands being met by the new business would have already been met by existing businesses. Retail trade and many service businesses almost always fall in this category. Displacement is less likely when a

new business produces goods and services that are exported to out-of-state buyers or that serve as substitutes for goods that would otherwise be bought out of the area. But even in this case, it cannot be assumed that there is always an increase in total production. Production by a new or expanded business may displace production of exports and import substitutes by other businesses in the area.<sup>4</sup>

### **Government's Role in Economic Development**

Government influences an area's economic development as it affects the area's attractiveness as a place for employment of mobile capital and labor resources and as it affects resource productivity. Government can promote development if it can either increase the perceived returns from employing mobile capital and labor in an area or improve the certainty of those returns. Most commonly, a state government affects what is often termed the state's "business climate." Among the key options for promoting development through public policy is increasing the value of public services, including infrastructure services, relative to taxes for mobile resources (see Vaughan, Pollard, and Dyer, 1984).

A state or local government can try to increase the value of public services relative to taxes for mobile resources by carrying out its own 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. The second condition is that government should minimize the costs of those services that it in fact chooses to provide, regardless of whether they meet the first condition for efficiency. Consolidation of county governments in a state to reduce costs and taxes is an example of an action that might meet both conditions.

Implementing these broad policies would increase the value of public services that mobile resources receive for their tax dollars and thereby make those services a "better buy" for mobile resources. The area would become more attractive as a location for economic activity. However, implementing such policies would likely be controversial because it would reduce services or increase taxes for some segments of the population. Also, determining whether provision of a

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<sup>4</sup>Exports and import substitutes may be produced in the public as well as the private sector. For example, if a state's public universities and colleges were closed, some of the educational services they provide likely would be bought from out-of-state suppliers.

particular service meets the "willingness to pay" test may be difficult if not impossible, since dollar values must be placed either explicitly or implicitly on government services.

### **Constraints on Development Policies**

For a variety of reasons, an area is limited in its ability to increase employment and incomes. First, national and international market forces and 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. It is difficult for government to improve on these private decisions, yet that is exactly what it must attempt in its economic development activities. It 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, it is difficult to identify inefficiencies in the delivery of public services that can be eliminated to reduce the tax burden on mobile resources. Finally, fairness will limit any redistribution of government costs from mobile to immobile resources.

Economic development programs for various governmental units often compete: they try to induce businesses to locate in one area rather than another. They may aim to correct inefficient business locations, but unless they actually do so, what one area gains another will lose, in which case there may be no gain for the nation as a whole. Nevertheless, states and communities may persist in competitive economic development activities because they feel that they will lose population and industry if they do not "meet the competition."

### **Criteria for Evaluating Policies**

Economic development policies which include programs such as building highways, necessarily entail diversion of resources from alternative private and public sector uses. Dollars used to construct developmental highways as a means for attracting businesses could have been spent on education or returned to tax-payers. These resource diversions are the costs of the policies. A central question in evaluating a development policy is whether it produces benefits commensurate with its costs. This is the question of whether the policy meets the criterion of economic efficiency. A second question is whether the costs and gains from the policy are distributed fairly among the area's citizens.

**Efficiency.** A development policy should produce current and future benefits that have an expected present value at least as great as the expected present value of its costs. These benefits

and costs are the policy-induced changes in the real incomes of the area's residents. Increases in real income are benefits, and decreases are costs. An individual's real income is the value of the goods and services, both public and private, available for consumption in current and future periods. A policy that increases aggregate real incomes is efficient. Some persons may gain from (receive higher real incomes because of) the policy and others may lose, but the gains of the gainers offset the losses of the losers. If a policy does not meet the criterion of efficiency, it necessarily makes an area's residents as a group worse off because they have to pay more to support the policy than they gain from it.

A policy may increase production and employment and yet not be efficient. For example, a tax on the value of land would not repel economic activity, since the land is not mobile; the land would continue to be used in its most profitable employment as long as the tax is less than the income-producing ability of the land. Revenues from this land tax could subsidize steel production in the area. With enough subsidy, it would be profitable to ship in the ore, coal, and other materials and ship out the finished steel. Total employment and production in the area would increase. But this policy would not be efficient unless the *additional* income generated by the steel mill exceeds the additional taxes land owners pay to subsidize the mill. If private investors have not found the area a profitable location for steel mills, it is unlikely that a subsidy of this kind would be efficient; the area probably has major cost disadvantages for steel production compared to other parts of the country.

The efficiency criterion can be stated less technically: development policies should increase living standards for an area's residents. Market-traded goods should on the average become more available; that is, real per capita incomes should increase. Moreover, population and industry should not be pursued at the expense of environmental quality and diminished quality of public services. The residents of the area, to whom the government is responsible, are not served by policies that reduce their living standards on the average even if the population and economic base of the area increase.

Admittedly, the efficiency criterion is a complicated and difficult basis for evaluating development policies. It is, however, the most appropriate guiding principle to follow if the ultimate objective is to increase the total real income accruing to an area's residents. If the efficiency criterion is not applied, it is impossible to determine whether a policy increases the incomes accruing to the owners of resources employed in the area. *There is no case for using different criteria simply because they are easier to use.*



**Equity.** Equity, a concern with the distribution of the gains and costs associated with a policy, also is important. Policies that satisfy the efficiency criterion may be foregone because they generate an inequitable distribution of gains and costs. Alternatively, policies may fail on efficiency grounds, but nevertheless be undertaken because they benefit a segment of the population that is regarded as deserving; they bring about a desirable transfer of income. For example, constructing a road enabling a new factory to be built may be efficient in that the income gains it generates for workers and businesses will exceed its costs. Yet the assistance may not be offered if the distribution of the gains is regarded as unfair. Similarly, building a road to attract a factory in a small town may not be warranted on efficiency grounds, but it may be provided to support the incomes of persons living in small towns. Planners should recognize that such support does transfer income and wealth from taxpayers at large to the residents of the town.

### **Using Infrastructure to Influence Location**

Decisions to build a new infrastructure facility or to replace an existing one are investment decisions that should be guided by the efficiency criterion. That is, an infrastructure investment should be made when those who will use the services provided by the facility, both directly and indirectly, are willing to pay the cost of its construction, operation, and maintenance. If users are not willing to pay these costs, they are effectively saying that the value of the services provided by the facility are less than its costs; 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 due to substandard roads.

Overbuilt infrastructure can also deter growth. Facilities put in place at an earlier time often do not match today's needs or those anticipated in the future. 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 generally. 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.

The location of roads and other public infrastructure obviously affect the location of private sector activity. Consequently, infrastructure investment is often seen as a tool that can be used to “spread prosperity” within a state or region. The desirability of using infrastructure investment in this manner presumes that the benefits and costs of increased business activity within the affected area depend on the location within the area.

To some degree this presumption is surely valid. In the short run, the gains from new activity may be greatest if it is located in a small town with a falling population rather than a growth center. Such a community may have excess infrastructure capacity and therefore may be able to provide public services to the business and its employees at a lower cost than a growth-center city. The latter would tend to have little excess infrastructure so that additional industry would mean additional infrastructure investment. However, in the long run the infrastructure in the low-growth town will have to be replaced. The cost of doing so may be greater on a per capita basis than in a larger city. That is, having population and industry dispersed among a number of small towns may in the long run be inefficient. If so, encouraging industry to locate in small towns that are presently experiencing high unemployment, excess infrastructure capacity, and population loss may delay or prevent adjustment to a more efficient pattern of location.

The efficient location pattern of population and economic activity within a state or region will be strongly influenced by transportation costs and economies of scale in private and public production. There is a danger in trying to counter these influences and *direct* the location pattern by financial assistance or by other measures such as the location of infrastructure. For example, a policy of using sales, income, and road use tax revenues collected in major urban areas to finance roads and other government services in rural areas and small towns could well be counter-productive from an economic development perspective. It would obstruct the evolution of an efficient regional distribution of population and industry. And the taxes paid by urban area residents and businesses that go to support provision of services in rural areas would act as a deterrent to economic development in urban areas.

### Summary

The objective of economic development is to increase income and product generated within an area. To do so, mobile resources that could locate elsewhere must be attracted to the area. For

this to occur, owners of these resources (workers and holders of capital, mainly) must perceive that their returns, monetary and otherwise, will be better in this area than elsewhere.

Public policies intended to positively influence an area's economic development either seek 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 deploy its resources efficiently. Building new facilities only when the benefits would exceed the costs is important to improving 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 as to whether and to what extent overall economic growth should be diminished in order to promote these other objectives.

## CHAPTER 3

### HIGHWAY INVESTMENT AND ECONOMIC DEVELOPMENT

Highway investment is widely regarded by both policy makers and analysts as an effective tool for promoting local and regional economic development. That such may be the case in particular circumstances is not at issue in this chapter. Instead, the central concern is what criteria should guide decisions about highway and road investment if such investment is to promote economic development. Is highway investment an exception to the general rule, stated in Chapter 2, that economic development policies must satisfy the economic efficiency criterion if they are to succeed in increasing the income derived from economic activity in the state? If so, what alternative criteria are appropriate and why?

In considering these questions, we first review the efficiency criterion as it applies to highway investment. Then we ask whether investments that do not satisfy this criterion may nevertheless promote development; we conclude that inefficient investments weigh against economic growth. Some of the pitfalls in using other criteria (than efficiency) to evaluate and justify highway investments are also explained. Finally, we discuss the issues and problems that arise in applying the efficiency criterion to gauge the success of a highway investment program, such as Iowa's RISE, that explicitly aims to promote economic development. Our objective is to develop workable guidelines that can be used to distinguish efficient from inefficient projects.

#### Efficiency in Highway Investment

As discussed in Chapter 2, economic development may be broadly defined as increasing the real income that individuals derive from economic activity within a state. Therefore, when economic development is the policy objective, the expected benefits and costs of an infrastructure investment project, highway or otherwise, are appropriately defined as the project-induced changes in the real incomes that individuals derive from economic activity within the state. Increases in real income are benefits, and decreases are costs. If a project's benefits exceed its costs, it increases real incomes in the aggregate and is termed efficient.

#### Highway Benefits and Costs

To translate the general criterion of economic efficiency into workable guidelines for evaluating projects, we consider in some detail the nature of highway benefits and costs. Highways are essentially "tools" used in transporting goods and people from one place to another,

and highway investments generate benefits only to the extent that they lower transportation costs.<sup>1</sup> Such cost reductions may be realized in numerous ways including decreases in travel time increases in safety, decreases in fuel and other operating costs, and reductions in noise or air pollution. But in the final analysis, all of the benefits of a road, and therefore the justification for building it, flow from using it for transportation.<sup>2</sup> The basic principle is that 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).

Highway benefits may not only accrue to persons and businesses whose vehicles 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. Persons may thus benefit from a highway without traveling on it. They do so when travel on the highway by others increases the income that they derive from the resources they own, or when such travel increases the purchasing power of that income (by reducing the prices paid for commodities).

Although *all* highway benefits derive from lower transportation costs, they can also be represented as increases in the real incomes of individuals in their roles as consumers and producers.<sup>3</sup> This is so regardless of how the benefits 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 be increased when road transportation to the location is improved.<sup>4</sup> *It is therefore important when estimating highway*

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<sup>1</sup>In other terms, highways are intermediate goods used in the production of final goods.

<sup>2</sup>For other discussions of this point, see Gómez-Ibáñez (1982) and Cole (1987, Chapter 5).

<sup>3</sup>Real income includes the value of environmental amenities, safety, and other “goods” that are not ordinarily traded in the market place. Real income is therefore not merely the purchasing power of monetary income generated by market transactions.

<sup>4</sup>Saccomanno (1980) proposes that transportation investments be evaluated by their effects on site values, “Through site value transfer, benefits and disbenefits of a given transport programme are reflected in capitalized form in site value changes on land. By perceiving investment impacts indirectly through changes in the land market, the analyst can forgo the relatively uncertain exercise of valuing intangibles” (p. 170). Saccomanno may be overly optimistic about this approach to evaluation for two reasons. First, there is the problem of distinguishing the change in land value that is due to the transportation investment from changes that have other causes. Second, some of the benefits and costs of a project may not be reflected in changes in land values.

*benefits not to "double count" by including in benefits 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 generates for him or her rather than have the investment not take place. Of course, the person would always prefer to pay less than this 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 making some or all of the population better off and for that reason is said to be economically efficient.

Stated a bit differently, each person can be thought of as determining the maximum amount that he or she would be willing to pay to build or improve a particular road. This amount will depend on any additional money income that the road makes possible, any reduction in prices that the person pays when spending that income, and any environmental and safety implications of the road. For many persons, this amount will be zero because they are unaffected in any way by the project, and it can be negative for some who see harm in the road (for example from noise and air pollution). Adding these amounts across all persons, including both current period and future amounts and stating the latter in present value terms, gives the aggregate benefits of the project. These benefits are then to be weighed against the present value of the road's costs, which take a number of forms: land acquisition, construction, maintenance and operation, and environmental. The project is efficient if benefits outweigh costs.

### **The Question of Impact Area**

When assessing the benefits of highway projects, it is necessary to recognize that building or improving a particular stretch of road may reduce the benefits derived from existing highways. That is, a project's benefit to the state as a whole usually cannot be determined by looking *only* at how it 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 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.<sup>5</sup> The project increases income and property values for owners of property along the upgraded road, but 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 as a whole unless its benefits exceed its cost.<sup>6</sup>

To illustrate further, suppose instead that the impact area of interest is an entire state because state funds were used to finance the transportation improvement. In this case the project will be efficient only if 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 (or 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.

What many states do, however, is work to recruit businesses away 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 have occurred from the transfer, *per se*.<sup>7</sup> Any public investments to encourage the move are a net loss to the nation as a whole unless other users of the new facilities benefit sufficiently to warrant the cost. The point, of course, is that from a national perspective, states working to draw industry away from one another do very little, if anything, to foster national growth.

### **The Problem of an Uncertain Future**

Perhaps the most vexing issue facing transportation investment analysis is uncertainty about future conditions. A full blown benefit-cost analysis depends on accurate estimates of future demand for the facility. But long-range forecasts often have been inaccurate enough to raise doubts about the probability that great accuracy will be achieved in the future. The statement that

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<sup>5</sup>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.

<sup>6</sup>If the project's benefits, measured by people's willingness to pay for the safer and faster travel that it provides, exceeds its cost, then the project satisfies the efficiency criterion and it promotes development broadly defined as increasing the real income generated within the state. There is in this case no need to appeal to a separate economic development justification for the project.

highway projects should be efficient therefore has to be understood to mean that the *expected* present value of benefits exceeds *expected* present value of costs.<sup>8</sup>

A fundamental issue is that 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 assured? The question is especially germane in less populous areas where the long-term economic future is particularly unclear. There is, of course, no general answer to the question of how much risk a state or other governmental unit should expose itself to. One useful way of viewing the issue is to apply the analogy of portfolio management. That is, there is room for calculated risk in highway investments, but risky investments should still meet the efficiency test such that the expected present value of benefits exceeds the expected present value of costs.

The overall investment strategy should be prudent, which is to say that a distinction must be drawn between highly speculative investments based on a faith that mobile resources will follow a road, regardless of its placement, and more certain investments. Analyzing the likelihood of attracting the other factors of production (capital, labor, and materials) necessary to enable growth to occur is as good a place as any to begin.

### Why Public Highways?

If private investors could easily capture all of the benefits of a highway investment, through tolls and location rents, then there would be no economic efficiency basis for public investment in highways. Such is the case when a road provides access to a single property - for example, land being developed as a housing subdivision or as an industrial park, a driveway serving a business or a home, or a road linking a mine or a farm to a highway.<sup>9</sup> It is not the case, however, when a

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<sup>7</sup>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.

<sup>8</sup>The expected present value of benefits is calculated by weighting future and uncertain benefits by their probability of occurrence. The expected present value of costs is similarly calculated, and usually the necessary data are relatively easy to generate. Note that a large benefit with a low probability of occurrence adds little to the expected value.

<sup>9</sup>Road investment in an industrial park adds to the value of the sites in the park. This additional value, which is the main if not only benefit of the investment, can be captured in higher rents or prices for the sites. The rationale for investing in the park should not be that such investment is necessary for economic development. Governments could create sites and rent or sell them at below market values as a means of subsidizing businesses that they wish to attract. The subsidy may be necessary to attract the business, but it would be just as effective if it were given in cash instead of as a markdown of land prices and rents. Governments could also develop industrial parks (or subdivisions) as means of capturing land rents created by infrastructure investment, including roads. Capturing land rents does not appear to have been an important motivation for such investment in the past.



road is used by many and entry and exit at many points along the road is desirable. In the latter case, capturing the benefits through a system of tolls would be very costly. Benefits that are costly to capture are said to be “external.” In general, the case for public involvement on *efficiency grounds* in financing roads becomes stronger as the share of the benefits that are external increases.

### **Developmental Highways**

From the preceding discussion, it is clear that an area can promote economic development by undertaking highway investments that are economically efficient. Are there circumstances in which the objective of economic development is also served by undertaking inefficient investments? That is, can a project fail the efficiency test and still promote development if it satisfies other criteria? Highway investment has two opposing effects on a state’s economic growth and development. It may reduce the transportation costs involved in carrying out production within the state, which favors economic growth. But it also means higher taxes and fees that may increase the cost of doing business in the state and discourage growth.<sup>10</sup> The balance of these two effects is favorable for development when the investment reduces transportation costs by more than the amount spent, both stated as present values; it is unfavorable when the converse is true. Thus, when highway investment promotes economic development, it is also justified on economic (efficiency) grounds. There is no distinct “economic development” justification for highway investment.

A highway may generate benefits in excess of its costs of construction, operation, and maintenance and yet not generate sufficient revenue from traditional highway user taxes and fees to cover those costs. Such highways may appear to have value mainly because of the economic development that they generate, but that development value derives from their usefulness in transporting goods and people. They are thus justified on economic efficiency as well as developmental grounds. *The statement that a highway is justified by its contribution to economic development should not be understood to mean that the highway is justified by something other than the traffic on it.*

### **Highway Investment for Redistribution**

An alternative criterion to economic efficiency for guiding highway investments is that of income redistribution. The objective here is to use investments in highways and roads 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.”

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<sup>10</sup>Growth is not discouraged if the road is financed by taxes that burden only immobile resources such as land.

Resources would not be invested so as to maximize society's overall welfare, but rather that of a designated place.

Many analysts are skeptical as to the advisability of using highway investments to foster economic development in lagging areas. Kraft, Meyer, and Vallette (1971) have contended 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 other factors such as labor, location, and agglomeration economies (lower costs due to the aggregation of activities). In the words of Strazheim (1972, p. 219), "the weight of current evidence concerning the usefulness of using transportation investment....as a developmental tool would appear to be on the side of the skeptics."

If highway investment in a declining area would cost more than the value of the benefits that result, 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 cash transfer to these residents would benefit them more than the same dollar amount invested in an inefficient highway. In point of fact, if the highway does not carry particularly high traffic volumes or is not especially critical, the benefits to area residents, users and non-users, will not be great.

## **Conclusions**

Our examination of the relationship between highways and economic development leads us to the following key conclusions:

- Investments in highways and roads promote economic development by lowering transportation costs. Beneficiaries of these reduced costs may include actual travelers or those who purchase or sell what is transported. The benefits of an investment are the transportation cost savings that it generates. These savings can be used in assessing the efficiency of the investment, but the changes in real income and asset values that result from lower transportation costs are manifestations of the same benefits. To include both in an appraisal would amount to double counting.
- Investing public funds in highway projects that are not efficient can actually reduce an area's economic development potential. An investment may reduce transportation costs involved in various forms of economic activity, but it also requires a public expenditure. If the cost savings do not exceed the expense necessary to construct and

operate a highway, the highway and the increase in taxes and/or user charges that it entails make the area less attractive to mobile resources.

- A competing criterion with that of economic efficiency (making society better off, overall) is income redistribution. Investing in highways in declining regions to improve their development potential, however, is unlikely to influence location decisions to any great extent. The general lack of other critical factors restricts what can be accomplished through transportation investments.

### **Applying Theoretical Concepts: Six Paradigms**

The foregoing discussions in this chapter and the preceding one explain in general terms the conditions under which highway 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, we have developed six paradigms. 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.

#### **Sixth City**

Consider a circumstance where 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 connecting 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 other similar communities within the state have all of the other necessary attributes as the applicant community. These other five communities, however, would not require the connecting road because adequate access already exists to an Interstate highway. The question arises, "Should the state DOT fund the project given that 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 incremental benefits to society would result over and above locating the plant in one of the other five communities. Yet a sizable capital cost must be defrayed. The difficulty we are illustrating here, of course, is that in most state highway programs related to economic development, local communities are the applicants. It would be difficult politically to redirect the company away 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 the state for economic activity are very likely to fund projects that are duplicative and, from a state perspective, inefficient.

