The Potential in Rural Industrialization and Local Economic Development*

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T HIS discussion of the potential of rural industrialization and local economic development will be focused upon the following three questions:

1. What are the implications of local urban-industrial development for farm family incomes in the low-income agricultural areas?
2. What is the potential for local urban-industrial development in the low-income agricultural areas?
3. What are the implications of this analysis for the Federal-State Rural Development Program?

The boundaries of this discussion can be further identified, first, by pointing out that local economic development refers to development at the city or county level in contrast to area or regional development. Second, primary emphasis will be placed on the prospects for expansion in local industrial employment and relatively little attention will be given to the prospects for employment expansion in trade, service, and the other "tertiary" industries.

Finally, by centering this discussion around the implications of local urban industrial development on agriculture's low-income problems, any discussion of the implications of local urban-industrial development for the problems of price and/or income stability in American agriculture is being deliberately by-passed. I would argue that the specific location pattern of nonfarm economic growth has little or no bearing on those problems which have occupied the center of the stage in farm policy discussion during the last three decades — that is the problem of price and income instability[1]— although space limitations prevent discussion in this paper.

I

There can be little doubt, however, that the level of farm family

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[1]This point was made by Willard Cochrane in "Appraisal of recent changes in agricultural programs in the United States," paper presented at the AFEA Winter Meeting, Cleveland, Ohio, Dec. 28, 1956, pp. 17-18.

income is closely related to the extent of local urban-industrial develop-
ment.[2] When the median incomes of rural farm families are plotted on
one axis and the proportion of the total population that is nonfarm on the
other axis of a chart, the result for most areas is a very clear positive
relationship (Table 12.1). On a national basis, only the seven Northern
Great Plains States appear to stand definitely outside of this relationship.

Welfare levels in agriculture, as measured by the median incomes
of farm families, are generally higher in those areas where urban-indus-
trial development has advanced the furthest. Even so, this does not
"prove" that (1) the higher income levels are "caused" by local urban-
industrial development or that (2) further development would necessarily
result in higher incomes for farm families located in close proximity to
such developing urban centers.

In order for local urban-industrial development to have any differen-
tial impact at all on the income levels of nearby farm families, the local
nonfarm economy must channel its impact through at least one of four
markets:

1. The labor market — through which labor is allocated among agri-
cultural enterprises and between the agricultural and non-agricultural
sections of the economy.

2. The capital market — through which purchases of capital assets
and working capital are financed.

3. The product market — the markets for the products produced by
agriculture.

4. The current input market — the market(s) for current inputs con-
sumed in the process of agricultural production.

T. W. Schultz has stressed the importance of the labor and capital
markets in transmitting the impact of urban-industrial development to
the agricultural sector.[3] E. C. Young has placed important emphasis
on the contribution of urban-industrial development to the creation of
an efficient farm supply market.[4]

My work on the impact of urban-industrial development on agricul-
ture in the Tennessee Valley region indicated, in that area at least, that
the major income effects of local urban-industrial development are
transmitted to the agricultural sector of the local economy through the

[2] See Ruttan, Vernon W., "The impact of urban-industrial development on agriculture in
the Tennessee Valley and the Southeast," Jour. Farm Econ., Vol. 37, Feb., 1955, pp. 38-58;
Sinclair, Lewis W., "Urbanization and incomes of farm and nonfarm families in the South,"
Jour. Farm Econ., Vol. 34, May, 1957, pp. 510-16; Anderson, R., and Collier, J., "Metro-
politan dominance and the rural hinterland," Rural Soc., 21:2 June, 1956, pp. 152-57; Glas-
gow, Robert B., "Farm family income, its distribution and relation to nonfarm income,"
USDA, ARS 43-34, Washington, Dec., July, 1956.

[3] Schultz, T. W., "Factor markets and economic development," The Economic Organiza-
tion of Agriculture, McGraw Hill, New York, 1953, pp. 283-312. See also Wilcox, Walter,
"Effects of farm price changes in efficiency in farming," Jour. Farm Econ., Vol. 33, Feb.,
1951, pp. 55-65; and Bishop, C. E., "Under-employment of labor in southeastern farms,"
Jour. Farm Econ., Vol. 36, May, 1954, pp. 264-68.

[4] Young, E. C., "The interaction between technical changes on the farm and technical
changes in marketing and distribution," Proc. Internat. Conf. Agr. Econ., Tenth Conference,
1956.

