Volume Title: Investment in Human Beings

Volume Author/Editor: Universities-National Bureau Committee for Economic Research

Volume Publisher: The Journal of Political Economy Vol. LXX, No. 5, Part 2 (University of Chicago Press)

Volume ISBN: 0-87014-306-9

Volume URL: http://www.nber.org/books/univ62-3

Conference Date:

Publication Date: October 1962

Chapter Title: The Costs and Returns of Human Migration

Chapter Author(s): Larry A. Sjaastad

Chapter URL: http://www.nber.org/chapters/c13573

Chapter pages in book: (p. 80 - 93)

THE COSTS AND RETURNS OF HUMAN MIGRATION[1]

LARRY A. SJAASTAD

University of Minnesota

MIGRATION research has dealt mainly with the forces which affect migration and how strongly they have affected it, but little has been done to determine the influence of migration as an equilibrating mechanism in a changing economy. The movements of migrants clearly are in the appropriate direction, but we do not know whether the numbers are sufficient to be efficient in correcting income disparities as they emerge.[2] There is a strong presumption that they are not.

The central purpose of this paper is to develop the concepts and tools with which to attack the latter problem. I propose to identify some of the important costs and returns to migration—both public and private—and, to a limited extent, devise methods for estimating them. This treatment places migration in a resource allocation framework because it treats migration as a means in promoting efficient resource allocation and because migration is an activity which requires resources. Within this framework, my goal will be to determine the return to investment in migration rather than to relate rates of migration to income differentials.

I. MIGRATION: TOO MUCH OR TOO LITTLE?

Economists and others are generally dissatisfied with the past performance of migration in narrowing geographic income differentials, in spite of the tremendous amount of internal migration taking place in the United States.[3] During the twelve months preceding the 1950 Census of Population, 5.6 per cent of the United States population moved to a different county and 2.6 per cent to a different state.[4] Accordingly, there were enough interstate migrants to replace the population of Delaware every month and even that of mighty New York within twenty-one months. Nevertheless, Delaware's per capita personal income continues to be two and one-half to three times that of Mississippi. How can these large income differences persist in the face of such massive movements?

Part of the answer lies in the fact that these movements are *gross* rather than

[2] A substantial number of highly creditable studies on the nature and strength of the forces affecting human migration have been completed; the earliest of these was published more than seventy-five years ago (see E. G. Ravenstein, "The Laws of Migration," *Journal of the (Royal) Statistical Society*, Vol. XLVIII [June, 1885]). The main concern of economists has been with the response of individuals to economic opportunity at a distance. Harry Jerome's *Migration and Business Cycles* (New York: National Bureau of Economic Research, 1926) leaves little doubt that international migration is influenced by the business cycle, and more recent work indicates a parallel relation for internal migration. Moreover, recent statistical studies have revealed a relationship between internal migration and income differentials as well.

[3] On this point see George H. Borts, "The Equalization of Returns and Regional Economic Growth," *American Economic Review*, L, No. 3 (June, 1960), 319–47.

[4] United States Bureau of the Census, *1950 Population Census Report*, P-E, No. 4B (Washington: Government Printing Office, 1956), p. 13, Table 1.

net migration rates, and that the gross migration rate at the state level is typically several times the net rate. But this fact raises an even more perplexing problem: why is gross migration in one direction the best single indicator of the amount of backflow, as appears to be true? For example, the Census estimates that 62,500 persons migrated from Mississippi in the year preceding the 1950 count; but it also estimates that 51,900 migrated into that state during the same period.[5] If people insist upon migrating into the lowest income state in the union at such a rate, how are economists to rationalize their behavior—much less prescribe the remedy for their alleged sorry earnings? If we take the out-migration of 62,500 persons as evidence that Mississippi is a low earnings area, we must by the same token accept the 51,900 as counter evidence that it is indeed a good place to earn a living. The simple majority favors the out-migrants, but this majority is unimpressively small put alongside the income statistics. It is one thing to find lack of mobility the culprit that prevents spatial equalization of incomes; it is quite another to suggest that a lot of mobility in the wrong direction may be the cause!

These remarks, of course, beg the question. Mississippi's per capita income may have risen as much from the 51,900 influx as from the 62,500 outflow. Men are not created equal, nor would they be likely to stay so if they were. A 10 per cent in-migration of highly skilled persons (with few children) may improve Mississippi's per capita income more than a larger but less selective outflow. One can conceive of conditions which would cause incomes to rise faster the smaller is net migration.

How may one explain Mississippi's mi-gration pattern (which, incidentally, is typical of that of most states)? The year 1949 was one of recession, which generates an increase in return migration. Moreover, Mississippi is homogeneous neither in occupations nor in industries. The out-migrants may have left declining industries and may not have been qualified for employment in the expanding ones. Or, some or all of the in-migrants may have been disillusioned out-migrants of previous years. There are also retirements. Retired persons may seek places where labor is cheap, whereas employed people are attracted to areas where it is dear; or people who are retiring return to communities in which they were reared and spent the earlier years of their lives.