### **Gold Mine**

A second paradigm relates to a situation where a business owns a parcel of land with a unique potential for economic development. The parcel could possess a beautiful vista of a 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 needs 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. Absent any 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 of building the road itself, however, the business requests that the state DOT do so, 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. In Chapter 2 we observed that because immobile resources cannot be transferred to another location where demand might be greater, incentives to develop them are unneeded. If it is not economical for the private sector to develop the site, public sector subsidies are unlikely to be efficient. Conversely, if the site has a unique resource that is in demand, as is the case in this example, no public subsidy is needed or warranted.

A related point is that 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, and this is deleterious to economic development.

The central message conveyed by this paradigm is that a highway investment program should be loathe to devote its resources to build a road whose benefits are largely increased profits to owners of immobile resources.

### **Raise the Ante**

A 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 where 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.

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. It 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 become sizable.

More important is that the incentive package very well could 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 households and businesses in the area. Finally, 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. To the extent that jobs are merely shifted, society has not gained, and the incentives amount to a net cost that actually worsen overall economic development prospects regionally or nationally.

The point to be stressed is 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**

Our 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 even out development across the state.

To be sure, most states have significant geographical variations in prosperity across their areas. Very often, one or a few urban areas have come to dominate the state's economy. Scale economies (larger plants, office complexes, and the like), agglomeration economies (shared capabilities, like law firms and printing services), and typically superior locations (explaining the urban area's initial settlement and growth) have given urban areas competitive advantages in attracting mobile resources.

Put another way, the return on mobile resources such as labor and capital has been superior in certain growing urban areas, so in large measure they have congregated 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. Furthermore, 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 same conclusions have been reached by Kraft, Meyer, and Vallette (1971) and Harris (1974), among others.

The important point is that 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. Attempting to spread out development will mean 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.

### **Open Up the Amazon**

A paradigm somewhat related to the previous one relates to a policy objective to make less well served parts of the state more accessible. Unlike the "Spread it Out" paradigm, however, the objective is less to raise the incomes of depressed areas, per se, but more 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 the railroads on opening up the West during the late 1800s are legendary. Can the same be true of highways today? Almost 30 years ago, Chinitz (1960) argued that further major investments would not be likely to greatly influence the spatial pattern of private investment. More recently, a survey by Blair and Premus (1987) led them to conclude 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.

This suggests that rarely will the high construction costs of adding new regional highways to the nation's highway system be justified, even in less developed areas. A sufficient number of developable sites remain that providing highway access to others is unlikely to advance economic development.

### **The Carnival**

A final paradigm is concerned with foot-loose business, 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. The risk is great that if only slightly more favorable economic circumstances avail themselves at another location, the business will depart. Over time such businesses are analogous to a carnival, they move from place to place.

A due amount of caution should be present when making a permanent improvement in the area's road system to attract a foot-loose business. Reasonable certainty should exist that if in fact the business leaves, another equally beneficial activity will occupy the facility left behind. Failing this, investments in fixed transportation facilities should be deferred until objective forecasts portend efficiency-ensuring traffic volumes in the foreseeable future.

One useful indicator of commitment by the business is 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, we conclude that private sector capital expenditure should be an important element in analyses of potential local road investments, especially if it is long-lived and fixed to the site.

## **Conclusions**

The six paradigms apply the central points presented in our theoretical discussion to a series of real-world circumstances likely to be encountered by planners and policy makers. In a certain way 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 is dependent upon how they fare when the efficiency criterion is applied: "Will the investment lead to a net economic gain to society?" The surest way to ensure an efficient investment is to concentrate on the benefits forthcoming to users of the highway and those who stand to gain through reduced transportation costs of one kind or another.

Is there room for speculative investments under any circumstances? The answer clearly depends on how uncertain the payoff of an investment is and what the size of potential payoff level is. Competent forecasts of travel demand in future years are a critical element in gauging the probable efficiency of an investment in a new or significantly upgraded facility.

## CHAPTER 4

### PREVIOUS RESEARCH AND CURRENT PRACTICES

One of the more common elements in state and local governments' efforts to stimulate economic development is to invest in roads and highways. In the preceding chapters we have concluded that efficient investments are consistent with economic development, but undertaking inefficient investments can actually weaken developmental prospects.

In this chapter we examine previous research in the area of transportation and economic development. We also examine the current practices of all 50 states in terms of the extent to which they are actively using highway investments to pursue economic development goals. Together, the research review and the assessment of state-level programs enable us to define quite accurately the current state of the practice. Applying the reasoning presented in Chapters 2 and 3, we make a critical assessment of these current practices.

#### Previous Research

Our interest in briefly discussing previous research on the relationship between transportation investments and local economic development is to help place our work in context. Almost no research has focused directly on when and why investing in better access can actually contribute to increases in income at the local level. Likewise, we know of no study that has systematically evaluated a state-level program intended to facilitate local economic development. Yet research has been conducted that relates to the basic connection between highway access and economic development. Even though most of it is not precisely germane to our work, this previous research offers certain useful insights. We examine previous research by category and then draw general conclusions.

#### Aggregate Models

Several recent reports have argued that the United States is spending "too little" on public sector infrastructure. The National Council on Public Works Improvement (1988) concluded that the quality of America's infrastructure is barely adequate to fulfill current requirements, and insufficient to meet the demands of future economic growth and development (p. 1).

But is it true that more investment in infrastructure will lead to increased local development? This question has been broached from many directions.



Several researchers have investigated the broad relationship between overall output or productivity and infrastructure, using a production function approach (see McGuire, 1986). Aschauer (1988) has related private sector productivity and public infrastructure spending and found that the slowing of productivity growth in the U.S. since the 1960s is paralleled by a fall in infrastructure spending. Indeed, he argues that the decline in infrastructure investment has been largely responsible for the decrease in U.S. productivity growth. Lewis, Hara, and Revis (1988) share the opinion that higher spending on public infrastructure would fuel productivity growth.

Garcia-Mila and McGuire (1988) used production functions to estimate the relationship at the state-wide level. They concluded that public investment tends to have a positive effect on Gross State Product and that it had a higher marginal productivity than private investment for the period 1965-1983. Breaking down the types of public infrastructure spending, such as spending on highways, sewage and sanitation, they found that education spending has a larger impact on Gross State Product than does highway spending. Eberts (1986) also examined the relationship between public and private investment and concluded that they are complements, not substitutes.

These production function models share several characteristics. Almost by definition, an increase in aggregate output can only result from an increase in capital or labor employed, unless productivity is assumed to rise exogenously. Thus it is not surprising that these models conclude that increases in stocks of capital lead to increased output, that is their basic assumption. A second characteristic of these models is that they are of necessity general, in that data on detailed types of infrastructure spending are often not available. These studies tend to break infrastructure into a small number of general categories, such as sewers, highways and schools, and many use only public and private sector totals.

There are three major limitations to the usefulness of these macro models for state-level decision-makers. First, many of the conclusions drawn from these studies are simplistic. Explaining the slowdown in U.S. productivity by just one factor, infrastructure spending, ignores many other changes that may have accounted for this trend (see Binder, 1989). Moreover, transportation investment may be simply a *necessary*, but not a *sufficient* factor for economic development (Revis and Tarnoff, 1987). Second, many of these studies examine the *average* effect of past investments, not the *marginal* effect of proposed projects. Whether a past aggregate relationship is a reliable guide to the worth of a new specific highway improvement is highly debatable. Eberts (1986), for example, argues that the effect of highway investment today with a mature highway system may not be the same as in earlier periods. Third, these studies are of little practical use at the state and local level. Even if one accepts that more should be spent nationally

on highway infrastructure, how does this information help a decision-maker evaluating one or more specific project proposals?

Binder (1989) pointed out that two strands are apparent in many of the calls for increased spending on infrastructure. First, a “needs” approach is often used to justify more investment: the stock we have “is in bad shape”. But, as Garn and Ledebur (1986), among others, observed, needs studies do not address the benefits of improving infrastructure. A piece of infrastructure may “need” to be repaired but if it offers few benefits, repair may not be justified. Garn and Ledebur argued that

[T]he foremost requirement for a workable, well-supported strategy to ensure adequate public facilities for present and future economic development is to emphasize the efficiency of investments (p. 23).

A second feature Binder observes is that some diagnoses of the “infrastructure crisis” are related to changes in the share of Gross National Product (GNP) spent on infrastructure, either in time or in space. Thus, since the United States is spending less now on infrastructure than it did in the 1960s, for example, more *should* be spent. Alternatively, since other countries are spending higher percentages of their GNP on infrastructure, the conclusion is made that the United States is *spending too little*. For example, Aschauer (1988) related productivity growth to infrastructure spending across countries, concluding that countries spending large amounts on infrastructure have high productivity growth. The U.S. could, he argued, improve its low productivity growth by increasing its spending on infrastructure.

Two major criticisms can be made of this reasoning. First, there is no firm basis to believe that a fixed relationship exists between infrastructure spending and economic performance, either across time or space. Even if one accepted that three percent of GNP should be spent on infrastructure, decisions must still be taken on where, and on what, to spend it on. The *quality* of investment decisions is surely more important than the *quantity*. The only certain way to make good investments is to examine each proposal carefully on its merits and not to proceed because it helps fulfill a “quota” of spending that has been preordained. Winston (1985) argued that more research is needed on the impact of transportation infrastructure investments on the economy, and the literature we have examined would indicate that he is correct.

### Statistical and Quasi-experimental Approaches

Several researchers have used statistical approaches to determine the relationship between highway investment and economic development at the national, regional, or local levels. In general, these statistical analyses involve a quasi-experimental design where “control” and

“treatment” groups are compared, or they are based on econometric models that relate a number of variables to changes in economic performance.

**Quasi-experimental Analyses.** A number of researchers have approached the problem of highway effects by, *ex post*, constructing control groups of areas unaffected by highway investment and comparing their economic condition with areas that had major highway investments. Some studies have focused on the national level. The Federal Highway Administration (1976) compared counties with and without freeways and found that those with them grew faster in population terms, even after allowing for pre-Interstate growth rates. Using a quasi-experimental design, Hansen (1973) found that proximity to a metropolitan area was more important in explaining relative non-metropolitan county population growth rates than the presence of major highways. Wheat (1969) looked at changes in manufacturing employment for 106 controlled-pair cities, some on Interstate highways and some not. He found no national difference in employment changes between cities on and off Interstates, though some relationships existed in certain regions. Briggs (1981, 1980), as part of a large study of the effects of highways on economic development, examined net migration and employment changes for non-metropolitan counties. He found that the effect of the presence of a highway was weak to nonexistent in remote, less developed rural areas, after controlling for other factors.

A number of quasi-experimental studies have examined regional highway networks. Kuehn and West (1971) found little effect of highways on income distribution in the Ozarks. Munro (1969) argued that the Appalachian Development Highway System was unlikely, by itself, to improve Appalachia’s relative lag. Miernyk (1980) judged the same system a provisional success because per capita income had risen in some of the states in the area, but lack of detailed income breakdowns within the affected states did not allow a more precise conclusion. Clay, Stuart, and Walcott (1988) examined groups of counties in North Carolina, focusing on changes in employment and highway expenditures. Because ambitious spending on highways has been accompanied by fast employment growth in North Carolina’s metropolitan counties, they concluded that highway investment is central to economic development.

Isserman, Rephann, and Sorenson (1989) use a quasi-experimental approach to investigate the effect of highways on smaller communities and rural areas that highways transverse. They examined growth rates of income, by sector, during the period of 1969-1984 for 231 small rural cities, some with highway access, some without. Evidence was found that cities on highways had faster growth, but little effect was observed on rural counties through which highways passed. Interestingly, they found exactly the same growth rate for communities on two-lane roads as those at the intersection of two Interstate highways in rural areas. Humphrey and Sell (1975) examined

Pennsylvania areas in detail and found that highways had some effect on relative population growth, especially for areas close to metropolitan areas.

At a local level, Gaegler, March, and Weiner (1985) examined the impact of the Connecticut Turnpike on two groups of towns, those within five miles of the highway or more than five miles away. An earlier study on the turnpike's first five years by McKain (1965) concluded that towns close to the turnpike experienced faster economic growth than either control towns or towns elsewhere in the state. Gaegler, March, and Weiner focused on changes in employment, wages, population, retail sales, and property values. Using these measures, they confirmed the earlier finding that towns along the turnpike had performed better than towns elsewhere but concluded that the benefits of the highway had spread further throughout the area.

Quasi-experimental approaches can be criticized on several grounds. First, the selection of control and treatment groups often is difficult, and the results are highly sensitive to the choice made. Second, many studies use only a few variables to explain the differing growth rates of each group. Highways may be influential, but a number of other factors probably also influence growth rates, and in principle they should be taken into account. In practice, it is difficult to measure the presence of entrepreneurial activity and other phenomena related to local development. Finally, any relationships found by these studies is mainly one of association, not causation. One cannot be confident that highways led to growth, rather than vice versa (Eagle and Stephanedes, 1987).

**Econometric Studies.** A number of major studies of the Interstate system as a whole have sought to discern its effects on regional growth. Bohm and Patterson (1972) examined population changes for all U.S. counties between 1960 and 1970 and related them to a number of variables. Dummy variables were used to indicate the presence of Interstate highways. Bohm and Patterson found that the presence of an Interstate had a substantial relationship with relative population growth.

Lichter and Fuguitt (1980) confined their study to non-metropolitan counties and sought to explain differences in net migration rates by a number of variables, one of which was the presence of an Interstate highway. They found that the impact of Interstates was at best modest and largely absent in remote, rural areas. Wilson, Graham, and Aboul-Ela (1985) used a time-series approach to estimate the effect of highway investment on regions within New Brunswick, Canada, for 1951-1982. While regional employment would have been their preferred measure of regional development, they used per capita income as a proxy because detailed employment information was not available. Highway expenditures were used to predict changes in regional per capita income, but only a weak relationship was found.

Moon (1987) used a stepwise multivariate regression analysis to explain development patterns around rural Interstate interchanges in Kentucky. Using as a measure of development the number and size of structures near the interchanges (from aerial photography), he found a number of variables to be important in explaining development patterns. Among these are traffic volume, distance to nearest city, amount of development before construction of the interchange, and distance to the next interchange. Nelson (1990) used a cross-sectional set of equations to examine employment density patterns in Georgia counties. He found little relationship between employment density and the presence of either Interstate or local county developmental highways.

Stephanedes and Eagle (1986) used a time-series approach to investigate the relationship between state highway expenditures and changes in employment level in 30 non-metropolitan Minnesota counties between 1964 and 1982. They found evidence of causality in that highway expenditures lead to temporary gains in jobs, with lasting increases materializing only in counties close to metropolitan areas. Grouping all 87 Minnesota counties, Eagle and Stephanedes found that no overall relationship existed. For a subgroup of regional centers, highway expenditures did appear to lead to job growth.

Econometric approaches have two broad disadvantages. First, establishing causality between investment and development is still illusive. Like Eagle and Stephanedes (1987), Straszheim (1972) noted that any statistical approach to determining the effect of highways will always have the problem of the direction of causality; do highways cause growth or vice versa? Even a time-series approach, like that used by Stephanedes and Eagle only establishes time patterns: development followed road investment chronologically, but we cannot conclude that the investment *caused* the development. Moreover, road investments are typically announced with long lead times. It is possible that development patterns may not only be influenced during the actual time period of spending, but also during the time highway planning occurs. Second, many econometric studies use only a few variables to explain growth. The process by which some areas grow faster than others is bound to be more complex than this.

### **Input-output Models**

Input-output models have become one of the more frequently used methods for assessing the economic impacts of transportation improvements (see Apogee, 1989). These models use past patterns of industrial and geographic trade to forecast the effects of policy decisions, such as new transportation investments. Stevens et al. (1981) developed an input-output model to predict the direct and indirect regional effects of highway projects, in terms of industrial output, income, value added, and employment. Allen et al. (1987) used an input-output model to assess the initial,

indirect, and induced impacts of 35 generic types of road investments in Ontario. They focused on a series of "economic impacts" of spending on highway construction, most notably regional income and employment. Their analysis yielded a regional income multiplier of about 1.82 (ratio of total impacts to initial, construction-only impacts) and an employment multiplier of 4.0. As they noted, however, these estimates are *gross*, rather than *net*; they measured the positive appearance of change within the nearby area, but not the less visible losses elsewhere. Huddleston and Pangotra (1987) stressed that net gains from highway investments will occur only if the resources (human or otherwise) that are utilized now were previously not employed or at least underemployed.

In an early national-level analysis, Amano and Fujita (1970) used an inter-regional input-output model to predict the impacts of hypothetical bridge construction projects in Japan. More recently, Liew and Liew (1984, 1985) used a multiregional input-output model to measure the regional development impact of a waterways project. Their model estimates the regional effect of transportation cost savings on industrial output, personal income, and employment.

One recent highway investment study used an input-output based methodology to derive sector-specific economic multipliers. The Wisconsin DOT Highway 29/45 Corridor Study (Cambridge Systematics, 1988) categorized the three basic sources of economic development resulting from a road investment to be those due to expansion of existing firms, attraction of new firms, and increased tourist trade. For each of these sources of development, direct effects (business begins), then indirect effects (business orders locally), and finally induced effects (employees spend their wages locally) were estimated. However, these "economic development effects benefits" were *added to* the travel time savings of the road, thus double-counting the benefits of the investment.

The real strength of input-output models is their ability to show the effects of changing transportation costs (e.g., through a highway investment) on the various sectors of an area's economy. The resultant "gains," however, generally are due to a change in competitive strength of the affected area vis-a-vis other areas of the country; they do not necessarily constitute new growth per se. As noted earlier, input-output models have difficulty reflecting advances in technology or the substitutability of one good for another. Most models are mathematical updates of inter-industry purchases and sales measured at an earlier time. Perhaps of greatest concern is that the models are only mechanisms for gauging the magnitudes of impacts; they provide no real insight into why, for example, lower transportation costs due to highway investments lead to economic growth in the affected area. Because linear relationships are assumed, input-output models typically are ill-equipped to distinguish between the effects of an upgraded highway on a

small community versus a larger metropolitan area. The spatial reordering that may occur, whereby smaller places may actually lose jobs to larger areas as a result of the better highway, is not reflected in the results of input-output models.

### **Industrial Location Analyses**

A number of studies have assessed the importance of highway access in industrial location decisions. Loosely based on the tenets of geographic location theory, most locational analyses are empirical inquiries into what factors various types of firms consider when choosing locations. For example, Mahmassani and Toft (1985); and Lyne (1988) studied the role of highways in attracting high-technology firms. The general conclusion has been that good access is a fundamental requirement, but proximity to research universities and a quality living environment also are essential. Wilson, Stevens, and Holyoke (1982) support this conclusion; they argued that noneconomic factors such as the firm's owners' residential preferences play key roles. Models based only on economic cost differences cannot fully explain location decisions.

Ernst (1981) drew a distinction in empirical studies of location decisions between revealed preference and surveys. The former approach seeks to discover transportation advantages by examining where firms located, but it fails to establish causality. Do firms locate in attractive places or did attractive places become that way as a result of firms locating there? The latter approach involves asking businesses what factors were important to the location decision they already have made. Frequently such surveys are biased by *ex post* rationalization.

Whether or not they are biased or at all useful, surveys inquiring into what have been the key determining factors in business location decisions rarely have placed upgraded highways at the top of the list. Harrison and Kanter (1978) concluded that labor costs and the availability of appropriate physical space were of greatest importance. In a survey of Fortune 500 firms, Schmenner (1982) found the top factors to be quality of labor, climate, and proximity to markets.

Regardless of the precise order of importance, it is clear that a series of factors influence business location decisions. While variations are bound to exist in what is important to different types of firms, transportation investments are likely to do relatively little absent the other critical attributes a specific type of activity requires. This suggests that only if transportation is the limiting factor--all of the other necessary ingredients are present--will investments in new or upgraded facilities be likely to foster economic development. Wilson (1986), in a review of economic analyses of transportation, maintained that beginning in the late 1960s, efforts to link transportation investments directly to economic growth were wide of the mark. He concluded that the economic

development process is too complex and the role of transportation is not likely to be sufficiently dominant to allow causal relationships to be established.

## Summary

Previous research on the relationship between highway investments and economic development cannot be described as conclusive. Macro-scale, national studies of the correlation between spending on transportation infrastructure and changes in productivity say little about which projects or even types of projects are most promising.

