Picking Winners

Industrial Strategies for Local Economic Development

Anthony Pascal, Aaron Gurwitz
The research reported here was performed in part under Grant No. H-2930 from the Department of Housing and Urban Development and in part with support by The Rand Corporation in accordance with its program of public service.
Picking Winners

Industrial Strategies for Local Economic Development

Anthony Pascal, Aaron Gurwitz

March 1983

Prepared for the Department of Housing and Urban Development
**PREFACE**

This report grew out of a research project conducted by Rand for the Office of Policy Development and Research, U.S. Department of Housing and Urban Development (HUD). It presents a new approach toward the systematic planning of local economic development and therefore should interest local officials, including development directors, as well as business people, community leaders, and scholars concerned with local economic affairs.

The reader may wish to consult two companion Rand reports: A. Gurwitz, *The Service Sector in Urban Revitalization: Sectoral Composition, Employment Density Gradients, and Central City Fiscal Capacity* (R-2817-HUD), and A. Gurwitz and S. Kirby, *The Sectoral Composition of Metropolitan Economies: Some Effects on Local Labor Markets* (R-2756-HUD).¹

The authors of this report summarize the findings of a lengthy and complex research project conducted by a group of Rand analysts that included, besides the present authors, William McNaught, Richard Victor, and Sheila Kirby. Jack Seinfeld and Sally Trude supplied the programming. James Dertouzos, Richard Fernandez, Susan Marquis, and John Pincus reviewed and helped revise earlier technical reports upon which this summary is based. The report benefited from suggestions made by the authors’ colleague Michael Murray.

Michael Schneider and Susan Jacobs of HUD’s Office of Policy Development and Research offered useful guidance as monitors of the project.

David Lyon, Vice President for Rand’s Domestic Research Division, and G. Thomas Kingsley, the former Director of the Housing and Urban Policy Program, provided advice and support.

¹Interested readers may also wish to consult unpublished background studies on local specialization, multiplier, and cyclical phenomena, which the authors will supply on request.
SUMMARY

Choices among job-expansion targets—manufacturing plants, shopping centers, hotels, office complexes—can be critical to the economic future of a locality and can be costly in public resources. Until now, local development planners have had to use back-of-the-envelope methods in devising development strategies for their communities. A much more systematic approach should now be feasible, given the availability of substantial quantities of data on urban communities and inexpensive methods of processing those data. The approach utilizes large data bases and computer modeling. In this spirit, we present a sector-by-sector methodology for analyzing metropolitan economic development that can help answer critical questions about a local economy, such as:

- Which industries offer the best prospect for immediate job growth?
- Which industries would have the highest multiplier effect on total new jobs?
- Which industries would benefit the central city (relative to the suburbs)?
- Which industries would make the greatest contributions to the regional tax base?
- Which industries would offer the most jobs to disadvantaged workers (i.e., those with past employment problems)?
- Which industries would provide jobs with upward mobility opportunities?
- Which industries would best protect the local economy against swings in the business cycle?

Although still rudimentary, this report’s techniques for answering such questions are an improvement over the largely ad hoc techniques currently in use, and hold promise for more sophisticated development when applied to specific communities. The techniques have already been adapted for use in the Cleveland metropolitan economy.

IDENTIFYING PROMISING INDUSTRIAL TARGETS

During the 1970s, employment in the private service industries—accounting, law and advertising, data processing, finance, insurance,
wholesale trade and warehousing, lodging and entertainment, corporate administration—grew faster than manufacturing or even government employment. Not all urban areas shared equally in the "services boom," however. Some places simply followed national trends toward increased employment in fast food outlets, income tax preparation firms and so on. Other metropolitan areas experienced large increases in employment in such export-oriented service activities as tourism, advanced business services, and international banking. Similarly, manufacturing employment declined substantially in some places but expanded markedly in others. Clearly, local characteristics have influenced which regions experienced service sector booms, which have enjoyed growth of manufacturing employment, which have had both, and which neither.

This report describes a method for uncovering these underlying characteristics and using them to identify promising industrial targets for specific metropolitan areas. The report presents a method for singling out high-payoff targets—industries underrepresented in a local economy whose characteristics should be conducive to the growth of that industry—and low-risk targets—industries enjoying unusual and sustained prominence in a local economy. Both kinds of industry appear to present opportunities for judicious interventions—loans, grants, land provision, tax abatements, and the like—by public authorities in the interest of job expansion. We list specific examples of these targeting opportunities for individual places.

ESTIMATING THE CONSEQUENCES OF SECTORAL INTERVENTIONS

Whether a targeted industry has a chance of taking hold in a local economy is one thing; the beneficial effects it might produce are another. All things equal, development officials will prefer projects that are highly stimulative, help the central city economy, increase the tax base, benefit disadvantaged workers with employment and advancement opportunities, and insulate the local economy from the vicissitudes of the business cycle.

This report shows how a recently developed multiplier estimation system can be used to forecast the total number of jobs induced by an initial targeted intervention. Multipliers, we found, will vary not only with the sector of original expansion but also with the characteristics of the local economy. Service industries and large economies tend to have the highest multipliers.
Conventional wisdom maintains that the service industries tend to provide substantial proportions of jobs to disadvantaged workers, but that these jobs tend to offer few opportunities for career advancement. We find little support in our data for these general contentions. In some types of cities, certain manufacturing industries and the construction sector are as likely as some service industries to provide jobs for those who might otherwise be unemployed. Elsewhere, some industries in the services category appear to provide better-quality jobs than some manufacturing industries. In general, we found that the specific industrial circumstances of cities matter a great deal, and, consequently, few “rules of thumb” apply across all cities. Efforts to identify “targets of opportunity” therefore should be conducted on a city-by-city basis. The report indicates ways in which city-specific data can be used to evaluate the employment effects of alternative industrial interventions.

Three generalizations are supported by our data, however. First, we confirm the belief that central cities tend to specialize in legal, financial, and business services. Thus, general policies aimed at stimulating the growth of these industries will tend to help the central city economy more than that of the suburbs. Second, we find that the tax base is relatively insensitive to which industries in a city are growing. A new job in the hotel industry might generate more revenues for local governments than a new job in the nondurable goods manufacturing sector, but the difference is so small as to matter very little. Third, we found that, compared with manufacturing, service specialization—especially in administrative services—appears to work to reduce a locality’s vulnerability to national business cycles. More research is needed to estimate cyclical effects with greater detail and precision.

The report also contains an exploratory simulation of the various outcomes that might be expected from the addition of a thousand new jobs in three different industries—hotels, finance, and durable manufacturing—in two very disparate local economies: Philadelphia and Albuquerque. This analysis is offered as an indication of the eventual usefulness of the emerging methodology.

The report is intended to chart the way toward organized planning for local economic development. Industrial strategies derived from empirical observation and systematic analysis will someday replace judgments that currently tend to be based on rules-of-thumb and sometimes only on faddish enthusiasm. We view the work presented here as a start in this new direction.
# CONTENTS

PREFACE ................................................................. iii
SUMMARY ............................................................ v
FIGURES AND TABLES ................................................. xi

Chapter

1. THE NEED FOR SYSTEMATIC DEVELOPMENT PLANNING ............................. 1
   Introduction .................................................. 1
   Background .................................................. 2
   Outline of the Study ........................................ 4

2. METROPOLITAN ECONOMIES AND SECTORAL TARGETS .............................. 5
   Specialization and Change in Service Cluster
   Employment .................................................. 5
   Variables Used .............................................. 8
   Findings and Interpretation ............................. 12
   Sectoral Targets for Job Creation Strategies ........... 19

3. SECTORAL INTERVENTIONS AND METROPOLITAN OUTCOMES ..................... 23
   The General Approach ...................................... 23
   The Benefits of Urban Development ...................... 25
   Research Findings: Sectoral Composition and Metropolitan Outcomes .......... 27
   Linking the Models ......................................... 33

4. CONCLUSIONS .................................................... 38

BIBLIOGRAPHY ......................................................... 41
FIGURES

3.1. Tracing the Effects of a Development Intervention .... 23
3.2. Short-Cut Procedure for Linking Models Without a Regional Economic Model .... 34

TABLES

1.1. Shares of Employment and Growth Rates of Employment by Cluster for 188 SMSAs (Average for Years 1970-1977) 3
2.1. Service Clusters ........................................... 6
2.2. Level of Clusters: Regression Results .................... 13
2.3. Change in Clusters: Regression Results ................... 17
2.4. Potential High Payoff Intervention Targets by Cluster and SMSA (With UDAG Scores) .................. 21
2.5. Potential Low-Risk Intervention Targets by Cluster and SMSA (With UDAG Scores) .................. 22
3.1. Industries Diverging from the Pattern of Hiring the Same Proportions of Types of Workers as Are in the Metropolitan Work Force ........................................ 30
3.2. Wage Differences for Workers with Identical Observable Characteristics in Identical Occupations Across Industries 32
3.3. Background Characteristics of Albuquerque SMSA, Philadelphia SMSA, and the Average U.S. SMSA ........ 35
3.4. Employment Effects of Alternative Interventions in Albuquerque and Philadelphia .................. 36
3.5. Effects of Alternative Interventions on the Tax Base, Albuquerque and Philadelphia .................. 37
Chapter 1

THE NEED FOR SYSTEMATIC DEVELOPMENT PLANNING

INTRODUCTION

How should a community plan for economic growth? Currently, local development officials and the federal agencies that support their activities perform adopt a reactive stance when private developers advance proposals that promise job creation and other economic benefits. Officials must usually make a back-of-the-envelope judgment about the reliability of the promises made in the application and about how a particular proposal might stack up against other strategies for job development.

A much more systematic approach to development planning is now becoming possible. Recent advances in data-base assembly and computer modeling promise to help development officials answer the following sorts of questions:

- Given the characteristics of our local economy and its recent growth history, which industrial sectors present the best opportunities for job growth? For example, might a strategy that emphasizes hotel and other tourist development have a higher payoff than one that features durable manufacturing or finance and insurance offices? Which kind of sectoral development offers the lowest investment risk?
- If an intervention did produce, say, 1000 new jobs in our local tourist sector, how many total new jobs might be generated in our community? What fraction of the new total might be located in the central city of the Standard Metropolitan Statistical Area (SMSA) as opposed to the suburbs?
- How would the initial job creation—together with its ramifications—affect the local tax base? Would a manufacturing-oriented strategy benefit the fiscal situation more than one based, say, on office employment?
- Which groups in our community might benefit from the newly created jobs? Would minorities with less than a high school education fare better under a strategy aimed at office jobs or one targeted on the creation of a wholesale trade cen-
ter? And, of the new jobs, which are dead-end and which promise upward mobility?

- Variations in the local industrial base induce different degrees of local vulnerability to national economic cycles. In our community, would a manufacturing or a service strategy work best to insulate us against the effects of recessions at the national level?

