The Development of Rural America

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Rural Development Alternatives
INTRODUCTION

Planning for rural development entails strategy and tactics. The strategy encompasses development planning and appropriate public policy. The tactics deal mainly with implementation of strategy and are oriented frequently toward issues of community power structures, leadership, and organization. Both strategy and tactics are essential for development, and the systems approach can be used in either, although this paper deals only with development strategy.

I describe the systems approach to planning, then outline a linear programming model that can be used as one tool for comprehensive policy planning in the systems framework. Much of this paper deals with data available from past studies on the cost effectiveness of individual programs which can form the foundation for systems planning. The data are not yet adequate for comprehensive systems planning but are of interest in themselves—they provide initial guidelines for setting program priorities to reach development targets efficiently. The analysis should interest national policy planners. Where an adequate set of programs is available, it can also help community leaders and development practitioners choose which ones to stress at the local level; and where an adequate set
of programs is not available, what programs to "lobby" for in new public policies and legislation.

Regional development programs (including related public-assistance and manpower programs) have expanded markedly in recent years. Federal funds for community and regional development tripled between 1960 and 1968, when they totaled $36.6 billion. The number of first-time enrollees in federally assisted work and training programs was nominal in 1960, .3 million in 1964 and 1.5 million in 1968. Enrollment in largely state-operated but federally aided programs of vocational-technical education totaled 3.8 million in 1960 and 7.5 million in 1968. Public-assistance payments from all sources totaled $3.8 billion in 1960 and $9.8 billion in 1968 (U.S. Department of Commerce, 1970, p. 297). This report will be documented by a number of studies that analyze the economic payoff from these and related programs.

Many of the national programs of community and regional development apply simultaneously to rural and urban areas. In some programs, rural people receive a disproportionate share of the benefits; in others, urban people receive a disproportionate share (Coffey, 1971). To reach development targets, rural areas may wish to press for a redistribution of funds among programs or for more funds in total. Economic evaluation of the efficiency of the various programs, viewed in the context of systems planning, can help rural people decide which programs to expand and which to contract and what total level of funds is required to reach development targets. Previous studies have not considered the many possible programs for economic development as part of a comprehensive system with interactions and linkages. The shortcomings of legislation and inadequate planning have resulted in many fragmented, inefficient, and overlapping programs. This paper shows how systems planning can be used to devise an efficient rural-development strategy.

SYSTEMS PLANNING

The term "general systems theory" (von Bertalanffy, 1951) has been in the literature for some time. Systems planning is not new, but placing a man on the moon has dramatized its effectiveness in solving problems and reaching an objective. Systems planning is not a technique; it is a systematic way of solving problems. To the extent that it represents the common sense that any good researcher
uses in solving problems, systems planning is as old as problem-solving itself.

**Defining the Systems Approach**

No single, concise definition describes the systems approach, but the method of solving problems does have certain more or less accepted characteristics:

1. Recognition of the total problem: all parts of the phenomenon in question that bear significantly on the solution must be accounted for within the system.

2. Each component or subsystem must be understood in its relationship to other subsystems and the total system. The problem solution must recognize time sequences and must mesh the components properly in reaching the chosen target(s).

3. The system must be tied together by communication networks and other linkages.

4. The process must be monitored for efficiency. Cost-effectiveness, benefit-cost analysis, program planning and budgeting, and other terms describe the evaluation techniques.

5. The performance of the system must be evaluated in relation to the targets or objectives, with feedback to adjust the process in accordance with information gained from experience. Quantitative approaches such as simulation and programming are often used to gain "experience" through small-scale operation of the system. The study of the control mechanism for the system is sometimes called cybernetics.

Each of the first four elements in systems planning is discussed in sequence below, following a brief examination of objectives and targets.

**Objectives and Targets**

One reason for the success of the moon program was that it had a well-defined objective—a man on the moon by 1970. Rural development has not had such a well-defined goal. Because public funds to promote rural development are limited, it is important that they be used efficiently. The objective of rural development could be conceptualized as maximizing net income of a population or region that has limited public funds available for programs to pro-
mote development. Or the objective might be to minimize the public cost of reaching certain development targets. These development targets might be desired levels of employment, income, and stability. A goal in the systems approach might be to reach targets by a designated year at the lowest public expense while maintaining at least a poverty-threshold income for the poor. The focus is on efficient use of public funds, but private investment is frequently complementary. In fact, public funds are likely to be most effective in raising incomes where they induce considerable private investment.

**Recognizing the Total Problem: A Programming Model**

One of the several possible models for devising a development strategy in the systems context is linear programming. The objective function (1) expresses the total public cost, $Z$, as a function of the specific program level, $x_i$, times the public cost per unit of that program, $c_i$. In matrix notation:

(1) $\text{Min } Z = C \mathbf{X}'$

where $C$ and $\mathbf{X}$ are row vectors of $c_j$ and $x_j$ respectively. Constraints in the system are designated by a column vector, $\mathbf{B}$. The row constraints, $b_i$, include the number of the population in various demographic and work-eligibility categories and the income and other targets for a specific category. The "technical" coefficients, $a_{ij}$, indicate the impact of public policy, $j$, on the subsystem population in row $i$. The public cost, $Z$, is minimized subject to constraints that income and other targets be equal to or greater than prescribed levels as in (2),

(2) $\mathbf{A} \mathbf{X}' \geq \mathbf{B}$

where $\mathbf{A}$ is the matrix of technical coefficients. The final constraint is that the public-policy activities be at non-negative levels:

(3) $x_j \geq 0$.

Linear programming is one possible formulation: Dynamic, poly-period, or nonlinear programming might improve the model. Simulation techniques could provide even more flexibility and allow analysis of the system over an extended period of time. Simulation with population cohorts could reflect the impact in subsequent generations of, for example, family-planning policies in the current generation. Experimentation with various models could reveal
which formulation is best suited to devise a rural-development strategy.

A comprehensive system comprising all population subgroups in the U.S. (or the world!) would be conceptually ideal, but operationally unmanageable. A smaller system is essential, and there are no objective guidelines for optimal size. One delineation is to include within the system all in this nation who are in poverty (and near poverty), recognizing that errors will arise because poverty programs influence persons outside this system. Another approach is to include the entire population within a region, recognizing that errors will arise because programs for a region will influence persons in other regions. The geographic unit chosen for economic-development planning ordinarily will encompass at least a multicounty economic-development district or a multidistrict region, such as the Ozarks. The county, township, or town unit is too small for devising a development strategy if changes in national public policy are an issue.