Quasi-experimental and econometric analyses have offered certain important insights, most notably that highway investments have been associated with employment growth near metropolitan areas to a far greater degree than in rural areas. These analyses do not say why what was observed did occur, however. Whether growing metropolitan areas required better highways or whether better highways led to growth cannot be established from these analyses.

Input-output models have been used quite frequently to assess the expected economic impacts of a major highway investment. While they show which industries are likely to benefit by lower transportation costs, they do not specify what portions of increases in employment or value added are offset by losses elsewhere. Nor do they distinguish between proportional changes in larger areas versus small communities, even though empirical evidence suggests that significant differences probably exist.

Finally, industrial location analyses have sought to identify the key factors firms consider when choosing sites for their facilities. For the most part, these analyses show upgraded highway facilities to be one of the factors that is considered, but not the most important one. This indicates that investing in better highways will not foster economic growth if other critical factors are not present. Caution should be used in asking a firm why it located where it did because of a tendency to rationalize the decision made.

Perhaps the most useful insight comes from Mohring (1976) who argued that transportation investments should be judged only on the transportation cost savings they bring, not on associated land value changes or other effects. When these cost savings are sufficient, economic growth will be encouraged if the potential for that growth otherwise exists. Adler (1971) also was appropriately cautious:

It is frequently discussed that all transport improvements stimulate economic development. The sad truth is that some do, some do not, and that even some of those that do may not be economically justified in the sense that there may be better investment opportunities. Each project must therefore be investigated individually...(p.29).



## Current State Programs

Facilitating the development of a stronger economy is a primary objective of all governmental units, and the states certainly are no exception. Among the key levers available to states is the improvement of infrastructure to make areas within them more attractive to the owners of mobile resources - businesses and households. Before evaluating one state's efforts in this direction, Iowa's RISE program, it is useful to briefly examine the current practices of all 50 states.

### The Data: Survey Design and Response

To determine the nature and level of state involvement in highway investments to facilitate economic development, we sent a questionnaire to each state department of transportation. We designed the questionnaire to be generally consistent with our earlier survey in 1985, a time when state involvement was increasing (see Forkenbrock and Plazak, 1986, and Forkenbrock, 1986). Questions pertained to whether the state presently has a special economic development-related road investment program, the level of priority given to different types of development objectives, and various program features.<sup>1</sup> We were especially interested in the extent to which the programs strive to make investments that are efficient.

Response to the survey was 100 percent, after a limited number of follow-up inquiries. Most states with special programs provided supplemental information on these programs, and considerable insight was obtained on state-level investment priorities.

### Economic Development as a Priority

A majority of states, 27, actively take economic development into account in their capital improvement programs (Table 4-1). Of these states, a strong majority have special programs to fund road improvements intended to promote economic development. To gain a sense of the specific ways in which the states place emphasis on economic development in their highways programs, respondents were asked to indicate the level of importance ascribed to each of five general types of investments. Table 4-2 shows that 40 states rate investments in roads that carry relatively high traffic volumes as "extremely important." Based on our analyses presented in Chapters 2 and 3, we find this emphasis to be encouraging. We concluded that efficient

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<sup>1</sup>A copy of the questionnaire appears in the appendix.

**Table 4-1**  
**Summary of State DOT Involvement**  
**in Economic Development - 1989**

	Actively Takes Economic Development into Account in Capital Improvement Program	Has Special Highway Program to Promote Economic Development
Alabama		•
Alaska	•	
Arizona	•	•
Arkansas	•	•
California		
Colorado		
Connecticut	•	
Delaware		
Florida		•
Georgia	•	•
Hawaii		
Idaho	•	
Illinois	•	•
Indiana		
Iowa	•	•
Kansas	•	•
Kentucky	•	•
Louisiana		
Maine	•	
Maryland		
Massachusetts		•
Michigan	•	•
Minnesota	•	
Mississippi		•
Missouri		
Montana		
Nebraska		
Nevada		
New Hampshire		
New Jersey	•	
New Mexico	•	
New York		•
North Carolina	•	•
North Dakota		
Ohio	•	
Oklahoma	•	•
Oregon	•	•
Pennsylvania	•	•
Rhode Island	•	
South Carolina		•
South Dakota	•	•
Tennessee	•	•
Texas	•	
Utah		
Vermont		
Virginia		
Washington	•	•
West Virginia	•	•
Wisconsin	•	•
Wyoming		•

**Table 4-2**  
**Priority Given to Types of Highway Investment Strategies**

Type of Highway Investment <sup>a</sup>	Extremely Important	Somewhat Important	Not Very Important	Not At All Important
Roads that connect state to out-of-state markets	21	19	8	
Roads that serve rapidly growing areas in state	24	23	1	
Roads that serve areas of state experiencing especially difficult economic circumstances	9	25	13	1
Roads that carry relatively high traffic volumes	40	8		
Roads that are in relatively bad repair	41	7		
Other	10			

<sup>a</sup>Two states did not report priorities.

investments, those that result in a maximization of user benefits, are likely to provide the best stimulus to economic development.

Less encouraging is the slightly greater emphasis (“extremely important” by 41 states) on roads that are in relatively bad repair. If the roads repaired first carry substantial traffic volumes, this priority is likely to lead to an efficient allocation of state funds, but if the emphasis is on repairing the worst roads first, regardless of volumes, economic development prospects are not enhanced. As we stressed earlier, development potential may in fact be reduced if user fees are raised to relatively high levels to repair underutilized facilities just because they are in the greatest “need” of repair.

Increasing access to and from rapidly growing areas in the state is viewed as “extremely important” by about half of the states, 24. Whether the other 26 states feel that their rapidly growing areas (to the extent they have such areas) are adequately served already or not is unclear. Few states, nine, place high priority on investing in roads that serve areas of the state experiencing especially difficult economic circumstances. Georgia, for example, has an ambitious program to provide four-lane access to most communities within the state.

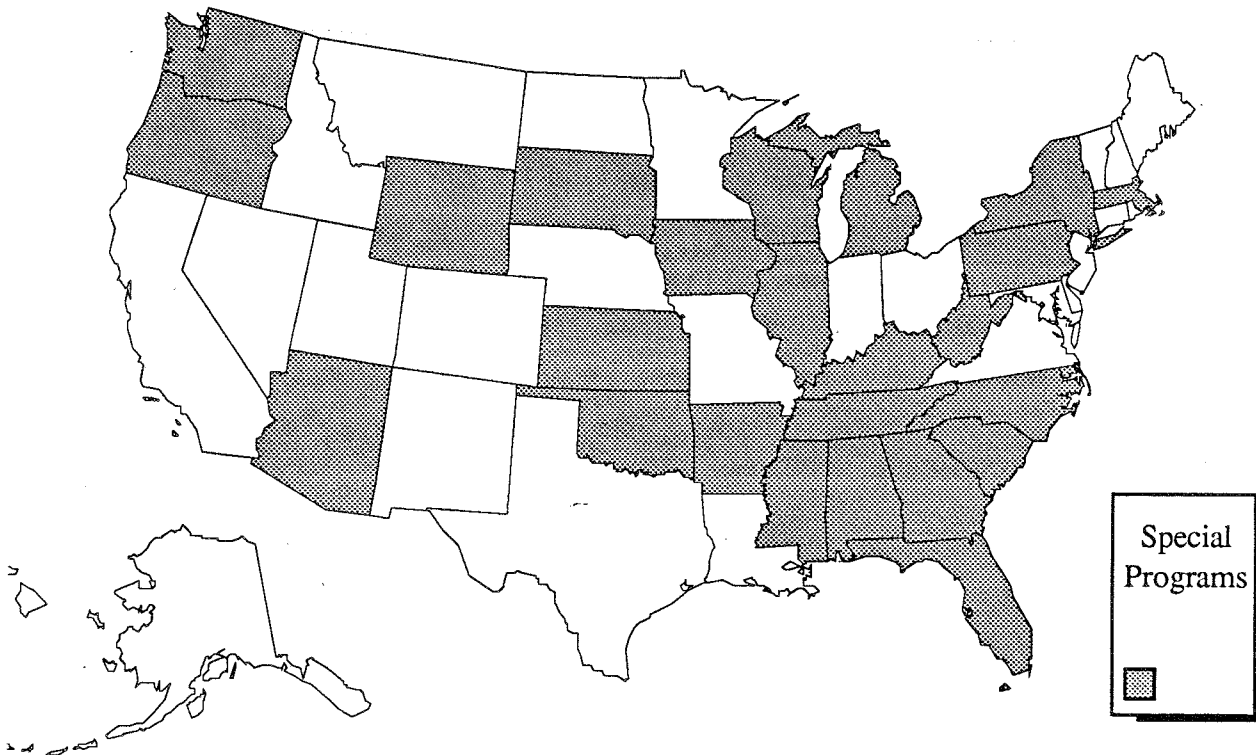
The fact that top priority rarely is given to roadbuilding in lagging parts of the state suggests that most states have concluded what we note in Chapter 3: transportation is a necessary

but definitely not a sufficient ingredient for economic development. If there is little prospect for the other key factors to be attracted to an area, transportation investments are quite unlikely to pay good dividends.

The top priorities, then, for state-level highway investment strategies are roads that need repair, that carry relatively high traffic volumes, that serve rapidly growing areas, and that connect the state to out-of-state markets.

### States with Special Programs

Twenty-four states have some type of special highway program intended in some way to foster economic development. As Figure 4-1 shows, these states are predominantly in the Southeast and "Rust Belt." It is noteworthy that special investment programs are rare in the Southwest and Plains states. Table 4-3 shows that most special programs are relatively young. Eighteen of the 24 state programs have been initiated since 1983. The four oldest programs (Kentucky, Oklahoma, Tennessee, and Wyoming) are industrial park road programs.



**Figure 4-1**  
**States With Special Highway Programs**  
**to Promote Economic Development**

**Table 4-3**  
**Details of Special Economic Development**  
**Highway Programs - 1989**

State	Program Name/Description	Year Established	Approx Annual Budget (\$m)
Alabama	Revenue bonding program	1985	Not Fixed
Arizona	Part of "Priority Programming" law	1989	0.5
Arkansas	Industrial Access Road Program	1979	0.5
Florida	Economic Development Trust Fund	1983	10.0
Georgia	Part of Governor's Road Improvement Program	1986	135.0
Illinois	Part of Build Illinois Program	1985	5.0
Iowa	Revitalize Iowa's Sound Economy (RISE)	1985	32.0
Kansas	Part of System Enhancement Program	1987	6.0
Kentucky	Through Cabinet for Economic Development	1967	5.0
Massachusetts	Public Works Economic Development Program	1983	30.0
Michigan	Transportation Economic Development Fund	1988	53.0
Mississippi	Part of 1987 Capital Improvement Program	1988	6.0
New York	Industrial Access Road Program	1985	5.0
North Carolina	Interstate Strategic Highway Network	1989	Not Fixed
Oklahoma	Industrial Access Road Program	1969	2.0
Oregon	Access Oregon	1989	5.0
Pennsylvania	Part of 12-year transportation program	1988	7.5
South Carolina	Through South Carolina Council for Economic Development	1987	60.0
South Dakota	Industrial Park Access Program	1980	1.0
Tennessee	Industrial Access Road Program	1965	3.0
Washington	Community Economic Revitalization Board	1984	10.0
West Virginia	Industrial Access Fund	1989	1.9
Wisconsin	Transportation Economic Assistance Program	1987	4.5
Wyoming	Industrial Access Road Program	1961	0.5

**Funding Levels and Sources.** Resources devoted by the states to their special programs to foster economic development through road investments vary widely. The overall average annual budget for the 24 programs is \$15.85 million, but this figure is skewed by a few very large programs. Georgia spends \$135 million annually, Iowa \$32 million, Michigan \$53 million, Massachusetts \$30 million, and South Carolina \$60 million. The average annual

expenditure for the remaining 20 states is only \$3.7 million; Alabama and North Carolina have no specified annual budget for their programs.

Table 4-4 shows that most programs are funded through single sources, but the types of funding mechanisms are quite variable. Eight states receive funds through legislative appropriations, 11 from dedicated highway user taxes, six from allocations within state departments of transportation, and five from more than one source. Only Alabama and Massachusetts use state-issued revenue bonds, although eight states' departments of transportation possess bonding authority for economic development-related projects (Alabama, Arkansas, Kansas, Kentucky, Michigan, Oregon, South Carolina, and Washington).

**Eligibility and Funding Criteria.** In 21 programs, local governments are allowed to apply for funds; thus, the program has the effect of fostering competition among communities within the state for economic development. We know of no program that actively seeks to avoid the "Sixth City" phenomenon by not funding duplicative facilities proposed by local governments. Private sector businesses can apply for funds directly in ten programs.

States vary in terms of what sort of project can qualify for funding. One major factor is whether a locational commitment by a business exists. Eighteen of the 24 states require this commitment prior to approving a grant for road improvements. Arizona, Iowa, Oklahoma, and Pennsylvania allow funding to both projects involving a firm commitment and those of a speculative nature.

Aside from eligibility the states vary in terms of the criteria that are applied to rate applicants' projects. Table 4-5 presents the number of states that use each of the criteria. The three most common criteria are level of private sector capital investment, the number of jobs assisted, and the cost to the program per job assisted. About one-third of the programs take into account the wage rate paid by the jobs that are created, and half consider the type of industry being attracted. Other criteria used by various states include Arkansas' requirement that localities provide the right-of-way and agree to provide future maintenance on the road constructed. Illinois looks toward the amount of local investment in a project. Iowa lists the largest number of criteria which include long and short range economic development potential, local initiative, transportation need and justification, economic impact and cost effectiveness, and local economic need. New York considers the potential for "spin-off" businesses associated with a given project. Oklahoma takes into account expansion potential for increased tax receipts.

**Table 4-4**  
**Funding Sources for State**  
**Economic Development Programs**

State	Highway User Charges	Legislative Appropriations	Departmental Allocations	Revenue Bonds
Alabama				•
Arizona	•			
Arkansas	•		•	
Florida		•		
Georgia		•		
Illinois		•		
Iowa	•			
Kansas	•		•	
Kentucky			•	
Massachusetts				•
Michigan	•	•		
Mississippi		•		
New York		•		
North Carolina	•			
Oklahoma	•	•		
Oregon			•	
Pennsylvania			•	
South Carolina	•			
South Dakota	•			
Tennessee		•		
Washington	•			
West Virginia	•	•		
Wisconsin	•			
Wyoming			•	

Match requirements for the 24 programs range from none (five states) to 50 percent (Illinois, West Virginia, Wisconsin, and Wyoming). In all, 13 programs have minimum match rates.

### Evaluation

Our survey has left us with the impression that the states tend to be careful in the investments they make when economic development is the objective. There is considerable evidence that state departments of transportation recognize the dim prospects that economic

**Table 4-5**  
**Criteria Used in Rating Projects**

Criteria	Percent of States Which Use Criteria
Number of jobs to be assisted.	88%
Program cost per job assisted.	71%
The type of industry associated with assisted jobs.	50%
The wage rate associated with assisted jobs.	33%
The amount of private investment associated with the project.	92%
“Other” criteria.	50%

development will follow when roads are built or upgraded in areas that are not otherwise competitive. The efficiency-based practice of investing in heavily utilized roads is indeed promising. Investing in roads serving declining areas is a priority in few states; our earlier analyses do not make us sanguine that capital-intensive roads are likely to provide a springboard from which an economic turnaround will result.

The 24 special state-level programs typically reflect carefully chosen criteria for selecting projects. Nevertheless, essentially all of the programs have several fundamental flaws:

- Duplicative facilities can be constructed that are inefficient
- Businesses may obtain cost concessions giving them resources beyond those needed to influence their decisions
- The growth in certain types of jobs very well may not actually constitute economic development
- Existing businesses may lose out in competition with the new, subsidized businesses, in which case the overall state becomes worse off.

Instances where special road-based economic development programs have particular potential for furthering the objective for which they were established include:



- Investing in roads with high traffic volumes, especially those where capacity constraints loom
- Working to connect areas demonstrating good future growth potential with out-of-state markets
- Attracting businesses that truly represent a diversification of the state's economy in strong, income producing sectors
- Reducing barriers to the effective utilization of resources with which the state is uniquely or at least competitively endowed.

In truth, many of the 24 programs have the capability of accomplishing these desirable outcomes. But most do not have sufficient safeguards to preclude rather inefficient expenditures that will actually weaken the state's competitiveness for attracting the mobile resources needed to strengthen its economy.

## CHAPTER 5 IOWA'S RISE PROGRAM

We now turn to a case study application of the concepts and generalized conclusions developed in the research presented thus far. Our survey indicates that among the 24 state-level programs for using road investments to help foster economic development, one of the larger and better documented efforts is Iowa's RISE (Revitalize Iowa's Sound Economy) program. This chapter begins with a description of RISE, its features and investment criteria. We then provide an overview of the program's funding trends to date. The criteria that the Iowa DOT uses to evaluate RISE applications are applied to 56 projects, after which we focus on 18 projects that have been completed. These 18 projects can be examined more closely because their impacts, at least in the short term, are known. All of the projects examined are "local-serving" projects in that they are relatively small-scale efforts to improve accessibility to specific locations within a particular governmental unit. A later research report will address larger, regional development highway investments.

### A Description of RISE

In 1985, the Iowa Legislature authorized the RISE program, to "promote economic development in Iowa through the establishment, construction, improvement, and maintenance of roads and streets" (Iowa DOT, 1986, p. 2). The legislation specified that RISE be funded by a dedicated gasoline tax of two cents per gallon. This tax produces annual revenues of about \$33 million. These revenues are available only to fund road projects that promote economic development. Cities and counties in Iowa apply for funding for projects within their jurisdictions (i.e., firms may not apply directly). Three different *types* of projects are eligible for funding.

- **Immediate Opportunity.** If a city or county is actively negotiating with a business and roads are an issue, application for an Immediate Opportunity RISE grant or loan can be made. Decisions on these applications are usually made within 15 working days.
- **Local Development.** In the circumstance where a city or county can demonstrate that a specific road improvement would improve its competitiveness for economic activity, it can apply for a Local Development grant. These projects are more speculative in that a particular business is not normally being recruited.

- **Regional Development.** A city or county can submit a proposal for Regional Development projects that are intended to link major population centers together or communities to Interstate highways. The number of projects accepted is small because of their relatively high cost. Approved projects are incorporated into the overall Iowa DOT Transportation Improvement Program.

No limits are placed on the amount of total RISE funding that can be allocated to each of these categories. Hence the balance of Immediate Opportunity, Local Development, and Regional Development projects is to be determined mainly by the quality of the applications submitted. The program does have one funding constraint, however. The Iowa Legislature placed specific limits on the maximum amount of funding that each type of jurisdiction can receive. No more than 50 percent of RISE funds can be spent on primary roads (state responsibility), no more than 25 percent on secondary roads (county responsibility), and no more than 25 percent on city streets and roads. This requirement was included to ensure that RISE funds would not be disproportionately spent on one type of road classification.

### **RISE Program Regulations**

Regulations governing the RISE program were issued in March, 1986, and amended in 1988 and 1989. As noted above, applicants for RISE grants or loans must be cities and/or counties in Iowa, and in fact it is the city or county with which the Iowa DOT enters into an agreement. Any road to be built with RISE funds must become a public road, with the jurisdiction in question agreeing to assume responsibility for maintaining it. The regulations have specific features for each general type of RISE project.

#### **Immediate Opportunity Projects**

Applications for Immediate Opportunity grants must be negotiating with a firm about an "immediate, nonspeculative opportunity for permanent job creation or retention" (Iowa DOT, 1986, p. 5). There are some restrictions on the types of firms that may qualify for funds. The firm must state in writing that it will not locate, expand, or remain at the site under consideration without RISE funds. All other infrastructure (e.g., water, sewer) must be in place or be provided by the applicant (city or county). The applicant must provide at least 20 percent of the total cost of the road improvement. This match can be in the form of cash or an in-kind contribution.

## **Local Development Projects**

Another type of project for which a city or county can apply, when the conditions for an Immediate Opportunity grant are not met, is the Local Development grant. These applications are accepted twice a year and are rated against each other on a number of measures. Applications for Local Development grants are rated on five factors, and preference is given to projects with high overall scores. The five factors, and their weights when the program was introduced, were:

- Development potential (30 percent) - the likelihood that development will take place at the site.
- Economic impact (30 percent) - a series of measures are used to rate the "effectiveness" of the project, including RISE dollars per job created or retained, private capital investment leveraged per RISE dollar, and jobs created or retained per 1,000 population in the county.
- Local commitment and initiative (30 percent) - how active the local economic development group is.
- Transportation need (5 percent) - the general conditions and quality of local roads serving the applicant city or county.
- Area economic need (5 percent) - whether the area has high unemployment and/or low income, relative to the state as a whole.