Table 12.1. Relationship Between the Median Income of Farm Families and Unrelated Individuals in 1949 and the Percent of the Total Population Nonfarm in 1950 for Selected Areas

Area	The regression in equation[c]	Arithmetic mean $\bar{I}$	Arithmetic mean $\bar{X}$	Standard deviation Sy	Standard deviation Sx	Standard error of estimate	Coefficient of Correlation	Coefficient of Determination	F ratio[d] Computed	F ratio[d] Critical
U. S. (48 states)[a]	I=289.86 /28.72X	2029.79	80.77	615.63	11.68	527.22	.53	.282	19.43	4.068
U. S. (41 states)[a,e]	I=-1749.41/44.64X	1939.02	82.63	620.34	11.29	371.06	.81	.650	75.37	4.889
Southeast (104 state[a] economic areas)	I=342.13 /11.73X	1100.67	64.67	342.12	16.24	286.98	.55	.303	45.83	3.944
Tennessee Valley Region[a] (201 counties)	I=515.55 /10.87X	1028.76	47.22	284.39	17.87	208.80	.68	.463	173.66	3.92
Central and Eastern Uplands (VII)[b]	I=561.84 /13.70X	1281.89	52.55	397.56	18.72	307.36	.638	.407	58.00	3.95
Southeast Central Plain (VIII)[b]	I=479.00 /9.62X	974.36	51.51	357.51	17.02	321.80	.451	.203	21.36	3.95
Atlantic Flatwoods and Gulf Coast (IX)[b]	I=583.83 /11.02X	1387.90	72.93	450.00	17.31	421.92	.387	.150	6.10	4.20
South Central and Southwest Plains (X)[b]	I=396.16 /17.91X	1416.18	56.94	719.24	16.66	667.92	.395	.156	10.04	4.07

[a] From Ruttan, Vernon W., "The impact of urban industrial development on agriculture in the Tennessee Valley and the Southeast," Jour. Farm Econ., Vol. 37, Feb., 1955, pp. 38-56.

[b] From Sinclair, Lewis W., "Urbanization and incomes of farm and nonfarm families in the South," Jour. Farm Econ., Vol. 39, May, 1957, pp. 510-16. The regional groupings in Sinclair's article are based on Bogue, Donald J., "An outline of the complete system of economic areas," Amer. Jour. Soc., Vol. 60, Sept., 1954, pp. 136-39.

[c] I=Median income of farm families in 1949; X=percent of total population nonfarm 1950. Basic data compiled from U. S. Census of Population, 1950, Vol. 2, Characteristics of the Population.

[d] Critical values of F are at the .05 level of significance and indicate that the hypothesis that there is no relationship between the two variables should be rejected.

[e] Excludes Idaho, Montana, Wyoming, North and South Dakota, Nebraska, and Iowa.

labor market — through the direct increase in the incomes resulting from nonfarm employment of farm family members. Secondary effects were exerted through the capital market. And distinctly minor effects were exerted through the product and current input markets.[5]

Christian's work in Mississippi also points to a relatively minor impact through the product market.[6] There is a substantial basis for believing that the product market effects may even run in the opposite direction — that is, that farm income may exert a greater effect on local nonfarm incomes through the product and current input markets than is exerted in the opposite direction.[7]

II

The fact that local urban-industrial development exerts its primary impact through the labor market should not lead to a discounting of the important role which local development must play if we are to achieve a rapid solution to the low-income problem in many areas.

Typical replacement ratios for rural farm males in the 20-64 age group are expected to run slightly above 200 during the 1950-60 decade in the South and about 135 in the rest of the country (Table 12.2). There-fore, in the major low-income areas of the South, young men are still entering the labor force at a rate more than double the number required to replace existing farm operators and hired farm workers as they re-tire. Thus, over half of the young men from such areas must find off-farm employment simply to prevent an increase in farm employment during 1950-60 — to maintain the number of male farm operators and hired workers at existing levels.

In addition, a further decline in farm employment averaging about 50 percent of the 1950 level for the 11 Southeastern states will be ac-quired if farm incomes in the Southeast are to be brought in line with farm incomes generally by 1975 (Table 12.3).

In areas such as the Northeast and North Central regions, where farm employment runs about 5 to 15 percent of total employment, the absorption of the required number of farm youth and farm workers into the local nonfarm labor force is relatively easy, even in the absence of exceptional rates of growth in nonfarm employment.

In the low-income areas of the Southeast, where farm employment runs about 40-60 percent of total employment, only exceptionally rapid

[5]Ruttan, op. cit., pp. 43-55.

[6]Christian, W. E., "Impact of industrialization on the marketing outlets for locally pro-duced farm products," paper presented at annual meeting of the Southern Economics Asso-ciation, Biloxi, Miss., Nov., 1954. See also Dickins, Dorothy, Welch, L. D., Ferguson, Virginia, and Christian, W. E., "Industrialization and market for food products in the Laurel trade area," Miss. Agr. Exp. Sta. Bul. 540, Mar., 1956.

[7]See Olson, Philip, "Arizona cotton town — an explanatory inquiry," Arizona Business and Economic Review, Bureau of Business Research, University of Arizona, Tucson, Oct., 1956, pp. 1-5, for an examination of the impact of farm income instability on a rural service center.

rates of growth in nonfarm employment will permit absorption of the surplus farm labor force locally. In the absence of an adequate rate of growth in local nonfarm employment, long distance migration presents the only solution to the surplus labor problem. And spontaneous long distance migration has rarely reduced the surplus labor force sufficiently to narrow substantially the earning differentials between the surplus and deficit labor (and population) areas.[8]

The logical implication seems clear: In those areas where local expansion in nonfarm employment is not sufficiently rapid to absorb a

Table 12.2. Replacement Ratios for Rural-Farm Males for Selected Areas*

Region	Ages 20-64		Ages 25-69	
	1940-50	1950-60	1940-50	1950-60
South Atlantic	219	223	192	169
Delaware	140	125	131	106
Maryland	157	155	146	134
Virginia	198	188	172	147
West Virginia	217	214	186	153
North Carolina	239	243	217	192
South Carolina	246	267	215	197
Georgia	221	236	189	170
Florida	186	178	156	129
East South Central	219	215	190	159
Kentucky	220	198	190	152
Tennessee	210	198	187	152
Alabama	235	241	203	172
Mississippi	211	227	181	160
West South Central	176	204	184	134
Arkansas	207	192	187	142
Louisiana	214	219	195	157
Oklahoma	209	172	184	131
Texas	196	154	178	124
South	214	206	189	155
Northeast	-	134	-	117
North Central	-	137	-	117
West	137	135	-	116
United States	179	168	167	135

*Source: Bowles, Gladys K., and Taeuber, Conrad, Rural-farm males entering and leaving working ages, 1940-50 and 1950-60. Series Census-AMS, P-27, No. 22, Aug., 1956. Tables 1 and 8.

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[8]For further discussion of the interrelationships between local development and migration, see Johnson, D. Gale, "Some problems of measuring the economic effects of area resource development," University of Chicago office of Agricultural Economics, Research Paper No. 5307, May 29, 1953, and "Mobility as a field of economic research," Southern Econ. Jour., Vol. 15, Oct., 1948, pp. 152-61. See also, Galbraith, J. K., "Inequality in agriculture — problem and program," First J. J. Morrison Memorial Lecture, Ontario Agricultural College, Guelph, Canada, Nov. 16, 1956, especially p. 6.

Table 12.3. Changes in Farm Output, Employment and Productivity
Required To Equate Farm Incomes in Selected Southeastern
States With the Projected U.S. Average Farm Income in 1975 *

Area	Average net income per farm worker 1950	Est. no. of farm workers 1950 (thousands)	Projected indexes for 1975 (1950=100)				
			Net farm output	Output per worker		Number of workers	
				Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
United States	$2,091	7,507	160	198	240	67	81
Non Southeast (37 states)	2,361	4,850	159	175	213	75	91
Southeast (11 states)	1,375	2,657	164	307	373	44	53
Alabama	1,038	264	114	398	483	23	29
Arkansas	1,639	227	142	252	306	46	56
Florida	2,615	130	205	158	192	107	129
Georgia	1,183	279	131	349	424	31	38
Kentucky	1,221	258	153	338	411	37	45
Louisiana	1,516	159	190	273	331	57	70
Mississippi	1,072	318	162	385	468	35	42
North Carolina	1,492	378	208	276	336	62	75
South Carolina	932	207	175	443	538	32	40
Tennessee	1,120	267	153	369	448	34	42
Virginia	1,722	176	143	240	291	49	60

*Source:

Column (1) For methodology employed in making these estimates see Comparative Data on Farm Income and Employment, 1929-51, TVA, Knoxville, May, 1953.

(2) Estimated from Annual Report on the Labor Force, U.S. Dept. of Commerce, Bureau of the Census, by distributing the national total to states on the basis of farm employment data in 1950 Census of Population.

(3) For national estimates see, Ruttan, Vernon W., "The Contribution of Technological Change to Farm Output: 1950-75," Rev. Econ. and Stat., Vol. 38, Feb., 1956, pp. 61-69. State estimates are based on 1929-52 trends in state output in relation to national farm output.

(4) National estimates are based on the assumption that output per farm worker will continue to increase at the 1910-50 rate of 3.9 percent per year. State estimates reflect the increase required if output per farm worker in each state is to reach the national average by 1975.

(5) National estimates are based on the assumption that output per farm worker will continue to increase at the 1929-50 rate of 5.6 percent per year. State estimates reflect the increase required if output per farm worker in each state is to reach the national average by 1975.

(6) This is the number of farm workers required to produce the farm output estimated in column (3) if output per farm worker increases at the rate indicated in column (5).

(7) This is the number of farm workers required to produce the farm output estimated in column (3) if output per farm worker increases at the rate indicated in column (4).

major share of (a) the young men and women entering the labor force for the first time (from both urban and rural areas) plus (b) the surplus farm population resulting from advancing technology in agriculture, farm families will continue to receive incomes below the levels in those agricultural areas situated more favorably relative to urban-industrial development.

III

The importance of local urban-industrial development to the solution of agriculture's low-income problem is widely recognized. We are now engaged in a rural development program which stresses expansion of local nonfarm employment alternatives as a solution to the low-income problem. This means that we can hardly avoid facing up to a second question: What is the potential for local urban-industrial development in the low-income agricultural areas? The answer to this question will depend to a major degree on the locational advantages of the low-income areas.

Factors affecting location decisions can be divided into three broad classes. [9]

1. Cost factors — including raw material, labor, site, and transportation costs.

2. Market or demand factors — including the size, structure, and location of the market for the products of the farm or industry.

3. Personal factors — mainly environmental preferences.

Location theorists have traditionally devoted a good deal more attention to the cost factors of location than to the market factors. The influence of personal factors has largely been ignored.

More recently, inquiry into the spatial interdependence of economic activity, especially under conditions of imperfect competition, has tended to emphasize the importance of the demand factors involved in industrial location decisions. [10]

The declining relative importance of raw material costs in manufacturing; [11] the external scale economies resulting from the agglomeration

[9]Greenhut, Melvin L., Plant Location in Theory and Practice, University of North Carolina, Chapel Hill, 1956, pp. 279-81. Other authors frequently give separate emphasis to the two major cost factors — raw material and labor costs. See, for example, McLaughlin, Glenn, E., and Robock, Stefan, "Why industry moves South," National Planning Association, Washington, D. C., 1949.

[10]Greenhut, op. cit., pp. 23-83.

[11]Dewhurst, J. F., and associates, America's Needs and Resources, A New Survey, Twentieth Century Fund, New York, 1955, p. 755. See also Greenhut, op. cit., pp. 113-17, and Isard, Walter, "Some locational factors in the iron and steel industry since the early nineteenth century," Jour. Polit. Econ., Vol. 56, 1948, pp. 203-17.

of industrial activity in urban centers;[12] plus the growing recognition of the market as a locational factor[13] all seem to favor the continued expansion of industrial activity in urban centers of at least standard metropolitan size or their nearby industrial satellites.

We might hypothesize that the smaller cities and towns characteristic of the low-income areas are likely to experience substantial expansion in industrial employment only under four conditions:

1. When labor costs are an important consideration in location decisions.

2. When local raw materials represent an important locational factor.

3. When defense strategy considerations dictate location at a substantial distance from important urban centers.

4. When personal preferences of managerial personnel for small town or rural locations are sufficiently strong to override strict profit maximization considerations.

If the above hypothesis is correct, local urban-industrial development would be expected to present an effective alternative to geographic labor mobility in only a relatively few of the nation's low-income agricultural areas during the next two decades. Those low-income rural areas which do experience substantial urban-industrial development will by and large be located where they can serve as effective satellites to existing urban-industrial centers.[14]

How does this hypothesis stand up when examined in light of the actual experience of industrial expansion during the recent years?

First of all, there is little doubt that the long-term trend toward location of a larger share of the nation's industrial employment in the less industrialized regions is continuing (Table 12.4).[15] The share of the nation's total industrial employment located in the New England, Middle Atlantic, and the East North Central regions has declined. The other regions have increased their share of manufacturing employment, with the most dramatic increases occurring in the Pacific and West South Central regions.

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[12]Greenhut, op. cit., pp. 37-41, 257-72. See also Schultz, op. cit., p. 147; Vining, Rutledge, "A description of certain spatial aspects of an economic system," Economic Development and Cultural Change, Jan., 1955, pp. 147-95; Friedman, John R. P., The Spatial Structure of Economic Development in the Tennessee Valley, University of Chicago, 1955, pp. 21-45; One might also refer to Allyn A. Young's presidential address to the Royal Economic Society in 1928, "Increasing returns and economic progress," Econ. Jour., Vol. 38, Dec., 1928. Although written in terms of general economic development, Young's article presents an especially interesting discussion regarding the basis for the agglomeration of economic activities.

[13]Greenhut, op. cit., pp. 23-83.

[14]For further discussion of the type of spatial structure which can be expected to develop in such areas, see Friedman, J. R. P., "Locational aspects of economic development," Land Econ., Vol. 31, Aug., 1956, pp. 213-27.

[15]"Comparative rates of manufacturing growth by region: 1899-1954," U. S. Dept. of Commerce, Office of Area Development, Staff Paper 3, Nov., 1956. See also Dickson, Paul W., Decentralization in Industry, Studies in Business Policy No. 30, National Industrial Conference Board, New York, 1954.

Table 12.4. Total Manufacturing Employment of the United States, Distributed by Geographic Region:
1899-1954*

Year	Total U.S. manufacturing employment[a] (millions)	New England	Manufacturing employment of geographic regions, as percent of U.S. total							
			Middle Atlantic	East No. Central	West No. Central	South Atlantic	East So. Central	West So. Central	Mountain	Pacific
1899	4.9	17.6	34.1	23.2	5.8	9.5	3.7	2.4	1.0	2.7
1909	7.0	16.0	33.8	23.3	5.9	9.7	3.9	3.0	1.1	3.3
1919	9.8	14.6	31.9	27.0	5.7	8.5	3.5	3.1	1.1	4.6
1929	9.7	12.3	29.8	29.1	5.6	10.1	4.1	3.3	1.1	4.6
1939	9.5	11.8	28.9	28.3	5.2	11.6	4.3	3.5	0.9	5.5
1947	14.3	10.3	27.6	30.2	5.5	10.7	4.4	3.9	1.0	6.4
1950	14.5	9.8	27.0	29.9	5.6	11.1	4.4	4.1	1.1	7.0
1951	15.3	9.6	26.5	29.9	5.8	10.9	4.4	4.2	1.1	7.7
1952	15.7	9.4	26.5	29.4	6.0	11.0	4.4	4.2	1.1	8.0
1953	16.7	9.4	26.2	30.0	5.8	10.7	4.4	4.3	1.1	8.1
1954	15.7	9.1	26.3	28.5	6.0	11.1	4.6	4.6	1.2	8.6

*Source: 1954 Census of Manufactures, Preliminary Report, Series MC-G2; 1953 Annual Survey of Manufactures; and 1947 Census of Manu-
factures. Supplied by the Office of Area Development, U. S. Department of Commerce.
[a]Includes employment, both production workers and non-production personnel, at operating manufacturing plants only; excludes employees
of manufacturing firms at separately reported central administrative offices, sales offices, auxiliary units, and other non-manufacturing
activities.

Second, it seems equally clear that the recent dispersion of indus-
trial employment to the less industrialized regions has not been accom-
panied by any substantial increase in the proportion of total manufactur-
ing employment located in the smaller cities and towns of the nation
(Table 12.5). For the United States as a whole, the percentage of manu-
facturing employment located outside of the standard metropolitan areas
was almost exactly the same in 1954 as in 1947. However, the smaller
metropolitan centers — those with less than 40,000 industrial employees
in 1947 — did experience a more rapid rate of increase in industrial em-
ployment than the larger industrial centers.

Location patterns among the several regions differ in some impor-
tant respects. The contrast between the five states of the East North
Central region and the 11 states of the Southeast is especially interest-
ing. In the East North Central region, with approximately two-thirds
of total industrial employment located in the very large industrial cen-
ters, the most rapid (percentage) increase in industrial employment
during the 1947-54 period occurred outside of the standard metropolitan
areas. In the Southeast, with three-fifths of industrial employment lo-
cated outside of the standard metropolitan areas, the most rapid (per-
centage) increase in industrial employment occurred in larger cities.
It is also interesting to note that the absolute, as well as the percentage,
increase in industrial employment in the Southeast was substantially
greater than in the East North Central region between 1947 and 1954.

The large share of the nation's small town or rural industrial em-
ployment that is presently located in the Southeast is perhaps even
more striking. With only 14 percent of the nation's total manufacturing
employment, the Southeast has one-third of all manufacturing employ-
ment in the nation that is located outside of the standard metropolitan
areas.

The importance of small town and rural industrial employment in
the Southeast can be traced in large measure to the importance of lum-
ber and textiles in the region's economy. With a major proportion of
total national employment in these industries already located within the
Southeast, [16] it seems reasonable to anticipate that future industrial ex-
pansion in the Southeast will tend to bring the industrial location pattern
of the region more nearly in line with the national pattern. [17]

The data examined do not seem to offer any reason for altering our
earlier hypothesis — that local urban industrial development will present
an effective alternative to geographic labor mobility in only a few of the
nation's low-income agricultural areas during the next two decades.

In the Southeast, the nation's major low-income agricultural area,
there is even some basis for expecting that industrial growth outside of

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[16]In 1947 the Southeast accounted for 48 percent of the nation's manufacturing employ-
ment in textile mill products and 45 percent of the nation's manufacturing employment in
lumber and wood products. These two industries alone accounted for 47 percent of total in-
dustrial employment in the Southeast. In the United States, they accounted for only 10 per-
cent.

[17]On the basis of a detailed analysis of the location patterns in the Tennessee Valley re-
gion, Friedman presents the following data and projections:

the standard metropolitan area size may be more difficult to achieve in the future than in the recent past.

IV

What are the implications of these conclusions for the conduct of development programs in low-income agricultural areas — more specifically for the Federal-State Rural Development Program?

1. Only a limited number of small cities and towns possess location characteristics sufficiently attractive to serve as the basis for substantial urban-industrial development — say an amount sufficient to bring the area into the standard metropolitan area classification by 1975.

2. Programs which focus their efforts on these potential urban-industrial centers will be more successful than programs in areas which are selected on the basis of other criteria — say the current level of income or the magnitude of rural underemployment.

3. The rural areas peripheral to the potential centers of urban-industrial development have more to gain from a successful development effort centered on the potential development centers than on unsuccessful or even partially successful efforts centered in areas of only minor potential development.

4. A single area development organization with programs centered around the potential urban-industrial center in its area will be more effective than a series of county programs each attempting to obtain part of the areas potential employment gains.

	Market	Raw Material (including power)	Labor	Miscellaneous	Total
Locational Orientation of Manufacturing Workers in the Tennessee Valley Region					
Percentage distribution in: 1929	31	32	35	3	100
1950	32	26	39	3	100
Percentage distribution of increase, 1929-1950	32	20	45	3	100
Estimated percentage distribution of increase, 1929-1975	45	15	35	5	100

Friedman, J. R. P., "Locational aspects of economic development," op. cit., p. 222, and "The spatial structure of economic development in the Tennessee Valley," op. cit., Chap. 7, pp. 102-25.

Table 12.5. The Location of Manufacturing Employment in the United States and Selected Sub-Regions, 1947 and 1954*

	Manufacturing employment (in thousands of workers)									
	Metropolitan areas [a]						Non-metropolitan areas		State Total	
	Large [b]		Medium [c]		Total					
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
United States										
1947	8,698	61	1,933	13	10,632	74	3,671	26	14,303	100
1954	9,372	60	2,215	14	11,587	74	4,096	26	15,683	100
Distribution of change										
1947-54	674	49	282	20	955	69	425	31	1,380	100
Southeast (11 states)[d]										
1947	214	11	563	29	776	40	1,173	60	1,949	100
1954	262	12	633	28	895	40	1,358	60	2,253	100
Distribution of change										
1947-54	48	15	71	23	119	39	185	61	304	100
East North Central (5 states)[e]										
1947	2,839	66	491	11	3,330	77	993	23	4,323	100
1954	2,899	65	496	11	3,396	76	1,075	24	4,472	100
Distribution of change										
1947-54	60	40	6	4	66	44	83	56	148	100

*Source: 1954 Census of Manufactures, Series MC-S1 to S49 and MC-C-2.
[a]A standard metropolitan area is a county or a group of contiguous counties which contains at least one central city of 50,000 inhabitants or more. Contiguous counties are included in a standard metropolitan area if they are essentially metropolitan in character and are sufficiently integrated with the central city.
[b]Metropolitan areas with over 40,000 industrial employees. These include metropolitan areas roughly equivalent to Peoria, Illinois, Columbus, Ohio, and Flint, Michigan, and larger.
[c]Metropolitan areas with less than 40,000 industrial employees.
[d]Includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia.
[e]Includes Ohio, Indiana, Michigan, Illinois, and Wisconsin.

In addition to the policy implications, two lines of research are strongly suggested:

1. <u>Regional economics</u> — including: (a) identification of geographic sub-regions which represent meaningful units for the purpose of <u>local</u> economic development; and (b) careful assessment of the specific locational advantages and disadvantages[18] possessed by each sub-region. (Let me emphasize that these are research problems and not problems which can be settled by appointing a committee of senior staff people who "know the area.")

2. <u>Factor mobility</u> — especially labor mobility. During the last two decades we have learned a good deal about population and labor mobility patterns. We still do not know enough about the selectivity of migration, either among areas or among individuals, to formulate meaningful generalizations. And we are apparently not yet ready to design programs which can transfer population and workers from the areas of greatest underemployment to the areas where employment is expanding most rapidly without encountering excessively high social costs.

Neither of these research areas can be studied independently of other research currently being conducted. They are both complementary to strong research programs in farm management, production economics, and marketing.

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[18]The importance of identifying the locational disadvantages correctly is as important as identifying the advantages. Location errors which are later corrected by plant closings may leave an area in worse condition than failure to attract new industry in the first place. See, for example, Kolker, B. L., and Levin, M. R., "Facts and illusions in resource development," Iowa Business Digest, July, 1956, pp. 1-7.

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Discussion*

RUTTAN'S paper submits good evidence that:
1. Urban-industrial developments are associated with some increase in the incomes of farm families and that this increase flows primarily through the labor market.

2. There is grave doubt that urban-industrial developments will solve the low-income problem in the major areas of low farm income because: (a) the natural population increase is building up the farm labor force faster than movement into nonfarm employment is reducing it, and (b) many of these areas of low farm incomes have relatively little to offer to new industries in terms of advantageous location. Ruttan limits the projection of implications to the next 20 years.

The practical alternative, as he points out, is increased "geographic labor mobility."

Within the framework of hypotheses, supporting evidence, and general conclusions drawn, Ruttan is to be commended for his excellent analysis. Any addition to what he has said will be made appropriately by using his presentation as a springboard for developing further hypotheses and supporting evidence to chart the course for research and action in a complex situation.

Perhaps the first hypothesis, which actually needs little supporting evidence, is that we are dealing with a complex situation both geographically and culturally.

In terms of geography the 1955 report of the Secretary of Agriculture on "Development of Agriculture's Human Resources," identified nine "Generalized Problem Areas": (1) Appalachian Mountains, Valleys, and Plateaus; (2) Southern Piedmont and Coastal Plains; (3) Southeastern Hilly Area; (4) Mississippi Delta; (5) Southwestern Sandy Coastal Plain; (6) Ozark-Quanchita Mountains and Border; (7) Northern Lake States; (8) Northwestern New Mexico; and (9) Cascade and Northern Rocky Mountains. The majority of these areas are in the Southern and Southeastern part of the United States. While these geographic areas

indicate concentrations of low farm income, it should be added that all agricultural areas contain some low income farm families.

Low income is the one common denominator with which we are dealing. This problem might be regarded as the result of unsatisfactory balance between people and the use of resources by which they make their living.

It is a reasonable hypothesis that each of the nine generalized problem areas has characteristics which make it different from the others: (1) Location with respect to metropolitan areas and to the larger urban regions into which metropolitan areas are merging in the more industrialized sections of the United States; (2) soil resources upon which to build a satisfactory agriculture; (3) mineral resources available for future exploitation; (4) resources of climate, scenery, etc. which lend themselves to the development of a recreational area for our vast urban population; (5) resources of water, location, and raw materials coming into future demand (for instance, renewable forest resources are gaining new importance in a broad band from Texas to the Carolinas); (6) human resources — the qualifications of the people either to join the industrial labor force or to find their place in their home communities or elsewhere.

The above six possible (and probable) differences among areas should be taken into account when studying the problem of low income and the place of various remedial measures in its solution.

As an illustration of how some low-income areas may change considerably for the better in the next few years, I wish to cite some developments in Ohio which are being duplicated in other states at least to some extent.

The growth of part-time farming is relieving the low-income situation in some areas. This improvement is possible because of automobiles, good roads, and growing industrial opportunities. Agriculturally, we still have the same low-income farms but not necessarily low-income families.

The Secretary's report delineating problem areas, referred to above, included four economic areas of Southern Ohio. Two areas were in the "moderate" and two in the "substantial" problem categories. Regional industrial development now taking place in the Ohio River Valley should considerably relieve the population pressure on the agricultural resources of this area.

Recent research in Ohio indicated that the growth of part-time farming was more closely identified with availability of nonfarm employment opportunities than with the quality of the agricultural resources. (The pull toward employment seems to be more effective than the push of poor resources).

Ohio research indicates that part-time farmers are willing to drive 25 to 30 miles, and that some are actually driving as much as 75 miles one way to work. With such a broad radius we need to take another look at the geographical limits of our so-called expanding metropolitan areas and their zone of influence on the occupational pattern of the people.

Circles with a 40-mile radius around new industrial developments in the Southern Ohio area place most of this area in commuting distance to industrial plants. Research is now being undertaken to discover what changes in farm organization and land use take place when full-time farmers take a nonfarm job and become part-time farmers.

The critical resources in the selection of these new Ohio industrial sites were apparently power, water, and raw materials. Chemical brine, one of the raw materials, is a resource that has become increasingly important in recent years. As little as 25 years ago this would probably not have been an important item in an inventory of the resources of that area.

Water, both for transportation and direct uses, seems destined to become a critical resource and more important in determining location of industry. Changes in the supply, cost, and use of water could foster a movement to locate new industry away from metropolitan areas.

Before people can take advantage of industrial opportunity at home or by outmigration they must want the employment and must be qualified for the work. An approach to this problem is underway in some eastern Ohio counties faced with new industrial developments. An inventory of human resources is being taken to determine how many people are available and want work, their educational training, their age, skills and aptitudes, their attitude toward remaining where they are or moving close to the job if and when such is available.

Another hypothesis is that low farm income is only one manifestation of a basic cultural problem. As mentioned previously, a rapid outmigration from some areas is not relieving the pressure on the land because of the rapid rate of natural population increase. Also, at the other end of the line are manifestations that the migrants have taken some problems with them.

A current issue of Time magazine comments on the social problems arising from the influx into Chicago (at the rate of more than 1,000 a week) of people from the submarginal farming areas — problems arising from the poor preparation of these people to fit well into an urban community. Here is a problem of education, of cultural development, of health, of orientation which is needed by people, migrants or not, before they can comfortably fit into the pattern of living and working in the modern urban-industrial community.

This leads us to ask the questions: (1) is our prime motive or policy to relieve the low-income farm problem, or (2) is the motive and policy to help people to become the best possible citizens wherever they may be?

Ruttan's paper points to the all-important fact that industrialization is a link in the chain of events which removes the pressure of population on our agricultural land. It also supports the view that industrialization is not a universal panacea for the ills of the low-income farmer.

On the other hand, the changing pattern of industry — decentralization, plants built to utilize automation and often requiring much ground floor

space, new products using new sources of materials — is of sufficient importance that any area and community may have an unrealized potential. This points to the need for forward planning for all communities. The economic geography of industrial developments centers in several urban regions composed of widely merging metropolitan areas. But this does not rule out the possibility or the probability that some new industries will continue to find it advantageous to locate beyond the urban periphery.