Recognizing Subsystems, Timing, and Interactions

As stated earlier, an advantage of the systems approach is that it can find the optimal combination of programs that will use limited public funds efficiently while meeting targets geared to unique characteristics of a heterogeneous population. To see the importance of recognizing subsystem diversity, it is only necessary to review characteristics of the poor. Of the 11 million households in poverty in 1966, (a) 39 percent were characterized by an aged head (65 years and over), (b) 27 percent by a female head under 65 years of age (over 80 percent included at least one child under 18, and over half included at least one child under 6 years of age), (c) 4 percent by a head that was ill or disabled, (d) 22 percent by a male head employed full-time, and (e) only 8 percent by an able-bodied male head employed sporadically or not at all. Welfare programs with built-in work incentives apply particularly to group (e). Income of aged and disabled groups (b) and (c) may be raised most efficiently by transfer payments, while training programs to upgrade skills may be the most efficient use of public funds to lift incomes of those poor (d) who are fully employed. Emphasis in early years might be on programs of the public-assistance type until programs that rank higher in long-term cost-effectiveness, such as family
planning, induced migration, and education, have had time to realize their impact.

Industrial-location incentives, long-term land retirement, and general education may efficiently raise regional income, but they are frequently regressive in character—that is, they disproportionately concentrate benefits on those who least need special public help. There is a fundamental conflict in programs between equity (favorable distributional effects) and efficiency. With few exceptions, programs that make limited public funds go farthest to raise incomes go to individuals who would have succeeded (because of above-average drive and ability) in the absence of such programs.² The disadvantaged are left out of programs if efficiency is pursued without regard to equity. This problem can be handled in the design of a programming model having an objective function that maximizes income of a region. The population is merely divided into various categories and the stipulation made that income attain at least some minimum level for the most disadvantaged. The shadow prices indicate the loss in aggregate income in the entire system stemming from such a stipulation. The results thus can quantitatively illustrate the trade-off between efficiency (maximum aggregate income from program budget) and equity (favorable distribution of income).

Communication Networks and Linkages

The complexity and diversity of public programs to promote regional economic development heightens the need for communication and linkages among programs. A program of the family-assistance type would call for even stronger linkages. The federal-state employment service, vocational-technical training programs, and organizations administering welfare programs are key elements. The employment service has been increasingly active in referring the hard-to-employ to manpower training programs. And welfare agencies are increasingly active in referring persons to rehabilitation programs. Some types of linkages between employment, training, and welfare programs can be handled by appropriate specification of a quantitative systems model.

Data from the Work Incentive Program (WIN) at once illustrate the importance of communication and linkages among programs and the difficulty in quantification. WIN, established by the
1967 amendments to the Social Security Act, has the goal of economic independence for all employable persons age sixteen or over in families now receiving Aid to Families with Dependent Children. Enrollments were expected to reach 150,000 by the end of fiscal 1971, making WIN one of the largest manpower programs. Nevertheless, it will be several years before WIN, or any other successor program, can enroll the entire target population—the estimated 1.1 million adults on welfare rolls for whom jobs and job training are possible avenues to self-sufficiency. The WIN program, though extensive, has almost totally eluded rural areas (Coffey, 1971, p. 12).

The WIN Program is administered by the Department of Labor through state employment agencies. Local welfare agencies refer clients to employment-service offices for interviewing, testing, counseling, and placement in jobs, job training, or special work experience, depending on the degree of job readiness. Stress is on helping clients to obtain meaningful jobs as rapidly as possible—at not less than the minimum wage or the prevailing wage, whichever is higher. All WIN enrollees receive their welfare benefits plus some training incentive payments. Welfare agencies continue to supply supportive medical and social services, including day-care centers for children.

In its early phase, the WIN Program has encountered a number of problems. In particular, there is a shortage of day-care arrangements for children in most areas where the program is operating. Quality day care is scarce and expensive. The Department of Health, Education, and Welfare estimates the cost of after-school and summer care for school-age children at $400 per child per year, and for full-day care for preschoolers at $1,600. These data suggest that the cost of day care severely reduces the cost-effectiveness of work-training programs for welfare mothers with preschool children, and could eliminate the program for such mothers from a cost-effective rural-development strategy.

**Monitoring Efficiency in a System**

Cost-effectiveness refers to efficient use of available means to reach a given objective. It can be expressed in several ways. Nearly all expressions recognize that public funds to promote regional development are severely limited. One of the simplest concepts is the amount of public funds required to create a permanent new job. Another concept is the income generated in a region per dollar of
public funds spent to promote economic progress. A broader concept is the net income generated in the nation per dollar of public and induced private expenditures in a given region. Benefits in the form of income generated in the region ideally should be adjusted for income changes in other regions. Income generated by publicly induced industrialization of a depressed area may mean loss of jobs to communities where some industry would otherwise have located. And programs to enhance mobility in a region may generate income in other regions by outmigrants. Another cost-effectiveness concept is the reduction in the incidence of poverty per dollar spent on a program. A criterion suggested earlier for linear programming was to maximize income per public dollar spent in a region, subject to the stipulation that the income of each subgroup must attain at least the poverty threshold.

Regional-development programs, like fertilizer application, cannot elude the law of diminishing returns. Injection of public funds into a program that has high cost-effectiveness will eventually drive efficiency down to a point where other programs will better utilize incremental public outlays. This principle, coupled with uncertainty and the need to reach special groups, leads to diversification of funds among programs.

The principle of diminishing returns is illustrated by data for 1959 from Hines and Tweeten (1972, table 1), which indicate that a $100 increase in direct schooling outlays per student reduces the marginal rate of return on schooling by 1.19 percentage points.

Diminishing returns influence supply; other factors influence demand. If the program is large enough to have a perceptible macro effect, the declining demand curve must be considered. Plans for a small development district may require few adjustments for declining prices as output is expanded through development programs. Plans for a large region that accounts for a major portion of the output of an industry would require more adjustments for declining prices.

Essentially, the systems approach is to first introduce the program that will contribute most to income per public dollar spent. If this program encounters diminishing returns or declining prices or does not reach specific groups such as the poor, then a new program is introduced to supplement or replace the first program. This process is repeated until the objective function is optimized, subject
to constraints that must be met. The process cannot easily be performed by trial-and-error budgeting. The interactions, programs, and subsystems are too numerous and complicated. But the simple cost-effectiveness estimates that will be presented later do give some first approximations, which can help set program priorities until more refined estimates are available.