These weights were amended, but not significantly, in later years.

## **Regional Development Projects**

The fundamental objective for including Regional Development projects in the Iowa DOT's Transportation Improvement Program is to connect economic activity in Iowa to out-of-state locations. Given the scarcity of funds for major projects, cost effectiveness in pursuing this objective is the primary basis for selecting Regional Development projects.

## **Changes to RISE Regulations**

In 1988 and 1989, a number of specific changes were made to the RISE program's regulations (Iowa DOT, 1988).<sup>1</sup> Several new factors were added to those that the Iowa DOT considers when evaluating applications for funds. It now gives the lowest priority to firms paying

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<sup>1</sup>It should be kept in mind that the original regulations were in force when our case study projects were approved.

low wages, relative to other area businesses, and to firms that have been repeated violators of any state or federal regulations, such as those pertaining to worker safety. Additionally, the Iowa DOT is now required to consider the impact of the new firm on existing Iowa businesses.

As of 1990, 90 percent of the county portion of RISE funds will be transferred to the counties directly. Thus only ten percent of the original amount set aside for projects involving county roads remains for funding RISE projects of this type. The remaining funds will be distributed to counties based on the state's overall Road Use Tax Fund formula.

### Overview of RISE Spending

A total of 186 RISE projects was approved by the Iowa DOT in the period of July 1, 1985, to June 30, 1989. Table 5-1 presents the number of projects by program category and the funding involved. Because the focus of our analysis is on local-serving projects, not those that are regional in nature, we will examine Immediate Opportunity and Local Development projects in greater detail.

As Table 5-2 shows, the mix of local-serving projects has been changing. Through 1986, only 16 Immediate Opportunity projects were funded, leaving significant resources for Local

**Table 5-1**  
**RISE Projects**  
**Approved July 1, 1985 - June 30, 1989**

Type of Project	Number Approved	Amount Approved <sup>a</sup> (millions)	Average Project Cost to RISE
Immediate Opportunity	56	\$14.47	\$258,393
Local Development	116	\$42.01	\$362,155
Regional Development	14	\$123.30	\$8,806,786
Total	186	\$179.78 <sup>b</sup>	

<sup>a</sup> Effective cost to RISE program; allows for payback of some funds (e.g., low-interest loans) by some applicants.

<sup>b</sup> Note that \$179.78 million exceeds the amount of revenue available to the RISE program for fiscal years 1986-1989. Some of the approved projects involve encumbering funds for future years.

**Table 5-2**  
**Local RISE Projects Approved by Year**

Project Type	1985 <sup>a</sup>	1986	1987	1988	1989 <sup>a</sup>	Total
Immediate Opportunity	4	12	18	16	6	56
Local Development	0	55	33	20	8	116
<b>Total</b>	<b>4</b>	<b>67</b>	<b>51</b>	<b>36</b>	<b>14</b>	<b>172</b>

<sup>a</sup> Data are for six months only.

Development projects. Over time the number of Local Development projects approved has diminished. It is also worth noting, though, that the annual number of Immediate Opportunity projects peaked in 1987 and has tapered off since.

Table 5-3 indicates that funding levels approved over the four-year period closely track the numbers of projects, implying that mean project sizes have not changed greatly. Since 1986, funds committed to local projects have not represented a sizable part of the revenue generated by the earmarked two-cent motor fuel tax. Part of the reason for this is the apparent difficulty in obtaining good project applications for county projects (recall that 25 percent of RISE funds are to be spent on county projects). It was this dearth of projects that led the Iowa Legislature in 1989 to shift most of the county portion of RISE to the routine Road Use Tax Fund for distribution to the state's 99 counties.

For the period May 30, 1985, through September 30, 1987, for which we have data, about half of all applications for Immediate Opportunity funds were approved. A significant number of those not approved were resubmitted as Local Development projects. Of 72 applications for

**Table 5-3**  
**Local RISE Funds Approved by Year**  
**(millions)**

Project Type	1985 <sup>a</sup>	1986	1987	1988	1989 <sup>a</sup>	Total
Immediate Opportunity	\$1.8	\$3.6	\$4.7	\$3.2	\$1.2	\$14.5
Local Development	0.0	24.0	10.2	5.8	2.0	42.0
<b>Total</b>	<b>\$1.8</b>	<b>\$27.6</b>	<b>\$14.9</b>	<b>\$9.0</b>	<b>\$3.2</b>	<b>\$56.5</b>

<sup>a</sup>Data are for six months only.

Immediate Opportunity funds, 33 were withdrawn or returned before consideration because they did not meet the basic eligibility requirements of the program. Fifteen were then resubmitted as Local Development projects. Of the remaining 39, three were pending at the end of the period. For the 36 applications that completed the process 32 were funded, three were changed to Local Development applications, and one was not funded.

A total of 182 applications was made for Local Development Projects, including those that began as Immediate Opportunity applications. Only two of these were withdrawn, and 33 were still being reviewed. Of the remaining 147, 77 were funded and 70 were not. As of December, 1989, eight Immediate Opportunity and Local Development projects that had been approved were subsequently revoked or scaled back by the Iowa DOT. As a result, a total of \$2.68 million in RISE funding was withdrawn.

### **A Preliminary Overview: 56 Immediate Opportunity Projects**

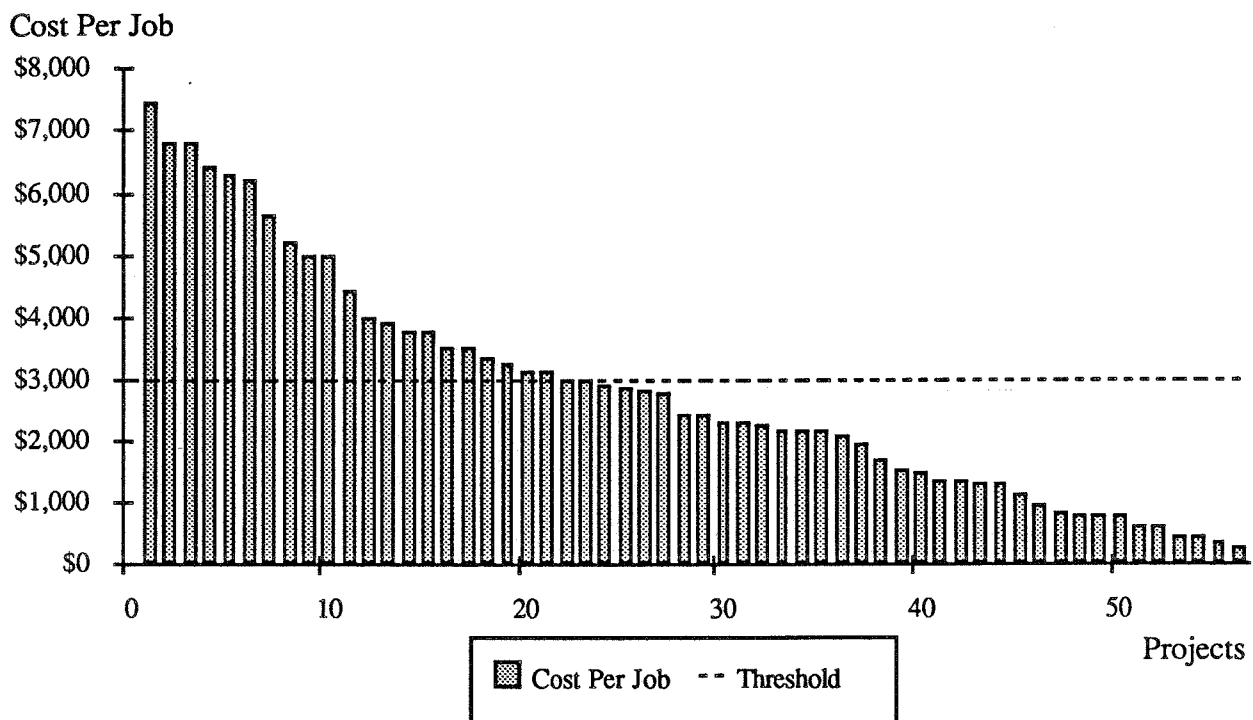
As described earlier, Immediate Opportunity projects involve the attraction of a specific firm, while Local Development projects do not. Rather, the latter are intended to improve prospects for an area's future development. Because Local Development projects' impacts are less quickly realized, it is not yet feasible to evaluate the overall performance of this category of projects. For this reason we focus our analysis on Immediate Opportunity projects.

When evaluating Immediate Opportunity applications, the Iowa DOT uses two numerical measures to assess the probable impact of a project and the cost-effectiveness of funding it: RISE cost per job assisted and non-RISE (private and other public) capital investment per RISE dollar contributed (we use the term "capital investment ratio" to signify this non-RISE investment). A general picture of how the 56 Immediate Opportunity projects approved to date size up against these measures follows.

#### **RISE Cost Per Job Assisted**

Each application for an Immediate Opportunity project must include an estimate of the number of jobs that will be created or retained by the business to benefit from the proposed project. For the 56 projects approved through June 30, 1989, the firms involved projected that a total of 6,374 jobs would be assisted. We have divided each RISE grant by the projected number of jobs to be assisted to arrive at the RISE cost per job assisted. The number of jobs assisted by each project includes both the projected increase in employment and any retained jobs.

Figure 5-1 shows that the RISE cost per job assisted has varied substantially from a high of about \$7,500 to a low of several hundred dollars. To provide a reference, we have drawn a horizontal line in Figure 5-1 at \$3,000, which is the rough target figure used by the Iowa DOT to study the cost-effectiveness of proposed projects (see Forkenbrock and Plazak, 1986, p. 155). About 40 percent of the 56 projects exceeded this figure. It should be noted that the data depicted in Figure 5-1 pertain only to RISE contributions. Some of the projects have also been assisted by other state agencies. Our detailed evaluation of 18 Immediate Opportunity projects later in the chapter examines the patterns of multi-source government assistance.



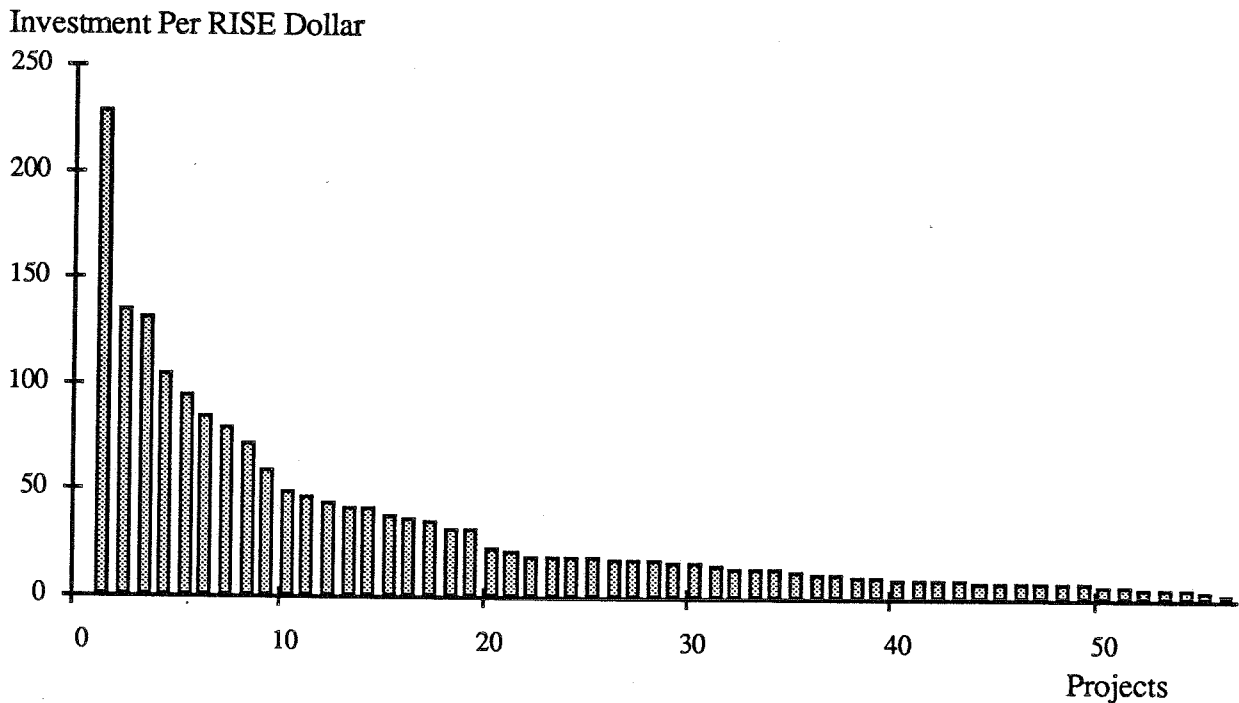
**Figure 5-1**  
**RISE Cost Per Job Assisted for 56**  
**Immediate Opportunity Projects Through June 30, 1989**

### Non-RISE Capital Investment Per RISE Dollar

The other measure used by the Iowa DOT when examining proposed Immediate Opportunity projects is non-RISE investment per RISE dollar. The non-RISE investment consists of some mix of public (state, county, or municipal) and private sector resources. Projects with higher leveraging of private or other public capital are viewed favorably, and a minimum of five to one is desired (see Forkenbrock and Plazak, 1986, p. 155). Figure 5-2 shows that the average



project involved a capital investment ratio of approximately \$27 per RISE dollar. Only three of the 56 projects approved did not meet the five-to-one threshold.



**Figure 5-2**  
**Private and Other Public Capital Investment Per RISE Dollar for 56**  
**Immediate Opportunity Projects Through June 30, 1989**

### **Case Study Analysis: 18 Completed Projects**

We now turn to 18 Immediate Opportunity projects for more detailed analysis. To help provide a context for our evaluation, the 18 projects are summarized in Table 5-4. The names of specific projects (e.g., Cedar Rapids (C)) are those assigned by the Iowa DOT. Several points about the case study projects should be kept in mind. They include:

- *All 18 case study projects are Immediate Opportunity projects. We cannot use any Local Development projects because very little development has actually occurred at any of the sites assisted. Similarly, most Regional Development projects are long-term in nature and will not be completed until the 1990s. Because we must have some idea of how the projects have actually performed, we can only use Immediate Opportunity projects.*

**Table 5-4  
Eighteen RISE Case Study Projects  
Basic Descriptions**

Applicant for Funds	Case Number	Type of Development	Total All Funding Sources <sup>a</sup>	Projected Capital Expenditures	Projected Change in Employment <sup>b</sup>	Actual Change in Employment <sup>c</sup>	Road Project Description
Cedar Rapids (A)	1	Electronics	\$200,000	\$4,350,000	60	177	Pave 1 mile connecting road
Cedar Rapids (C)	2	Hotel/Convention Ctr.	\$85,200	\$11,211,300	75	213	Road improvements
Clinton	3	Animal Food Proc.	\$94,000	\$4,117,800	25	NA <sup>d</sup>	New street to industrial park
Clive	4	Various	\$1,006,500	\$15,754,900	336	351	Relocate road; replace bridge
Coralville	5	Electronics	\$1,376,663	\$24,651,498	600	660	Pave, improve existing intersection
Dubuque County (A)	6	Plastics	\$762,129	\$5,368,963	65	65	Extend industrial park road
Fort Dodge	7	Barcoding/Packaging	\$376,355	\$3,879,289	60	22	Extend road into industrial park
Humboldt	8	Boat Mfg.	\$37,976	\$516,344	45	80	Construct new road in industrial park
Iowa County	9	Tourism	\$260,000	\$1,120,400	35	46	Construct new roadway
Mahaska Co.	10	Tools	\$487,476	\$2,740,600	60	60	Pave connecting road
Manchester (A)	11	Electronics	\$341,996	\$1,736,026	200	330	Repair, extend road into industrial park
Maquoketa (A)	12	Boat Trailers	\$87,730	\$553,180	25	0 <sup>e</sup>	Extend street into industrial park
Maquoketa (B)	13	Automotive Lifts Mfg.	\$112,837	\$370,209	70	30	Pave existing street
Mt. Pleasant (A)	14	Motel/Restaurant	\$25,000	\$1,990,000	32	59	Pave connecting frontage road
New Hampton	15	Transmissions	\$82,285	\$249,840	75	30	Street extension
Orange City (A)	16	Frozen Foods	\$72,800	\$1,518,200	25	74	Improve entrance to industrial park
Panora	17	Windows/Warehouse	\$223,000	\$2,227,000	80	0 <sup>f</sup>	Reconstruction and new roadway
Sioux City	18	Honey	\$901,590	\$5,613,000	150	94 <sup>g</sup>	Street relocation
<b>TOTAL</b>			<b>\$6,533,537</b>	<b>\$87,968,549</b>	<b>2,018</b>	<b>2,291</b>	

<sup>a</sup> RISE, CEBA, Set Aside

<sup>b</sup> Projected increase in employment plus job retentions, if applicable.

<sup>c</sup> Reported increase in employment plus job retentions, if applicable. Data as of December, 1989.

<sup>d</sup> Data not available.

<sup>e</sup> Firm bankrupt; had employed 9 workers during its existence.

<sup>f</sup> No development took place.

<sup>g</sup> Development delayed. Ninety-four jobs were retained by a firm for which one hundred jobs were projected to be retained.

- *Case study projects were approved early, giving time for development to have taken place.* Of the total of 56 Immediate Opportunity projects approved through 1989, we have selected 18 of the earliest. These projects were approved in the period between June, 1985, and September, 1987.
- *Case study projects are typical of the overall group.* Using the simple measures of RISE cost per job and capital investment ratio, the 18 case studies are fairly representative of all 56 Immediate Opportunity projects that have been assisted. However, because these 18 projects were among the earliest to be approved, we cannot be sure that they are of the same general quality as those approved later. The Iowa DOT now evaluates proposals differently than it did at the time of these early applications, as experience has been gained and legislation modified.

As was done in our overview of all 56 Immediate Opportunity projects approved so far, we apply the two key performance-based criteria used by the Iowa DOT in reviewing project proposals. Although these are not the only factors taken into account, taken together they do represent the essence of what a successful RISE application should have: a large number of jobs at a low cost to the program, with significant leveraging of other investment dollars. Later, in Chapter 6, we apply a comprehensive framework derived from Chapters 2 and 3 to assess the effects of these projects on economic development within the state.

### **RISE Cost Per Job Assisted**

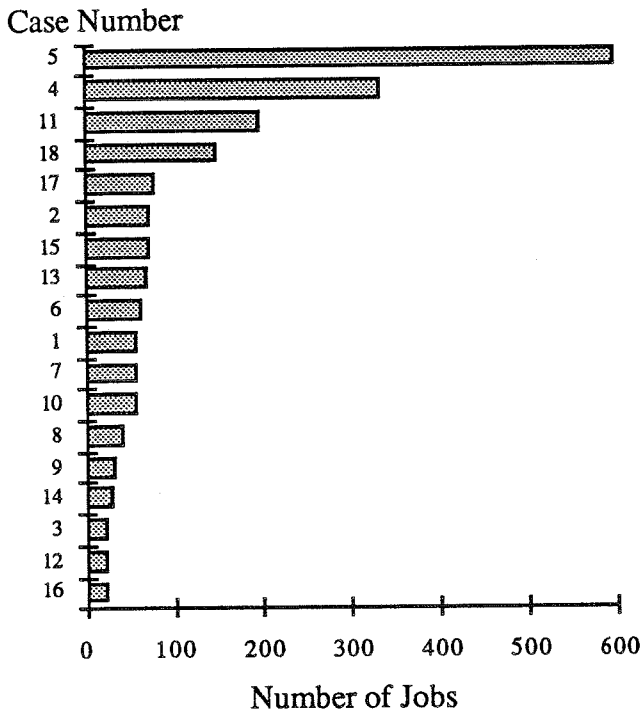
Figure 5-3 shows the number of jobs that the applicants projected would be created and retained at each of the 18 projects. Most projects involve fewer than 100 jobs, with an average of 112 jobs and a median of 65 jobs. Figure 5-4 shows, for each project, the percent of the number of *projected* jobs that were *reported* to actually exist in 1989. For example, Coralville (case number 5), projected an increase of 600 jobs, and the reported number employed in 1989 represented 110 percent of this projected increase. As Figure 5-4 shows, the “success” of each project in creating the number of promised jobs varies greatly. With a few projects, the reported employment level in 1989 represents an increase of two or three times the projected increase; several others barely reached half.<sup>2</sup> Overall, the number of reported jobs in 1989 reflects an

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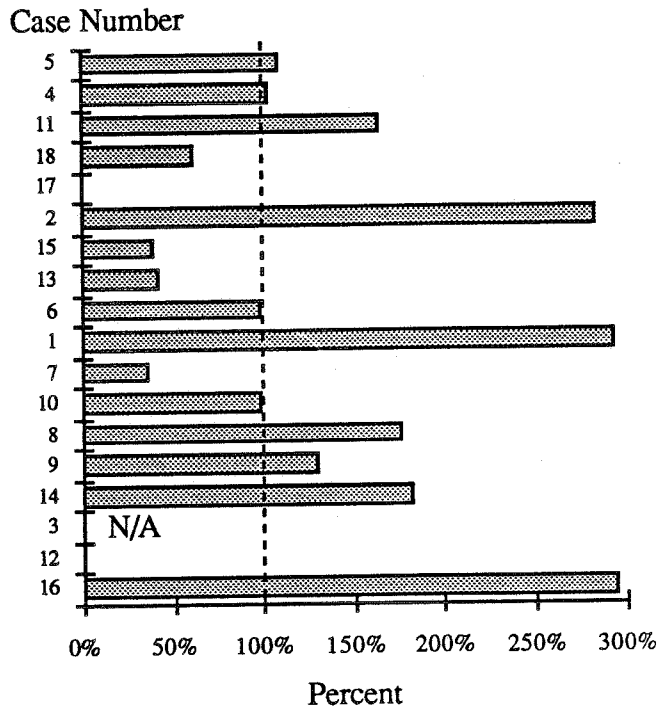
<sup>2</sup>Of the 18 projects, the planned development did not take place in two instances (case numbers 17 and 14), although at the latter a restaurant was built instead of the planned motel. One project (number 18) has been delayed; 94 jobs have been retained of 100 projected, but no employment increase has taken place. Data were not available for one project (number 3). At one project (number 12) the firm began operations but has since declared bankruptcy.

increase of about 115 percent of the total projected increase, though one applicant had not reported as of the time of our analysis.