Whatever may be the best hypothesis for this seemingly paradoxical behavior, three related points become clear: (1) Net migration is not necessarily a useful measure for testing the labor market's ability to remove earnings differentials. (2) Disaggregation of both the migrant and parent population by at least age and occupation may be required to confirm (or deny) the alleged failure of migration to achieve a reasonably equal income distribution over space. (3) The "perverse" behavior of gross migration is consistent with observed income differentials being generated by occupational as well as geographic immobility. Let me add that the somewhat paradoxical relation between gross in- and out-migration may be substantially an aggregation problem, as I have argued elsewhere.[6]

II. DIFFERENCES IN EARNINGS

Migration poses two broad and distinct questions for the economist. The

[5] United States Bureau of the Census, *op. cit.*, p. 32, Table 8.

[6] See my "Migration in the Upper Midwest" in "Four Papers on Methodology" (an unpublished manuscript of the Upper Midwest Economic Study, University of Minnesota).

first, and the one which has received the major attention, concerns the direction and magnitude of the response of migrants to labor earnings differentials over space. The second question pertains to the connection between migration and those earnings, that is, how effective is migration in equalizing inter-regional earnings of comparable labor? The latter question has received much less attention than the former. It is also the more difficult of the two.

Most studies concerned about the first question have focused upon *net* migration to or from various geographic areas or between pairs of such areas. Most of them have found a relationship between income or earnings and migration, and usually in the expected direction (that is, high earnings are associated with net *in*-migration, low earnings with net *out*-migration). The qualifications, however, are numerous; and the observed relationship is usually quite small and weak. My study of interstate migration, for example, shows that over the 1940–50 decade, an increase in per capita labor earnings of $100 (1947–49 dollars) induces net in-migration or retards net out-migration by only 4 or at most 5 per cent of the population aged fifteen to twenty-four years at the end of the decade.[7] The percentage was lower for other ages and hence lower for the total population. This modest response of net migration to earnings differentials implies that per capita earnings must be low indeed for net out-migration to overcome natural increase and effect a local population reduction. My study indicates that during the 1940's the earnings level in a particular state would need to be roughly one-half the national average in order for migration

from that state to offset completely the natural increase, thus leaving a static population.

But as was suggested earlier, net migration alone is not the only mechanism for removing earnings differentials; one should also consider gross migration. Presumably, net migration is required only from those industries (or occupations) with locally depressed wage rates. If low earnings characterize all or most industries in a particular area, net out-migration is required; and it should bring about an increase in the wage rate relative to the case without out-migration. If some industries in the area, however, are paying higher wages than elsewhere, and the workers leaving the low-wage industries are unqualified and cannot easily become qualified for employment in the high-wage industries, in-migration should also occur. But this diversification among high- and low-wage industries is almost certain to *weaken* the expected relation between average earnings levels and net migration, although there remains a strong presumption that low average earnings will induce net out-migration.

Occupational composition can account for some, but not all of the differences in earnings among states. The results of Frank Hanna's admirable study show that: (1) the low income states are dominated by occupations with relatively low earnings at the national level, and (2) the earnings within particular occupations in low-income states tend to be lower than the national average.[8] Opposite relationships characterize the high-income states. Hanna's study, together with the observed relation between income and net migration, supports the hypothesis that

[7] Larry A. Sjaastad, "Income and Migration in the United States" (unpublished Ph.D. dissertation, University of Chicago, 1961), p. 38.

[8] Frank A. Hanna, *State Income Differentials, 1919–1954*, (Durham, N.C.: Duke University Press, 1959), p. 128.

migration does constitute a response to *spatial* earnings differentials; moreover, this evidence is consistent with the hypothesis that migration is a search for opportunities in *higher-paying occupations*. Both hypotheses are reassuring to the economist.

Although the studies of net migration to date partially reveal the functioning of the labor market, they tell us little more than the fact that net migration is in the "right" direction. The estimated response magnitude of net migration to gaps in earnings is of little value in gauging the effectiveness of migration as an equilibrator. There are, however, several alternative approaches. One simple approach is to compare rates of (gross) migration with changes in earnings over time. Numerous compositional corrections would be necessary, and this approach would still have to answer the difficult question of how much equalization of earnings should be brought about by a given amount of migration. Moreover, it is possible that the impact of migration can be offset by further changes in the economic forces which originally generated the earnings differentials.

A better alternative, at least analytically, is to cast the problem strictly as one of resource allocation. To do this, we treat migration as an *investment increasing the productivity of human resources*, an investment which has costs and which also renders returns.