The $a_{ij}$'s ("technical" coefficients) should reflect efficient use of a given program. In general, a program such as industry-location incentives will be most efficient if directed toward city units of efficient size. This topic—the efficient size of units on which to focus development programs—is sufficiently important to warrant attention in the following section.

WHERE TO FOCUS DEVELOPMENT PROGRAMS

Current policies are not adequate to bring satisfactory levels of living to rural areas. The necessary transformation requires new policies and new planning as well as local leadership. Before embarking on bold new policies, it is essential to confront the issue of where economic and population growth should occur in the system.

To avoid wasting the energies of those working to achieve rural development, there are certain realities that must be faced. One is that the exodus from the farm will continue, although the absolute number of farm-urban migrants will drop substantially. In the 1970s, only one in four Oklahoma farm boys reaching the age of employment can find an adequate farming opportunity (Lu et al., 1970). It is estimated that no more than one in five farm boys in the U.S. can find an adequate farming opportunity in the same period.

Not every rural town can grow. Most small towns will be unable to retain the majority of their young people seeking jobs, and many will decline in population. Comparatively few small towns can attract industry—there simply are not enough industrial plants or other job-creating opportunities to go around.

To understand why every town cannot attract an industrial plant, it is well to review briefly what industry seeks in a location. One factor is the availability of adequate transportation facilities: interstate highways, rail transportation, and a major airport. Another factor is nearness to markets: most industries directly or indirectly produce for consumers, and this means they want to be near large numbers of people. A third factor is adequate inputs,
including raw materials and labor supply, both in the number and quality of workers. This frequently requires locating near like industries in order to purchase inputs from common suppliers and to be aware of changes in industry styles and technologies. Specialized labor skills are required in progressive industries. Many of the best-paying firms, to achieve economies of size, must employ large numbers of people in a single plant. Finally, firms look for adequate community services, including schools, utilities, financial institutions, health services, and churches; many rural communities cannot supply these along with progressive community attitudes toward change.

Many small communities faced with a shortage of these attributes must compensate a locating industry with subsidies in the form of low-interest loans, property-tax exemptions, free or low-cost land and buildings, and low-wage labor. These compensations can severely burden the community. Industrialization does not bring unmitigated benefits to a rural community. It may increase social problems and taxes (even for residents who do not benefit), overburden services, cause pollution, and even turn the community's power structure over to "outsiders." The benefits to local workers from a new plant are reduced by bringing in skilled workers from outside and by the one-shot employment effect. That is, without a series of new plants and sustained employment growth, the community continues to lose its young people after the initial employment requirements of the new plant have been met.

Metropolitan America will contain an increasing proportion of the nation's population in the 1970s. Currently, 70 percent of the nation's population resides in metropolitan communities. These communities, defined as cities of 50,000 or more and their surrounding towns, accounted for three-fourths of the nation's growth in the 1960s. Urbanization inexorably attends economic growth. But there is considerable evidence that it can go too far. Our large metropolitan areas are plagued by serious problems of air pollution, congestion, crime, and violence. Many of the costs associated with these problems do not enter the private accounts of firms asking location decisions; hence firms find the metropolis profitable, and jobs and people continue to flow in.

Others must pay the cost, including rural residents. Antipollution and other programs are attempting to make the metropolis
more livable. Policies that require the use of nonlead gasolines and of devices for controlling exhaust emission presumably will apply to all residents, although air pollution by motor vehicles is not a problem in rural America. Calculations suggest that despite few benefits to them, the cost of such policies to rural residents is not small. The added cost of the control package—higher gasoline prices, loss of power, and engine modifications—amounts to $680 per car on a ten-year basis. If the annual cost of $68 is multiplied by 20 million cars owned by rural residents, the annual cost to rural residents of helping to control metropolitan smog is over $1 billion.

The problems cited above of the large metropolis suggest that it is not a logical place to promote the location of new jobs and more people. The declining number of jobs in agriculture and mining coupled with the disadvantages cited earlier of small towns in attracting new jobs suggest that efficient efforts to promote development would not concentrate on the small town. It appears that programs for using limited resources to promote a more nearly optimum distribution of jobs and people, consistent with economic and social efficiency, should focus on cities between these extremes in size.

After adjusting cities of all sizes to comparable characteristics and varying only city size, one study (Morris and Tweeten, 1971) estimated that the cost per capita of controlling crime in cities with over one million inhabitants is approximately twice the cost of controlling crime in smaller cities. Research on economies of city size, which is being done by people at Oklahoma State University as well as by others, indicates that the cost per capita of providing adequate public services tends to be lowest in cities ranging from roughly 20,000 to 1 million in population. On the other hand, economic vitality, as measured by a dynamic and growing job market, tends to be highest in cities of 200,000 or more residents. So growth centers may be as small as 20,000 if no other centers are within commuting distance, but ideally should be larger—though not over 1 million population. The coefficients for the systems model described earlier should reflect growth strategies focused on cities of optimal size.

The concept of having an adequate growth node or center was embodied in the Public Works and Economic Development Act of 1965, which provided for economic-development districts. These
LUTHER TWEETEN

districts tend to contain at least one city of 20,000 or more population, which serves as a growth node. These cities, generally within commuting distance of rural residents, should be sufficiently viable and should have proper policies in order to provide new jobs to compensate for declining job opportunities in other parts of the district. There are advantages also in planning for medical and health facilities, vocational schools, and other public services in regions of this size. Although the county often is not an adequately-sized unit for planning and provision of services, this does not necessarily call for consolidation of rural counties. There appear to be few net economies in government due to size for counties with a population of over 10,000. Savings from consolidation of county functions are offset by higher transportation costs for people who drive to the county seat and for county officials who drive to the people (Klindt and Braschler, 1969).

THE DATA

Shortcomings of data currently preclude realistic empirical applications of the "sophisticated" systems planning described earlier, which simultaneously recognizes diminishing returns, interactions, time lags, subsystems, and efficiency. However, the conceptual framework outlined gives direction to future planning, and it highlights data gaps. These gaps are slowly being filled in as the result of emphasis on individual program planning and evaluation in recent years. Considerable benchmark data are available on several programs; these can provide initial estimates of the a_{ij}'s, b_i's and c_i's.3

Much of the remainder of this paper enumerates results of past studies of actual or potential public policies to promote development. The results, while providing some coefficients for the models described earlier, are also of interest in themselves by suggesting priorities for programs that make public funds go far in raising income and levels of living. Viewed as separate and distinct entities, the studies fail to tell what combination of programs will reach specific policy targets at minimum public expense and what time interval and public expense are needed to reach the targets. Cost-effectiveness measures do not show optimal output, that is, how far to pursue a given objective.