In Figure 5-4 and in those to follow we use "N/A" to signify that information was not available. Other situations where a bar is not displayed indicate values of zero or cases where the value cannot be calculated (e.g., the reported cost per job where no jobs were added).



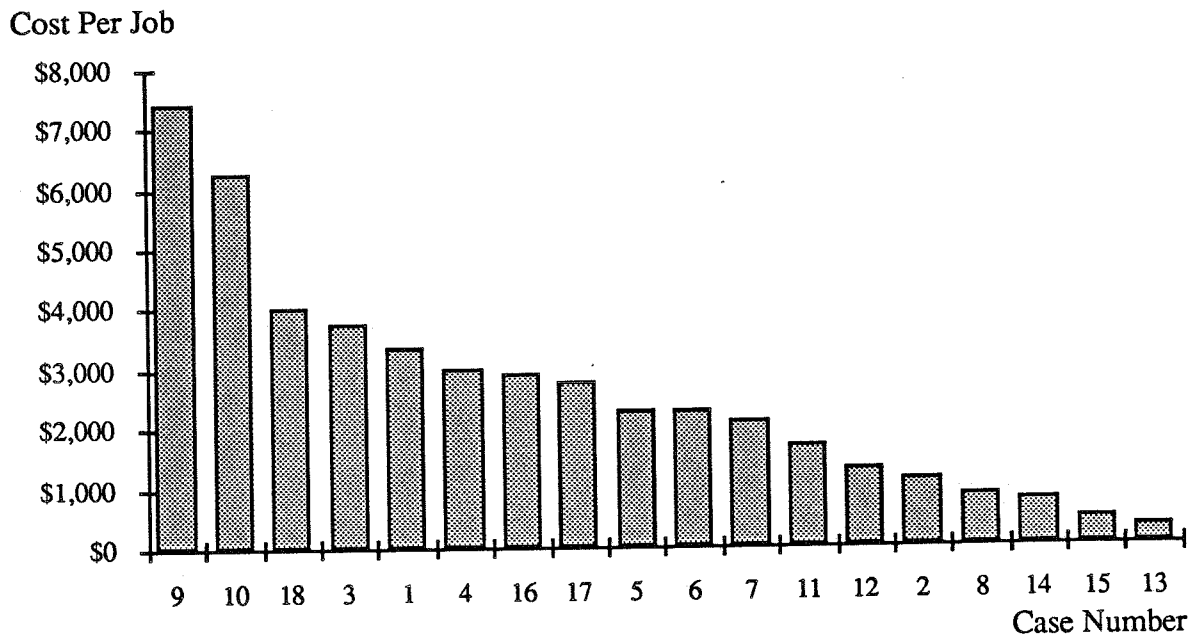
**Figure 5-3**  
**Projected Increase and Retention of Jobs at RISE Projects**



**Figure 5-4**  
**Reported Increase and Retention as Percent of Projected Increase and Retention**

There is a problem in measuring projected and reported increases in jobs when rating an application and when evaluating the project a few years after it was funded. What we wish to know is whether the projected or reported increase in employment at the assisted firm represents a *net* increase in total employment in the state. In practice, we cannot ascertain how many of these jobs are new and how many are simply transferred from somewhere else in Iowa. If only half of the increased jobs are new, the effectiveness of the program is clearly much less than might otherwise be thought. It is impossible to accurately assess the impact of any RISE project without being able to determine whether any job gains are on net, new jobs for the state.

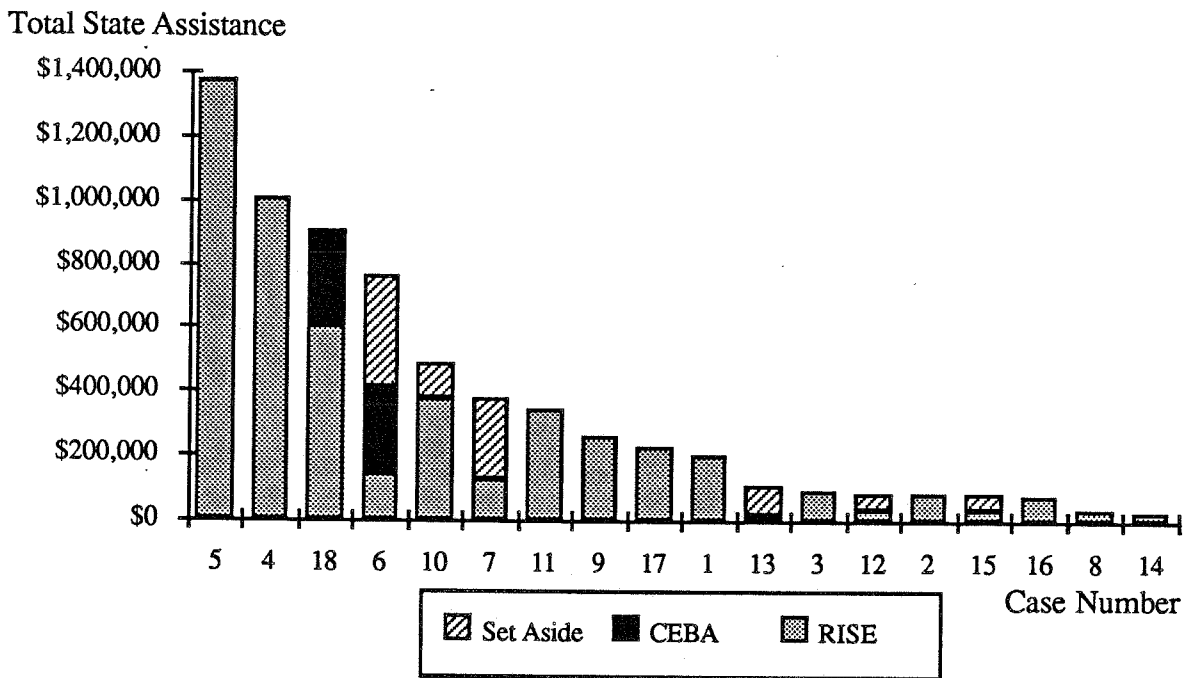
The projected cost per job to the RISE program is shown in Figure 5-5. Across the 18 projects the cost ranges from \$298 to \$7,429; these figures take into account both projected increases in the number of jobs and jobs that are retained. The weighted average RISE cost per job for the 18 projects is \$2,509. This figure is pushed upward somewhat by two projects, Iowa County (case number 9) and Mahaska County (case number 10), that had comparatively high costs per job.



**Figure 5-5**  
**Projected RISE Cost Per Job**

While all of our 18 case studies received grants and, in some cases, loans from the RISE program, a number of these projects was also assisted by other state agencies within Iowa. To better understand the relationship between assistance and job creation, we use as our definition of assistance the total a firm was granted by each of the three major industrial attraction programs in Iowa: RISE grants and loans, Economic Development Set Aside grants, and CEBA (Community Economic Betterment Assistance) grants<sup>3</sup>. Seven of our 18 projects received more than one of these forms of assistance; Figure 5-6 presents a graphic breakdown for each project. In a few cases RISE was only a minor part of the total assistance package. It should be pointed out that we have not included all forms of assistance that are available to firms. In addition to the three

<sup>3</sup>Set Aside grants are part of the Community Development Block Grant (CDBG) program. The CEBA program is state funded using proceeds of the Iowa lottery.

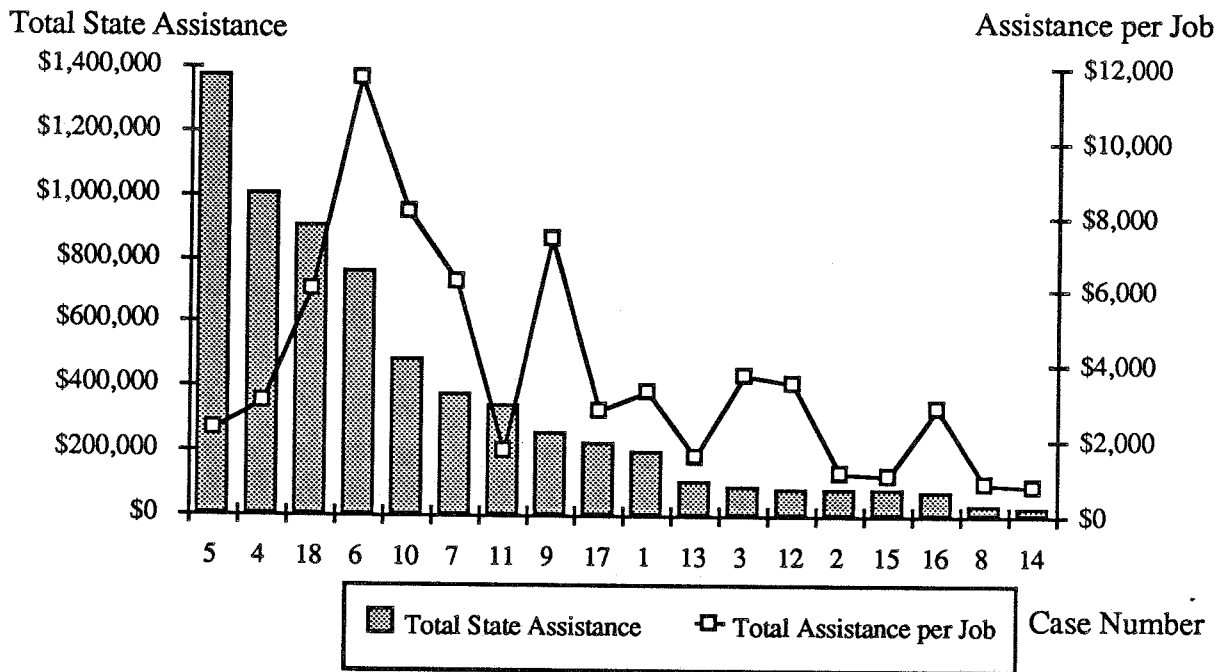


**Figure 5-6**  
**Total State Assistance for 18 Projects:**  
**RISE, Set Aside, and CEBA**

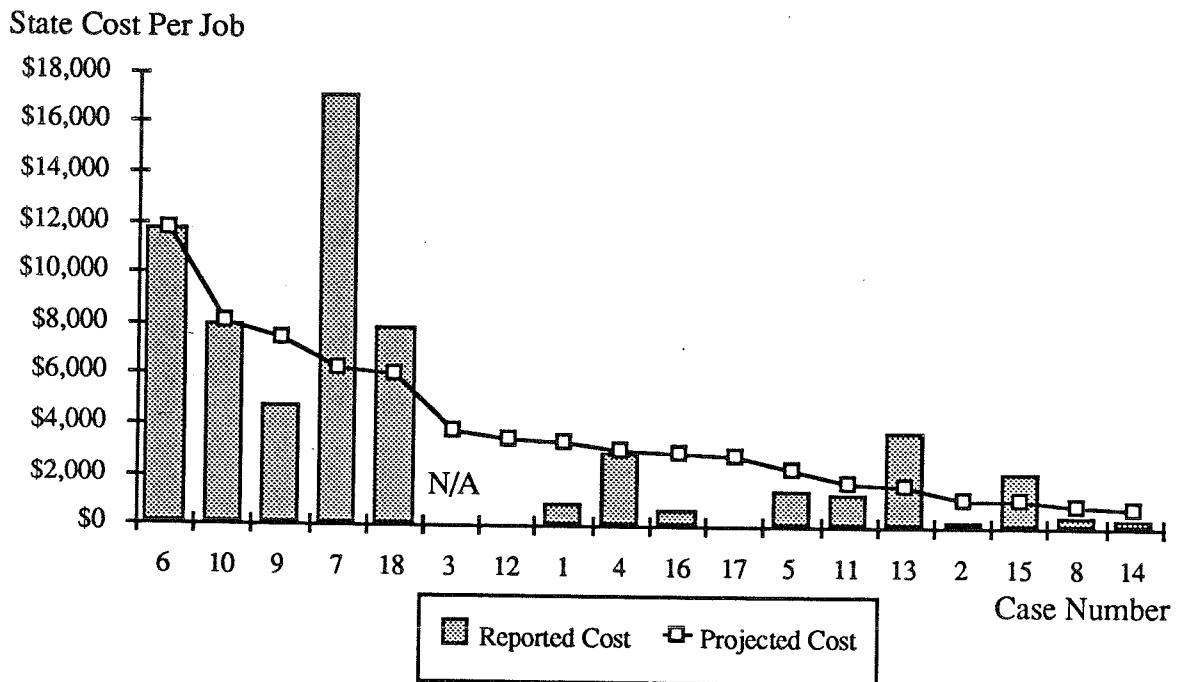
programs just mentioned, new firms in Iowa can receive job training grants administered through community colleges. Moreover, local communities frequently provide assistance ranging from infrastructure improvements to tax abatements.

Figure 5-7 shows that some projects which received large total amounts of assistance also projected large numbers of jobs, making the state cost per job fairly small. Conversely, some projects received relatively small amounts of assistance but had costs per job that were comparatively high. Because a sufficient amount of time has passed, it is now possible to measure the reported state cost per job for the case studies and to compare it to what was projected. The projected increase and reported change in number of jobs per dollar of state assistance are shown in Figure 5-8. For the 18 projects, the projected state cost per job varied from \$781 to \$11,725, and the weighted average state cost per job was \$3,238. Considering what actually took place, the reported state cost per job<sup>4</sup> ranged from \$244 to \$17,107, although no information is available for one project. Additionally, in one case no development took place, and at another project site, a

<sup>4</sup>Reported cost equals RISE funds committed plus CEBA grant plus Set Aside grant *less* any savings in actual road costs (some projects cost less than estimated). Reported jobs were derived from applicant surveys administered by the Iowa DOT.



**Figure 5-7**  
**State Assistance and**  
**State Assistance Per Job (Projected)**



**Figure 5-8**  
**State Cost Per Job:**  
**Reported Versus Projected**

firm began operations but later was bankrupt; no cost per job can be calculated for these two projects. The weighted average reported state cost per job for the 17 projects was slightly less than \$2,500 as of December, 1989.

We encountered certain practical difficulties in applying the cost per job measure. From the state of Iowa's point of view, the relevant cost per job should include all state assistance, in whatever form. To be useful in any sense, the relevant cost per job should be an all-inclusive measure. Furthermore, the number of jobs at each of these 18 projects was self-reported by the firms involved. Whether the firms have used consistent bases for determining these figures is open to question. Obtaining consistency would either require significant administrative resources within the Iowa DOT or the use of another source of information on employment that is internally consistent. Even if we had perfect data on gross jobs created and cost per job, it is not clear that these help us determine whether economic development has, or will, take place. They do not relate directly to the question of whether the state's residents have increased their overall wealth, over what would have happened otherwise.

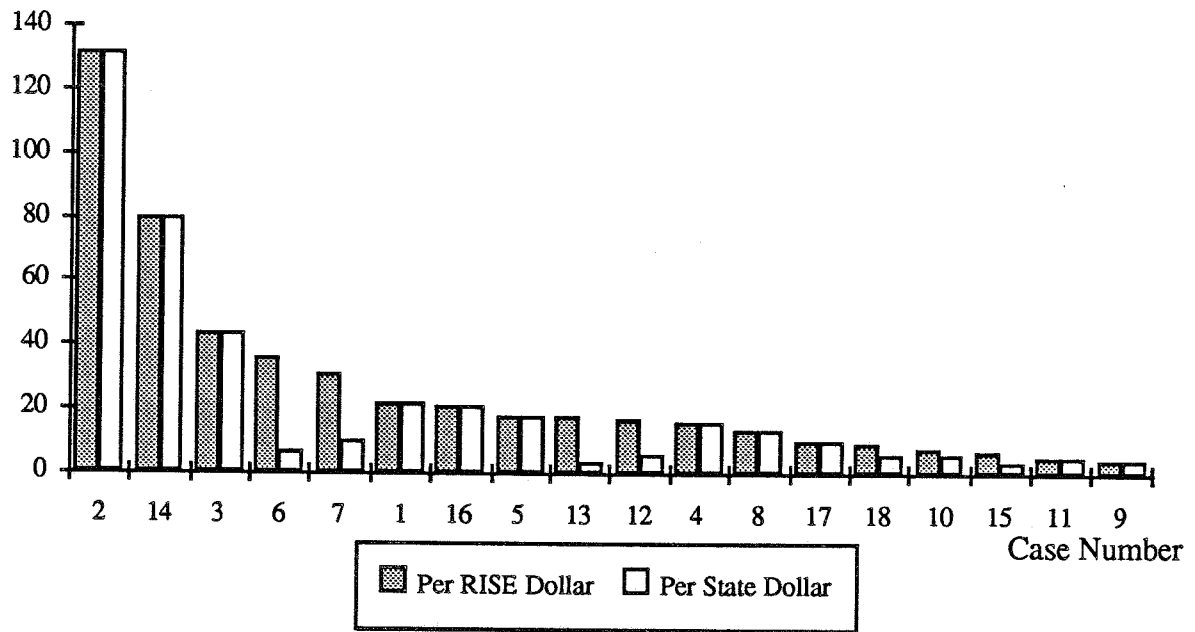
#### **Private and Non-RISE Public Investment Per RISE Dollar**

The other major criterion used to review proposed RISE Immediate Opportunity projects is the private and non-RISE public investment leveraged by each dollar of RISE assistance, termed "capital investment ratio". As with cost per job, care must be taken to include assistance from all state sources. To illustrate the importance of doing so, we have compared the capital investment ratio for only RISE assistance with the capital investment ratio for all state assistance. Figure 5-9 shows this comparison. As the figure shows, for those projects that did receive other kinds of assistance, the capital investment ratio is significantly reduced when this other assistance is included. For the 13 projects where information is available, Figure 5-10 shows the reported capital investment ratio versus the projected capital investment ratio, for all state assistance granted to each project.

Figure 5-9 and 5-10 have the various RISE projects ordered the same on the horizontal axis to facilitate comparison. Overall, the reported capital investment ratio for the 13 projects of slightly over 11 to one is approximately 20 percent less than the projected ratio of about 14 to one. It should be noted that case numbers 15 and 9 on the right end of Figure 5-10 had very small capital investment ratios, so their good performance does not contribute much to the overall reported capital investment ratio.