The approach to systematic planning described in this report is designed to help answer such questions. Although no methodology will generate perfect predictions or exact estimates of all the relevant phenomena, we believe that the Rand approach, admittedly still rudimentary, is an improvement over the current, largely ad hoc, techniques that development planners have traditionally had to use. The Rand approach calls for the local leadership to avail themselves of a variety of original data sources and analytical techniques for identifying investment targets with the best chance of benefiting the community. Our approach has been applied and refined in a Rand research project on the Cleveland, Ohio, metropolitan economy. The economic monitoring capability that Rand is helping to build in Cleveland makes use of these techniques.1

BACKGROUND

The genesis of the Rand study was the debate over manufacturing versus service jobs as the best avenue for urban economic development. As Table 1.1 shows, export-oriented service employment in the average American SMSA grew in the 1970s at an approximate annual rate of 4.3 percent while employment in durable manufacturing actually declined and nondurable manufacturing was almost stagnant. Public employment grew modestly during this period, but even the moderate growth registered then is now increasingly threatened by fiscal retrenchment at all levels of government.

The more involved we became in the study of the service sector in urban revitalization, the more convinced we were that no single strategy is best for all local economies. Some communities might find that manufacturing remains the best bet. In others, a particular service cluster—e.g., finance as compared with wholesaling—might present

Table 1.1

SHARES OF EMPLOYMENT AND GROWTH RATES OF EMPLOYMENT
BY CLUSTER FOR 188 SMSAs
(AVERAGE FOR YEARS 1970-1977)

<table>
<thead>
<tr>
<th></th>
<th>Percent of Total Employment</th>
<th>Rate of Change of Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business and legal services</td>
<td>2.4</td>
<td>+6.4</td>
</tr>
<tr>
<td>Finance, insurance, and real estate</td>
<td>5.1</td>
<td>+3.5</td>
</tr>
<tr>
<td>Wholesaling, warehousing, and trucking</td>
<td>7.2</td>
<td>+5.3</td>
</tr>
<tr>
<td>Visitor services</td>
<td>6.2</td>
<td>+2.3</td>
</tr>
<tr>
<td>Administration</td>
<td>2.2</td>
<td>+7.4</td>
</tr>
<tr>
<td>All export services</td>
<td>23.1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>+4.3&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Durable manufacturing</td>
<td>14.0</td>
<td>-2.6</td>
</tr>
<tr>
<td>Nondurable manufacturing</td>
<td>9.6</td>
<td>+1.0</td>
</tr>
<tr>
<td>Government</td>
<td>18.6</td>
<td>+2.8</td>
</tr>
</tbody>
</table>

<sup>a</sup>Total for the five clusters.
<sup>b</sup>Weighted average, where the average level is the weight.

opportunities superior to either manufacturing or alternative service industries. Therefore, we set out to study where particular sectors have grown (or declined), what factors were associated with local specialization in particular sectors, and what effects particular forms of growth have had on the local economy and community.

To our knowledge, this study is the first to attempt a sector-by-sector analysis of metropolitan economic development. It entailed the examination of several very large data bases, some of which had never before been utilized in such fashion. Nor had these data bases been integrated into an analytic framework in previous research. For example, we processed County Business Patterns data, which contain over one million records on employment by industry (at the 2- and 3-digit SIC levels) and county, over time. We also employed several other data bases, including the Regional Industrial Multiplier System, the 1970 Census of Population, the 1970 Public Use Sample, Censuses of Business and Manufacturers, Employment and Earnings by State and Area, and Current Population Surveys.
OUTLINE OF THE STUDY

The following two chapters treat:

- **Opportunities for sectoral interventions.** Our analysis of the magnitude of and change in employment-by-sector in specific metropolitan areas leads us to propose a system by which promising intervention targets can be identified for individual metropolitan economies.

- **Effects of sectoral interventions.** Our research on the consequences of job growth in various sectors—e.g., on total employment, on the distribution of jobs, on the tax base, on cyclical vulnerability, etc.—yields a series of insights through which alternative sectoral job-creation strategies for specific metropolitan areas may be compared.

A final short chapter summarizes findings and offers guidance for policymakers.
Chapter 2

METROPOLITAN ECONOMIES AND SECTORAL TARGETS

This chapter begins with an analysis of how the characteristics of the local economy relate to specialization and changes in particular employment categories. It concentrates on service employment, but touches as well on manufacturing. The chapter concludes by applying knowledge of such relationships to the development of sector-specific strategies for job creation.

SPECIALIZATION AND CHANGE IN SERVICE CLUSTER EMPLOYMENT

Services, for our purposes, include nonmanufacturing, nongovernmental activities, in which some significant fraction of output is exported outside the metropolitan area. This definition therefore excludes retail trade, the voluntary sector (hospitals, charities), and the public sector. Our basic measure of service activity is employment.

Because any given industry is likely to have only a very small representation in many metropolitan areas, we have grouped the industries into aggregate clusters. Table 2.1 shows the clusters we have subjected to analysis, together with their constituent industries.

Note that the first four clusters are combinations of separate but related industries, comprising groups of firms. The fifth is not a single industry, but the aggregate of administrative employment over many industries, and thus consists of parts of firms. Consequently, there will also be some overlap between the administrative cluster and the others.

We are interested in two characteristics of the service clusters as these vary across Standard Metropolitan Statistical Areas: How important is the particular cluster in the local economy (e.g., is it a local specialty)? By how much has the cluster grown or declined in recent years? We measure the former by the fraction of all SMSA employment accounted for by the cluster, averaged over the years 1970 to 1977, and the latter by the compound annual rate of change in cluster
Table 2.1

SERVICE CLUSTERS

<table>
<thead>
<tr>
<th>Cluster Description</th>
<th>Cluster Symbol</th>
<th>Constituent SICs</th>
<th>Industry</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business and legal services</td>
<td>BS&amp;LG</td>
<td>Business services, e.g., advertising, accounting, data processing, temporary help, etc.</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Legal services</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Finance, insurance, and real estate</td>
<td>FIRE</td>
<td>Banking, brokerage, credit agents, etc.</td>
<td>60-</td>
<td></td>
</tr>
<tr>
<td>Visitor services</td>
<td>VISIT</td>
<td>Air transportation</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eating and drinking places</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hotels</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Amusement and recreation services</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Wholesale trade and warehousing</td>
<td>WHSL</td>
<td>Trucking and warehousing</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wholesale trade:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Durable goods</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nondurable goods</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Administrative, auxiliary, and office activities</td>
<td>ADMIN</td>
<td>Central administrative offices and auxiliary establishments</td>
<td>Summed for all SICs (no identification number assigned)</td>
<td></td>
</tr>
</tbody>
</table>

employment in the SMSA between the years 1970 and 1977. The symbol o/o before the shorthand name for the cluster denotes the average percent of total metropolitan employment the cluster accounted for in the years 1970 to 1977, while the symbol Δ denotes the average yearly rate of change in employment over the same

---

1We chose these years because data for them are available by SMSA on the Bureau of the Census computer tape for County Business Patterns. For some SMSAs, individual years between 1971 and 1975 were missing or we eliminated them because of errors in coding or transcription. We calculated averages over these spans of years to avoid the complicating effects of business cycles. This meant, however, that we were not able to observe the effects of structural changes within metropolitan areas as caused, for example, by growth.
period. We were able to derive measures of these variables for 188 of the 243 SMSAs that had been established by 1970.2

The average level and change in each cluster for all 188 SMSAs in the sample were presented in Table 1.1. As seen there, 23 percent of total employment in the average SMSA was attributable to the sum of the five clusters, with VISIT and WHSL accounting for the largest fractions, and BS&LG and ADMIN accounting for the smallest. In the average metropolitan area (hereafter shortened to "metro"), the smaller clusters showed the fastest rates of growth: ADMIN by 7.4 percent per year and BS&LG by 6.4 percent. VISIT employment grew by about 5 percent annually, while FIRE and WHSL increased at lower rates. The weighted average annual growth over the period was 4.3 percent. Of course, some metros experienced employment declines in individual clusters. Typically, these declines were negligible—after all, the service clusters were growing nationally—except in the smallest SMSAs, where the disappearance (through demise or out-movement) of a single firm can have an appreciable effect on a given cluster.

We sought to discover what characteristics of the local economy were associated with the level of employment in a particular cluster, and what attributes were associated with the rate of change. To isolate the factors accompanying level and change, we performed a series of multivariate analyses for the service clusters. For a rough comparison, we also explored the metropolitan attributes associated with specialization and change in durable and nondurable manufacturing.

For several reasons, we refer to these as empirical characterizations of the process of specialization and growth in service industries, and not as explanatory models. First, because in a developed industrial system local economies are powerfully integrated into the national economy, we did not attempt to develop metropolitan structural models, but merely identified the factors we expected to have either positive or negative associations with a cluster's level and change. Second, we attempted no simultaneous estimation across clusters.

---

2Most of the metropolitan areas that we could not analyze fell into the following categories and for the following reasons: (1) those in Alaska and Hawaii—distance from other U.S. cities makes them special cases; (2) smaller SMSAs, particularly in Sunbelt states such as Florida and Texas—for these we lacked sufficient data in County Business Patterns and other sources, mostly because of recency of accession to SMSA status; (3) smaller SMSAs in New England (i.e., other than Boston, Bridgeport, Hartford, Providence, and Springfield)—because New England SMSAs are composed of towns rather than counties (the reporting unit for County Business Patterns), an excessive amount of data manipulation would have been necessary to convert all the necessary explanatory variables from other sources.
even though it is obvious that the clusters are interrelated. Instead, we separately estimated, by the ordinary least squares (OLS) technique, each of the empirical equations.

The type of multivariate analysis we performed permits the identification of the separate association of each of a series of "independent" variables with the observed variation of the "dependent" variable. Thus, in our case, it is a technique for appraising the strength of association between cluster level or cluster change, on the one hand, and a string of individual factors that reflect the size, location, and nature of the metro area, on the other hand. The strength of the separate relationships can also be roughly assessed in statistical terms, so that one can state whether or not the connection appears due to random chance. Associations labeled "statistically significant" are those in which there would appear to be a systematic, instead of random, connection between the variables. (For the sake of simplicity, OLS estimation was used, although this technique will yield technically biased estimates.)

What we have done constitutes a first exploration, not a rigorous explanation. Our results should be considered as illustrative and thus suggestive for policy purposes, but far from definitive.

The following were the variables used for the empirical characterizations. Unless noted, the variable was employed in all of the cluster estimates. (In parentheses are the shorthand names of the variables. These are used in Tables 2.2 and 2.3, where results are shown.)

VARIABLES USED

Population Size (POPMAG)

The larger the metro, the more it should tend to specialize in service cluster activities, other things equal, since the larger cities serve as regional service centers. High fractions of total employment in a service cluster therefore should be associated with large populations. We expected cluster growth, on the other hand, to vary inversely with population size, in view of the recent national trend toward disproportionate growth of smaller cities. (The zero order correlation between population size and population growth for our 188 metros was \(-0.191\).)

\footnote{We did, however, always include the level for cluster \(i\) as an independent variable in the explanation of the change in cluster \(i\), and in many cases we included the level and/or change in \(i\) as a dependent variable in the level and/or change equation for cluster \(j\).}
Population Change (CHPOP)

More rapidly growing cities should have more rapidly growing employment in service clusters. We therefore introduced a population change variable into the estimates for cluster growth.

Largest City in State (STADOM)

The largest city in a state often houses the headquarters of many sorts of firms operating in the state. We created the variable STADOM to designate such cities, and introduced it in each of the estimates for cluster level.

Region (NOREA, SOUTH, WEST, To Be Compared with North Central)

As controls we used regional dummy variables for the Northeast, North Central, South, and West. The regional variables are intended to represent the age of cities and, in part, the bases of their economies. These characteristics will influence the size and nature of the services the region's cities provide.