Since major public concern is focused on the economic position of persons in the lower income brackets, much of the following dis-
cussion of programs is oriented to this group. The available studies that provide cost-effectiveness measures are not oriented to a single criterion of efficiency. For the first two programs—family planning and national full employment—reduction in the incidence of poverty is the criterion. For the subsidized migration, education, and training programs, the social rate of return on investment is the criterion. For subsidized private and public employment and for industry-location incentives, the public cost per job created is the criterion. Finally, for public-assistance and farmland-retirement programs, the increment in income per public dollar spent is the criterion. Each of these programs is discussed below.

**Family Planning**

Surveys indicate that “poor women want no more children than nonpoor women have, and perhaps fewer,” according to Kershaw and Courant (1970, p. 60). They estimate that if poor families had the number of children they wanted, there would be 450,000 fewer poor children born each year, and many families would move above the poverty line because of being smaller. They estimated that it would cost $20 per woman per year to supply family-planning devices and advice. With approximately 5 million poor women of childbearing age, the cost would be $100 million if they all took advantage of family-planning help, though of course not all would. These estimates by Kershaw and Courant (1970, pp. 60–61) imply that the cost-effectiveness of family planning is very high, not much over $200 to reduce the number of persons in poverty by one. Though this figure is undoubtedly on the optimistic side, even a substantial allowance for error leaves this program at or near the top of the cost-effectiveness category in meeting one development target—reduction of the number of persons in poverty. Other studies by family-planning organizations (cf. Jaffe, 1968, chap. 21) and by Bogue (1968, chap. 22) provide additional data.

**Full Employment**

Public monies, in conjunction with induced private investment, go far to raise the income and well-being of rural people when spent on monetary and fiscal policies for full employment. Monetary policies for full employment entail comparatively little opportunity cost and hence have a high social benefit-cost ratio. The issue remains:
Do such policies really help the poor, that is, is the distribution of benefits from such policies progressive or regressive?

One study used the "trickling down" hypothesis to analyze the change in the incidence of poverty among farm families under various assumptions of national unemployment (Madden, 1968). Assuming a 4 percent national unemployment from 1966 to 1975, the incidence of poverty among white farm families was projected to fall from 28 percent in 1966 to 20 percent in 1975. The incidence of poverty among nonwhite farm families was projected to fall from 75 percent in 1966 to 67 percent in 1975 under the same national unemployment percentage. The incidence of poverty by 1975 was nearly the same when a 6 percent national unemployment rate was assumed. In 1966 nonwhite farm families were so far below the poverty threshold that it would have taken considerable economic progress to have moved even a very few above the $3,000 threshold used by Madden. Thus full-employment policies would not be as effective as one might expect in reducing the incidence of poverty.

But the poor who are "last hired and first fired" are sensitive to changes in national employment. Furthermore, the success of nearly all positive policies directly focused on the rural poor depends on the availability of jobs. It does little good to provide job counselors, employment bureaus, and training centers if jobs do not exist.

National monetary policies for establishing full employment are not by themselves sufficient to eliminate rural-urban income differences and poverty in a reasonable period. Once national unemployment is down to about 4 per cent of the labor force, other programs become more efficient means of improving the economic position of rural people.

Fiscal policies for full employment can have widely different effects, depending on where public funds and programs to stimulate employment and incomes are focused. The remainder of this chapter examines a number of fiscal policies.

Improving Labor Markets: Bringing People to Jobs

Much research has described the mobility of rural people, particularly farm workers (cf. Hathaway and Perkins, 1968). In contrast, very little research has focused on improving the mobility of labor, though lack of such mobility is considered one of the key
elements explaining chronic low returns on labor resources in rural areas. Migrants rely primarily on information from friends and relatives to learn about availability of jobs. We know very little about the delivery of job information to rural people by the Federal-State Employment Service.

The employment service potentially could provide various degrees of assistance to potential job-seekers, including: (1) a continuation of present practices, (2) additional job information (for example, on out-of-state jobs, by using a computerized job bank) within the current employment-service structure, (3) additional mobile offices, (4) the seeking out and visiting of potential employees, and finally, (5) payment of job-seekers to train for a job and then subsidization of a move if necessary.

Estimates are available of the economic payoff from the last-named alternative. Table 1 shows that the economic payoff from subsidized migration to a new job can be large. For comparatively small cost, about $500 per family, people can be assisted in moving to places where jobs are more plentiful than in their home community. Studies indicate that the rate of back-migration after subsidized migration is frequently high, often reaching 60 percent during the first year and averaging 30 percent each year. The same studies indicate that adequate pre- and post-move counseling and financial help can substantially reduce the rate of back-migration.

<table>
<thead>
<tr>
<th>Project</th>
<th>Relocates</th>
<th>Rate of Return on Money Invested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hartford</td>
<td>10</td>
<td>negative*</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>46</td>
<td>8</td>
</tr>
<tr>
<td>Wisconsin-Michigan</td>
<td>255</td>
<td>20</td>
</tr>
<tr>
<td>Mississippi</td>
<td>255</td>
<td>24</td>
</tr>
<tr>
<td>North Carolina</td>
<td>485</td>
<td>33</td>
</tr>
<tr>
<td>Average of 67 projects</td>
<td>31</td>
<td></td>
</tr>
</tbody>
</table>

* Costs exceeded returns. The manpower situation shifted from excess supply to excess demand in the area during the period when the experiment in subsidized mobility was being organized. Considerable administrative expenses accrued, although few workers were relocated. This situation would be expected to occur occasionally in an expanded program, so it should be recognized as realistically portraying the merits of such efforts.

Frequently, vocational training needs to accompany these subsidized migration efforts.

Some foreign countries have had much more experience than the U.S. in subsidizing labor mobility. An interesting study by Jenness (1969) from Canadian experience improves on the methodology for evaluating mobility programs in several ways: (1) It accounts for changes in earnings for all family members, not just the male breadwinner; (2) it adjusts for each worker’s personal history and characteristics; (3) it estimates the period over which the initial differential in earnings persists; and (4) it adjusts for the likelihood that some workers would have moved in the absence of a subsidy. Jenness (1969, pp. 111–12) computed a benefit-cost ratio of 3.9 for a favorable moving situation that would increase earnings by 50 percent. The Canadian experience indicates that an initial earnings increment of $1,000, or 20 percent, is more typical, thus implying a less favorable benefit-cost ratio for the typical case than that of 3.9 calculated by Jenness.