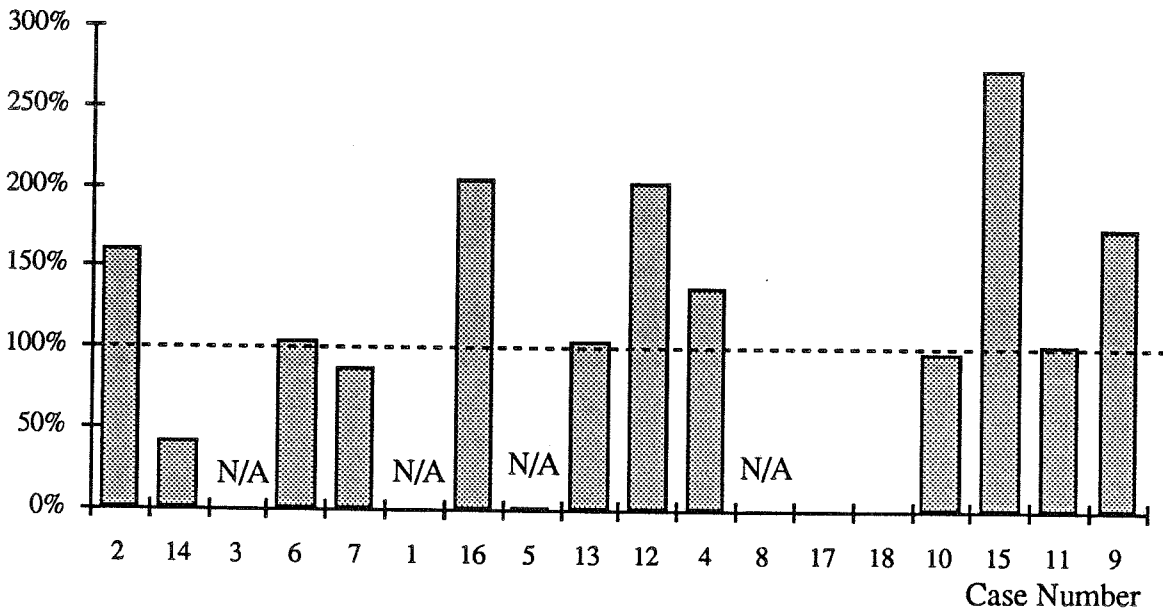


Dollars of Capital Investment



**Figure 5-9**  
Capital Investment Ratios for RISE Assistance and Total State Assistance

Reported/Projected



**Figure 5-10**  
Capital Investment Ratios for State Assistance: Reported Versus Projected

In applying the capital investment ratio, we find the same set of problems as with job increases. We do not know how much of this investment would have taken place in the absence of the project at this site or at another site in Iowa. In fact, investment and jobs are really two sides of the same coin; they both measure economic activity at a given site. As such, both suffer from the same drawback in that they are *gross*, rather than *net* measures. We cannot use them without some way of determining whether they are additional to the state, or simply the appearance of jobs or investment that would have taken place regardless of the project.

### **Wages Rate as a Criterion**

After RISE had operated for several years, the Iowa DOT was directed to introduce another major criterion to use in its application process, wages paid by the applying firm. Although the 18 case studies were approved before wages became a major focus of concern, we also use this measure to address the broader question of how useful wages are in helping us determine a project's value. Are wages really a good measure of benefits, or do they mislead us?

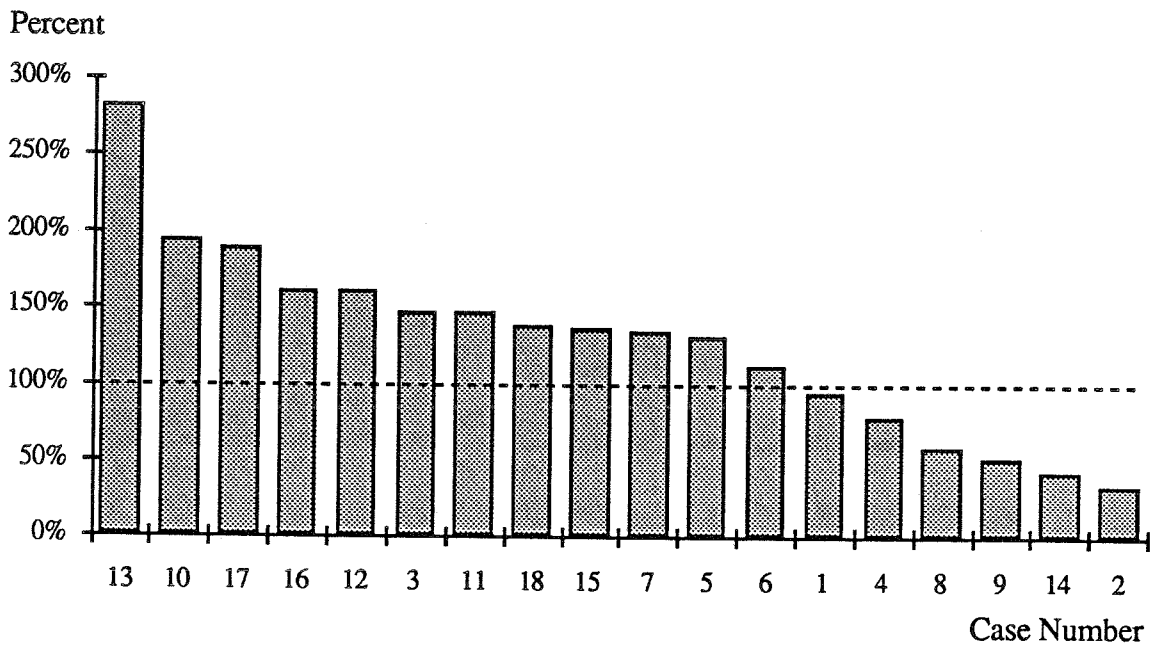
At first sight, it might appear that we could simply say that ten new workers earning \$17,000 each implies that the project has annual benefits of \$170,000. But this approach would lead to incorrect conclusions for two basic reasons. First, as with the increase in jobs, we cannot be sure that all of the jobs are new. Transferred jobs will bring transferred wages with them. Second, even for net new jobs, \$17,000 will not be a measure of the increased income from the project for an individual worker. We have to consider what the individual was doing before the project was undertaken; he or she previously could have been employed or out of the paid labor force.

For an employed worker moving from another job, the income gain would be \$17,000 less his or her previous wage (and allowing for any moving costs). In most cases, the gain would be much less than \$17,000. In the case of a person joining the paid labor force, the gain would be \$17,000 less the value of his or her current activities. These activities have value to the individual who enters the paid labor force even though they are not "paid" activities that produce market-traded goods and services. Hence the monetary gain to an individual of entering the paid labor force might be close to \$17,000, but the net gain must reflect the lost value from the activity foregone.

Thus, as with the increase in jobs, it is apparent that we would need an enormous amount of information about the new workers at each project before we could begin to estimate the benefits that Iowans receive as a group from the wages paid at any given project. Wages paid are simply

the *gross* increase in income appearing at the project site - we really want to know the *net* increase that the completion of this project caused.

**Industry Versus Average County Wages.** Although we cannot use wages, *per se*, as a way of measuring the economic benefits of a project, we can try to gain some general insights from the wages paid by the case study firms. To do this, we compare the wages paid by the *industry* the firm represents to the average *county* wage where the project is located. In doing this, we are asking the broad question, do the industries aided by RISE offer higher wages than the average paid in the counties where they are locating? Figure 5-11 shows how the industry wage rates in Iowa<sup>5</sup> and county wage rate<sup>6</sup> vary for the 18 case study projects. In most cases the industry wage rate exceeds the county wage rate by a significant margin.



**Figure 5-11**  
**Industry Wage as a Percent of**  
**Average County Wage (1987)**

<sup>5</sup>Each firm has been assigned to a Standard Industrial Classification (SIC) code, using the *Iowa Manufacturer's Directory, 1987*, and *Iowa Manufacturers Register, 1987*. Wage rates for each SIC code for Iowa as a whole are drawn from *County Business Patterns, 1987*.

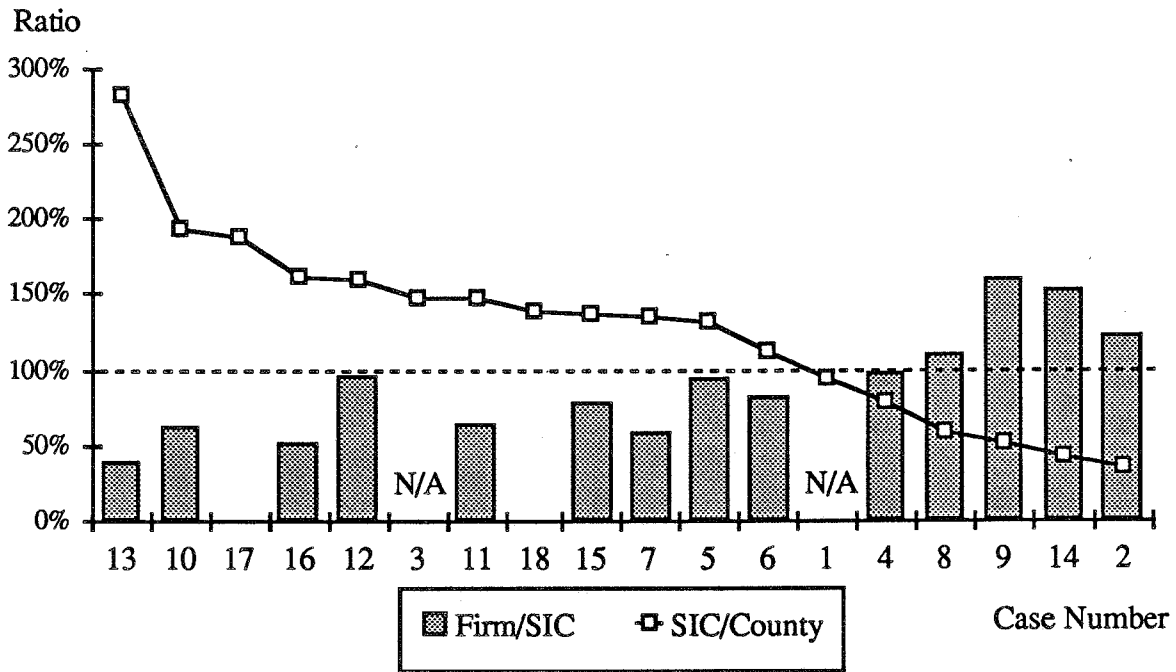
<sup>6</sup>Average county wage rates are also drawn from *County Business Patterns, 1987*

Can we say that RISE is having the effect of drawing high-wage industries to most counties? Perhaps, but at least two factors make it difficult to draw so general a conclusion. First, most RISE projects involve manufacturing firms, which tend to pay higher wages than non-manufacturing firms. Hence the county average wage, which has a smaller concentration of manufacturing industry, should have a lower average wage. Second, the data we have compared are each expressed as total annual payroll per worker. Because the proportion of part-time workers is less in manufacturing industry than in the overall economy, we would again expect average annual wages to be higher in manufacturing.

**Firm Versus Industry Wages.** Of course, each firm aided by a RISE grant pays its own wages, not the average of the industry of which it is a part. Using data collected by the Iowa DOT on the 18 case studies, we can examine how the wages case study firms report they paid compare to the average paid by their industry groups in Iowa. Figure 5-12 shows this comparison. The projects are ranked again by the industry/county wage ratio to highlight the difference between industry wage rates and individual firm wage rates.

From these data, it appears that that the case studies as a group tend to pay less than their industry averages. If true this finding would not be completely unexpected. Many of these firms are located in rural counties where the average wage level is less than in Polk County (where Des Moines is located) and other metropolitan counties. Because the state-wide industry wage level is influenced by wages in Des Moines, what may be happening is that to some extent firms are attracted by lower wage rates in rural areas (or repelled by higher wage rates in Des Moines).

As with the comparison between industry and county wage levels, however, several problems arise with this conclusion. The average number of hours worked per year may be lower for our case study firms than for the average firm in each industry, although we would expect that they would be similar within a given industry. The two case studies with the highest ratios of wages paid by the firm to wages paid by its industry are cases 9 and 14, with ratios of over 150 percent. The former case study involves tourism and the latter is a restaurant; both these industries have predominantly part-time workers. Our estimates of workers' incomes at these firms is based on an hourly wage and full-time, full-year work. It may well be that workers at these firms do not earn significantly more than others in the same industry, if a more typical part-time assumption is made. Moreover, we cannot be sure that the average wage rate self-reported by each firm is measured on a consistent basis with the industry wage rates.



**Figure 5-12**  
**Firm Versus Industry Wage Ratio and**  
**Industry Versus County Wage Ratio**

Note: Reported wage rates are for 1989, while the average county wage rate is for 1987.

Wage data by themselves can tell us very little about the effect of any given project on economic development. Two major problems are apparent. First, it would be very costly to collect all the data we need to even approximate the increase in income that results from a project. Even making simple comparisons with the data we do have is fraught with difficulty. Second, we still face the problem of determining whether the new jobs we see at each project are simply mirrored by losses that are less visible elsewhere. The data available are such that any conclusions we can make are at best only suggestive; we simply cannot be confident of these findings without much more detailed data.

### Summary

Iowa's RISE program was established in 1985 and now has an annual budget of about \$33 million. Three general types of projects are eligible, Immediate Opportunity, Local Development, and Regional Development. Because Immediate Opportunity projects lead to impacts that are measurable in the short term, we have focused on this category of local-serving projects. Regional development projects will be addressed in a later report.

In evaluating applications for Immediate Opportunity projects submitted by counties or municipalities, the Iowa DOT uses two key measures. They include the cost to the RISE program per job and a capital investment ratio that compares the RISE investment to the amount to be invested by the applicant county or municipality and private businesses. Our examination of these measures suggests that while their performance orientation has its virtues, significant conceptual and practical difficulties exist with them.

## **CHAPTER 6**

### **EVALUATION OF RISE**

### **IMMEDIATE OPPORTUNITY PROJECTS**

We now turn to an examination of the economic development impacts of the 18 case study RISE Immediate Opportunity projects. To guide our analysis we first present a framework that is consistent with the conceptual material in earlier chapters. We then use this framework to derive five "screens" that enable us to examine the extent to which economic development is facilitated by the respective RISE projects.

#### **A Generalized Evaluation Framework**

Each RISE project aims at improving transportation access to one or a few sites. The objective is to reduce the transportation costs involved in using the sites as locations for mobile businesses and to induce such businesses to choose Iowa sites when they would not otherwise do so. If the end result of the project is to be economic development, incomes of resources employed in Iowa must be increased. These income gains may accrue to the firm being attracted and to others within the area in some combination. The framework we present is depicted in Figure 6-1 later in the chapter. This figure is useful when following the relationships discussed in this section.

#### **Project Benefits and Costs**

Using scarce economic resources (land, labor, and capital) for a RISE project necessarily precludes using them to produce other private and public goods -- for example, private housing and public schools. The value of these foregone goods is the opportunity cost or simply the cost of the project. This value is measured by the public resources going into the project because those resources could either be used to fund other public activities or be rebated to taxpayers<sup>1</sup>. A central question in evaluating a RISE project is whether it generates net benefits (benefits exceeding its costs) when full account is taken of the cost of the project and its effects on all Iowans' incomes.

Locating a new firm in a particular community (or expanding an existing firm) may affect the incomes of the firm's owners and others in the state, with both income gains and income losses

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<sup>1</sup>The tax revenues required to finance a project may not measure its full cost. As noted earlier, there may be other costs such as air and noise pollution.

being possible. Building or improving a road to serve the firm may similarly generate income gains and losses. Taking account of all of these income changes, the net benefits,  $B_r$ , of having a firm locate or expand at a RISE site and undertaking the road project are:

$$B_r = W_r + (P_r - P^*) - C,$$

where  $W_r$  is the sum of the gains and losses to all income recipients other than the owners of the firm if it locates at the RISE site rather than at the best alternative site *and* the road is improved;  $W_r$  includes public and private sector gains and losses.  $P_r$  is the net income that the firm earns on its capital investment if it locates or expands at the RISE site *with* the road improvement.  $P^*$  is the net income that this same capital investment would earn for the firm in its best alternative use, which could be the same activity at another location or simply an investment in financial assets.  $C$  is the cost to the state of the road improvement. All magnitudes are expected *present values* of current and future flows.

The equation simply says that the net benefits of the project equal the sum of gains and losses to others than the firm's owners plus the change in income for these owners because the firm located at the RISE site minus the cost of the RISE project to the state. If  $B_r$  is positive, owners of resources employed in the state are expected to gain as a group when the RISE project is undertaken *and* the firm locates in the community. But a positive value for  $B_r$  does not necessarily imply that the RISE project should be undertaken. This is because the state can use other forms of assistance, most notably direct financial assistance, to attract the firm to a particular location (e.g., the RISE site). Before concluding that the RISE project should be undertaken, it is therefore necessary to determine whether the expected net benefits with the project,  $B_r$ , exceed the expected net benefits,  $B$ , that result if the firm locates at the site *without* the RISE project. The latter are:

$$B = W + (P - P^*),$$

where  $W$  is the sum of the expected gains and losses to all income recipients other than the owners of the firm if the firm locates at the RISE site rather than at the best alternative site and the road project is *not* undertaken; it includes public and private sector gains.  $P$  is the net income that the firm earns on its capital investment if it locates or expands at this site *without* the RISE-funded road improvement.  $P$  thus reflects the cost of any road improvements that the firm would make in the absence of the RISE project in order to utilize the site;  $P$  is less than  $P_r$  by the cost of such improvements and any loss in income by the firm due to reduced accessibility.



## Conditions for Undertaking a Project

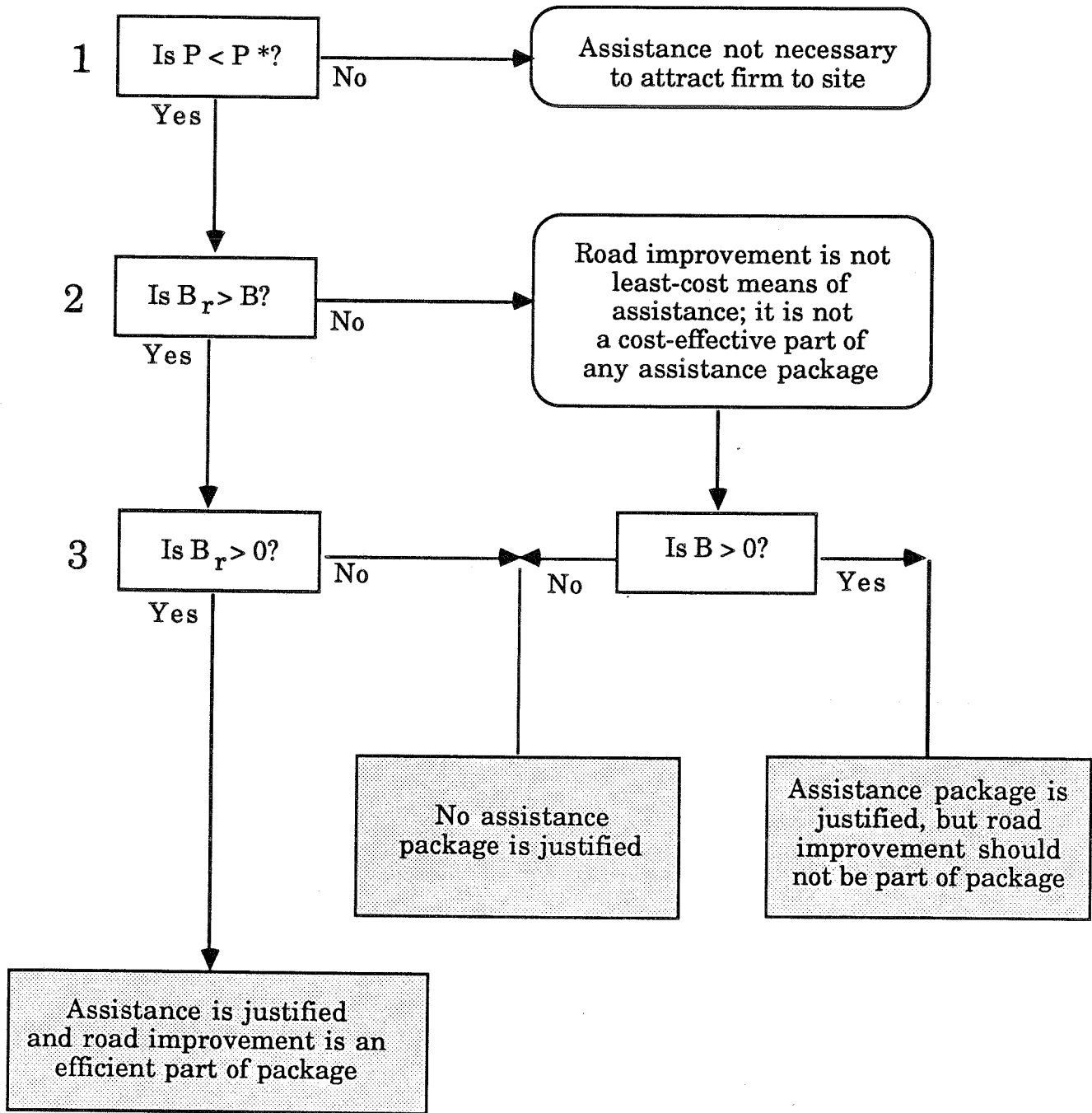
Three broad conditions must hold if a RISE project is to be an efficient way to promote economic development. First, the Iowa DOT must establish that undertaking the project has the potential to change the firm's location decision; it must establish that the firm will not locate at the RISE site without assistance of some form. Second, having established that the firm will not locate at the RISE site without some form of assistance, the Iowa DOT must determine that the RISE project is the cost-effective means of assistance.<sup>2</sup> Third, if it determines that the RISE project is cost-effective, the Iowa DOT should then determine whether the overall benefits of attracting the firm outweigh the costs involved. Each of the three conditions is examined more closely (see Figure 6-1).

