URBAN PUBLIC SERVICE COSTS AND BENEFITS OF RURAL-TO-URBAN MIGRATION*

Larry C. Morgan and A. Frank Bordeaux, Jr.

In a recent article, Hildreth and Schaller [7, pp. 768, 771-772] suggest that researchers can make important contributions to community development programs by analyzing the trade-offs resulting from increasing economic activity in rural communities or moving the people to jobs in other communities, and the subsequent effects of these alternatives on the allocation of community services. Although they concentrate on the delivery of public services to rural communities, it is important to note that urban public service costs are a major factor influencing the current emphasis on "place development," rather than encouraging rural-to-urban migration.

Much of the rationale of current rural development policy is based on the assumption that there is great divergence of social and private marginal costs of public services to city in-migrants from rural areas. The President's National Advisory Commission on Rural Poverty [10, pp. 102-113] concluded that rural-to-urban migration ultimately results in a net social cost because the young, most productive people leave rural areas while the nation's large cities are already heavily congested and facing increasing public service costs. This conclusion is generally supported by Buchanan and Wagner [2, pp. 139-158], who argue that, in terms of fiscal equalization policies, there are grounds for reducing the divergence between social and private marginal costs of public goods by reducing or halting rural-to-urban migration.

With respect to very large cities, Hansen [5; 6, pp. 240-244, 271-287, 301-302] has stated that rural-to-urban migration is a sub-optimal allocation of population and labor. He argues that the streams of rural migrants should be guided to intermediate-size cities in the population range from 50,000 to 1 million.

Maddox [8] and Riew [11] have developed analytical frameworks that include the measurement of the net social costs of rural-to-urban migration in the urban sector. Few studies have been attempted that empirically measure net social public service costs of migration. Crowley [3] provided an estimate for these net social costs using 1955-1960 data for 94 large U.S. cities. The median annual net public burden was found to be $72 per in-migrant. Although his study does not distinguish between rural-to-urban and interurban migrants, Crowley has made a valuable contribution to an important aspect of public service costs in large cities.

PURPOSE

The purpose of this paper is to analyze local public service expenditure benefits and tax payments of families who recently moved from one of the nation's most depressed rural areas to a nearby intermediate-size urban growth center. The analysis should be helpful in evaluating the wisdom of discouraging rural-to-urban migration and migration growth center strategy advocated by Hansen [5].

DATA AND METHODOLOGY

In November 1971, a random sample of 161 families was drawn in Lexington, Ky., an intermediate-size city (population 110,000) that experienced rapid population and economic growth

Larry C. Morgan is assistant professor of agricultural economics at the University of Tennessee, and A. Frank Bordeaux, Jr., is associate professor of agricultural economics at the University of Kentucky.

*This paper is based on research performed under University of Kentucky Contract No. NIH-70-2198 with the National Institute of Health. Other results of the project, "An Economic Analysis of Migration From Eastern Kentucky to Selected Urban Centers," previously have been reported by Bordeaux and Morgan [1].

during the last decade. The Bureau of Census drew the sample from the 1970 15 percent Census sample in Lexington. The sampling design insured that the head of each household was born in one of the 49 counties in the Appalachian portion of eastern Kentucky; had moved to Lexington between April 1, 1965, and April 1, 1970; was more than 16 years of age at the time of out-migration; did not live outside eastern Kentucky for five or more years prior to his 16th birthday, and did not commute to work in Lexington for more than six months prior to migration.[1]

In order to preserve confidentiality, the Census administered a comprehensive questionnaire to each migrant household.[2] Detailed information was obtained on each family's income, residential real estate value or monthly cash rent for place of residence, number of members of the household, and number of children currently attending local public schools.

Migrant Family Tax Payments

As in Crowley's study [3], in-migration to Lexington was approached from the standpoint of the central city as a decision-maker that determines the allocation of public services through the "consumer-voter" process. Only city and local public school services are considered in this analysis. All public service expenditures that are due to intergovernmental transfers of funds from county, state, or federal agencies are specifically excluded from the analysis. City and school tax payments were estimated for each family by applying the relevant tax rates to the family's total annual earned income[3] and the estimated value of place of residence.[4]

Migrant Family Expenditure Benefits

For the total city population, it was assumed that total local tax payments equaled the value of total local public service benefits. This assumption also was made by Crowley [3], whose analytical framework is based on a study of tax incidence by Gillespie [4]. The city expenditure benefit per migrant family was estimated by multiplying the number of members of the migrant household by the annual city per capita tax payment.[5] Local public school expenditure benefits per migrant family were estimated by multiplying number of school-age children in the family by the annual local school tax payment per school-age child.[6]

Migrant Family Net Tax Burden

The migrant family net tax burden is defined as follows:

$$NTB = EXPEND - TAX$$

where NTB is the net tax burden; EXPEND is the expenditure benefit, and TAX is the migrant family's total tax payment. A negative NTB represents a *net benefit* to the community because the family's tax payment is greater than the value of public services received. Conversely, a positive NTB represents a *net cost* to the community because the migrant family pays less taxes than the value of public services received.

Although the NTB is an estimate of the *average* public service cost or benefit of a migrant family, it is assumed to be, like Crowley's study [3, p. 16], an estimate of *marginal* public service cost or benefit of an additional migrant family in the city. The appropriateness of this assumption depends to a large degree on the homogeneity of the migrant population. In this regard, it is reasonable to assume that the population of eastern Kentucky migrants in Lexington is a more homogeneous group than the migrants Crowley analyzed in 94 metropolitan cities.

The migrant family's NTB is therefore a measure of the net social cost or benefit of public services to the family. In this sense, NTB provides one measure of the local public service sector spillover effects of in-migration.

---

[1] The Commuting criterion was necessary to avoid including persons who commuted from nearby counties for unusually long time periods.

[2] At no time were the authors aware of the identity of any respondent.

[3] The City of Lexington collected a 1.5 percent payroll tax in 1971 [9, p. 63].

[4] In 1971, the City of Lexington collected a property tax of 61.7 cents per $100 of assessed value [9, p. 63], and the Fayette County School District collected a property tax of 83.4 cents per $100 of assessed value [9, pp. 63-64]. If the migrant owned the place of residence, the migrant's estimated value of the property was used to estimate annual city and school taxes. If the migrant rented the place of residence, it was assumed that all property taxes were born by the renter. Monthly cash rent was capitalized in order to estimate residential property value [9, pp. 250-258]. For renters (one-half of the households), the mean monthly cash rent was $95.34. The value of rental property was estimated to be 100 times the monthly cash rent. Five families did not pay property taxes because they received either free housing or highly subsidized public housing. Homeowners reported a mean value of $19,969 for their residences.

[5] The city per capita tax payment was estimated to be $67.44 [9, pp. 254-255].

[6] The local school tax payment per school-age child was estimated to be $209.86 [9, p. 258].

RESULTS

A major objective of the overall study (of which this paper is a part) was to analyze private costs and benefits of rural-to-urban migration [9, pp. 67-143]. At the end of 1971, the typical migrant family had lived in Lexington approximately four years since migration. Total annual earned income per migrant family rose from approximately $4,300 at the end of the last year of residence in eastern Kentucky to approximately $6,200 at the end of the first year in the city, and to approximately $8,600 at the end of the last year in the city. The mean migrant age was 31.3 years and the mean migrant educational level was 12.9 years.

One problem encountered in estimating the income opportunity costs of not migrating out of rural areas is that many of the migrants were students prior to migration. Approximately one-fourth of the migrants in this study were students prior to migration and therefore did not have extensive earned income experience in the area. Therefore, a sub-sample of 112 migrants who were active in the job market during the last year of residence in eastern Kentucky and the last year of residence in Lexington was used to analyze the private costs and benefits of migration. These "Eastern Kentucky Workers" incurred a mean total family migration cost[7] of $378, while their mean family net migration benefits rose from $458 at the end of the first year after migration to $740 at the end of the last (fourth) year following migration [9, pp. 140-141]. Assuming the net benefit stream is a linear function of time, the internal rate of return to private investment in migration, during the first four years after migration, is approximately 132 percent. Thus, it is apparent that there are strong private tangible incentives to move out of eastern Kentucky.

Urban life also rewards migrants with many intangible benefits. In response to batteries of attitudinal statements, more than one-half of the migrants were satisfied, and less than one-fifth of them were dissatisfied with their jobs, interpersonal associations, and services and facilities in Lexington [9, p. 158]. No attempt was made to measure of incidence of social delinquency among migrant families, but their favorable attitudes toward everal major components of urban living conditions suggest that they are not likely to be associated with the urban violence that is commonly thought to be associated with central city migrant ghettos [10, pp. 11-12].

These findings pose a fundamental question about rural-to-urban migration policy: If migrants act selfishly to maximize the net present-values of their lifetime income streams, do they simultaneously become a net social cost in terms of public services in urban areas? Eastern Kentucky migrants in Lexington do not appear to be net social costs for city services (Table 1). Results of paired T-tests of expenditure benefits and taxes indicate that the city NTB is not different from zero at the 10 percent level of significance in the cases of the total sample and the "Eastern Kentucky Workers" sub-sample.[8] However, those migrants who were students in eastern Kentucky immediately prior to migrating have a mean net social benefit (negative NTB) of $25 per family.

In the case of local public school services, migrants in the total sample have a mean net social cost of $32 per family, which is greater than zero at the 2 percent level of significance. The sub-sample of "Eastern Kentucky Workers" has a mean net social cost of $48 per family, which is different from zero at the 1 percent level of significance. Migrants in the "student" sub-sample appear to pay approximately the same amount of school taxes as the value of school expenditure benefits received.

In regard to combined city and school services, the typical migrant family is a net social cost of $28, much of which is due to "worker" families, who have a mean net social cost of $48 per family. The "student" families, however, have a mean net social benefit of $33 per family, but it is not significantly different from zero.

In general, those migrant families with total annual earned incomes of less than $7,500 are net social burdens with respect to city services (Table 2). Those families with annual earned incomes of $10,000 or more are city net social benefits.

Although the relationship between NTB and total family earned income indicates that the NTB is regressive,[9] the relationship for school and local services is erratic. Much of the wide variation in school NTB's is due to large variations in school expenditure benefits. School taxes, which are a function of residential real estate value, are a steady, positive function of income. School expenditure benefits, however, are a function of the number of

[7] Migration costs included: cash travel costs, $65; other cash costs, $39, and foregone earnings, $274.

[8] The null hypothesis is that migrant family expenditure benefits equal migrant family tax payments.

[9] The term "regressive" as used here indicates that the NTB declines as migrant family income increases.

Table 1. PAIRED T-TESTS OF LOCAL PUBLIC EXPENDITURES AND TAXES FOR EASTERN KENTUCKY MIGRANT FAMILIES IN LEXINGTON, 1971*

Sample and Variable	Sample Size	Mean	Net Burden	"t"	One-Tail Probability
		--dollars[a]--			
Total Sample:					
City Expenditure	159 (2)[b]	198	-5	-0.58	0.28
City Tax		203			
School Expenditure	161	132	32	2.02	0.02[c]
School Tax		100			
Local Expenditure	159 (2)[b]	331	28	1.33	0.09[c]
Local Tax		303			
"E. Ky. Workers":					
City Expenditure	112	204	0	-0.10	0.50
City Tax		204			
School Expenditure	112	148	48	2.37	0.01[c]
School Tax		100			
Local Expenditure	112	352	48	1.78	0.04[c]
Local Tax		304			
"E. Ky. Students":					
City Expenditure	37 (1)[b]	190	-25	-1.71	0.04
City Tax		215			
School Expenditure	38	88	- 7	-0.29	0.39
School Tax		95			
Local Expenditure	37 (1)[b]	280	-33	-1.01	0.16
Local Tax		313			

*Source: Larry C. Morgan, "An Economic Analysis of Out-Migration from a Depressed Rural Area." Unpublished Ph.D. thesis, University of Kentucky, 1973, p. 182.

[a]All values have been rounded to the nearest dollar.

[b]Parentheses indicate number of observations excluded due to incomplete income data.

[c]The alternative hypothesis that public expenditures exceed taxes is accepted.

school-age children in the family, which is quite variable between income classes.

CONCLUSIONS

Although the eastern Kentucky migrant family in Lexington received city expenditure benefits approximately equal to its tax payment, in the case of local public school services, an annual net social cost of approximately $32 per migrant family is imposed upon the Lexington community. This finding cannot be interpreted as conclusive evidence that rural-to-urban migration should be reduced until there is a more complete understanding of the financial relationship between local school districts and state and federal funding agencies. Recent migrants tend to be young adults with children and, therefore, tend to receive large expenditure benefits for the education of their children. It is beyond the scope of this paper to analyze the incidence of school benefits among the total Lexington population, but it may very well be that the equity factor in local school financing allows proportionately greater benefits (net social costs of schooling) to the families of all young adults. Even if it is found that migrants are age-specific public burdens in the urban community, their net social cost for local school services ($32 per family) is less than 5 percent of their annual net private benefits ($740 per family) from rural-to-urban migration.

Migrants who were students in eastern Kentucky immediately prior to migration are both likely to be net social benefits to the Lexington community for

Table 2. MEAN NET LOCAL TAX BURDENS OF MIGRANT FAMILIES BY INCOME CLASS, 1971*

Type of Burden	Total Earned Family Income, 1971								
	None	$1-2,499	$2,500-4,999	$5,000-7,499	$7,500-9,999	$10,000-12,499	$12,500-14,999	$15,000-17,449	$17,500 & Over
	Dollars								
City	61.30 (39.34)[a]	50.07 (21.42)	79.33 (18.07)	42.58 (21.03)	3.04 (11.93)	-33.31 (11.52)	-104.47 (16.77)	-109.02 (33.58)	-197.67 (48.61)
School	-59.49 (61.20)	125.84 (56.64)	11.86 (39.09)	81.61 (49.98)	-12.45 (22.04)	43.92 (30.12)	-8.58 (42.75)	56.10 (115.93)	58.51 (78.87
Local[b]	11.73 (71.16)	175.91 (65.59)	91.18 (46.11)	124.19 (65.72)	-9.41 (28.28)	10.60 (36.29)	-113.05 (55.88)	-52.93 (145.57)	-139.16 (115.02)
Sample size	6	9	18	34	35	23	15	8	6

*Source: Adapted from: Larry C. Morgan, "An Economic Analysis of Out-Migration from a Depressed Rural Area." Unpublished Ph.D. thesis, University of Kentucky, 1973, p. 305.

[a]Standard error of the mean is in parentheses.

[b]Local tax burden may not equal the sum of the city and school burdens due to rounding.

both city and local public school services. Any program that is designed to reduce or halt rural-to-urban migration should recognize that there are very few employment opportunities in eastern Kentucky for young people who have just entered the job market, particularly those who have not attended college. The student migrants in this study had approximately 14.5 years of education and had annual total family earned incomes of approximately $9,500 in 1971 in Lexington [9, pp. 110-111]. In view of the fact that they have accrued large private and social benefits from migration, there is no persuasive evidence to support programs that discourage students from leaving eastern Kentucky.

Migration policy cannot be conclusively evaluated until the net social cost of all migration actions and effects is accurately measured. In addition to the private migration costs and urban public service costs analyzed in this study, additional research must ultimately determine the social cost of migration to the sending community, the recipient community, and the national economy. These costs include private costs to both migrants and non-migrants and public costs incurred due to changes in tax basis and public service requirements in the communities. Certainly, these costs should include intangible or psychic costs incurred by migrants and non-migrants who are directly affected by the migration process.

In the absence of a global measure of migration social costs, it behooves policy analysts to concentrate on the two major sources of migration costs and benefits: the private costs and returns to the migrant family due to the migration process, and the net local tax burden on the family in the urban recipient city. The results of this study suggest that rural development policies that discourage rural-to-urban migration run the risk of denying rural people opportunities to earn substantially higher incomes in urban areas, where migrant net social costs for local public services are minimal. Since the results of this study apply to a relatively small geographic area, similar research on out-migration from other depressed rural areas is urgently needed.

Finally, the results of this study, although limited to only one intermediate-size city, lend support to Hansen's argument [5] that migration streams from rural areas, especially depressed rural areas, should be directed to intermediate-size urban growth centers. The revitalization of rural areas may be possible, but it cannot be accomplished without massive injections of social overhead capital. In the absence of local wages comparable to the present value of urban wages and migration costs, rural people in depressed areas like Appalachian Kentucky cannot be expected to forsake migration to urban areas. Since there are not yet definite estimates of the trade-offs between rural development and rural out-migration, it is more likely that out-migration, by default, will continue to play a major role in the development of depressed areas.

REFERENCES

[1] Bordeaux, A. Frank, Jr., and Larry C. Morgan. "Sources of Job Information for Migrants." *Southern Journal of Agricultural Economics,* Vol. 5, No. 1, pp. 211-216, 1973.

[2] Buchanan, James M., and Richard E. Wagner. "An Efficiency Basis for Federal Fiscal Equalization." *The Analysis of Public Output.* Edited by Julius Margolis, New York: National Bureau of Economic Research, Columbia University Press, 1970.

[3] Crowley, Ronald W. "An Empirical Investigation of Some Local Public Costs of In-Migration to Cities." *Journal of Human Resources,* Vol. 5, No. 1, pp. 11-23, 1970.

[4] Gillespie, W. Irwin. "Effects of Public Expenditures on the Distribution of Income." *Fiscal Federalism.* Edited by Richard A. Musgrave. Washington, D.C.: The Brookings Institution, 1963.

[5] Hansen, Niles M. *Intermediate-Size Cities as Growth Centers.* New York: Praeger Publishers, Inc., 1971.

[6] Hansen, Niles M. *Rural Poverty and the Urban Crisis.* Bloomington, Ind.: Indiana University Press, 1970.

[7] Hildreth, R. J., and W. Neill Schaller. "Community Development in the 1970's." *American Journal of Agricultural Economics,* Vol. 54, No. 5, pp. 764-773, 1972.

[8] Maddox, James G. "Private and Social Cost of the Movement of People Out of Agriculture." *American Economic Review,* Vol. 50, No. 2, pp. 392-402, 1960.

[9] Morgan, Larry C. "An Economic Analysis of Out-Migration From a Depressed Rural Area." Unpublished Ph.D. thesis, University of Kentucky, 1973.

[10] President's National Advisory Commission on Rural Poverty. *The People Left Behind.* Washington, D.C.: Govt. Printing Office, 1967.

[11] Riew, John. "Migration and Public Policy." *Journal of Regional Science,* Vol. 13, No. 1, pp. 65-76, 1973.