Improving Education and Training: Preparing People for Jobs

Education has a twofold effect on rural development: (1) It increases skills, and (2) it fosters attitudes consistent with socioeconomic progress. It broadens the outlook of people, enhances their motivation and aspirations for higher incomes and higher standards of living, and creates attitudes more nearly consistent with frictionless assimilation into a new environment.

A pilot project at McAlester, in the low-income Ozarks region of Oklahoma, was designed to generate an entrepreneurial spirit in a group of sixty-five adult males by formal means. The assumption of the study was that an attitude corresponding with McClelland’s “need for achievement” can be taught, and that this will in turn lead to business activity that will create new jobs (cf. Tweeten, 1970, p. 427).

A follow-up study of McAlester trainees (and of a similar program conducted at Washington, D.C.) showed that each dollar spent on the program generated from $15 to $100 of new investment in just six months. The cost for each new job created by the program ranged from $100 to $300—a very favorable cost-effectiveness rating. The average increase in business profits during the first six months from each trainee ranged from a low estimate of $57 to a high of
$900. If these profits are maintained in perpetuity, the rate of return on training investment will range from 23 percent to 360 percent. These results are promising but tentative. Many years will be required to evaluate the full extent of the benefits of the program.

People-oriented development programs, such as education and training, have a high probability of success, because they tend to benefit the individual whether he leaves his home community or remains in it. Rates of return show the highest interest rate that could be paid on funds used for education (including foregone earnings) if one is just to break even on the investment. The rates of return shown in table 2 compare favorably with rates that could be earned on alternative investment opportunities. Social rates of return on investment (public and private) in the general education of U.S. white males are 18 percent for elementary schooling and 10 percent for secondary schooling and college. Rates are lower for nonwhite males and for females of all races. Private rates of return on only the investment made by the individual are, of course, higher than social rates of return.

Table 2. Estimated Rates of Return to the Individual (Private) and Society (Social) from Investment in Schooling, White Males, 1959

<table>
<thead>
<tr>
<th>Schooling Level or Field of Study</th>
<th>United States</th>
<th>Low-Income Rural Areas in South</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private Rate of Return</td>
<td>Social Rate of Return</td>
</tr>
<tr>
<td>Elementary (grades 1-8) ..........</td>
<td>155 (79) *</td>
<td>18 (10) *</td>
</tr>
<tr>
<td>High School (grades 9-12) ......</td>
<td>16 (22)</td>
<td>10 (12)</td>
</tr>
<tr>
<td>College (grades 13-16) ..........</td>
<td>14 (6)</td>
<td>10 (3)</td>
</tr>
<tr>
<td>Technical schooling (1960-1965 students, Okla. State Tech.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>15.6</td>
<td>8.6</td>
</tr>
<tr>
<td>Automotive</td>
<td>5.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Commerce</td>
<td>10.6</td>
<td>4.4</td>
</tr>
<tr>
<td>Diesel</td>
<td>21.4</td>
<td>14.4</td>
</tr>
<tr>
<td>Drafting</td>
<td>23.2</td>
<td>17.4</td>
</tr>
<tr>
<td>Electronics</td>
<td>21.5</td>
<td>15.1</td>
</tr>
<tr>
<td>Refrigeration</td>
<td>17.7</td>
<td>12.0</td>
</tr>
</tbody>
</table>

* Rates in parentheses are for nonwhite males.

Social rates of return on vocational training at Oklahoma State Tech are also shown in table 2. Rates tend to be at least as high as those from general education, according to a number of studies of the payoff from technical-vocational training reviewed by Shallah and Tweeten (1970) and by Hardin (1969).

Many states still rely to a considerable extent on local financing of schools. Efforts to improve human resources through education increase job mobility; this causes equity problems when the local expenditures for schooling accrue as benefits to another part of the state or to another state. Migration studies indicate that there is a large spill-in of benefits to states experiencing high net immigration, such as California, from the education paid for, sometimes at great sacrifice, by residents of states with large net outmigration. Funding formulas need to be revised to compensate for net losses incurred by local communities and states, because the spill-out of their investment in schooling is not compensated for by the spill-in of capital embodied in immigrants. Perhaps because taxpayers are reluctant to adequately support schools with large investment spill-out and because of an inadequate resource base to tax, the general educational system is not adequately funded in many states. A new federal-state funding formula has been proposed, which takes into account (1) the desirable level of investment in schooling per student, (2) the net spillover of benefits among states, and (3) the ability of a state to finance education. Table 3 shows how this new formula for funding common schools would apply to Oklahoma.

Bringing Jobs to People

The above programs of improving human resources and bringing people to jobs have been underemphasized in the past. To many people, rural development means bringing jobs to rural areas. If this is the goal, it is still necessary to improve human resources: the documented heavy back-migration of rural people after an unfavorable experience with an urban job suggests that these people may also be unacceptable employees for a high-paying rural employer.

Nevertheless, there are many rural people who are able-bodied and underemployed but for whom outmigration is not the answer. For such persons, it is important to put teeth into programs to bring more jobs within commuting distance of rural residents. Current programs of technical assistance, low-interest loans, and public-
facility grants are inadequate. And it seems unfair to ask depressed communities to subsidize the locating of industries. It has been suggested that firms be allowed a federal tax write-off on profits in proportion to the degree of underemployment in the rural areas in which they locate. A firm that locates in a designated growth center would write off from its corporate income taxes 1 percent of its plant investment for each 2 percent of underemployment in the economic-development district. In other words, if underemployment is 30 percent in the district, then the firm can deduct from its corporate federal income tax 15 percent of its investment in plant and equipment. This program would only be available to firms that locate where underemployment exceeds, let us say, 20 percent.

Based on the most comprehensive data available, Singer (1972, p. 236) estimated that providing jobs through tax incentives for location of industry would entail a public subsidy (foregone taxes) of $8,000 to $17,000 per job created. This cost-per-job-created is within the bounds of an independent estimate by Tweeten (1970, p. 414), based on past efforts of the Economic Development Administration, that from $5,400 to $27,000 would be required to create a new job. The latter estimate assumes, perhaps unfairly, that all administrative costs of EDA should be charged to job creation. Sazama (1970) has estimated that there would be favorable benefit-cost ratios for state loans, although other studies suggest that these
programs are not effective in attracting industry (cf. Tweeten, 1970, p. 446).