**1. Is the Firm's Location Influenced?** To determine whether the location decision of the firm *can* be influenced by the project, the Iowa DOT must compare the profitability of the firm at the site *without* the road improvement,  $P$ , with the firm's profit at its best alternative site,  $P^*$ . If the project is to have any chance of promoting overall economic development, the firm's profit at the site without the road improvement must be less than its profit from the best alternative use of the capital it would commit to this project. In many cases, the firm would simply be considering two or more sites for a given investment, such as a manufacturing plant. If the site with the proposed road improvement is the most profitable already, then the firm will locate there *regardless* of whether the road is built, and the project has no potential to increase overall economic development. The state cannot gain by providing an incentive for a firm to locate where it would have located without assistance.

**2. Is the Road Cost-Effective?** This condition is equivalent to establishing that the transportation benefits of the road improvement justify its cost. In so doing, the Iowa DOT should evaluate the project in exactly the same way as any road project. More precisely, it is necessary to distinguish the benefits that accrue when the firm locates in the community without the RISE project being undertaken,  $B$ , from the benefits that accrue with the project,  $B_T$ . The difference between the two ( $B_T - B$ ) is the only benefit that can be attributed to the project. The net benefits of the project are positive only if  $B_T$  exceeds  $B$ . Subtracting  $B$  from  $B_T$  and rearranging terms gives the net benefits attributable to the RISE project:

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<sup>2</sup>The cost-effective means of assistance is the *least-cost* means of providing the assistance required to attract the firm to the RISE site. Determining that a project is cost-effective still leaves open the question of whether the firm should be assisted.



**KEY:**

$P^*$  - Firm's best alternative profit

$B_r$  - Net benefits of attracting firm and building road

$P$  - Firm's profit at RISE site without road

$B$  - Net benefits of attracting firm only

**Figure 6-1**  
**Summary of Conditions for Judging Efficiency of RISE Projects**

$$\begin{array}{rclclcl}
 (B_R - B) & = & (W_R - W) & + & (P_R - P) & - & C \\
 \text{Net benefits} & = & \text{Gains to others} & + & \text{Firm's} & - & \text{Cost of road.} \\
 \text{of project} & & \text{with firm and road} & & \text{profit with} & & \\
 & & \text{minus gains to} & & \text{road minus} & & \\
 & & \text{others with firm} & & \text{its profit} & & \\
 & & \text{and not the road} & & \text{without} & & \\
 & & & & \text{road} & & 
 \end{array}$$

The net benefits of a RISE project are thus comprised of the incremental gains to members of society generally from the road improvement ( $W_R - W$ ) plus the additional profit to the firm due to the road improvement ( $P_R - P$ ), less the cost of the RISE project. The net benefits of the project do not include, for example, the higher wages that might be earned because the firm is present in the community. Those wage gains could be had without undertaking the road project by paying a sufficiently large cash subsidy to attract the firm. Thus, the question of whether the RISE project is warranted is just the question of whether it is a less costly means of attracting the firm than a cash subsidy. This can be true only if the project generates transportation benefits (cost savings) in excess of its cost. If together these benefits exceed the project's cost, the second condition holds: the project produces benefits in the form of lower transportation costs that exceed the project's cost. This condition tells us that *even though the road project may be seen as an economic development tool, it must be justified on the basis of its transportation benefits alone*. If this condition does not hold, assisting the firm by undertaking the RISE project is not cost-effective. Simply put, if the project does not increase net benefits, each dollar invested in the project would generate benefits for the firm (and others) of less than one dollar.

**3. Are the Overall Net Benefits Positive?** Satisfying the second condition is not sufficient to justify the road project. The Iowa DOT, having concluded that the second condition holds ( $B_R > B$ ), must determine if  $B_R$  is in fact positive. That is, it is necessary that the overall benefits of attracting the firm and building the RISE project actually exceed the costs.  $B_R$  may exceed  $B$  and yet still not be positive. Therefore whether  $B_R$  is positive is a separate question that needs to be addressed before making an investment.

### Applying the Three Conditions

The three conditions are applied in a simple numerical example in Table 6-1. First, the firm's relative profitability at the RISE site with and without the road improvement is determined. Estimates of revenues and costs are used to calculate  $P$  and  $P_R$ . The road improvement lowers transportation costs and hence increases the firm's profits. These profit estimates are then compared to the firm's profit at its best alternative site. Since  $(P - P^*)$  is negative but  $(P_R - P^*)$  is

**Table 6-1**  
**Numerical Illustration of Applying**  
**Three Conditions for Assessing Project Efficiency**

	Business locates at RISE site without road	Business locates at RISE site with road paid for by RISE
<b>1. Firm's Profitability</b>		
Revenues	\$1,000,000	\$1,000,000
Costs		
Costs other than transportation	825,000	825,000
Transportation costs	100,000	50,000
Profits at RISE site		
P	75,000	
P <sub>R</sub>		125,000
Profits at best alternative site (P*)	100,000	100,000
Profits: RISE site minus best alternative (P - P*)	\$(25,000)	
(P <sub>R</sub> - P*)		\$25,000
<b>2. Gains from Attracting Firm and Building Road</b>		
Additional profit for firm (P <sub>R</sub> - P)		50,000
Transportation benefits to others (W <sub>R</sub> - W)		15,000
Cost of road (C)		60,000
Net benefit of road, (B <sub>R</sub> - B), or (W <sub>R</sub> - W) + (P <sub>R</sub> - P) - C		\$5,000
<b>3. Overall Benefits</b>		
Benefits to others of having firm in community (W)	10,000	10,000
Benefits to others of having the RISE road	0	15,000
Benefits to others of having firm and road (W <sub>R</sub> )		25,000
Additional profit for firm (P - P*)	(25,000)	
(P <sub>R</sub> - P*)		25,000
Cost of project (C)		60,000
Total net benefits		
Without project   B = W + (P - P*)	\$(15,000)	
With project    B <sub>R</sub> = W <sub>R</sub> + (P <sub>R</sub> - P*) - C		\$(10,000)

positive, we can see that the potential exists to influence the firm's location decision: the road changes the relative profitability of the site.<sup>3</sup>

Second, we now calculate the gains from building the road and attracting the firm versus the gains from simply attracting the firm. As Table 6-1 shows, this involves adding the additional profit the road creates for the firm to the transportation benefits the road brings to others, and subtracting the cost of the road. In this case, the *net* benefit of the road is \$5,000; benefits of \$65,000 (\$50,000 plus \$15,000) exceed the cost of the RISE project which is \$60,000. Because it generates positive net benefits, the RISE project is efficient.

We now turn to the third condition. Having established that improving the road is the efficient choice, should the state assist the firm at all? To answer this, we estimate the total benefits ( $B_T$ ).  $B_T$  is made up of the gains to others (both in transportation benefits and gains in income from wages and other sources) and the additional profit for the firm compared to its best alternative, less the road cost. In the example in Table 6-1, both  $B_T$  and  $B$  are negative. Thus attracting the firm is not efficient with or without the road improvement (i.e., in the aggregate, attracting the firm would lower Iowans' incomes). This case illustrates the need for the third condition. The second condition simply compares  $B_T$  and  $B$  and is met if  $B_T > B$ , while the third condition is needed to show that  $B_T$  is positive and not simply *less* inefficient than  $B$ .

Two points should be stressed with regard to the first two conditions. First, a road project is justified only if both the first and second conditions are met. A project can be rejected on efficiency grounds if either of the first two conditions does not hold. Therefore, the comparatively difficult task of determining whether the third condition is met may, in many cases, not be needed because the road itself would be inefficient. Second, these two conditions can be applied in a similar fashion for any in-kind assistance that may be contemplated. A job-training program, for example, should not be part of any package of assistance unless it is efficient in its own right, using an analogous condition to our second one.

If any one of the three conditions does not hold, undertaking the road investment cannot promote economic development. If the first condition does not hold, any development that occurs would have happened anyway because the firm would have located in Iowa because the RISE site is already its best site. If the second condition does not hold, the road improvement is inefficient in

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<sup>3</sup>It should be noted that  $P_T - P$  can be estimated, as can the relationship of  $P$  to  $P^*$ . A detailed picture of the firm's costs and revenues is not necessary.

and of itself: every dollar spent on it returns less than a dollar in transportation benefits. If the third condition does not hold, there is no overall gain from attracting the firm to the state.

### **Other Forms of Assistance**

If neither  $B_r$  nor  $B$  is positive, no form of assistance is justified on efficiency grounds. However, there may be cases when a road project is not efficient but other forms of assistance could promote development. Suppose that the first and third conditions hold, but not the second. In this case, an alternative site is more profitable, so the firm will not locate at the RISE site without assistance (since  $P < P^*$ ). Moreover, the overall benefits of the project ( $B$ ) are positive. Thus the project benefits the overall state but the firm has a better choice elsewhere. A cash subsidy may be justified in order to affect the firm's decision and hence obtain the overall benefits. The amount of subsidy required to attract the firm would be  $(P^* - P)$ , leaving a gain to others in the community after paying the subsidy of  $W - (P^* - P)$ . The RISE project would not be justified, though.

### **Public Versus Private Road Improvements**

The benefits from a road project can be divided into those that accrue to others than owners of the business ( $W_r - W$ ) and those that accrue to the owners of the business ( $P_r - P$ ), with a project being efficient if the sum of these benefits exceed its cost:

$$(W_r - W) + (P_r - P) > C$$

For small scale projects, such as an access road to a factory, transportation cost savings for others than the business usually are approximately zero. In this case, all benefits accrue to the firm, and it will undertake the project on its own if the project's benefits exceed its cost, and not otherwise. This is an example of the "Gold Mine" paradigm. The paradigm illustrates the fact that public sector involvement in a road project is unlikely to be warranted when a single private interest receives all of the project's benefits. Guided by the profit motive, the private sector will undertake all economically efficient projects that have a single beneficiary.

Whether public involvement is needed when instead of just one beneficiary, a project has a number of beneficiaries depends on the number of beneficiaries and their ease of identification. If 20 landowners will benefit from a road project equally, the total benefits to all will be 20 times the benefits to one. Any one landowner would not build the road since he or she would not receive all of the benefits. But there is little reason to believe that the 20 landowners would not agree among themselves to fund the road. They would all benefit from it, above and beyond the cost involved; this is exactly what happens when new roads are built into subdivisions. The need for government

involvement in a road project will therefore be very small if the project benefits only a small number of easily identifiable private interests. In such cases, we can expect the private sector to undertake a project if it promises transportation benefits in excess of its costs, and not otherwise.

### **Applying a Series of 'Screens' to Evaluate RISE Projects**

In the preceding discussion, we developed an evaluation framework to guide us in determining whether a proposed Immediate Opportunity project would promote economic development in Iowa. Given sufficient data, we could use this framework to categorize particular projects. However, for the 18 RISE projects that we are examining as case studies, adequate data do not exist, so we have developed a series of questions, or "screens", that are used to approximate whether  $B_r > B$  and whether  $B > 0$ . Although our conclusions cannot be as definitive as they would be if we had data to determine  $B_r$  and  $B$  more precisely, the screens do serve to approximate the desired analysis.

The screens can be used for two purposes. First, they can be applied retroactively to the 18 case study projects that were funded by RISE grants. We must emphasize that this type of evaluation is by its nature artificial in that decisions on funding in the real world must be made beforehand, not with the benefit of hindsight. Moreover, these 18 projects were among the first approved under the RISE program. Since then, the program's regulations have been changed and the Iowa DOT has gained experience in how to evaluate projects. In many ways, some of our screens simply reflect lessons that have already been learned. Second, the screens can guide an assessment of whether changes in the RISE program are warranted with respect to future applications and whether the information that is collected currently as part of the RISE application process is sufficient to allow a judgement to be made as to the project's likely effect on economic development.

In applying our evaluation framework, we use five screens:

- First, does the firm in question have to operate in Iowa because of the product or service it is selling?
- Second, is there a site outside Iowa that the firm is considering that has a cost advantage over the best available site in Iowa if the RISE project were not undertaken?
- Third, is there a cost advantage for the firm at this site in comparison to other sites in Iowa?

- Fourth, if the first three screens suggest that the firm would not locate at the RISE site without assistance, is the proposed road project the most cost-effective way to assist the firm?
- Fifth, are the total benefits of building the road and attracting the firm to the RISE site greater than the cost of the RISE project and any other assistance to the firm?

The five screens are applied sequentially, as is depicted in Figure 6-2. The logic behind the sequence of screens illustrated in the figure is the same as in Figure 6-1. The screens state the questions to be answered in evaluating a project and are more easily applied by Iowa DOT analysts and administrators; they provide a workable basis for retrospectively evaluating the 18 RISE projects. Each of the five screens is explained and then applied in turn.

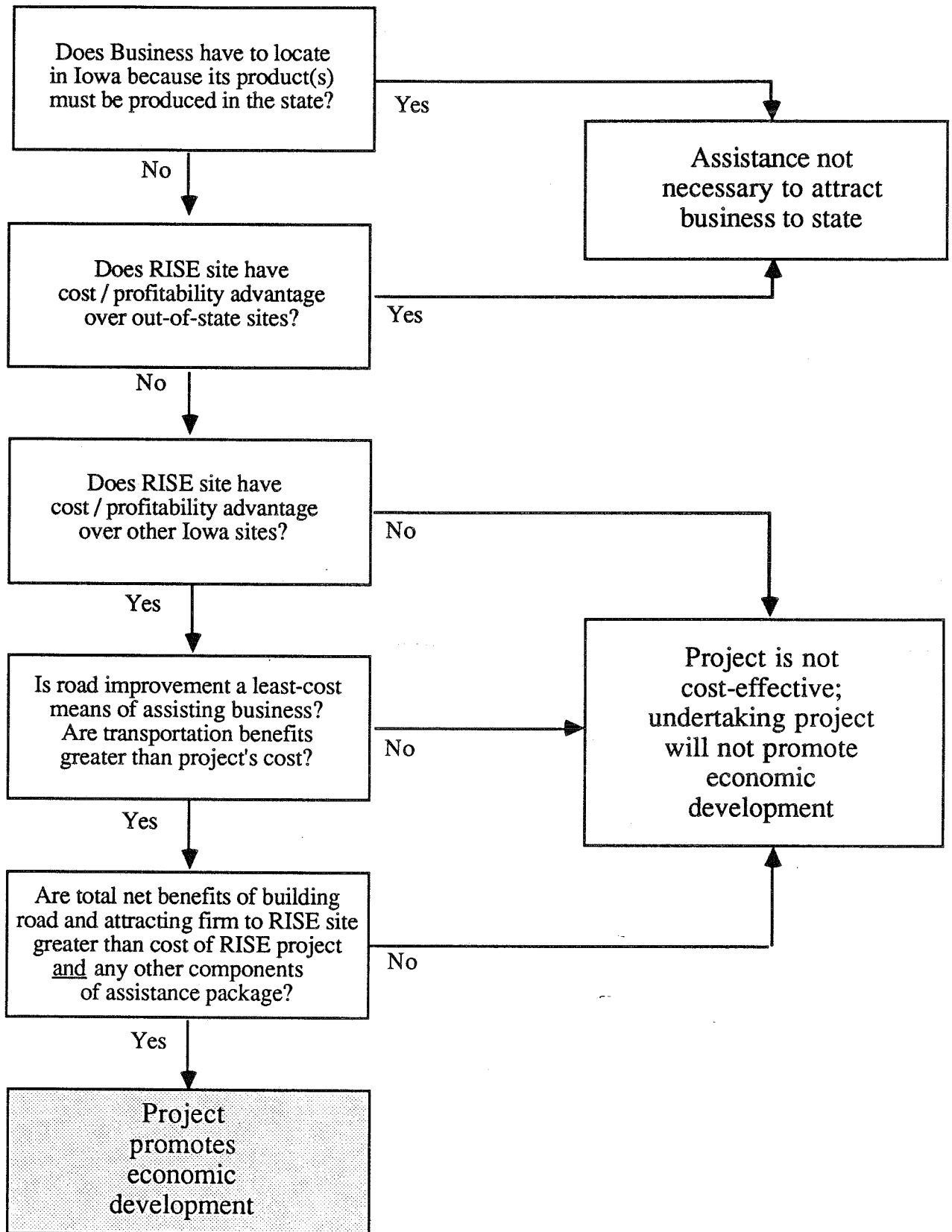
### **Does the Firm Have to Operate in Iowa?**

Our first task is to determine whether each project has the *potential* to benefit the state as a whole. By this we mean, would any new jobs or increases in wealth at this firm tend to be additions to the state's wealth, or would they more likely be displacements from other firms already resident in Iowa? We can assess the likelihood of benefit by considering the market in which the firm will sell. If the demand for its good or service is *fixed in Iowa*, then we can be confident that any new jobs that appear with this firm will largely be transferred from other firms within the state. If, on the other hand, the demand for this good is not fixed in Iowa, the potential exists for net gains to the state.

The demand in Iowa for some goods or services, almost by their very nature, is probably fixed with respect to the number of firms serving that demand. A new retail store is unlikely to increase the overall level of retail sales in Iowa. One more video store in a town will, at most, change the pattern of spending on leisure activities in that town. Likewise, the number of home builders will not change the basic demand for housing in Iowa which is driven by demographics, interest rates, and the general state of the economy.

The demand in Iowa facing industries that primarily serve the national market is not fixed. If a new electronics company locates in an Iowa community, it can grow and prosper by building up sales to companies all across the country. In the process, it is unlikely to directly affect any of the existing Iowa companies serving the same general market. But if two or three Iowa firms dominate the market for a given good, a new company is likely to displace rather than increase wealth in the state. We should be careful to examine both the nature of the demand for a RISE applicant's output and the structure of the industry supplying that good. Looking at a RISE





**Figure 6-2**  
**Screens for Evaluating RISE Projects**

project, and the business involved, we either could find that the demand for the good or service in question is essentially fixed in Iowa, or that the demand is not fixed. Many service businesses fall into one of these extremes; for example, fast-food restaurants and supermarkets must locate in Iowa to sell to Iowans. For others, categorization may be less obvious, but most projects should *tend* to one or the other extreme. Of the 18 projects three probably would not pass through this screen:

- In Mt Pleasant, a motel applied for funds to upgrade a frontage road. Total economic activity in Iowa will not increase if this project is funded: the market for overnight stays in Iowa is fixed with respect to the number of motels.
- In Clive, an application was made on behalf of, among others, a relocating auto dealership and a tire retailer. The applicant also stated that a hospital might be attracted to the site. All three of these types of activity must be located in or near this general area to exist. A car dealer cannot easily sell cars to Iowans from outside the state, except in cities adjacent to the state border. Additionally, the Clive project includes headquarters for two agricultural associations. The first of these, a state organization, certainly would have located somewhere in Iowa, and the second probably would also, given the state's predominance in this particular facet of agriculture.
- In Cedar Rapids, an application was made on behalf of a hotel/convention center. To the extent that this hotel caters to overnight guests in Cedar Rapids, it offers no potential for gain to the state. To the extent that it can attract regional convention business to the eastern Iowa area from competing sites in other states, it offers the potential for economic development in Iowa.

### **Is the RISE Site More Profitable Than Out-of-state Alternatives?**

The state of Iowa can only benefit from funding a RISE project if the grant truly does change a firm's location decision, either to locate in the state when it would not have otherwise or to locate in one part of the state that offers society benefits rather than another part that does not. With this screen, we focus on the first of the three cases discussed earlier: how can we be confident that a firm's location decision is likely to be influenced by the RISE project?

We can only influence a decision if there is one being made. Thus we want to know what out-of-state site the firm is considering that is *better* than the unimproved site it is evaluating in Iowa. If the firm cannot show that such a better site exists, we cannot assume that it does. Firms have great incentives to seek information to compare sites because they make more profit by

locating at a site that offers a cost advantage. If they have invested little or no resources in a search for alternative sites, they must perceive that little cost differential in fact exists.