Climate (TEMCLI)

Cities with temperate climates should attract more visitors, other things equal. We introduced a variable into the o/oVISIT and ΔVISIT equations to reflect this; it is the ratio of the mean January to the mean July temperature.\(^4\)

Access to U.S. Population (ACUPOP)

Metros vary widely in how near they are to other population centers in the continental United States. Some are in densely populated re-

\(^4\)As a point of interest, the following are TEMCLI values for selected SMSAs:

<table>
<thead>
<tr>
<th>City</th>
<th>TEMCLI Value</th>
<th>City</th>
<th>TEMCLI Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Francisco-Oakland</td>
<td>.753 (highest)</td>
<td>Dallas-Fort Worth</td>
<td>.225</td>
</tr>
<tr>
<td>Anaheim</td>
<td>.602</td>
<td>Roanoke</td>
<td>.203</td>
</tr>
<tr>
<td>Palm Beach</td>
<td>.537</td>
<td>New York City</td>
<td>.182</td>
</tr>
<tr>
<td>Orlando</td>
<td>.403</td>
<td>Des Moines</td>
<td>.138</td>
</tr>
<tr>
<td>Corpus Christi</td>
<td>.316</td>
<td>Fargo</td>
<td>.110 (lowest)</td>
</tr>
<tr>
<td>Seattle</td>
<td>.284</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
gions close to other metros; others are isolated. A potential (or gravity) index of access can be derived from measures of the magnitudes of surrounding populations and the distance between the place in question and those surrounding populations. Given population size and the other explanatory variables, we would expect o/oFIRE, o/oBS&LG, o/oWHSL, and o/oVISIT to be larger, the more isolated the city, because isolation implies the need to provide such services locally. The farther away are other metros, the more costly it is to depend on them for such services. o/oADMIN, on the other hand, should vary directly with access to population, other characteristics being held equal, because administrative services are more heavily exported and therefore, to minimize costs, should tend to be located in proximity to other concentrations of economic activity.

Governmental Centers (FEDRES and STACAP)

Cities that are centers of governmental activity should be attractive to certain service clusters because they generate demand for the output of those clusters (e.g., legal services) or because the government activity itself affects the nature of the economic base (e.g., Federal Reserve facilities, which establish a city as a banking center). We therefore introduced dummy variables for those SMSAs that contain Federal Reserve banks or branches (FEDRES) or are state capitals (STACAP) into the equations for o/oFIRE, o/oBS&LG, and o/oADMIN—the last, on the grounds that locations chosen as government ad-

\[
ACUPOP_i = \frac{1}{\sum_{1...3064} \frac{POPMA_j}{(Distance i to j)^2}}
\]

for all of the 3064 counties of the continental U.S. This approach to measuring access to population is somewhat biased in that it gives high values to SMSAs composed of multiple counties.

By way of interest, the following are ACUPOP values for selected SMSAs:

<table>
<thead>
<tr>
<th>City</th>
<th>ACUPOP</th>
<th>City</th>
<th>ACUPOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jersey City</td>
<td>1803</td>
<td>Chicago</td>
<td>528</td>
</tr>
<tr>
<td>New York City</td>
<td>1757</td>
<td>Atlanta</td>
<td>489</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>1027</td>
<td>Denver</td>
<td>324</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>883</td>
<td>Houston</td>
<td>269</td>
</tr>
<tr>
<td>Detroit</td>
<td>707</td>
<td>Los Angeles</td>
<td>254</td>
</tr>
<tr>
<td>Hartford</td>
<td>659</td>
<td>Phoenix</td>
<td>190</td>
</tr>
<tr>
<td>Akron</td>
<td>644</td>
<td>Spokane</td>
<td>170 (lowest)</td>
</tr>
</tbody>
</table>
ministrative centers might also be attractive as business administra-
tive centers. (Other federal bodies, such as the Small Business Ad-
ministration, Public Health Service, and Veterans Administration,
often establish their regional headquarters in the same cities as the
Federal Reserve System.)

Industrial Base (MFRCTR)

Metro areas that concentrate on manufacturing should, all else
equal, be less likely to have high levels of employment in such clus-
ters as VISIT, FIRE, BS&LG, and WHSL, on the grounds that special-
ization is a characteristic of urban economies. Our industrial base
variable is value added in manufacturing per capita in 1972. (We used
that variable rather than the percent employment in manufacturing,
whose use would have constrained the percentage values that the de-
pendent variables could take.) We thought it important to add the
industrial base variable, MFRCTR, to the equation for o/oADMIN as
well, although expectations as to the direction of the relationship are
somewhat ambiguous. Office employment might seek specialized
localities, as we hypothesized for FIRE or VISIT, or might, on the
other hand, tend to colocate with the manufacturing facilities that the
offices administer.

Heavy Industry (LGPLTS)

Heavy industry, with its negative aspects, should have a repelling
effect on the service clusters, especially o/oVISIT, o/oFIRE, and o/
obS&LG. We thought the variable belonged in the o/oADMIN equa-
tion, but had mixed expectations as to the sign of the relationship.
Perhaps offices flee from the smoke, dirt, and noise associated with
heavy industry; on the other hand, they may need to be near the
firm’s largest plants. As a proxy for heavy industry, we used the per-
centage of all the metro’s manufacturing plants that had 100 or more
employees in 1972.\footnote{The zero order correlation between LGPLTS
and the percentage of all employment in durable manufacturing was 0.461
in our sample of 188 SMSAs.}

Affluence (INCPCA)

The higher the average level of income, the more employment and
employment growth we would expect in our clusters, since the local
population forms part of the demand for these sorts of services. We used per capita income in 1974 as a proxy for affluence.

**Dispersion (o/oCLUSTER, Including o/oFIRE, o/oBS&LG, o/oVISIT, o/oWHSL, o/oADMIN)**

The nationwide trend toward the dispersion of economic activity results in an increasing similarity among labor markets. Because of declining real costs of transport, communication, and information processing, the scale and agglomeration advantages of the large SMSAs are fading. We therefore expected that any particular cluster's rate of growth would be negatively related to its level of employment, i.e., that specialized local economies were becoming less so over time. Accordingly, in each of the Δ equations we added an explanatory variable that reflected the percentage level in that same cluster (i.e., o/oFIRE in ΔFIRE, o/oVISIT in ΔVISIT, etc.).

**Cluster Linkages (o/oADMIN, ΔADMIN, o/oFIRE, ΔFIRE, o/oRETL, ΔRETL)**

Finally, we recognized that certain clusters were linked—that the level or growth in cluster i should be directly associated with the level or growth in cluster j. We hypothesized that high values of o/oADMIN would associate with high values of o/oFIRE, o/oBS&LG, and o/oVISIT, and that ΔADMIN would have similar relations with ΔFIRE, ΔBS&LG, and ΔVISIT. For o/oBS&LG and ΔBS&LG, we added, respectively, o/oFIRE and ΔFIRE, and for o/oWHSL and ΔWHSL, we introduced o/oRETL and ΔRETL (the percentage of employment in and the change in employment in retail trade, respectively). Obviously, all signs were expected to be positive. Introducing the cluster linkages was a crude attempt to compensate for the underlying simultaneous determination phenomena that a single model could not capture.

**FINDINGS AND INTERPRETATION**

**Metro Specialization**

Table 2.2 shows the results of our attempts to identify factors associated with the relative size of service clusters across American
Table 2.2

LEVEL OF CLUSTERS: REGRESSION RESULTS

<table>
<thead>
<tr>
<th>Level Variable</th>
<th>Constant</th>
<th>POPMAG</th>
<th>STADOM</th>
<th>NOKRA</th>
<th>SOUTH</th>
<th>WEST</th>
<th>TRNCLI</th>
<th>ACICPUP</th>
<th>FEDRES</th>
<th>STACAP</th>
<th>MFRCTR</th>
<th>LGFLTS</th>
<th>INCPCA</th>
<th>X_ADMIN</th>
<th>X_FIRE</th>
<th>X_RETL</th>
<th>R² (F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/oFIRE</td>
<td>-3.912</td>
<td>0.185</td>
<td>0.108</td>
<td>0.033</td>
<td>0.138</td>
<td>0.226</td>
<td>-0.167</td>
<td>0.106</td>
<td>0.234</td>
<td>-0.229</td>
<td>-0.152</td>
<td>0.238</td>
<td>-0.013</td>
<td>0.486</td>
<td>13.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(13.57)</td>
<td>(2.32)</td>
<td>(1.56)</td>
<td>(0.44)</td>
<td>(2.86)</td>
<td>(2.86)</td>
<td>(2.86)</td>
<td>(1.34)</td>
<td>(4.01)</td>
<td>(2.80)</td>
<td>(1.75)</td>
<td>(3.23)</td>
<td>(0.19)</td>
<td>(13.62)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0/oBSLNG</td>
<td>-4.270</td>
<td>0.099</td>
<td>0.132</td>
<td>0.087</td>
<td>0.206</td>
<td>0.133</td>
<td>-0.050</td>
<td>0.104</td>
<td>0.009</td>
<td>-0.123</td>
<td>-0.113</td>
<td>0.195</td>
<td>0.129</td>
<td>0.193</td>
<td>0.581</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(9.37)</td>
<td>(1.35)</td>
<td>(2.12)</td>
<td>(1.28)</td>
<td>(2.98)</td>
<td>(2.85)</td>
<td>(2.85)</td>
<td>(1.45)</td>
<td>(0.16)</td>
<td>(1.63)</td>
<td>(1.63)</td>
<td>(3.56)</td>
<td>(2.09)</td>
<td>(2.09)</td>
<td>(18.37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0/oVISIT</td>
<td>-6.61</td>
<td>0.016</td>
<td>-0.018</td>
<td>-0.156</td>
<td>-0.235</td>
<td>-0.305</td>
<td>0.178</td>
<td>0.357</td>
<td>-0.325</td>
<td>-0.320</td>
<td>0.267</td>
<td>0.043</td>
<td>0.558</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(17.68)</td>
<td>(0.26)</td>
<td>(0.33)</td>
<td>(0.46)</td>
<td>(1.13)</td>
<td>(4.25)</td>
<td>(4.71)</td>
<td>(0.96)</td>
<td>(5.02)</td>
<td>(4.46)</td>
<td>(0.90)</td>
<td>(0.78)</td>
<td>(30.14)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0/oWHSL</td>
<td>-1.069</td>
<td>-0.075</td>
<td>0.271</td>
<td>-0.118</td>
<td>-0.070</td>
<td>-0.113</td>
<td>-0.180</td>
<td>0.002</td>
<td>0.033</td>
<td>0.032</td>
<td>-0.113</td>
<td>2.67</td>
<td>0.281</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.19)</td>
<td>(0.80)</td>
<td>(3.36)</td>
<td>(1.32)</td>
<td>(0.79)</td>
<td>(1.18)</td>
<td>(1.62)</td>
<td>(0.34)</td>
<td>(0.31)</td>
<td>(1.32)</td>
<td>(2.88)</td>
<td>(6.19)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0/oADMIN</td>
<td>-6.223</td>
<td>0.055</td>
<td>0.042</td>
<td>0.090</td>
<td>0.192</td>
<td>0.060</td>
<td>6.276</td>
<td>0.303</td>
<td>0.008</td>
<td>0.162</td>
<td>0.024</td>
<td>0.189</td>
<td>0.369</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(11.60)</td>
<td>(0.60)</td>
<td>(0.55)</td>
<td>(1.96)</td>
<td>(2.28)</td>
<td>(0.69)</td>
<td>(2.76)</td>
<td>(0.42)</td>
<td>(0.12)</td>
<td>(1.77)</td>
<td>(0.25)</td>
<td>(2.17)</td>
<td>(8.67)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0/oDUMBFR</td>
<td>-1.784</td>
<td>0.021</td>
<td>-0.061</td>
<td>-0.444</td>
<td>0.398</td>
<td>-0.144</td>
<td>-0.061</td>
<td>-0.444</td>
<td>0.398</td>
<td>-0.144</td>
<td>-0.061</td>
<td>0.398</td>
<td>0.303</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.42)</td>
<td>(0.29)</td>
<td>(0.72)</td>
<td>(1.52)</td>
<td>(4.90)</td>
<td>(4.90)</td>
<td>(1.50)</td>
<td>(1.50)</td>
<td>(1.50)</td>
<td>(1.50)</td>
<td>(1.50)</td>
<td>(1.50)</td>
<td>(12.96)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0/oDUMBFR</td>
<td>-0.846</td>
<td>0.047</td>
<td>0.087</td>
<td>0.092</td>
<td>-0.233</td>
<td>0.242</td>
<td>0.087</td>
<td>0.092</td>
<td>-0.233</td>
<td>0.242</td>
<td>0.087</td>
<td>0.092</td>
<td>0.330</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.07)</td>
<td>(0.66)</td>
<td>(1.05)</td>
<td>(1.16)</td>
<td>(2.92)</td>
<td>(2.57)</td>
<td>(1.05)</td>
<td>(1.16)</td>
<td>(2.92)</td>
<td>(2.57)</td>
<td>(1.05)</td>
<td>(1.16)</td>
<td>(11.72)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