Subsidized Private Employment

Job Opportunities in the Business Sector (JOBS), a program in which private industry is paid by the government to train and hire the disadvantaged, appears to be very cost-effective, creating a “permanent” new job for under $3,000 of direct federal funds per disadvantaged worker (“Zero Quota,” 1970, p. 93). The retention rate in the JOBS program is between one-half and two-thirds. The JOBS program has two components—one in which industry has considerable choice in selecting trainees whom it trains and hires at no direct cost to the government, and another in which the firm has little choice in selecting trainees but is paid to train and employ them.

One of the most important discouraging factors is that the contracted portion is very small. There has not been a breakthrough in getting business to take contracts for on-the-job training—contracts which make them feel obligated to take the kind of person supplied. Most of the businesses which have joined the program have gone into the free portion of the program where they can select their own trainees. They have been reluctant to take what one of the officials in the National Alliance of Businessmen called the “basket case.” The indication, therefore, is that people selected for training are not from the hard-core or “basket case” group. (Levine, 1969, p. 179.)

Public training-employment programs may fare little better with this hard-core group. It is necessary to recognize that there are seemingly able-bodied workers who, for lack of initiative or aptitude, are unable to earn a socially acceptable wage, even after extensive training and subsidized employment, and for whom a simple transfer payment is the most cost-effective way to raise their incomes to an acceptable level.

Public Employment

Two recent programs, Operation Mainstream and New Careers, as well as New Deal programs of the 1930s, give some background for predicting the consequences of a large-scale effort by the government to assume the role of employer of last resort.
The Public Service Careers Program is designed to provide jobs in the public sector in a manner parallel to the JOBS program in the private sector, and it may provide jobs for 11 million disadvantaged persons by 1975 (U.S. Department of Labor, 1970, p. 73). The program, of which New Careers is one component, has not been in operation long enough to evaluate.

The Family Assistance Plan or related programs that require employment (or training) on the part of welfare recipients will increase the demand for employment opportunities, even in make-work projects for those who cannot obtain employment under competitive conditions. Levine (1969, p. 182) gives one view of the group of persons to be served and the type of work performed under public-service employment.

These are people who are not now being recruited for manpower programs or who are not succeeding in these programs, but who might be capable of working. In 1965, on the basis of reports done for the Office of Economic Opportunity, the National Commission on Technology, Automation, and Economic Progress talked of five to six million jobs needed for poor people. This number may be far too high for the program I am outlining—it is an estimate of the needs of the public sector for all sorts of people, not just the residual poor who cannot make it elsewhere—but the true number is still likely to be substantial.

What kind of jobs are we talking about in a public employment program? We are not talking about leaf-raking because it has a bad name, but we are talking about manual labor, of outdoor maintenance, including perhaps even the redistribution of arborial debris! We are talking perhaps about ditch-digging . . . the separation of sewers from other kinds of drainage lines, etc. We may be talking about work in the post office—which could hardly be done worse! We are not talking about doctor's aides and teacher's aides. (Levine, 1969, p. 182.)

The success of the program depends on (1) the contribution to real output; (2) the training, attitudes, and discipline acquired that would bring people up to satisfactory employability levels for competitive employment; and (3) the success in moving people from "make-work" public employment to competitive employment in a reasonable period of time, say eighteen months.

The wage should be somewhat above the level of income that
would be provided by public-assistance grants and below the wages available under competitive employment—hence, approximately $1.50 to $2.00 per hour. The wage should not be so high that workers would be bid away from more productive private employment.

Private industry is unlikely to tolerate government-run industry that competes directly with its own products. Furthermore, the candidates for public employment are likely to be the hard-core disadvantaged who, because of low aptitude, unreliability, or low initiative, are unable or unwilling to benefit from manpower training or competitive employment. Pooling these people together in public employment could cause them to reinforce one another's deficiencies; and working in dead-end jobs on make-work projects could accentuate their anomie. A large program of this type would surely develop an unfavorable public image. Perhaps this program should not only be an employer of last resort, but also a program of last resort.

Yet many people are optimistic about the program, and the public cost of raising income levels by it compare favorably to the public cost of raising income of the able-bodied through various negative-income-tax and other public-assistance programs. Pohlman (1970, p. 17) computed its benefit-cost ratios under specific assumptions concerning length of employment and productivity and concluded that

in terms of the figures developed in this study, the normative implications are quite clear: If the government adopts a guaranteed annual income concept or sets minimum welfare standards, it will pay to develop as many job opportunities as possible. This is already the case in the industrial states which have more adequate welfare programs. Even when the only benefits considered are the reduced welfare expenditures, the investment in job opportunities is a sound one. When other benefits are considered, job creation becomes even more attractive.

**Direct Grants**

Public assistance in the forms of transfer payments ordinarily does not make federal funds go far toward raising incomes except for the nonsalvageable poor. But there are many instances in which transfer payments are more cost-effective than other programs. For many nonsalvageable poor, including the aged, the disabled, and
mothers with preschool children, substantial funds may be spent on training for jobs in order to create future earnings which never materialize. In other instances, direct grants are necessary in order to maintain income until programs, such as family planning, that rank higher in long-term cost-effectiveness have had time to exert an influence. In other instances, direct grants may serve nonquantifiable humanitarian ends and may help to avoid riots.

There are several forms of "direct payments": (1) payments in services or goods, such as food donations; (2) cash grants, such as Aid to Families with Dependent Children; (3) partial grants, such as unemployment, retirement, disability, and medical compensation, in which the government and the private sector or individuals share the cost of the program; and (4) a negative income tax. Some of these are more cost-effective than others.

It can be shown in theory that welfare payments in cash rather than in an equivalent dollar volume of specific goods or services places the individual on a higher indifference (satisfaction) curve. The case for payment in kind is that society knows better than the individual what is good for him. The public perhaps is willing to provide more welfare funds if it has some say about how funds are spent by the poor. Tying welfare payments to education or to performance of work makes payments go farther to raise income, but it may give payments only to the particular "poor" who need assistance the least. There are many poor people who lack the capacities not only to earn a socially acceptable income but even to qualify for welfare grants by the most token of performance standards. For these, there are few alternatives to transfer payments.