Asking this sort of question of firms considering Iowa as a location may not be cost-free. Why, it may be asked, does it make sense to force a firm to discuss a competing site in Illinois when they are already interested in Iowa? Would it not just deter them from choosing Iowa? We would argue that it would not. Firms that are systematic and professional about location decisions will not be surprised by such a question; neither will they have difficulty in discussing alternative sites. Companies that research and plan effectively where to locate are probably more likely to be successful in their industry than those that do not, so they are more attractive to the state.

When we come to consider whether the firms attracted to the 18 RISE sites were aware of better alternative sites in other states at the time they applied for RISE funding, we can tell very little from looking back at the application process. Firms were not required to discuss alternative sites and the relative costs existing at them.

### **Is the RISE Site More Profitable Than Other Iowa Sites?**

Each proposed RISE project improves access to a particular site in Iowa. The project cannot be *necessary* for attracting the business to the state if there are other sites within Iowa that are equivalent to the improved site *from the firm's perspective*. By equivalent, we mean equally profitable. Thus we pose the question, if this site were improved with a RISE grant, would the site now offer a significant cost advantage over other, already available, suitable sites in Iowa?

A road improvement to a specific site is likely to produce the greatest benefits for a firm locating at that site when there is *something special about that site*. That is, there is something about the site that offers significant cost advantages over other sites where the firm could locate. In essence, the site is a "Gold Mine". Unless there is some factor located at the site that offers substantial cost savings, a road improvement that provides access to this factor is not likely to offer large benefits to the firm. A road improvement will always lower costs to a given site *by some amount*, but the Iowa DOT should identify those projects for which the road improvement will provide significant benefits, relative to the costs of the improvement.

Are there some kinds of sites that tend to offer this sort of "specialness" or that do not? If there is nothing special about a given site, we risk creating a "Sixth City": another site that simply replicates a number already available elsewhere in the state. In many instances, projects that involve road improvements to industrial parks may lead to this type of replication. Industrial parks offer a range of services to a "generic" firm or firms. Almost by definition, these sites offer no special cost advantage to one industry. Moreover, Iowa at present has a large number of industrial

parks that already exist and have spare capacity; many of them have been improved with grants from the Local Development portion of RISE itself.<sup>4</sup> Is there any reason to believe that extending roads into more industrial parks is likely to open up “special” sites? The presumption must be that they will not, although there may be exceptions. A revised application process could allow exceptions to be identified by focusing on any site-specific advantages that might exist.

We can look at the *types* of projects aided by these 18 RISE grants. A number of projects involved building new roads into, or improving already existing roads in, an industrial park. Of these, the following projects involved firms setting up at this location *for the first time*, either as a new firm startup or as a new plant of an existing firm:

- Clinton, new street to an industrial park; new location for firm
- Dubuque County, new extension of an industrial park road; new development
- Fort Dodge, new extension into an industrial park; new development
- Humboldt, construct new road into an industrial park; new development
- Maquoketa (A), extend street into an industrial park; new development.

For these projects, our presumption is that another site in Iowa could have sufficed for the business being attracted, either close by or in the same general area. Only in rare cases will a RISE Immediate Opportunity grant to improve a road in an industrial park be the most cost-effective way to help attract a firm to Iowa.

### **Is the Project a Least-cost Means of Assisting the Firm?**

In our fourth screen we ask, given that a road project will make this site more profitable for the firm, is it the least-cost way for the state to assist the firm? By road improvements being the *best* form of aid we mean that the cost to the state should be as low as possible, given a certain level of benefits for the firm. Is there another way to help the firm as much but with a lower expenditure by the state?

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<sup>4</sup>Indeed, the Local Development portion of RISE often funds roads into just such speculative industrial parks. In the period 1985-1988, 26 road projects were funded by RISE in industrial parks in Iowa. Because only a few of these involved sites where firms were wishing to start up, the number of readily available industrial park sites in Iowa has been increased by these RISE projects.

Suppose that a \$50,000 road would benefit a firm by \$10,000 each year. Two questions are particularly relevant. First, could RISE spend less than \$50,000 on a road to another site and still provide the firm with the same level of benefit (as addressed in the "Sixth City" paradigm)? Second, would the firm prefer a different form of assistance that would cost the state less than \$50,000? Most particularly, would the firm prefer a cash grant of, say, \$25,000? Although the Iowa DOT may not have authority at present to offer different types of aid within the RISE program, the state should be open to the possibility that the same result, benefits to the firm, could be achieved at less cost if varying types of assistance were offered.

For the 18 case studies, we cannot really tell if or how the firms involved would have been willing to trade off the road project for cash support. Because the program as presently structured allows for only road investments, applicants have no incentive to fully reveal their true preferences. Of course, we cannot assume that any firm would have preferred cash to a road; these roads may all have been crucial to their business success. Nevertheless, by not allowing for some ability to trade-off, the state of Iowa risks supporting RISE projects that are not the most cost-effective way of assisting firms.

#### **Are the Overall Benefits Greater Than the Costs?**

If a project passes the first four screens, it is a cost-effective means for attracting the firm when it is desirable to do so. The remaining question is whether total net benefits of building the road and attracting the firm to the RISE site exceed the cost of the RISE project and any other components of an assistance package.

We cannot really address the change in each firm's operating costs brought about by a RISE project; we simply do not have any information on this. But we can make some comments about the likelihood of changes in Iowans' incomes in relation to the cost of the project. First, we can look at the assistance per job in the context of total employment changes in Iowa in the last few years. In the 1986-1989 period, Iowa's total non-farm employment increased by over 200,000. If, for example, the state were to support each new job at \$10,000, this employment growth would have been accompanied by \$2 billion in state support. For a state whose total annual revenue from all sources is about \$5 billion, this is a prohibitive sum. The state could not uniformly give assistance to each new job at a level of \$10,000.

Second, in essence, a project will increase Iowans' incomes a certain amount for a number of years. Let us make a few assumptions to investigate the relationship between income gains and the project's cost. Assume, in the extreme, that the project increases the income of workers employed there for the rest of their lives. What would the increase in income have to be to justify,

for example, a \$10,000 grant per job assisted? Using a 10 percent interest rate, one would have to believe that workers' incomes increased by \$1,000 per year for the rest of their life to justify this size of grant. If incomes were only affected for ten years, rather than a lifetime, the increased income would have to be about \$1,600 per year.

Three of the projects have relatively high assistance rates per projected increase in employment: Dubuque County had total assistance of \$11,725 per job assisted, Mahaska County \$8,125, and Iowa County \$7,429. These amounts would require substantial income effects to justify the assistance, and hence we are skeptical that they are efficient. It also is true that among the 18 projects, the reported costs per job of many projects have exceeded the projected figures.

### **Some Related Policy Questions**

If a prospective RISE project were to successfully pass through all five screens, it would be an efficient means for promoting economic development. Recalling the paradigms presented in Chapter 3, three other policy-related questions warrant attention. These questions are contemplated in turn.

#### **Is the Assistance Equitable?**

There is a fundamental difference between a project that increases the wealth of many Iowans and one that benefits a very small number. Our "Gold Mine" paradigm illustrates a circumstance where a single business stands to benefit substantially from a public investment, but where the business could supply the investment itself and still show a profit. The point is that a project could have benefits that exceed its costs, but the benefits might accrue to few individuals while the costs are shouldered by many. Unless a distributional objective is being pursued (e.g., assisting disadvantaged persons), a project that benefits only a few persons generally is not a good candidate for a public subsidy.

#### **Is This a Foot-loose Firm?**

Assisting a business that is foot-loose by nature of the type of activities in which it engages is risky. As we emphasized in our discussion of the "Carnival" paradigm, foot-loose businesses very well could leave if only slightly more favorable economic circumstances materialize at another location. This concern suggests that two considerations be taken into account when reviewing proposed RISE projects even when they pass through all five screens. The first is the level of capital expenditures by the assisted firm. A relatively high level of capital expenditures suggests that a strong commitment to the location is being made by the firm. It is less likely that the firm

will leave if it invests in immobile facilities. A second consideration is that if a relatively foot-loose business is attracted to a location improved through a RISE project, is it likely another business could be attracted to the site should the assisted firm depart? This sort of assessment is by its nature speculative, but unless a favorable probability exists that another equally beneficial business could be attracted, the RISE project may not be a wise investment.

### **Are In-state Targeting Objectives Met?**

In Chapter 3 we discussed the possibility of taking into account the policy objectives of assisting less prosperous areas of the state (the “Spread It Out” paradigm) and developing less well served areas (the “Open Up the Amazon” paradigm). Considering these objectives when evaluating otherwise desirable RISE projects (i.e., projects that successfully pass through the screens) is difficult. Immediate Opportunity projects involve a specific firm that wishes to locate in Iowa, expand its operations in the state, or remain. Whether the firm could be persuaded to locate in a less prosperous or less developed area depends on factors such as the nature of the firm’s operations, its need for proximity to other activities, and its philosophy. If greater state-level expenditures on infrastructure and other requirements could make the firm willing to locate in one of these areas, the value of this location must be weighed against the additional cost. We have pointed out that this greater expenditure works counter to maximizing overall state economic development, at least in the short run.<sup>5</sup>

Because Iowa’s economy has experienced difficult times in essentially all parts of the state, it is somewhat problematic to examine the extent to which less prosperous parts of the state have been assisted through the 18 Immediate Opportunity projects being examined. It is the case that six of these projects are located in counties with per capita incomes below the average for Iowa’s 99 counties. Counties with incomes above and below the state average are displayed in Figure 6-3, as are the locations of the 18 projects.

Only slightly less difficult is assessing the degree to which the 18 projects have assisted less developed areas of the state. Common reference is made to an area in eastern Iowa that encompasses Des Moines, Waterloo, the Quad Cities (Davenport metropolitan area), Dubuque, Cedar Rapids, and Iowa City. This zone is the location of a disproportionate share of Iowa’s economic activity. Eight of the 18 projects are outside this area, a rather crude indication that they are assisting less developed parts of the state (see Figure 6-3).

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<sup>5</sup>It should be noted that the stated purpose of RISE is to “maximize economic impact to the state.” No reference is made to geographic targeting or income redistribution.

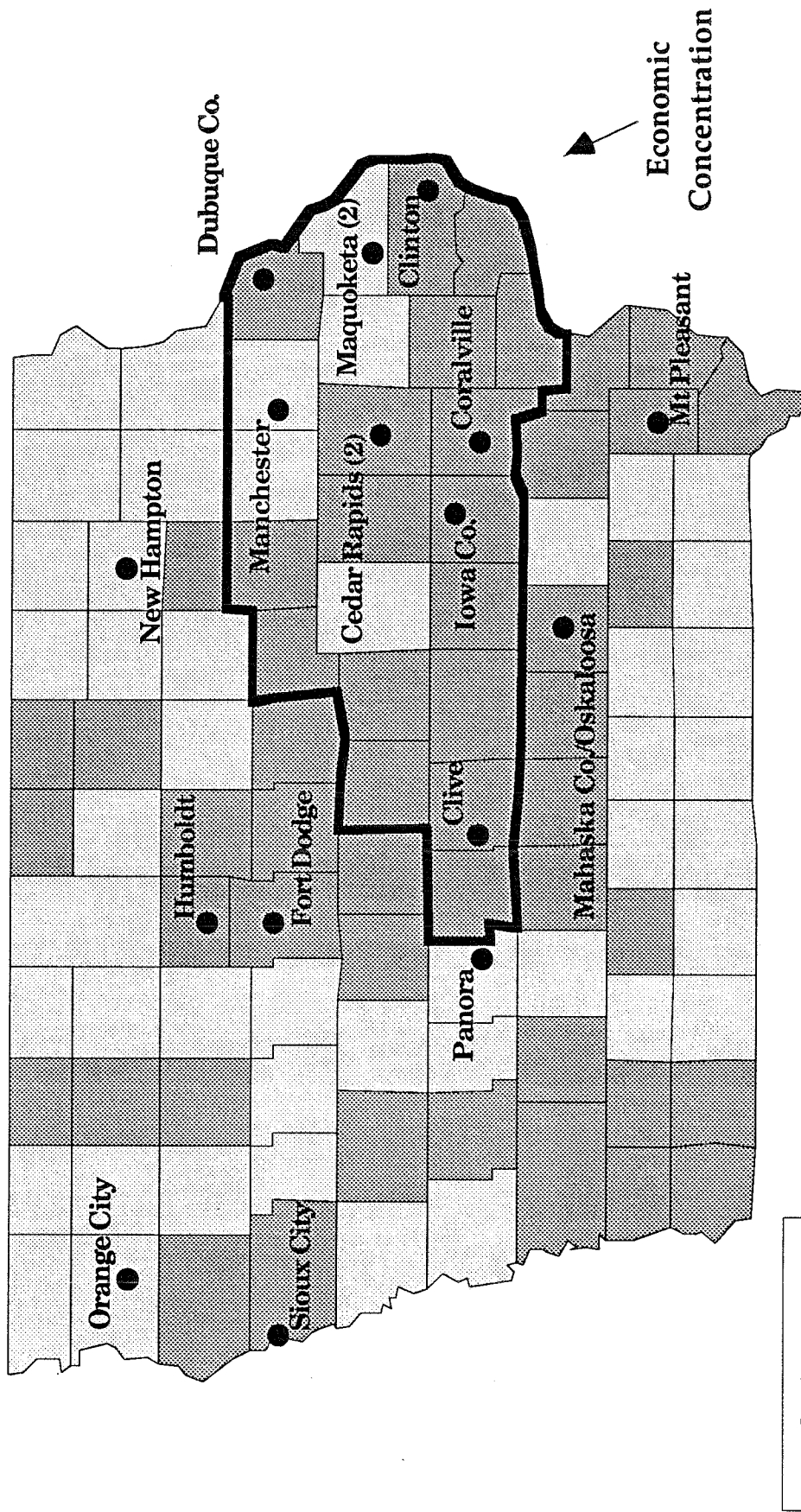


Figure 6-3  
 Location of 18 RISE Projects  
 and Per Capita Income, By County, 1985

Source: Iowa Census, 1988



## Summary

The foregoing screens and related questions are an attempt to apply our evaluation framework as effectively as possible to the 18 Immediate Opportunity projects about which we have information. Eight of the 18 projects pass all five screens, though with more data the number could be greater or less<sup>6</sup>. We must stress that we have not made an absolutely definitive assessment of any of the projects. Rather we have used these case studies to illustrate how the screens can be used to evaluate applications for RISE and similar programs in other states. Our overall conclusion is that programs like Iowa's RISE, and road investments generally, can help facilitate economic development by increasing local income. But only if the transportation cost savings brought about by a road investment exceed the associated costs can the investment contribute to a net increase in local income.

We have sought to lay out a conceptual basis for examining the probable effects of road investments. To help make the approach we suggest as workable as possible, we have illustrated the key issues in a series of six paradigms and derived five decision screens. If applied sequentially, the screens can enable decision makers to assess whether a proposed road investment is likely to improve the return on mobile labor and capital within the area. By doing so a road investment can foster local economic development.

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<sup>6</sup>The projects are Cedar Rapids (A), Coralville, Maquoketa (B), New Hampton, Panora, Orange City (A), and Manchester (A). It should be noted that no development actually occurred at Panora, although this could not have been foreseen at the time of application.

**APPENDIX: Survey of State Departments of Transportation**

## Survey on Highway Investment and Economic Development

<i>State of Alabama Highway Department</i>	
Respondent's name:	_____
Position:	_____
Telephone Number:	_____

This survey is part of a study which will examine the relationship between highway investment and economic development. The study is jointly sponsored by the United States Department of Transportation and the Iowa Department of Transportation. We have asked the Midwest Transportation Center at the University of Iowa to administer this survey on our behalf. Results from the study and survey will be available to all responding agencies. We very much appreciate your cooperation.

If you should have any questions regarding the survey please contact:

Prof. David J. Forkenbrock  
(319) 335-6800

Upon completion, please return the survey along with additional comments in the envelope provided to:

Midwest Transportation Center  
227 South Quadrangle  
University of Iowa  
Iowa City, Iowa 52242

**Part A. Programming Priorities**

*We begin with a few questions regarding overall priorities. They will help to establish the context in which economic development-related efforts might fit.*

Does your department specifically take economic development into account in its capital improvement program for Alabama?	Yes <input type="checkbox"/>
	No <input type="checkbox"/>

For the following types of roads, what level of priority does your department assign to each ?	Extremely Important	Somewhat Important	Not Very Important	Not At All Important
Roads that connect Alabama to out-of-state markets.				
Roads that serve rapidly growing areas in Alabama.				
Roads that serve areas of Alabama experiencing especially difficult economic circumstances.				
Roads that carry relatively high traffic volumes.				
Roads that are in relatively bad repair.				
Other, please specify _____				

Please rank the preceding categories in terms of priority for your department with 1 as the highest priority and 5 as the lowest:	Rank
Roads that connect Alabama to out-of-state markets.	
Roads that serve rapidly growing areas within Alabama.	
Roads that serve areas of Alabama experiencing especially difficult economic circumstances.	
Roads that carry relatively high traffic volumes.	
Roads that are in relatively bad repair.	
Other, as stated above	

**Part B. Special Highway Programs to Encourage Economic Development**

*Some states have initiated specific programs to foster economic development through highway investments. Others incorporate economic development objectives into their normal programming activities. We are interested in the efforts Alabama makes in this regard.*

Does Alabama have a special program for promoting economic development through highway investments?	Yes <input type="checkbox"/>
	No <input type="checkbox"/>

*If Yes, continue. If No, further questions need not be answered but feel free to include additional comments in Part C, Page 4.*

In what year was the program established?	Year:
What was last year's budget for Alabama's program to promote economic development through highway investments ?	\$            million

How is the program funded? Check all that apply.	Check if appropriate
Annual legislative appropriation	<input type="checkbox"/>
Dedicated highway user tax	<input type="checkbox"/>
Departmental allocations	<input type="checkbox"/>
Other (please explain) _____	<input type="checkbox"/>

Does the department have bonding authority for economic development-related projects?	Yes <input type="checkbox"/>
	No <input type="checkbox"/>

With respect to your program, does the state assist in identifying businesses interested in sites for location or expansion within Alabama?	Yes <input type="checkbox"/>
	No <input type="checkbox"/>

Does the state assist in identifying suitable sites for businesses wishing to locate or expand in Alabama?	Yes <input type="checkbox"/>
	No <input type="checkbox"/>

Who initiates the application process for a particular project ?	Check all that apply
Local Governmental units	<input type="checkbox"/>
State Agency (specify which agency) _____	<input type="checkbox"/>
Private Sector Businesses	<input type="checkbox"/>
Other	<input type="checkbox"/>

Before making a decision regarding a specific site, does your department seek to identify alternative suitable sites already having sufficient highway access ?	Yes <input type="checkbox"/>
	No <input type="checkbox"/>

If applicants are local governmental units, which of the following three conditions best characterizes Alabama's program.	CHECK ONE ONLY
Applicant must have a firm commitment from a specific business.	<input type="checkbox"/>
Applicant can apply for a project to enhance local development potential. (e.g., no firm commitment from a business is required)	<input type="checkbox"/>
Program holds provisions for both of the above conditions.	<input type="checkbox"/>

Which of the following criteria are used to measure the 'worth' of a proposed project?	Check all that apply
Number of jobs assisted	<input type="checkbox"/>
Cost of road improvement per job assisted	<input type="checkbox"/>
Industry type of assisted jobs	<input type="checkbox"/>
Wage rate of assisted jobs	<input type="checkbox"/>
Private sector investment	<input type="checkbox"/>
Other (indicate) _____	<input type="checkbox"/>

Do you require the local community or business involved to match funds made available by the program ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If Yes, is there a minimum match rate?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If Yes, what is this match rate? _____		

Are funding decisions for this program made in conjunction with other state-level economic development-related agencies?	Yes <input type="checkbox"/>
	No <input type="checkbox"/>

Do you conduct feasibility studies of proposed projects prior to allocating funds within this program?	Yes <input type="checkbox"/>
	No <input type="checkbox"/>

Has the state of Alabama conducted any after-the-fact evaluations of individual projects funded by this program?

Yes

No

If Yes, please enclose a copy of a recent evaluation if possible.

*Thank you for completing this survey. Your responses are much appreciated and will greatly assist our effort to compare programs in individual states. Feel free to include any further comments or suggestions in the Part C, below.*

***Part C. Additional Comments***

**Please return completed survey in the envelope provided to:**

***Midwest Transportation Center  
227 South Quadrangle  
University of Iowa  
Iowa City, Iowa 52242***

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