Treating migration as an investment removes one of the difficulties inherent to the first approach; there exists a ready-made criterion to test the effectiveness of migration in reducing earnings differentials over space. That criterion is, of course, the rate of return on resources allocated to migration. The difficulty of the method is that it is necessary to identify and measure the costs as well as the re-

turns to migration; its credit is the possibility of meaningful comparisons between migration and alternative methods of promoting better resource allocation.[9]

III. THE PRIVATE COSTS OF MIGRATION

The private costs can be broken down into money and non-money costs. The former include the out-of-pocket expenses of movement, while the latter include foregone earnings and the "psychic" costs of changing one's environment. Each of these is treated in turn below.

1. THE MONEY COSTS

There are no data to my knowledge on the expenses incurred by migrants in the course of moving. Although these data could be collected only from the migrants themselves, these costs could, no doubt, be estimated reasonably well for given distances (and number of dependents, if one treats migration of families). Such estimates have been made, but I suspect they are quite conservative.[10] Nevertheless, since the money costs one ought to include are only the *increase* in expenditure for food, lodging, transportation (for both migrants and their belongings), etc., necessitated by migration, the order of magnitude of these costs is surely sufficiently small that it cannot account for the large earnings differentials encountered in the data (even after taking into

[9] Obviously, complete or perfect spatial equalization of earnings is ruled out (other than by chance) so long as migration involves costs to the migrant.

[10] James G. Maddox, for example, estimates "that many farm people can travel as far as five hundred miles from their home, take ten days to find nonfarm jobs, and wait a week for their first paycheck after they start work with a nest egg of no more than $100 per person" ("Private and Social Costs of Movement of People out of Agriculture," *American Economic Review*, L [May, 1960], p. 393). Note that this is an estimate of capital requirements as opposed to money costs, since Maddox does not take account of what it would cost to live without migrating.

account foregone earnings). Moreover, the results of my study of internal migration in the United States, 1949–50, suggest that the marginal costs associated with additional distance are considerably higher than could be attributed to the costs considered in Maddox's estimate. The migration variable was defined as the number of (net) migrants going from state i to state j as a fraction of all (net) migrants from state i. Regression coefficients obtained indicate that the attractiveness of a given destination was unaffected by a 10 per cent gain in annual per capita labor earnings *and* a simultaneous 16 per cent increase in distance.[11] At the mean of the income and distance variables these percentages imply that the typical migrant would be indifferent between two destinations, one of which was 146 miles more distant than the other, if the average annual labor earnings were $106 (1947–49 dollars) higher in the more distant one.[12] Marginal costs per mile of migration would have to be high indeed to reconcile this negative effect of distance with the present value of the earnings differential even at very high discount rates, particularly since the persons involved are already migrants and only their allocation over space is in question. Moreover, this result cannot stem from migrants moving in a series of short jumps. That explanation would be plausible if the allocation of gross migrants were being studied; in the case under

question, however, the variable is net migration. One is strongly tempted to appeal to market imperfections such as the lack of information to explain the apparently high distance cost of migration. Unfortunately, no simple way has been devised for testing that hypothesis—although attempts have been made.[13] Even so, the migration-impeding effects of uncertainty remain to be measured.

2. THE NON-MONEY COSTS

The non-money considerations involved in migration are surely significant, probably far more so than the money costs. The first non-money costs to consider are opportunity costs—the earnings foregone while traveling, searching for, and learning a new job.[14] Part of these foregone earnings will be a function of the distance of migration. In addition the time required to find a new job is presumably affected by the level of unemployment. Clearly one should be able to estimate these components. The costs of learning a new job (on-the-job training) are treated in detail by Mincer in another paper in this Supplement. As Mincer demonstrates, these costs are subject to measurement. Since they are reflected by reduced earnings, these costs are to be taken into account by choosing the appropriate expected earnings stream (after migration) for comparison with the expected stream had the migrant not moved.[15]

---

[11] Sjaastad, "Income and Migration in the United States," p. 63.

[12] These estimates are partial regression coefficients and since an occupational mix variable was also present, it is assumed that the occupational mix is either constant or changes such that average earnings of the labor force remain constant if each member earns the national average within his occupation. The occupational mix correction is that devised by Hanna and called "rate constant earnings" (*op. cit.*, chap. v).

[13] In particular, see Philip Nelson, "A Study in the Geographic Mobility of Labor" (unpublished Ph.D. dissertation, Columbia University, 1957).

[14] One could include in opportunity costs the entire earnings stream the migrant is expected to earn had he not migrated, and then include in returns the expected earnings stream after migration. The alternative followed in this paper is to look only at the increment to costs and earnings associated with migration.

[15] Risk and uncertainty "costs" can be treated in a fashion similar to on-the-job training costs; that is,

A second form of non-money costs must be considered. Since people are often genuinely reluctant to leave familiar surroundings, family, and friends, migration involves a "psychic" cost. It would be difficult to quantify these costs; moreover, if they were quantified, they should be treated quite differently from the costs previously considered. The costs treated above represent real resource costs; however, the psychic costs do not. Rather they are of the nature of lost consumer (or producer) surplus on the part of the migrant. Given the earnings levels at all other places, there is some minimum earning level at location i which will cause a given individual to be indifferent between migrating and remaining at i. For any higher earnings at i, he collects a surplus in the sense that part of his earnings could be taxed away and that taxation would not cause him to migrate. The maximum amount that could be taken away without inducing migration represents the value of the surplus. By perfect discrimination, it would be possible to take away the full amount of the surplus, but in doing so leave resource allocation unaffected (other than through distributive effects). Hence, the psychic costs of migration involve no resources for the economy and should not be included as part of the investment in migration.

Although the psychic costs involve no resource cost, they do affect resource allocation. Very likely, more migration would take place if psychic costs were zero for everyone. In addition, even if knowledge were perfect, psychic costs could explain the existence of earnings

by an appropriate increase in the rate of discount for the increment to expected future earnings created by migration. Moreover, the adjustment in the discount rate need not be made explicitly if internal rate of return calculations are made.

differentials larger than those implied by the money and opportunity costs of migration. However, these excessive differentials would not represent resource misallocation. The optimal allocation of resources must take tastes as given, and will differ accordingly if people prefer familiar over strange surroundings. Migration incentive transfers to compensate for these psychic costs would be as inappropriate as transfers to render people indifferent among occupations even though strong preferences may exist. To compensate for psychic costs would result in resources being used for migration to obtain earnings with a lower value than those received before. To draw upon an old example, because the public hangman earns a high income owing to his distasteful job, it does not necessarily follow that welfare would be improved with more hangmen!

Although we should not treat psychic costs as a component of the costs of migration, they pose a problem for the analysis of rate of return. To the extent that some part of existing earnings differentials represents tastes alone, the rate of return to resources allocated to migration is biased. One manner in which this problem can be partially circumvented is to consider only persons for whom the marginal psychic cost is zero. The allocation of actual migrants by distance migrated should be relatively free of the influence of psychic costs, although the percentage of all persons who become migrants is not. Using education as an analogy, this approach is similar to determining the rate of return on the nth year of schooling as compared to the rate on n years.

IV. THE PRIVATE RETURNS TO MIGRATION

For any particular individual, the money returns to migration will consist of a positive or negative increment to his real

earnings stream to be obtained by moving to another place. This increment will arise from a change in nominal earnings, a change in costs of employment, a change in prices, or a combination of these three. Money returns so defined are sufficiently general to encompass not only those returns stemming from earnings differentials between places, but also the returns accruing to the migrant in his capacity as a consumer. Both of these returns are net gains; increased efficiency in consumption is logically equilavent to increased efficiency in production. In addition, there will be a non-money component, again positive or negative, reflecting his preference for that place as compared to his former residence.[16] Finally, there is pure consumption. The pure consumption return should be regarded as the satisfaction or dissatisfaction the migrant receives in the course of his actual travel. This is analogous, again in the case of education, to the satisfaction the student experiences merely from being on campus, quite apart from the non-marketable satisfactions he may obtain over his life span as a result of his education.[17] The non-money returns will be examined first.

[16] Preference for familiar versus strange surroundings are included in psychic cost and are excluded here. Preference at this point refers to such factors as climate, smog, and congestion. It is assumed that the individual's production and consumption occur at the same place; if that were not true, his preferences would be reflected in the amount of cost he is willing to bear to consume at one place and to be employed at another.

[17] The consumption-investment dichotomy I have in mind is based strictly upon the point in time at which the migrant actually receives the satisfactions. An outlay made to increase future productivity is usually called an investment; an outlay for immediate satisfaction is labeled consumption. Moreover, if a person uses some of his resources to increase future satisfactions, it should not matter whether or not the increase is reflected in future market transactions. From this point of view, there is no logical difference between a consumer or producer durable; I choose to call them both an investment.

1. THE NON-MONEY RETURNS

Earlier it was found that we can safely ignore psychic costs of migration since they involve no resource cost; likewise, we should ignore non-money returns arising from locational preferences to the extent that they represent consumption which has a zero cost of production. Some people, for example, may be indifferent between earnings at one level in Minnesota and a lower level in California owing to a preference for the latter's climate. If a large portion of the population showed this preference, California would have a locational advantage, and industry would migrate in that direction to enjoy the resultant lower labor costs. In a world of perfect competition and resource mobility no earnings differentials arising from these preferences would remain in final equilibrium; if discrimination were perfect, the existence of the preferences would be totally reflected in rents earned by factors (land) specific to the climate. Moreover, the pure rents so paid should not be treated as costs of employment since they arise from tastes for location rather than differences in productivity.

Even in a world of perfect competition and resource mobility there can be earnings differentials arising from variations in costs of employment (which must be offset by corresponding differentials in productivity). Larger cities typically reveal higher earnings within occupations than smaller cities. Costs of employment are higher in larger cities due to additional transportation, rent, etc., which are compensated by higher earnings. If one includes the former as a return to migration to the larger city, he should deduct the latter as additional cost of employment. Locational preferences pose a problem in estimating the return to migration to the extent that they can give rise to rents not to be counted as costs of employment; but additional costs arising

from the superior productivity of a specific location are to be deducted. Although a distinction between those returns to migration which represent higher productivity and those which are merely consumption of zero cost goods is analytically useful for considering the returns to migration arising from increased efficiency, it is of no practical use. Final spatial equilibrium in the real world would permit variations in earnings (within occupations) resulting from non-labor resource immobility (particularly natural resources) and from lack of competition as well as from differentials in cost of employment and labor immobility. Moreover, since discrimination in the land market is not perfect, persons can and do receive windfalls by moving to a place of their preference. Private non-money returns to migration may very well exist and influence behavior; and they cannot be separated from those private returns reflecting higher productivity alone. Even in a world of perfect competition, of resource mobility, and of discrimination according to preference it would not be feasible to classify costs of employment into the two categories outlined above. For practical purposes, the only alternative appears to be the unrealistic assumption that variation in tastes permits a spatial distribution of persons such that no rents arise from differences in amount and composition of natural amenities, and that this distribution does not seriously differ from the "optimal" distribution from the viewpoint of resource allocation.

2. THE MONEY RETURNS

It is obviously not sufficient simply to compare labor earnings over space and assume that any observed differences arise from disequilibrium in the labor market. Hanna's study reveals that occupational composition explains a sig-

nificant portion of earnings differentials among states.[18] Other variables such as age and sex affect earnings within an occupation.[19] However, assuming occupation, age, and sex to be the more important compositional variables affecting earnings, first estimates of the return to migration is the difference in earnings within occupations, ages, and sexes, and between all places. These estimates would almost surely be underestimates because they fail to take into account possible disequilibrium between as well as within occupations and because a change in occupation may necessitate migration. The more relevant alternatives for migrants may be *among* rather than *within* occupations. While one may be able to show that the Alabama farm laborer can improve his earnings on an Iowa farm, his prospective opportunities may be far more in an urban area and occupation.

If the return to migration can be increased by occupational upgrading, the problem in estimating the return becomes far more complex. In this context it is particularly useful to employ the human capital concept and to view migration, training, and experience as *investments in the human agent*. These investments, specific to the individual, are subject to depreciation and deterioration both in a physical and an economic sense. If market forces reduce the relative wages of a particular occupation, practitioners of that occupation suffer a capital loss and are faced with the alternatives of ac-

[18] *Op. cit.*, p. 121.

[19] The value of leisure is also neglected when comparing earnings. If the individual labor supply function is not backward bending, smaller earnings will necessarily be accompanied by larger amounts of leisure time, which should not be valued at zero. Thus one should look at hours of work as well as earnings. There remains the problem of the value to impute to an hour's leisure. While an imputation probably cannot be accurately made, this omission should be borne in mind.

cepting the lower earnings or making additional investments in themselves to increase their earnings in a more favorable market. If the relative wages in an occupation are adversely affected locally, migration alone is sufficient; if the adverse effect is national, such as the earnings in agriculture, the entire occupational earnings structure is under stress and migration is feasible only if new skills are acquired by the migrant. Whether or not the additional investment is worthwhile depends crucially upon the age of the individual. Young persons will typically have made only a small investment in themselves through training for and experience in a specific occupation and a relatively large one through formal education; whereas a larger portion of the investment in older persons presumably arises from skill and experience specific to a particular employment.[20] For the former group, obsolescence is a far smaller threat; moreover, their longer life expectancy increases the present value of the returns to additional investment relative to the older group.

Since the age-income relation within an occupation is at least partially due to the accumulated experience (on-the-job training), older persons entering a given occupation even after minimal training are likely to receive lower earnings than persons of similar age but well experienced in that occupation. Hence, comparisons across occupational groups but within age groups lead to overestimates of the rate of return to migration alone. The return so estimated is to be attributed to both the migration investment and the investment in on-the-job training, as well as costs of pre-employment training. Estimates of the return to mi-

gration alone must be preceded by an explanation of the age-earnings relation so that earnings representing equal experience are compared.

If it is true that complementary investments are required to make migration feasible, particularly among the older migrants, one must be extremely careful in making broad comparsions of earnings and, upon finding significant differences over space, in concluding that voluntary migration is incapable of efficient allocation of labor resources. It is clearly possible that the migration mechanism could be working extremely well in the sense that the marginal return to additional migration is not "high," but that substantial differentials in earnings may persist. I strongly suspect, for example, that the lack of relevant alternatives for older farmers in non-farm occupations may go a long way in explaining why off-farm migration has not increased relative earnings in agriculture so that "comparable" factors receive comparable returns. The point is that factors are not really comparable, having had different occupational histories.

I have estimated net migration rates from rural areas in the upper Midwest which sharply reveal the age selectivity of net migration from agricultural areas.[21] These are presented in Table 1.[22] Although nearly half of the persons, aged 10–14 years in 1950, migrated from the

[20] In the United States, the difference in this intangible "portfolio" is exaggerated by the secular increase in levels of formal education attained.

[21] The upper Midwest includes the following states and parts of states: Montana, North and South Dakota, Minnesota, northwestern Wisconsin, and Upper Michigan. The migration rates are estimated by the census-survival rate method using 1950–60 census-survival rates developed by the author in connection with his research on the Upper Midwest Economic Study.

[22] Since these migration estimates are from rural areas only, the problem of the difference between net and gross migration is less serious than suggested earlier. The rural areas of a given region are likely to be quite homogeneous, so only a small amount of cross-migration is anticipated.

rural areas during the 1950–60 decade, less than one in ten of the persons 20 years of age and over in 1950, migrated. Although one might plausibly argue that both money and non-money costs of migration increase with age, it seems doubtful that the increase in these costs as initial age rises from 15–19 to 20–24 can be sufficient to reduce the out-migration rate from over 30 per cent to less than 10 per cent. If increases in costs reduce rural out-migration as age increases, the same cost increases should be borne by all migrants. Table 1 also presents gross migration in 1949 for the United States as a

TABLE 1

1950–60 Net Out-Migration from Rural Areas, Upper Midwest, as a Per Cent of 1950 Population, and Gross Migration Rates, United States, 1949

1950 Age	Upper Midwest Per Cent Out-Migration Rate	United States Per Cent Gross Migration*
0–4	13.7	7.0†
5–9	25.1	5.0
10–14	44.5	4.0‡
15–19	30.6	6.9§
20–24	9.1	11.3
25–29	10.4	9.4
30–34	10.7	6.7
35–39	9.8 ⎱	4.7
40–44	8.6 ⎰	
45–49	9.2 ⎱	
50–54	7.5 ⎟	3.0
55–59	9.4 ⎟	
60–64	8.8 ⎰	
65+	1.8	2.6

* Source: Bureau of the Census, *1950 Population Census Report*, P-E, No. 4D, Tables 1 and 2.
† Aged 1–4 in 1950.
‡ Aged 10–13 in 1950.
§ Aged 14–19 in 1950.

per cent of parent population. The age-migration pattern there is quite different. However, the data are not comparable since the age range for 1950–60 upper Midwest migrants differs, for example, 0 to 4 in 1950 is from 0 through 14 over the decade. The data are reorganized in

Table 2 for identical age groups, and the pattern is similar. Although the migration rate falls 70 per cent in the upper Midwest as one goes from age ranges 15–29 to 20–34, it remains constant for the United States. Although not conclusive,

TABLE 2

Comparison of Rural Out-Migration, Upper Midwest, with Gross Migration Rates, United States

Age Range	Average of Range	Upper Midwest Per Cent Out-Migration Rate	United States Per Cent Gross Migration
0–14	7.5	13.7	5.5*
5–19	12.5	25.1	5.4
10–24	17.5	44.5	7.6
15–29	22.5	30.6	9.1†
20–34	27.5	9.1	9.1
25–44	35.0	10.5	6.5
35–44	40.0	10.0‡	4.7
45–64	55.0	8.4	3.0
65+		1.8	2.6

* Aged 0–13.
† Aged 14–29.
‡ Approximate.

the evidence for the United States strongly suggests that little of the decline in migration rates as age increases can be explained by associated increases in the money or non-money costs of migration.

As age increases, of course, there is a shortening of the time period over which the migrant expects to recapture these costs; but again it seems unlikely that this effect can so sharply reduce the migration rate. If retirement comes at age 65 to 70, the group aged 15 to 19 in 1950 will have about 45 years, on the average over the decade, remaining in the labor force—as compared with 40 years for those initially aged 20 to 24. At a discount rate of 10 per cent, the present value of an additional dollar per year for the former group is $9.89; for the latter group it is $9.82, a mere 7 cents less. The dispersion in cost of migration would

have to be fantastically small if a reduction in present value of returns by less than 1 per cent (owing to the shortening of the amortization period) would reduce the migration rate by 70 per cent. Neither increasing costs of migration nor reduction in the amortization period alone can explain the age-migration relation observed in the upper Midwest.[23]

However, if substantial additional costs of retraining for a new occupation must be borne by these rural out-migrants, the age-migration pattern displayed in Table 2 becomes more comprehensible. The majority of the rural out-migrants from the upper Midwest will necessarily be changing occupations. Clearly they come from agricultural occupations but are entering urban occupations. New skills must be acquired. Only a smaller portion of the gross United States migrants, however, need to change occupations; much of this mobility can be merely geographic and not occupational. For the latter group, the total costs to the individual for migration and acquiring new skills can be much smaller than for the former.

The sharp reduction in rural out-migration at relatively early ages and its near constancy thereafter suggests that (a) the investment in skills in rural occupations is concentrated in early years, and (b) consequently, the rural age-earning relation should rise sharply as returns to this investment are realized. Both of these propositions can be tested by the analysis developed in Mincer's paper. Moreover, this hypothesis implies that the degree of disequilibrium may differ among age groups—being largest for the young and less for the older persons. Differences in earnings could, of course, become larger for the older persons; but this is not inconsistent with efficient resource allocation. These older people may have suffered a capital loss, and their remaining lifetime is too short to justify large additional investments in themselves. To the extent that the above characterization is true, such disparities in earnings become a question of social policy rather than one of resource allocation.[24]

If, as I suggest, interoccupational earning differences may be the more relevant ones in dealing with migration, but if there is as yet no way of making sense out of these differences in terms of actual incentives offered migrants of different ages, some alternative approach to estimating the rate of return on migration is necessary. Fruitful lines of attack may be to focus upon migrants only or to make comparisons between migrants and nonmigrants of similar age.[25] Conceptually,

[23] Suppose that the distribution of costs, as well as the present value, of returns to migration for all potential migrants is normal, mean C and PV, respectively; variance S^2 and zero, respectively, and that costs and returns are independent. For the 15–19 age group, $C = C_1$, $S^2 = S_1^2$, $PV = PV_1$; for 20–24, $C = C_2$, $S^2 = S_2^2$, $PV = PV^2$; assume a discount rate less than 10 per cent so that $PV_2 = 0.99PV_1$. For 30.6 per cent of the persons aged 15–19, $PV_1 \geq$ cost; for 9.1 per cent of those aged 20–24, $PV_2 \geq$ cost. At the margins, $PV_1 = C_1 - .5S_1$; $PV_2 = C_2 - 1.3S_2$. Let $C_1 = C_2 = C$; $S_1 = S_2 = S$; then $S/C = 0.0135$. The implied coefficient of variation is a mere 1.35 per cent. More reasonable coefficients of variation for both costs and present values are possible if there exists a strong positive correlation between these two variables. Some positive correlation is expected.

[24] For a bold approach to the social policy question posed by persons "locked-in" their historic occupations, see T. W. Schultz, "A Policy To Redistribute Losses from Economic Progress" (prepared for a labor mobility conference, Iowa State University, November, 1960) (mimeographed). In this paper Schultz argues that since the losses to individuals from economic progress are much more narrowly distributed than are the gains, a case can be made for redistributing those losses over a larger group.

[25] By focusing upon migrants only it would be possible to eliminate the effects of differences in psychic costs, as was mentioned above.

there is no problem in determining whether and by how much a migrant's earnings are altered by his move. Cross-classified data concerning vital characteristics of migrants such as age, occupation, earnings before and after migration, etc., are a prerequisite to a thorough study of return to migration along these lines. Fortunately, substantial data of this sort will be available in the 1960 *Population Census Special Reports* and will cover a five-year period; the negative transitory effect of migration upon the earnings of migrants should largely disappear. As far as I know there will be no earnings data for migrants before migration, but cross-classification may permit use of earnings of comparable non-migrants as a substitute.[26]

V. PRIVATE VERSUS SOCIAL COSTS AND RETURNS

Does the migrant bear all the costs of migration and receive the total reward for his activity? The obvious answer is probably not. Migration will typically involve costs (and rewards) to non-mi-

grants as well as migrants; the relative prices seen by the migrant are likely to be at variance with transformation rates for the economy as a whole. Divergences between social costs and returns arising from externalities pose knotty analytical problems; those arising from market imperfections and institutional factors are somewhat easier to examine and are my main concern here. The cases considered are illustrative rather than exhaustive; consequently, the omissions may be the more important.[27]

The above discussion of private costs and returns places voluntary migration in the general framework of a competitive economy satisfying the minimal requirements permitting an "optimum" allocation of resources. Among other features, wages must be freely determined and there must be no barriers to the free movement of labor and other inputs among industries or across space.[28] Even if wages are freely determined and equal marginal product, differences in the relation between wages and, for example, retained earnings in different areas will cause private returns to differ from social returns. Consider the case of local differences in the degree of progression in income taxation; migration redistributes resources in a fashion to equate earnings over space *subject to the taxation structure*, a process which may indeed be detrimental to resource allocation.

Divergence between private and social costs of migration can also occur when the charges for services collectively provided (such as schools) are based upon the per capita cost rather than the actual

[26] If a study of the returns to migration were carried out along these lines, one additional factor must be considered. I have assumed that migration is mainly in response to differences in earnings over space. In the case of off-farm migration, however, rising unemployment in the non-farm sector has been observed to attenuate sharply the outflow from agriculture even though we may assume earnings differentials (for employed persons) to remain relatively stable. If unemployment is high, the probability of the off-farm migrant obtaining a job at a given level of earnings is reduced, perhaps much more than rates of unemployment would indicate, owing to seniority rules and the like. Observed earnings differentials must be further discounted for the risk of unemployment and the appropriate discount rate may be very high, as imperfections in the capital market may prevent potential migrants from assuming this risk during periods of moderate to heavy unemployment. The logical choice in this circumstance is to defer the move until more favorable labor market conditions prevail.

[27] This section draws heavily upon the comments of Anthony M. Tang on an earlier draft.

[28] We must also require that product prices also be freely determined and barriers to free trade non-existent.

marginal cost of providing those services to migrants. However, capital losses imposed by migrants upon the privately held fixed assets of non-migrants in an area experiencing a population decline generally cannot be admitted as an excess of social over private cost. These losses involve no resource cost; persons presumably will not migrate until their productivity elsewhere is sufficiently high to compensate for rent differentials.

Another source of an excess of social over private returns to migration arises from a failure of migrants to consider the returns to their progeny from the resulting change in the latter's (initial) location. By assuming the current change in market conditions to continue indefinitely into the future, a crude first approximation of this excess is possible. Suppose the migrant includes as private return the additional earnings obtained by himself and his immediate family but excludes any return to unborn children. The rate of interest, compounded instantaneously, is assumed to be 10 per cent per year; and the rate of population increase at 1.5 per cent per year. If his first as-yet-unborn child enters the labor market in twenty years, and if earnings differentials are and remain the same for all occupations (since there is no certainty that the migrant's progeny will enter his occupation), each dollar of his (uniform) earnings stream for a forty-five year participation in the labor force has a present value of $9.90. The present value of a permanent income stream of $1.00 beginning in twenty years and growing at the rate of 1.5 per cent per year (due to natural population increase) is about $1.62. The first figure is the present value of the return to the migrant aged twenty years of each dollar of earnings differential; the second is the present value of the return to the stream of unborn children

he will generate.[29] If the migrant neglects the latter completely, the social return to migration will be 16.4 per cent in excess of the private return; if the private rate of return is in fact 10 per cent, the additional social rate of return will be 1.164 per cent. For older migrants the excess of the social return over the private will approach zero (they are less likely to have more children); and for younger migrants the social rate also approaches the private rate because a longer period will elapse before their children enter the labor market. For all migrants the excess of the social over the private rate of return is less than the estimate made above.

VI. CONCLUDING COMMENTS

My effort in this paper has been to place human migration in an investment context and in so doing to formulate testable hypotheses germane to observed migration behavior. My main conclusion remains that migration cannot be viewed in isolation; complementary investments in the human agent are probably as important or more important than the mi-

[29] The present value of the income stream of the migrant of $1.00 per year is computed as

$$\int_0^{45} e^{-rt} dt = 9.90$$

when $r = 0.10$. It is assumed that the migrant's children will realize an equal gain per year, and that the first child will not enter the labor force until twenty years in the future, their number growing continuously at 1.5 per cent per year thereafter. The present value of one income stream of $1.00 per year but which grows in number at 1.5 per cent per year and which will not begin for twenty years is

$$\int_0^{\infty} \frac{(e^{nt}) e^{-rt}}{(e^{20r}) dt},$$

which reduces to

$$\left(\frac{1}{e^{20r}}\right) \frac{1}{(n-r) e^{-(r-n)t}} \Bigg]_0^{\infty}.$$

If r is greater than n, the expression is finite and equal to 1.62 for $r = 0.10$ and $n = 0.015$.

gration process itself. As I have indicated, cognizance of, and attention to, these additional investments offer a promising clue to observed immobility in the face of large differentials in *current* earnings. In addition, only the estimation of the direct as well as associated costs of migration together with returns can reveal the extent of resource misallocation created by the frequently alleged barriers to mobility.

Costs and returns to migration have been consistently viewed in a real resource sense. Our tools of analysis are applicable only when costs and returns are so restricted; measures of psychic cost of migration, for example, are hard to come by. As I have suggested at various points, indeed the very need for these measures can often be circumvented.

Although my discussion provides only a sketchy framework for further empirical study of migration, the following additional conclusions are relevant to empirical undertakings. (1) Gross rather than net migration is a more relevant concept for studying the returns to migration as well as the impact of migration upon earnings differentials. (2) Migration rates are not an appropriate measure for estimating the effect of migration. (3) Age is significant as a variable influencing migration and must be considered in interpreting earnings differentials over space and among occupations. (4) The relation between private and social costs of, and returns to, migration at best depends upon market structure, resource mobility in general, and revenue policies of state and local governments.