aSignificant at 1%.  
bSignificant at 5%.  
cSignificant at 10%.
SMSAs. In other words, these estimates indicate the local characteristics that were related to specialization in the seven clusters of industries. Judging by the Rs, the most impressive associations were registered for the VISIT and BS&LG clusters; for FIRE the associated variables seemed to account for about half the variation; for ADMIN it dropped to 37 percent, and for WHSL to 28 percent. In retrospect, the seemingly disappointing results for the latter two are not so surprising. Wholesale trade is a ubiquitous activity without a great deal of spatial specialization, and specialization in headquarters activities is often a result of historical factors not reflected in current SMSA characteristics. For the two manufacturing clusters, about one-third of the observed variation was accounted for by the associated variables.

The first numbers appearing under each of the associated variables in Table 2.2 indicate the relative importance of the variable (as compared with the others on that line) in terms of association with the outcome variables. (They are standardized beta coefficients.) The figures in parentheses show whether the association is so strong that random chance is unlikely to account for it.

/o/FIRE. A metro area’s level of finance, insurance, and real estate employment seems to be associated with its size, region (i.e., in the Northeast and South, but not in the West), and degree of concentration in government activities. FIRE employment does occur in relatively isolated places (i.e., with low levels of ACUPOP) and in cities with little specialization in heavy manufacturing, particularly the sort that occurs in large plants. Cities with high levels of per capita income also registered high in financial, etc., employment. Surprisingly, administrative centers do not appear to be FIRE centers as well, perhaps because insurance and real estate are to an appreciable extent “retail” instead of business input activities.

/o/BS&LG. Specialization in business services tends to occur in regional centers (metros that lead their states in population), and in the South and West. Manufacturing again has a negative association, although the variables which characterize that specialization do not quite attain significance at the 10 percent level of confidence. Here, too, affluence is important, as well as are such “demand” clusters as FIRE and ADMIN.

---

8Because the range of percentages in a given cluster could vary only in a limited way, we transformed the dependent variable into log(100 - %XXX)/100.

9They are the T-statistics on the coefficients in their natural forms. The superscript letters (a, b, c) show the level of confidence with which the “random association” hypothesis is to be rejected.
o/oVISIT. Population factors appear to have little to do with high levels of visitor-serving employment. Places with temperate climates register high, as we would expect. The Northeast, South, and West show as significantly negative in comparison with the North Central region, perhaps because the North Central region contains locations that attract more visitors than their climate and other characteristics would indicate.\(^{10}\) Again, manufacturing appears to act as a repellent and per capita income as an attraction. Isolation (i.e., low value for ACUPOP) is the most influential of all the associated variables, probably because visiting isolated places requires finding board and lodging there. We had thought that high levels of administrative employment would be associated with high demand for visitor services, but there proved to be no significant relationship.

o/oWHSL. Only two variables, STADOM and retailing, turned out to be associated with employment in the wholesaling, trucking, and warehousing cluster at a significant level. Isolation was a shade short of significant at the 10 percent level. Neither region, nor affluence, nor manufacturing specialization varied significantly with the size of the wholesaling cluster. Generally, then, those cities that dominate their hinterlands score high in WHSL.

o/oADMIN. Administrative employment—headquarters and auxiliary activities—appears to be high in the South and low in the North Central region, other things equal. Unlike the case for the other four clusters, isolation shows up as a definite disadvantage; places located in thickly populated sections of the county have more administrative employment. The size of the SMSA itself and its degree of local dominance appear unimportant. MFRCTR varies with rather than against o/oADMIN, suggesting that administrative functions are performed in the places where production is carried out. (Think of Detroit, Pittsburgh, Cleveland, and Chicago, all high in o/oADMIN.) The federal government (but not state governments) and private business seem to choose the same administrative centers. As for all of the other clusters (except WHSL), high per capita income is associated with disproportionately high employment in this cluster.\(^{11}\)

o/oDURMFR and o/oNDURMFR. As noted earlier, we did not attempt to build elaborate models to explain durable and nondurable

---

\(^{10}\) We did, however, remove the Las Vegas and Reno SMSAs from our sample in performing the analysis of the VISIT sector. They registered, respectively, 36 and 24 percent in VISIT employment against an SMSA average of 16 percent, for obvious reasons. We did not remove Atlantic City, however, because gambling was not yet a major employer there in the early 1970s.

\(^{11}\) That the causality runs in the other direction is unlikely, inasmuch as most office jobs are low-paying, at least in comparison with manufacturing, and since ADMIN accounts for only 2 percent of employment in the average city.
manufacturing, but merely tried to estimate their employment percentages with variables already developed for the service clusters, by way of comparison. For the manufacturing clusters, population size has no significant association; not surprisingly, inasmuch as manufactured products are largely exported. Manufacturing centers tend not to be in the West, nor, in the case of durables, in the South. Non-durables are found in thickly populated areas, perhaps to save on transport costs for such goods as foods and textiles with relatively low value for their bulk. Durables exhibit the opposite tendency (although the coefficient on ACUPOP is not quite significant at the 10 percent level).

Cluster Change

Table 2.3 presents findings for the equations that attempt to characterize change (growth or decline) in the various clusters. For these estimates, the overall relationships of the dependent with the associated variables tend to be a bit lower than they were for the level estimates described above. In four out of the five service-cluster estimates, the selected variables are associated with about half the variations in the change variable. Our relative inability to find associations for ΔADMIN is probably due to the fact that headquarters and administrative employment are more idiosyncratic in their location than is employment in the other service industries. Estimates for change in the manufacturing sectors were a bit better relative to the service estimates than was the case in the respective level estimates.\[12\]

ΔFIRE. Dominating the estimate for change in financial, insurance, and real estate employment is population change. (In fact, for all of the first four clusters, population change is the most weighty variable.) Neither population magnitude nor the regional factors attained significant coefficients, although affluence did. There is apparently no tendency for the level of financial employment in a metro to be associated with its percentage of growth. Neither does growth in ADMIN employment—thought to be a "demander" of FIRE output—seem to influence ΔFIRE. (In fact, although the coefficient is not significant, the sign is counterintuitive.)

ΔBS&LG. For business and legal services growth, a similar pattern emerges. Population change and per capita income have the expected

\[12\] As a point of interest, in all seven equations the constant term is close to zero, suggesting that there is no exogenous growth.
<table>
<thead>
<tr>
<th>Change Variable</th>
<th>Constant</th>
<th>POP2</th>
<th>NOREA</th>
<th>SOUTH</th>
<th>WEST</th>
<th>INCPA</th>
<th>CLUSTER</th>
<th>ΔADMIN</th>
<th>ΔFIRE</th>
<th>ΔRETL</th>
<th>$r^2$ (F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔFIRE</td>
<td>0.003</td>
<td>-0.014</td>
<td>0.639</td>
<td>0.023</td>
<td>-0.072</td>
<td>0.068</td>
<td>0.137</td>
<td>0.045</td>
<td>-0.066</td>
<td></td>
<td>.503 (18.59)$^a$</td>
</tr>
<tr>
<td>ΔBCS&amp;LG</td>
<td>-0.002</td>
<td>-0.012</td>
<td>0.442</td>
<td>0.120</td>
<td>0.095</td>
<td>-0.009</td>
<td>0.137</td>
<td>-1.25</td>
<td>0.054</td>
<td>0.085</td>
<td>.409 (11.35)$^a$</td>
</tr>
<tr>
<td>ΔVISIT</td>
<td>0.087</td>
<td>-0.145</td>
<td>0.504</td>
<td>-0.327</td>
<td>0.095</td>
<td>-1.81</td>
<td>-0.032</td>
<td>-0.180</td>
<td>-0.043</td>
<td></td>
<td>.580 (22.60)$^a$</td>
</tr>
<tr>
<td>ΔHISL</td>
<td>-0.006</td>
<td>-0.153</td>
<td>0.373</td>
<td>-0.076</td>
<td>-0.067</td>
<td>0.164</td>
<td>0.133</td>
<td>-0.012</td>
<td></td>
<td>0.267 (2.88)$^a$</td>
<td>.565 (23.86)$^a$</td>
</tr>
<tr>
<td>ΔADMIN</td>
<td>-0.153</td>
<td>-0.077</td>
<td>0.165</td>
<td>-0.117</td>
<td>0.056</td>
<td>-0.028</td>
<td>0.171</td>
<td>-0.274</td>
<td></td>
<td>0.190 (4.30)$^a$</td>
<td></td>
</tr>
<tr>
<td>ΔDEMRFR</td>
<td>-0.052</td>
<td>0.129</td>
<td>-0.390</td>
<td>-0.002</td>
<td>0.003</td>
<td>0.059</td>
<td>0.062</td>
<td>0.202</td>
<td></td>
<td>0.361 (14.68)$^a$</td>
<td></td>
</tr>
<tr>
<td>ΔNDURMFR</td>
<td>-0.017</td>
<td>-0.095</td>
<td>0.467</td>
<td>-0.207</td>
<td>0.048</td>
<td>0.137</td>
<td>-0.024</td>
<td>-0.085</td>
<td></td>
<td>0.492 (20.12)$^a$</td>
<td></td>
</tr>
</tbody>
</table>

$^a$Significant at 1%.  
$^b$Significant at 10%.  
$^c$Significant at 5%.
associations. Population size, region, and change in the demand sectors do not. Places that specialize in this employment category seem to be losing their edge (negative sign on o/oCLUSTER), but the coefficient falls somewhat short of significance at the 10 percent level of confidence.

ΔVISIT. Visitor-related employment seems to be falling in the largest metros, but is strongly and positively related to population growth. This cluster appears to be declining in the Northeast and growing in the West, as compared with the course of events in the North Central states. VISIT also exhibits a dispersion pattern, in that places that register high in VISIT employment have low rates of growth in their visitor-oriented services. Per capita income appears not to be associated with the expansion in hotel, restaurant, and amusement employment.13

ΔWHSL. Wholesaling, trucking, and warehousing employment is also on the upswing in smaller, rapidly growing cities, and particularly in the West. Affluence appears to help in generating growth as does expansion in retailing, which we expected.

ΔADMIN. For this cluster—headquarters employment—we were able to identify factors associated with only about 20 percent of the variation across SMSAs. Even population growth fell short of the 90-percent level of significance as an independent variable. Regional factors failed to come through in a significant manner. Affluence, however, does not appear to correlate independently with growth in administrative employment, and the dispersion phenomenon seems to operate; metros with high levels of administrative employment had relatively low rates of growth in that category, and vice versa.

ΔDURMFR and ΔNDURMFR. The factors associated with growth in the manufacturing sectors again displayed a pattern different from those that characterized the service clusters. For durables, large population contributed to growth, while for the nondurables, the opposite was the case, although the coefficient for the latter was not quite significant. Nondurable employment grew where population was expanding, but durables grew more slowly or declined in such places. No regional factors came into play for durables, but significant gains were registered in nondurable manufacturing employment in the West, with even more significant limitations in the Northeast, compared, as always, with SMSAs in the North Central region. As to the

13The sample of SMSAs was reduced by one in this analysis. The Orlando, Florida, SMSA attained a 16-percent annual rate of growth in VISIT employment during the period 1970-1977, while the average SMSA grew only at 5 percent. The establishment of Disney World was the unique event.
diffusion phenomenon, just the reverse was true of durable manufacturing employment. Metros with high levels had the most growth.

SECTORAL TARGETS FOR JOB CREATION STRATEGIES

We have mentioned before that our analyses are exploratory. In this section we outline how results from a more rigorous and comprehensive modeling effort, suitably refined, could be used to systematically identify promising sectoral targets in individual metropolitan economies.

Identifying High-Payoff Sectoral Targets

To the extent that estimates of the kind discussed here do indeed characterize the process of local specialization and growth, they have direct application to the devising of sectoral strategies. The models, based upon observed behavior across a large sample of SMSAs, generate predictions of the "natural" level of a given activity in a particular local economy.\textsuperscript{14}

Suppose the value predicted by the model for a given SMSA, e.g., Fort Wayne, significantly exceeds the value actually observed in a particular cluster, e.g., FIRE.\textsuperscript{15} This implies, to the extent that the model accurately reflects real world phenomena, that Fort Wayne is "unnaturally" low in finance, insurance, and real estate activities, given its characteristics—population, industrial base, location, etc. Knowing that Fort Wayne is "too low" in FIRE, however, is not sufficient. If FIRE in Fort Wayne were growing "unnaturally fast," we might expect that the Fort Wayne economy was on the road to attaining its "natural" level in FIRE.\textsuperscript{16}

But if Fort Wayne were found to be both "unnaturally" low in its level for FIRE and low-to-normal in its growth for FIRE, we have been offered an interesting piece of information. The co-occurrence suggests that some factor not represented in the FIRE models is preventing Fort Wayne from attaining its natural position in the finance, insurance, and real estate cluster. That factor might be an imperfection in the local capital market, an attitude of risk-aversion on the

\textsuperscript{14}The predictions result when local characteristics are used as values of the associated variables and multiplied by the coefficients derived from the estimates.

\textsuperscript{15}We used the rather stringent test of a difference of at least two standard deviations to define a significant departure.

\textsuperscript{16}Where "unnaturally fast" is defined as a case in which the observed rate of \( \Delta \text{FIRE} \) exceeds the predicted rate by at least two standard deviations.
part of investors, or a historical anomaly of one kind or another. But it is precisely these sorts of local impediments that federal, state, and local urban development policies should be designed to overcome. That is, a judicious intervention might break the bottleneck and permit Fort Wayne to take its "natural" place in terms of finance, etc., employment.

Acceptance of this chain of reasoning depends on prior acceptance of the validity of the models—or successors thereto—which purport to characterize specialization and growth phenomena. In the absence of other information, the models at least serve to point the way toward promising investment opportunities. Where the findings of the analysis described here conflict with expert judgments, further research is obviously called for.

In Table 2.4, we list all the metropolitan economies that exhibit "unnaturally" low levels together with "unnaturally" low-to-normal growth in each of the seven clusters being analyzed. We refer to these as potentially high-payoff targets for sectoral interventions because in each of the metro/cluster combinations a new investment may help the locality fulfill its potential.

**Identifying Low-Risk Sectoral Targets**

At the other end of the spectrum are the metro economies that, for a given cluster, score "unnaturally" high on level of employment and which, at the same time, exhibit normal-to-"unnaturally"—high job growth in that same cluster.\(^{17}\) They are shown in Table 2.5. In these places, instead of a bottleneck that prevents natural adaptation, we may be observing a continuing trend toward hyperspecialization. Interventions in such economies are certainly not needed to unlock the potential; however, they may produce their effects with very low risk, at least if observed trends persist.

The counterargument would hold that hyperspecialization is a process of "milking" a potential and cannot long endure. We cannot resolve that argument here, and present our findings on hyperspecializing metros with that caveat in mind.

The information in Tables 2.4 and 2.5 should prove useful to decisionmakers because it indicates, for a group of local economies, the sectors that seem to offer the best opportunities for intervention.\(^{18}\) It

\(^{17}\)As before, we defined "unnatural" as a difference of at least two standard deviations between predicted and observed values.

\(^{18}\)A much larger number of SMSAs would appear if we eased the terms of the definition of "unnatural" as regards level and change. For instance, we could set the definition of unnatural at one (instead of two) standard deviation difference between observed
Table 2.4

POTENTIAL HIGH PAYOFF INTERVENTION TARGETS
BY CLUSTER AND SMSA
(WITH UDAG SCORES)

<table>
<thead>
<tr>
<th>Cluster</th>
<th>SMSA (UDAG Score)</th>
<th>Cluster</th>
<th>SMSA (UDAG Score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRE</td>
<td>La Crosse (5)</td>
<td>ADMIN</td>
<td>Galveston (5)</td>
</tr>
<tr>
<td></td>
<td>Fort Wayne (3)</td>
<td></td>
<td>South Bend (4)</td>
</tr>
<tr>
<td></td>
<td>Kenosha (3)</td>
<td></td>
<td>Kenosha (3)</td>
</tr>
<tr>
<td></td>
<td>Ann Arbor (2)</td>
<td></td>
<td>Springfield, Ill (3)</td>
</tr>
<tr>
<td></td>
<td>Champaign-Urbana (2)</td>
<td></td>
<td>Cedar Rapids (2)</td>
</tr>
<tr>
<td></td>
<td>Vallejo (2)</td>
<td></td>
<td>Palm Beach (0)</td>
</tr>
<tr>
<td></td>
<td>Huntsville (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BS&amp;LG</td>
<td>Williamsport (6)</td>
<td>DURMFR</td>
<td>New York (6)</td>
</tr>
<tr>
<td></td>
<td>Johnstown (5)</td>
<td></td>
<td>Champaign-Urbana (3)</td>
</tr>
<tr>
<td></td>
<td>Huntington-Ashland (4)</td>
<td></td>
<td>Sioux Falls (3)</td>
</tr>
<tr>
<td></td>
<td>Wheeling (4)</td>
<td></td>
<td>Fargo-Moorhead (2)</td>
</tr>
<tr>
<td></td>
<td>Kenosha (3)</td>
<td></td>
<td>Madison (2)</td>
</tr>
<tr>
<td></td>
<td>Fargo (2)</td>
<td></td>
<td>Topeka (2)</td>
</tr>
<tr>
<td></td>
<td>Lynchburg (2)</td>
<td></td>
<td>Lincoln (1)</td>
</tr>
<tr>
<td></td>
<td>Bloomington, Ill (1)</td>
<td></td>
<td>Salinas (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Billings (0)</td>
</tr>
<tr>
<td>VISIT</td>
<td>Birmingham (6)</td>
<td>NDURMFR</td>
<td>Norfolk (6)</td>
</tr>
<tr>
<td></td>
<td>Los Angeles (5)</td>
<td></td>
<td>Saginaw (6)</td>
</tr>
<tr>
<td></td>
<td>Baton Rouge (2)</td>
<td></td>
<td>Lansing (4)</td>
</tr>
<tr>
<td>WHSL</td>
<td>Battle Creek (6)</td>
<td></td>
<td>Ann Arbor (2)</td>
</tr>
<tr>
<td></td>
<td>Long Branch (5)</td>
<td></td>
<td>Newport News (2)</td>
</tr>
<tr>
<td></td>
<td>Ann Arbor (2)</td>
<td></td>
<td>Austin (1)</td>
</tr>
<tr>
<td></td>
<td>Newport News (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vallejo (2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

also suggests the way to attain a "balanced" intervention portfolio, i.e., by including both high-payoff and low-risk investment situations. It even provides guidance in designing multisector projects. For example, Bloomington, Illinois, which appears under BS&LG and FIRE, might want to consider a general office development, while La Crosse, Wisconsin, appearing under WHSL and VISIT, might consider a complex that features a hotel, convention center, and warehousing facilities.

and predicted values, and thereby generate many more high-payoff and low-risk targets.
### Table 2.5

**Potential Low-Risk Intervention Targets by Cluster and SMSA**

(With UDAG Scores)

<table>
<thead>
<tr>
<th>Cluster</th>
<th>SMSA (UDAG Scores)</th>
<th>Cluster</th>
<th>SMSA (UDAG Scores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRE</td>
<td>Hartford (7)</td>
<td>WHSL</td>
<td>Jersey City (6)</td>
</tr>
<tr>
<td></td>
<td>Battle Creek (6)</td>
<td></td>
<td>La Crosse (5)</td>
</tr>
<tr>
<td></td>
<td>New York (6)</td>
<td></td>
<td>Spokane (5)</td>
</tr>
<tr>
<td></td>
<td>Syracuse (6)</td>
<td></td>
<td>Sioux Falls (3)</td>
</tr>
<tr>
<td></td>
<td>Great Falls (4)</td>
<td></td>
<td>Des Moines (2)</td>
</tr>
<tr>
<td></td>
<td>Des Moines (2)</td>
<td></td>
<td>Amarillo (1)</td>
</tr>
<tr>
<td></td>
<td>Jacksonville (2)</td>
<td></td>
<td>Lubbock (1)</td>
</tr>
<tr>
<td></td>
<td>Bloomington, Ill (1)</td>
<td></td>
<td>Charlotte (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Greensboro (0)</td>
</tr>
<tr>
<td>BS&amp;LG</td>
<td>Trenton (7)</td>
<td>ADMIN</td>
<td>Wilmington, DE (7)</td>
</tr>
<tr>
<td></td>
<td>South Bend (4)</td>
<td></td>
<td>Akron (6)</td>
</tr>
<tr>
<td></td>
<td>Green Bay (2)</td>
<td></td>
<td>Racine (4)</td>
</tr>
<tr>
<td></td>
<td>Ann Arbor (2)</td>
<td></td>
<td>Santa Barbara (3)</td>
</tr>
<tr>
<td>VISIT</td>
<td>Atlanta (6)</td>
<td></td>
<td>Amarillo (1)</td>
</tr>
<tr>
<td></td>
<td>Lancaster (6)</td>
<td></td>
<td>Tulsa (1)</td>
</tr>
<tr>
<td></td>
<td>New York (6)</td>
<td></td>
<td>Boise (1)</td>
</tr>
<tr>
<td></td>
<td>La Crosse (5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Louisville (5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Riverside (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Santa Barbara (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ft. Lauderdale (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lexington (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Omaha (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Salinas (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DURMFR</td>
<td>Muskegon (6)</td>
<td>NDURMFR</td>
<td>Greenville (5)</td>
</tr>
<tr>
<td></td>
<td>Rockford (4)</td>
<td></td>
<td>Charlotte (1)</td>
</tr>
<tr>
<td></td>
<td>Eugene (2)</td>
<td></td>
<td>Greensboro (1)</td>
</tr>
<tr>
<td></td>
<td>Lynchburg (2)</td>
<td></td>
<td>Modesto (1)</td>
</tr>
<tr>
<td></td>
<td>San Jose (1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Federal officials, when allocating scarce resources, often want to favor areas exhibiting the most need. HUD uses Urban Development Action Grants (UDAG) qualification scores for this purpose. In Tables 2.4 and 2.5 we have listed the SMSAs under each cluster in descending order of UDAG qualification scores. These scores are based on local measures of unemployment, population growth, age of housing stock, poverty, and per capita income, and are meant to reflect the degree of distress in the local economy. In a sense, then, those SMSAs at the top of each list are the most “deserving” of assistance.
Chapter 3

SECTORAL INTERVENTIONS AND METROPOLITAN OUTCOMES

THE GENERAL APPROACH

The first part of this report discusses some of the ways in which available data can be organized to identify likely targets for sectoral intervention in different cities. Identifying current and future winning targets is only one side of the decision coin, of course. A sectoral strategy with a low payoff or high risk might yield some sufficiently valuable specific economic and social benefits for the community to make the project worthwhile. We now turn, therefore, to an evaluation of the benefits of alternative sectoral development approaches in different cities.

The hoped-for benefits of urban development programs are as multidimensional as the problems that afflict the distressed central cities of the United States. In addition, the full benefits of any given project are only realized once the initial impact has worked its way through the structure of the entire local and regional economy. These two considerations suggest that procedures for evaluating urban development projects should trace the effects through a structural model of the regional economy, and should project the eventual effect of some initial intervention on a variety of outcomes of concern to urban policymakers. This process is illustrated in Fig. 3.1.

![Diagram](image)

Fig. 3.1—Tracing the effects of a development intervention
The model in Fig. 3.1 works in the following way. Suppose that through a UDAG-supported project or some other development program, some number of initial new jobs is introduced into the metropolitan area.¹ The firms that employ these workers purchase some of their inputs from other firms in the metropolitan area, and these firms also increase their employment. Eventually, once all the interactions among local firms have worked themselves out, the initial intervention will have resulted in some aggregate increase in total employment in the metropolitan area and some distribution of those jobs across all sectors.

Disproportionate growth in different sectors may, in turn, lead to very different outcomes. For example, if sectors hiring large proportions of minority group members or job-seekers with low educational attainment are induced to grow, development will tend to reduce unemployment more than would a strategy that favored other sectors. Likewise, to the extent that some sectors contribute more per employee to the local tax base, strategies inducing growth in those sectors will contribute more to the fiscal soundness of local governments.

Building such a structural model requires two distinct types of analysis. First, we need a method for accounting for intersectoral flows. Second, we need techniques that relate the sectoral composition of the local economy to a number of outcomes of interest. Rand's work has focused on these latter relationships, those represented by arrows c, d, e, f, and so on, in Fig. 3.1. We decided to devote most of our effort to the analysis of outcomes because good research is already available on intersectoral growth relationships within urban economies. (These are called multiplier studies; see Bibliography.)

The rest of this chapter reports the results of this part of our research. We begin with a list of the metropolitan outcomes we have included in our analysis. Then we summarize our research findings with respect to how different sectors contribute in different degrees to each outcome. Finally, we present the results of some rough calculations for two selected SMSAs, which illustrate how the individual analyses can be linked in a structural model similar to that illustrated in Fig. 3.1.

¹This number of initial new jobs will ordinarily be less than the number of people eventually working at the project site. Part of the effect of any given development project will be to shift the location of existing employment within the metropolitan area. Strictly speaking, the number of new jobs that should enter the model is the number of new jobs associated with whatever net increase in final demand the development project is able to produce.
THE BENEFITS OF URBAN DEVELOPMENT

The objectives of urban development policy are numerous. Our choice of outcomes to examine was driven partly by data availability, but also by some fairly widely accepted notions of what urban development policy should try to do. While the following list is by no means exhaustive, we believe it covers most of the basic policy objectives. How each of the outcomes might be weighted in choosing a particular strategy will of course depend on the priorities that obtain in a given community.

Increasing Total Employment

Development strategies that generate a large total of new jobs as they work through the local economy will be favored over strategies that generate fewer jobs. Job generation reduces structural unemployment and can contribute to the solution of urban problems that are related to unemployment.

Increasing Employment for Those Most Likely to Be Unemployed

Structural unemployment is greater among some population groups than others. Young labor force participants, minority group members, and high school dropouts have a harder time finding jobs. Thus, economic sectors that hire large populations of these groups should be favored by development policymakers.

Increasing Employment in the Central City

New jobs in the central city might be considered more valuable than new jobs in the suburbs for two reasons. First, unemployment is usually more common in the central city than in the suburbs. One way that has been suggested for dealing with this problem is to induce more jobs to locate in the central city, although it might also be possible to "open the suburbs" to jobs for central city residents. Second, the economic condition of the central city heavily influences the image a metropolitan area projects to the world. The notorious

---

*By central city, we mean the area close to the center of the metro area. If its political jurisdiction is geographically small, many of the problems we discuss will probably extend to the inner suburbs.*
economic problems of Newark or Cleveland inflict a spillover cost on even the most prosperous neighboring communities.

**Increasing Fiscal Capacity**

The severely strained fiscal circumstances of such cities as New York, Cleveland, St. Louis, and Detroit cannot be ignored by development planners. Strategies that will contribute more to the local tax base at a given cost will be favored over alternatives, other things equal.

**Reducing Cyclical Vulnerability**

Metro economies differ in their responsiveness to national business cycles. In some, local fluctuations in unemployment are more severe than in the nation as a whole. In others, local unemployment is only slightly affected by national economic fluctuations. Most local policymakers would prefer to protect their communities from national recessions, to the extent possible. Again, different sectoral compositions may have different effects on local vulnerability to national cycles.

**Enhancing Opportunities for Occupational Mobility**

The sheer quantity of jobs—either the total for the metropolitan area or for certain groups—is not the only concern of a job creation policy. The quality of jobs also matters; the opportunity for upward career mobility is an important dimension of job quality. Specific occupations in a specific sector differ in this quality dimension. It is often charged that some of the service sectors offer only "dead-end" jobs. If so, this might constitute a powerful argument against a service-sector-oriented development strategy.

These, then, are the objectives of development policy we have incorporated into our analysis. The list, again, is not exhaustive. Many elements of the "quality of life" in a city—environment, aesthetics, congestion, amenities, and so on—have not been included in the list, either because data are unavailable or because considerations of these outcomes were beyond the scope of our research. We now turn to a brief description of our findings with respect to the effects of different sectoral compositions on these outcomes.
RESEARCH FINDINGS: SECTORAL COMPOSITION
AND METROPOLITAN OUTCOMES

Total Employment

The stimulation to a metropolitan economy generated by an urban
development program or project is not confined to the number of jobs
directly created at the project site. The new business associated with
the directly created jobs will also create demands for other inputs. For
example, new restaurant business that is created as part of a “visitor
services” strategy will also stimulate sales by local food distributors,
linen suppliers, florists, and matchbook printers. These suppliers will
also expand their employment in the metropolitan area, and the
visitors’ services strategy will have created additional jobs indirectly.
This indirect stimulation effect is measured by a metropolitan indus-
try multiplier, a number that indicates how many jobs will be created
in total when employment in a specific industry in a specific met-
ropolitan area increases by one job. For example, when employment
in the food processing industry increases by one job in the Baltimore
SMSA, total metropolitan employment can be expected to increase by
2.70 jobs.3 The food processing multiplier in Baltimore is, therefore,
2.70, indicating that 1.7 additional jobs will be created by whatever
stimulated the initial increase of one job in that industry.

Industry multipliers differ across metropolitan areas and across in-
dustries within a single metropolitan area for a variety of reasons.
Larger cities tend to have larger multipliers for all industries than
smaller cities, because large cities are able to supply a larger propor-
tion of all of the inputs any given firm is likely to need locally. Smaller
cities provide a narrower range of inputs locally, and, therefore,
more of the potential stimulation to the local economy is lost to other
metropolitan areas. The average multiplier for all industries in a met-
ropolitan area ranges from a high of 3.74 for the New York SMSA to
a low of 1.96 for the Grand Forks, North Dakota SMSA.

Multipliers differ across industries because different industries
generally buy different proportions of their inputs from the local econ-

---

3This and all the multiplier estimates in this chapter are derived from the U.S.
Department of Commerce’s Regional Input-Output Multiplier System (RIMS-I). This is
an imperfect system for generating multipliers because it takes only a few regional
characteristics into account in “regionalizing” the U.S. input-output table for 1972.
However, RIMS is unsurpassed as an inexpensive source of comparative multiplier
estimates for specific cities. Furthermore, our experience in working with these multi-
pliers indicates that their intermetropolitan and intrametropolitan differences illumi-
nate reasonable industrial and regional differences. A full description of the RIMS
methodology and a complete list of regional multipliers can be obtained from the Bu-
omy. A large proportion of the value of inputs to the iron foundry industry is purchased from places far away from where the blast furnaces are located. By contrast, most of the inputs to the private education industry consist of labor services of one type or another. Such labor services are difficult to import—e.g., most teachers live and work in the same metropolitan area—and consequently most of the inputs to this industry are purchased locally. These differences are reflected in the average multipliers for these industries across all SMSAs: 3.88 for private educational services and 3.07 for the primary metals industry.

The service industries tend to be the most labor-intensive; that is, compared with other industries, labor accounts for a higher proportion of the total value of their inputs. Consequently, service industries tend to purchase a larger proportion of the inputs from the local economy, and, therefore, have higher multipliers. To the extent that gross job creation is a major objective of metropolitan economic development, to the extent that there are real opportunities for service sector expansion in the region, and to the extent that the metropolitan area is "typical" in this regard, policies aimed at service-sector expansion look like a good bet.

However, not all cities are "typical," and this is the third reason for interindustry and interregional variation in economic multipliers. A fabricated metal firm will be able to buy a larger proportion of its nonlabor inputs—sheet metal, machine tools, etc.—in a city like Cleveland than in a place like Denver that produces little machinery or primary metal. This again is reflected in the multipliers of the fabricated metals industry: 3.37 in Cleveland and 2.40 in Denver.

Because these interregional differences are so substantial, it is important that each metropolitan area take its own particular economic structure into account in devising development strategies. Programs should not be adopted simply because they have worked elsewhere.

Distribution of Jobs*

Casual empiricism suggests that certain sectors hire relatively large proportions of their work force from disadvantaged groups—minorities, youth, the poorly educated. For example, one might expect to find a high proportion of blacks and Hispanics in hospital work. These impressions have evolved into rules-of-thumb among development planners. Growth in sectors that appear to hire large numbers of minority group members is assumed to help absorb structural unem-

*The material presented in this section is summarized from Gurwitz and Kirby (forthcoming).
ployment. To test these impressions and rules-of-thumb, we investigated the effects of sectoral development strategies on the distribution of jobs among groups.

We examined the composition of the work force for ten sectors in a sample of SMSAs. We sought uniform patterns across types of SMSAs (large and small, Sunbelt and Snowbelt) to ascertain whether certain sectors consistently hired larger or smaller proportions of blacks, youth, and the poorly educated than the proportion of that type of worker in the general SMSA labor force. In other words, we tried to determine whether some of the established rules-of-thumb were reliable guides for systematic development planning.

Contrary to casual impressions, we found very few systematic patterns among sectors across SMSAs. We found, for example, in spite of the conventional opinion that hospitals are likely employers of minority groups, no tendency in the health services sector as a whole to hire significantly larger proportions of blacks than the proportion of blacks in the metropolitan work force.

The same was true of the other categories of workers we looked at. Industries either tend to hire about the same proportion of each type of worker as is present in the metropolitan work force, or exhibit hiring patterns that are not consistent across different types of cities. The statistically significant divergent findings are summarized in Table 3.1. The industries listed here are the ones that hire a relatively large or small proportion of the specified type of worker in all types of cities. As an illustration, the categories of workers listed in this table are restricted to those thought to be most likely to be structurally unemployed: blacks and minimally educated whites.

While many of the findings reported in Table 3.1 conform to general impressions, they hardly amount to a comprehensive set of criteria for selecting sectors with a mind to reducing unemployment. Therefore, the major conclusion of this part of our study is that there are no rules-of-thumb that are reliable in all metropolitan areas. There is no substitute for project-specific analysis of sectoral hiring practices. Fortunately, more current data to support such analyses will become available for use by development planners when the 1980 Census Public Use Sample is released.

Increasing Central City Employment

Here, too, we attempted to test certain rules-of-thumb and general impressions. Certain sectors—financial services, legal services, hotels

---

5The material in this section is summarized from Gurwitz (1982a).
Table 3.1

INDUSTRIES DIVERGING FROM THE PATTERN OF HIRING
THE SAME PROPORTIONS OF TYPES OF WORKERS
AS ARE IN THE METROPOLITAN WORK FORCE

<table>
<thead>
<tr>
<th>Worker Type</th>
<th>Sectors Hiring Relatively Large Proportions</th>
<th>Sectors Hiring Relatively Small Proportions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young, black, high school graduate</td>
<td></td>
<td>Business services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FIRE</td>
</tr>
<tr>
<td>Old, black, not high school graduate</td>
<td>Construction</td>
<td>FIRE</td>
</tr>
<tr>
<td>Old, black, high school graduate</td>
<td></td>
<td>Business services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction</td>
</tr>
<tr>
<td>Young, white, not high school graduate</td>
<td>Nondurable manufacturing Sales</td>
<td>FIRE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Health services</td>
</tr>
<tr>
<td>Old, white, not high school graduate</td>
<td>Construction</td>
<td>Leisure services</td>
</tr>
<tr>
<td></td>
<td>Durable manufacturing</td>
<td>FIRE</td>
</tr>
<tr>
<td></td>
<td>Nondurable manufacturing Sales</td>
<td>Health services</td>
</tr>
<tr>
<td></td>
<td>Sales</td>
<td></td>
</tr>
</tbody>
</table>

—are allegedly attracted to the central business district (CBD). In order to test these impressions, we estimated a model that related sectoral composition of a metropolitan area to a measure of the spatial distribution of employment.

Our statistical findings in this case indicated that general impressions were correct. High proportions of employment in the finance, insurance, real estate, and legal services sectors were associated with relatively high concentrations of employment close to the CBD. High proportions of employment in the health services and retail sales sectors were associated with relatively dispersed spatial patterns of employment. None of the other sectors included in the model displayed a statistically significant effect. However, the statistically significant effects were of substantial magnitude. The data indicate that moderate differences in sectoral composition are associated with substantial differences in the geographic distribution of economic activity within metropolitan areas.
Increasing Fiscal Capacity

Public concern with metropolitan fiscal problems tends to focus on conditions in central cities. However, because of limitations on what turned out to be the best set of data on sectoral compositions—again, the County Business Patterns series—we had to undertake an analysis of the tax burden of central counties of SMSAs. As with the spatial dispersion analysis, we developed a model relating the tax base to the sectoral composition of the metropolitan economy.

Our statistical analysis indicates that three sectors are associated with statistically significant effects on the tax base. Counties with high proportions of employment in the cultural services (private education, museums, recreation) and hotel sectors have large tax bases, and counties with high proportions of employment in the nondurable manufacturing sectors have smaller tax bases, everything else being held equal. However, the magnitudes of these effects are small. New jobs do generate increased tax revenues, and the industries in which those jobs happen to fall may make some difference, but because the differences are small they should have little influence on the choice of development projects.

Job Quality

The quality of jobs is not a well-defined concept, but this dimension must be taken into account when evaluating economic development strategies or programs. The charge is often made that development of some service sector, particularly of the visitors’ services industries, generates only low-paying, dead-end jobs; we have some suggestive evidence that industries do indeed differ with respect to job quality.

First, different industries apparently pay different wages to individuals with identical observable characteristics in identical occupations. To evaluate the industry/wage relationship, we used the Bureau of the Census Public Use Sample and took durable manufacturing wages as the standard. Holding other observable factors constant, it appears that many of the service sectors do pay significantly lower wages than durable manufacturing, as does nondurable manufacturing. These results are summarized in Table 3.2. To the extent that this dimension of job quality is important and to the extent that unobserved differences among workers are not important, the sectors on the right-hand side of Table 3.2 should be favored, but it is important to remember that total job creation for the structurally unemployed is also an im-

---

*The material in this section is summarized from Gurwitz (1982a).  
²The material in this section is summarized from Gurwitz and Kirby (forthcoming).
portant objective. The fact that most of the sectors on the right-hand side of Table 3.2 are also on the right-hand side of Table 3.1—meaning that the high-wage sectors are not especially likely employers of the structurally unemployed—suggests that the two objectives may conflict to some degree.

Table 3.2

WAGE DIFFERENCES FOR WORKERS WITH IDENTICAL OBSERVABLE CHARACTERISTICS IN IDENTICAL OCCUPATIONS ACROSS INDUSTRIES

<table>
<thead>
<tr>
<th>Industries Paying Lower Wages Than Durable Manufacturing</th>
<th>Industries Paying the Same Wages as Durable Manufacturing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural services</td>
<td>Business services</td>
</tr>
<tr>
<td>Hotels</td>
<td>Communication</td>
</tr>
<tr>
<td>Recreation</td>
<td>Construction</td>
</tr>
<tr>
<td>Retail sales</td>
<td>FIRE</td>
</tr>
<tr>
<td>Wholesale sales</td>
<td>Health services</td>
</tr>
<tr>
<td>Nondurable manufacturing</td>
<td></td>
</tr>
</tbody>
</table>

Second, we investigated occupational mobility. Again we used the 1970 Public Use Sample to divide workers into two groups: those who had changed occupations between 1965 and 1969 and those who had not. We assumed that upward occupational mobility was more likely than downward mobility, and, therefore, assumed that those who had changed occupations were, as a group, more upwardly mobile than those who had not. We then compared the percentages of workers who had shifted occupations by their sector of employment in 1965. We compared these proportions with the 28 percent of 1965 durable manufacturing workers who had shifted to a different occupation by 1969. We found that cultural services, FIRE, hotels, nondurable manufacturing, and retail sales offered many such opportunities—so described—than durable manufacturing. Business services, communications, construction, health services, and recreation offered fewer.

Our analysis of occupational mobility was especially limited, however, because the figures we used were for all of an industry's workers combined. Our sample size was too small for us to investigate the opportunities offered by different industries for advancement of those
on the bottom of the occupational status ladder. However, these figures do indicate that there may be significant differences in job quality across industries, but that it would be too simple to say that certain industries offer only "bad" jobs. Even the hotel industry, which pays low wages, is among those industries that offer relatively more opportunities to shift to the higher-wage sector and to rise in the occupational hierarchy.

Cyclical Stability

Local economies vary in their sensitivity to national business cycles. A common measure of relative sensitivity is the magnitude of the change in local employment occasioned by a given change in national employment. In earlier Rand work (Victor and Vernez, 1981), it was found that a one percentage point increase in the manufacturing share of area employment increased that area's relative sensitivity by about 0.03. A similar increase in the aggregate share of the service sectors reduced the area's relative sensitivity by about 0.025. Further research failed to reveal differential effects among particular service clusters, except for administrative employment, which had a noticeably strong effect in reducing cyclical sensitivity.

LINKING THE MODELS

This section of the report is not intended to present definitive results, but, rather, to illustrate how the various pieces of our analysis could be linked together in a systematic planning-evaluation approach. The framework for the linkage is illustrated in Fig. 3.1. However, at this stage, one of the key elements of the framework is missing, the model of the local economic structure. Such models are available for many metropolitan areas, and procedures developed by the U.S. Department of Commerce can generate an input-output model for any U.S. county. Because our purpose here is to illustrate how the elements can be fit together rather than to generate reliable numbers, we have used a shortcut procedure for filling in the key missing link. This procedure is illustrated in Fig. 3.2.

The key compromise shown in Fig. 3.2 is the use of the U.S. national input-output (I-O) table in place of a regional model. The input-output relationships for any given city will always be different from that of the American economy as a whole because no city's economy is an exact replica of the nation's economy. Thus, we do not claim reliability for these estimates; they are presented to portray the ultimate capability of our approach.
Note also in Fig. 3.2 that we link only four of our outcome variables to the initial intervention. Results of our studies of the two other relationships (i.e., cyclical vulnerability and job quality) do not fit into the linkage procedure in quite as straightforward a manner as the first four.

To illustrate some of the uses of this framework and some of the ways in which outcomes differ by city type, we have performed calculations that trace out the differential effects of a (net) increase of 1000 new jobs in three different sectors (hotels, FIRE, and durable goods manufacturing) in two very different metropolitan areas—Philadelphia and Albuquerque. The figures in Table 3.3 indicate how different the two SMSAs are.

The employment effects resulting from the intervention of 1000 jobs are suggested in Table 3.4. The total employment gains are generated by the values of the RIMS multipliers for the three sectors in these SMSAs. The fact that the multipliers register higher for Philadelphia than for Albuquerque reflects the city-size effect mentioned earlier. Note also that the multipliers for the two cities do not differ by a constant because there are important structural differences between the two economies.

The fact that we report no new jobs for blacks in Albuquerque is merely a statistical artifact that reflects the city’s small black population. (A more appropriate analysis for Albuquerque would focus on
<table>
<thead>
<tr>
<th>Item</th>
<th>Albuquerque</th>
<th>Philadelphia</th>
<th>Average U.S. SMSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Average for SMSA, 1970-77 (000)</td>
<td>371</td>
<td>4,827</td>
<td>799</td>
</tr>
<tr>
<td>(2) Average annual change, 1969-77 (%)</td>
<td>+2.4</td>
<td>-0.1</td>
<td>+1.5</td>
</tr>
<tr>
<td>(3) Fraction black (%)</td>
<td>2</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>(4) Fraction over 65 (%)</td>
<td>7</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>(5) Fraction (families) in poverty (%)</td>
<td>14</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Employment: fraction of total, 1970-77 (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6) BS&amp;LG</td>
<td>7.9</td>
<td>3.5</td>
<td>2.4</td>
</tr>
<tr>
<td>(7) FIRE</td>
<td>5.2</td>
<td>6.1</td>
<td>5.1</td>
</tr>
<tr>
<td>(8) WHSL</td>
<td>7.2</td>
<td>7.4</td>
<td>7.2</td>
</tr>
<tr>
<td>(9) VISIT</td>
<td>7.1</td>
<td>4.8</td>
<td>6.2</td>
</tr>
<tr>
<td>(10) ADMIN</td>
<td>0.5</td>
<td>3.5</td>
<td>2.2</td>
</tr>
<tr>
<td>(11) DURMFR</td>
<td>5.7</td>
<td>14.0</td>
<td>14.0</td>
</tr>
<tr>
<td>(12) NDURMFR</td>
<td>3.0</td>
<td>12.5</td>
<td>9.6</td>
</tr>
<tr>
<td>(13) Government</td>
<td>15.0</td>
<td>13.5</td>
<td>18.6</td>
</tr>
<tr>
<td>Employment: rate of change, 1970-77 (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(14) BS&amp;LG</td>
<td>+0.8</td>
<td>+6.1</td>
<td>+6.4</td>
</tr>
<tr>
<td>(15) FIRE</td>
<td>+5.7</td>
<td>+1.9</td>
<td>+3.5</td>
</tr>
<tr>
<td>(16) WHSL</td>
<td>+7.3</td>
<td>+2.7</td>
<td>+5.3</td>
</tr>
<tr>
<td>(17) VISIT</td>
<td>+3.9</td>
<td>+0.1</td>
<td>+2.3</td>
</tr>
<tr>
<td>(18) ADMIN</td>
<td>+14.2</td>
<td>+3.2</td>
<td>+7.4</td>
</tr>
<tr>
<td>(19) DURMFR</td>
<td>-8.4</td>
<td>+3.3</td>
<td>-2.6</td>
</tr>
<tr>
<td>(20) NDURMFR</td>
<td>+8.9</td>
<td>-2.7</td>
<td>+1.0</td>
</tr>
<tr>
<td>(21) Government</td>
<td>+4.7</td>
<td>+1.8</td>
<td>+2.8</td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(22) Central city share of SMSA area, 1970 (%)</td>
<td>13.5</td>
<td>19.0</td>
<td>na</td>
</tr>
<tr>
<td>(23) Central city share of SMSA employment, 1970 (%)</td>
<td>45</td>
<td>68</td>
<td>na</td>
</tr>
<tr>
<td>(24) Access to all U.S. population, 1970 (potential)</td>
<td>208</td>
<td>883</td>
<td>468</td>
</tr>
<tr>
<td>(25) Per capita income, 1974 ($)</td>
<td>4200</td>
<td>4900</td>
<td>4600</td>
</tr>
<tr>
<td>(26) Per capita value added in manufacturing, 1972 ($)</td>
<td>480</td>
<td>1910</td>
<td>1850</td>
</tr>
<tr>
<td>(27) Climate (temperature score)</td>
<td>389</td>
<td>181</td>
<td>212</td>
</tr>
<tr>
<td>(28) UDAG qualification for city, 1980 (score)</td>
<td>1</td>
<td>5</td>
<td>-1 to 7</td>
</tr>
</tbody>
</table>
Table 3.4

EMPLOYMENT EFFECTS OF ALTERNATIVE INTERVENTIONS IN ALBUQUERQUE AND PHILADELPHIA

<table>
<thead>
<tr>
<th>1000-Job Increase in:</th>
<th>Albuquerque</th>
<th></th>
<th>Philadelphia</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jobs for</td>
<td>Jobs for</td>
<td>Jobs for</td>
<td>Jobs for</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Non-High-</td>
<td>Total</td>
<td>Non-High-</td>
</tr>
<tr>
<td></td>
<td>Jobs</td>
<td>School</td>
<td>Jobs</td>
<td>School</td>
</tr>
<tr>
<td></td>
<td>Blacks</td>
<td>Graduates</td>
<td>Blacks</td>
<td>Graduates</td>
</tr>
<tr>
<td>Hotels</td>
<td>3178</td>
<td>0</td>
<td>232</td>
<td></td>
</tr>
<tr>
<td>FIRE</td>
<td>2281</td>
<td>0</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Durable manufacturing</td>
<td>2219</td>
<td>0</td>
<td>355</td>
<td></td>
</tr>
</tbody>
</table>

the Hispanic minority.) In Philadelphia, where blacks constitute a substantial proportion of the SMSA labor force, the differences in sectoral effects on black employment are even more substantial than the differences in multipliers across sectors. To the extent that increasing employment opportunities for blacks is a major concern in Philadelphia, visitor service development appears to be a desirable strategy.

The results of our ad hoc computations of tax base effects are reported in Table 3.5. The magnitude of the effect of a 1000-job intervention on the tax base appears to be dominated by the effect of the total employment increase, i.e., by the size of the sectoral multiplier.

The final illustrative computations project the changes in the central-city share of total SMSA employment resulting from three different types of sectoral interventions. They are shown in Table 3.6. The initial SMSA proportions and the magnitude of the effects of any given sectoral intervention are determined in large part by the geographic size of the central city relative to its metropolitan area, as shown in Table 3.3. Table 3.6's numbers reflect even rougher computations than the other illustrative figures. However, the substantial differences in the magnitude of the effects in Albuquerque and Philadelphia do arise out of some major differences between the two economies. If we compare Tables 3.3 and 3.6, we see that 1000 new hotel jobs in the Albuquerque SMSA would be associated with a five percentage point decrease in the fraction of total employment in the central city, but
only a one percentage point decrease in Philadelphia. This is mostly because the creation of 1000 new jobs would be a substantial intervention in Albuquerque's economy, but would amount to only a tiny proportion of Philadelphia's work force. The magnitude of the induced percentage changes is therefore larger in Albuquerque.

### Table 3.5

**Effects of Alternative Interventions on the Tax Base, Albuquerque and Philadelphia**

(In $ million)

<table>
<thead>
<tr>
<th>1000-Job Increase in:</th>
<th>Increase in Tax Base</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Albuquerque</td>
</tr>
<tr>
<td>Hotels</td>
<td>$172.63</td>
</tr>
<tr>
<td>FIRE</td>
<td>113.92</td>
</tr>
<tr>
<td>Durable manufacturing</td>
<td>107.26</td>
</tr>
</tbody>
</table>

### Table 3.6

**Effects of Alternative Interventions on Central-City Employment, Albuquerque and Philadelphia**

<table>
<thead>
<tr>
<th>1000-Job Increase in:</th>
<th>Central-City Share of Total SMSA Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Albuquerque</td>
</tr>
<tr>
<td>Hotels</td>
<td>40%</td>
</tr>
<tr>
<td>FIRE</td>
<td>56%</td>
</tr>
<tr>
<td>Durable manufacturing</td>
<td>44%</td>
</tr>
</tbody>
</table>
Chapter 4

CONCLUSIONS

The field of metropolitan economic development is notorious for its fads. For a while during the 1960s, the fad was to build downtown shopping malls. The idea apparently was that this would attract shoppers from the suburban malls. During the 1970s, many large industrial cities adopted "service sector strategies." High school programs in office skills, and junior college courses in computer programming, were favored over more traditional industrial arts, and metropolitan economic development activities focused on offices, hotels, and restaurant arcades in the central business district. It is too early to tell what the development fad of the 1980s will be, but already it looks as if too many metropolitan areas, under the banner of "high tech," will be trying to develop new Silicon Valleys, the nickname for the computer-chip economy surrounding San Jose, or the local equivalent of Boston's Route 128, where electronics firms flourish.

Each of these fads has succeeded in some places. Some downtown malls are thriving, and the services strategy has succeeded in stimulating growth in some unexpected places—Philadelphia, for example. No doubt there will be a few more Silicon Valleys by 1990. More often, though, development strategies based on some popular view of the economic future of all cities have failed in specific places at specific times. How can local leaders know whether a development strategy that someone is proposing is right for their particular metropolitan area? The purpose of this report has been to lay out a systematic framework for assessing the potential effectiveness and potential benefits of any given industrial strategy in any given metropolitan area. The unifying emphasis of both parts of the report has been that metropolitan differences do matter, that differences across industries also matter, and that a metropolitan development strategy cannot be bought "off the rack." Careful thinking about the objectives of metropolitan development, linkages between those objectives and particular industries in the metropolitan area, and the region's economic strengths and weaknesses with respect to each industry should precede the adoption of an industrial strategy for local development. This report has shown that this process of systematic thinking need not take forever.

We have begun to develop systematic methods for identifying industries that have been performing much better or much worse than ex-
pected in a given metropolitan area. These are the industries that should bear the most careful local examination. A closer look will indicate whether the unexpected performance points to some exploitable advantage or some alterable impediment. Either could form the basis for part of a development strategy. The method described here, along with other simple approaches, used in our work in Cleveland (Gurwitz and Kingsley, 1982), are readily applicable to a wide variety of metropolitan circumstances. We have also seen that systematic analysis can be applied to the linkage between metropolitan problems—particularly the ones that economic development programs are intended to solve—and the growth of particular industries. Growth of some industries can help solve some problems in some places. In this report and in the supporting technical documents, we have begun to develop readily applicable methods for efficiently identifying those problems, industries, and places.

This report does not present a completely specified model of metropolitan development or a "handbook" for development planners. Instead, it offers the beginnings of a systematic approach to developing an economic growth strategy that will be right for a specific region at a specific time in the region's history. The methods presented here could evolve into a step-by-step guide to development planning. That task would involve more work on the specific components of the process, and would require considerable attention to developing a product that meets the needs of metropolitan development planners.

Even without a rigorous development of the simulation model presented in Chap. 3, the essential point has been made. Each metropolitan area is unique, and economic development strategies, if they are to succeed, must be based on that uniqueness.
BIBLIOGRAPHY


Goldman, R., *The Structure of Santa Clara County Model*, County of Santa Clara Planning Department, California, 1965 (mimeograph).


Sternlieb, George, and James W. Hughes (eds.), *Post-Industrial Amer-
ica: Metropolitan Decline and Inter-Regional Job Shifts, Rutgers University, Center for Urban Policy Research, New Brunswick, New Jersey, 1975.


Stone, Donald, Industrial Location in Metropolitan Areas, Praeger, New York, 1974.