Aid to Families with Dependent Children (AFDC) is the fastest growing and most controversial of the public-assistance programs. A 1961 amendment to the Social Security Act permitted families with an employable parent to receive federally supported assistance under the AFDC-UP program. As of 1970, only half of the states had adopted the program. Also work incentives were built into the AFDC program by 1967 amendments, which required that, beginning no later than July 1969, all states must disregard the first $30 of monthly earnings and one-third of all earnings above that amount in computing a family's AFDC allowance (U.S. Department of Labor, 1970, p. 151). Some success in moving welfare recipients to jobs and off welfare roles is apparent: during fiscal
1969, welfare recipients enrolled in work and training programs administered by the Department of Labor numbered approximately 180,000, plus 100,000 youth from welfare families in the Neighborhood Youth Corps summer program. Based on a sample of 12,000 who completed Manpower Development Training Administration (MDTA) programs in fiscal 1967, an estimated 59 percent of the men and 62 percent of the women formerly on assistance obtained employment after training, compared to 75 percent of all men and 69 percent of all women who completed MDTA courses in 1967. Hourly earnings average $1.86 after training for former welfare recipients, only 10 cents per hour below the average for all MDTA graduates. The record appears promising but needs more careful economic evaluation.

The Family Assistance Plan

For adequate levels of living in the rural areas, welfare reforms are needed that would include the working poor, reduce the indignity of the means test, cut wasteful administrative apparatus, include built-in incentives for work and for family unity, reduce variation in payment rates and eligibility requirements among states, and reach more than the one-half of the poor receiving assistance in 1971. By providing uniform national norms of eligibility and by assuming a larger share of the cost of welfare (and education), the federal government would appear to be employing more equitable ways of "revenue-sharing" than by basing revenue-sharing on population or past federal aid. Many such improvements are included in the Family Assistance Plan; but many of these reforms have already been made in the AFDC program, which would be replaced by FAP.

To be eligible for FAP, able-bodied family members would have to accept available employment or training. Mothers with children under six years of age would be exempt from this rule, but many would be freed for employment by the day-care centers for children that would be established under the program.

Still, we should hold no illusions about the effect of FAP. Since less than 10 percent of persons on welfare are potentially employable, built-in work incentives would do little to increase employment for families now receiving welfare. And FAP would double the number (12 million in 1971) of persons receiving welfare. The additional millions would include many working poor. Many of
these persons would work less. Hence, FAP would probably reduce national employment and output and would probably increase welfare costs. As a percentage of the gross national product, the real cost would be small and, in the minds of many, a small price to pay for a more equitable distribution of income.

An estimated 262,000 farm-operator and 232,000 farm-laborer families would be eligible for FAP in 1971. FAP plus food stamps would increase assistance nearly $1 billion to farm families over current welfare programs, and two-thirds of the gain would be in the South. Net gains to rural families would be nearly $3 billion, or roughly half the net gain to all U.S. families from FAP and food stamps. About four times as many U.S. rural families would be eligible for FAP benefits as would be eligible for benefits under the current AFDC or AFDC-UP programs in 1971.

In 1971 the gap between the poverty threshold and the income that poor families were receiving from all sources was about $8 billion. The proposed Family Assistance Plan plus the food stamp bonus would cut this poverty gap approximately in half.

A direct grant of the difference between current income and the poverty threshold would close the gap for $8 billion. A family assistance plan or a plan of the negative-income-tax type would require considerably more than $8 billion to close the gap, because many funds would go to the nonpoor. Thus a flat grant would be more cost-effective in eliminating poverty in the short run, but the work-incentive effects of a negative-income-tax plan might lead to greater effectiveness for it in the long run.

**Farm Income Support Programs**

Farm-commodity and land-retirement programs constitute the single most massive government effort to support rural incomes; they have entailed costs to the treasury of over $4 billion annually in recent years. It is well that such programs be included in systems planning for rural development.

Government payments associated with commodity programs are slightly less concentrated among large producers than are farm receipts. Estimates for 1965 indicate that in the absence of commodity programs, income of units with farm sales of $40,000 and over would fall $14,149 on the average, while income of units with
farm sales of under $2,500 would fall $281 on the average (Tweeten and Schreiner, 1970, p. 54).

Data show that government programs for acreage diversion in the 1960s added $1.50 on the average to net farm income per government dollar spent (cf. Tweeten, 1970, chap. 11). Diversion programs have a "double-barreled" effect on farm income: The farmer receives a direct payment for participating in the program, plus indirect income as reduced production generates higher receipts through an inelastic demand. Current programs have not made government funds go as far as they could go to raise farm income, because emphasis has been placed on direct payments rather than on diverting production except in the feed-grain program.

Table 4 contains estimates of the cost-effectiveness of a long-term land-retirement program administered to remove as much production as possible per government dollar spent. The estimates assume that farmers would place land in the program if it pays to do so, a $2 payment is paid by the government per diverted acre for conservation practices, and land retirement is limited in any one county to no more than 30 percent of the cropland. The normative estimates of the value of production retired per dollar of program cost to the government are in line with actual performance of past

<table>
<thead>
<tr>
<th>Acres Retired Nationally in Millions</th>
<th>Cumulative Government Cost in Millions of Dollars</th>
<th>Cumulative Value of Diverted Production in Millions of Dollars</th>
<th>Average Value of Production Retired per Dollar of Government Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>105.0</td>
<td>508.2</td>
<td>4.84</td>
</tr>
<tr>
<td>20</td>
<td>348.9</td>
<td>1,078.1</td>
<td>3.09</td>
</tr>
<tr>
<td>30</td>
<td>569.4</td>
<td>1,474.8</td>
<td>2.59</td>
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<tr>
<td>40</td>
<td>842.7</td>
<td>1,938.3</td>
<td>2.30</td>
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<tr>
<td>50</td>
<td>1,215.9</td>
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<td>60</td>
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<tr>
<td>70</td>
<td>2,062.9</td>
<td>3,857.6</td>
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</tr>
<tr>
<td>80</td>
<td>2,554.4</td>
<td>4,597.9</td>
<td>1.80</td>
</tr>
</tbody>
</table>

*Because more production is diverted per dollar of program cost on marginal land, the first 10 million acres diverts less production but at lower government cost per unit of production than the last 10 million acres in table 4. See Tweeten (1970, chap. 11) for a thorough analysis of the relationship between cost-effectiveness and productivity of land. Source: Zepp and Sharples (1970).
long-term land-retirement programs and would provide a useful schedule for interpolating the impact of alternative levels of voluntary production-control programs in the systems model. The systems estimates would probably show that land retirement is not a cost-effective means to raise incomes of poor rural people, but may be one cost-effective means to raise incomes of a rural region in the aggregate.

The contribution to farm income is larger than the value of production diverted, in part because the macro effects on farm receipts are not shown in table 4. In systems planning for any one region, the effects for that region could be calculated under the assumption that the program would be available to farmers in the entire nation, with macro and micro impacts prorated accordingly.

SUMMARY AND CONCLUSIONS

Improvements have been made in public programs to promote the development of and to improve living standards in rural areas. Yet these programs remain fragmented, overlapping, and inadequate, and they are frequently inefficient in reaching the desired development goals. The premise of this paper is that it is time to move from program-planning to plan-programming. This paper outlines the rudiments of a comprehensive, systems-programming approach to rural-development planning. Ideally, the approach (1) accounts for interactions among policies, (2) explicitly recognizes development targets, (3) shows trade-offs between targets such as efficiency and equity, and (4) measures the total public investment needed to reach development targets efficiently. A basic conflict exists between goals of efficiency (for example, maximum income per public dollar spent) and equity (for example, favorable distribution of benefits). Unmitigated pursuit of efficiency leads to public programs that by-pass the poor. Thus it is necessary to constrain systems solutions to meet targets such as reducing the incidence of poverty.

The coefficients in the systems-programming approach presented in this paper should reflect efficient development technology for any given program. Among other considerations, this requires coefficients for optimal-size growth centers, which provide public services at low cost per capita. Studies of economies of city size indicate that cities of 20,000 to 750,000 fulfill these requirements.
However, economic viability measured by ability to provide steady growth in jobs ordinarily requires growth centers larger than 20,000 population.

This paper outlines a basic model for comprehensive systems planning of rural development, but it does not contain empirical estimates from the model. The paper reports results of a number of studies of individual programs, which provide cost-effectiveness coefficients that could be a foundation for a comprehensive model.

The estimates of cost-effectiveness presented for individual programs suggest tentative priorities for an overall rural-development strategy. National full-employment and family-planning programs rank high in cost-effectiveness for use of public funds to improve the well-being of rural people. Adequate provision of family-planning services at public expense to assist the poor in having only the number of children that they desire would appear to deserve high priority in a rural-development program.

Approximate estimates of the efficiency of public monies in creating new employment opportunities are summarized in table 5. All of the programs assume a reasonably adequate level of skill training and general education and no excessive national unemployment—thus education and national monetary policies are not included in the priorities. The table shows estimated direct public expense for creating a permanent job for residents of rural areas. It appears that public employment, which many people recommend

<table>
<thead>
<tr>
<th>Table 5. Public Cost for Creating a New Job for Rural Workers in 1972 by Alternative Programs</th>
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<tbody>
<tr>
<td>Public employment ($6,000 per year for 10 years</td>
</tr>
<tr>
<td>with 40 percent productivity)</td>
</tr>
<tr>
<td>$6,000/year for 10 years</td>
</tr>
<tr>
<td>Industry location through tax write-offs</td>
</tr>
<tr>
<td>$3,000/year</td>
</tr>
<tr>
<td>JOBS program ($3,000 per job, one-half retention rate;</td>
</tr>
<tr>
<td>including administrative costs)</td>
</tr>
<tr>
<td>$6,000/year</td>
</tr>
<tr>
<td>Subsidized migration ($500 direct payment plus</td>
</tr>
<tr>
<td>$500 for administration and counseling; one-third retention</td>
</tr>
<tr>
<td>rate)</td>
</tr>
<tr>
<td>$3,000/year</td>
</tr>
</tbody>
</table>

* The Value of the marginal product is assumed generously to be $2,400 per year and is deducted from the annual cost to the public. Future costs are not discounted to the present.

Source: Updated estimates based on studies cited in text.
as the solution to problems of underemployment in depressed areas, is an expensive way to create new jobs. The net cost, of course, depends on several factors, including the productivity of the workers involved in the program. If the workers are not productively employed, the cost is prohibitive. On the other hand, the JOBS program, which utilizes federal subsidies to private firms that train and hire the disadvantaged, requires a direct public outlay of only $6,000 per permanent job created. The JOBS program perhaps has limited viability in many rural areas, because there simply are not enough jobs available with private firms; but the program is a way of focusing jobs directly on disadvantaged workers, and it warrants use wherever possible.

Table 5 indicates that moving people to jobs can be more cost-effective than bringing jobs to people. Subsidized loan programs to bring industry and jobs to people are about as cost-effective as tax write-offs when operated at the same level of intensity. The fact that some past loan programs appear to have been more cost-effective partly reflects the fact that they operated at low levels of intensity. Areas that experience a large net outmigration should be compensated for their investment loss in the form of human capital embodied in outmigrants.

Many less mobile rural people are best served by bringing jobs within commuting distance. Programs such as a tax write-off to a locating industry are needed to bring jobs to people. For the disadvantaged but able-bodied workers in rural areas, it may be necessary to combine the two approaches of bringing jobs to people and people to jobs—by paying firms first to locate in viable rural centers, then to hire the disadvantaged.

And finally, for those people who cannot obtain adequate employment because of old age, disabilities, or other valid reasons, improvement in the welfare program—a plan of the negative-income-tax type in conjunction with the food stamps, family health insurance, and housing programs—would go a long way toward meeting these requirements. For the most disadvantaged, public-assistance transfer payments are more cost-effective than the programs in table 5, which are designed for able-bodied persons.

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periment Station and the National Science Foundation. The comments of Dean Schreiner, Gerald Doeksen, and George Brinkman were much appreciated by the author.

NOTES

1. This figure includes outlays for agriculture and rural development, natural resources, commerce and transportation, community development and housing, health, education, and manpower, but it excludes Social Security.

2. One “law” of public programs is that their benefits tend to be distributed regressively among those eligible for the program (Tweeten, 1970, p. 417).

3. Considerable data are available on characteristics of the population. Useful sources of data include the 1966 and 1967 Survey of Economic Opportunity (SEO) based on a sample of 30,000 households. The one-in-one-hundred sample from the 1970 U.S. Census of Population provides substantial additional detail. Considerable data have been assembled by the Urban Institute for a micro-simulation study of the impact of income-maintenance programs (Peabody and Caldwell, 1970). Other sources of data include personal interview surveys made in major poverty areas, which are useful if the system under analysis coincides with the survey regions.

4. These estimates for EDA are based on capital requirements of $20,000 per worker, which are higher than for nonmetropolitan industry in general but are not out of line for high-paying, progressive industries. These and other estimates used in this study do not consider the employment added directly in the form of personnel hired to administer the particular program.

REFERENCES


Greenberg, David, and Kosters, Mar-


Pohlman, Jerry. "A Cost-Benefit Analysis of Transfer Payments:


