SCHOOLING, EXPERIENCE, AND GAINS AND LOSSES IN HUMAN CAPITAL THROUGH MIGRATION

Mary Jean Bowman and Robert G. Myers, University of Chicago

Since the revival of the concept of human capital in the 1950's, many areas of economic research, including the economics of migration, have undergone a rethinking. Although neither the idea of human capital nor its application to migration can be termed "new," current estimating procedures and their economic applications are much more sophisticated than earlier ones. In considerable part new approaches and greater sophistication reflect improvements in the quality and availability of data. However, new appreciation of critical problems is always some jumps ahead of the data -- and also, we might add, behind them.

We will first sketch briefly several recent treatments of human capital in migration. Some of their methodological implications will become evident in a reexamination of one-way migration that takes into account place and timing of schooling and work experience. We turn then to the more complex analysis required when we include remigration possibilities. Along the way suggestions will be made for useful new tabulations of 1960 census data together with some pleas or hopes for the 1970 census.

In discussing the relation between "Migration and Economic Opportunity," we might emphasize migration as a means of responding to economic opportunity or as a means for creating economic opportunity. Heretofore more attention has been given to the passive view of migration as an allocative mechanism than to the view of migration as playing a dynamic training role. But migrants often move out and return with new skills, and in-migrants bring and transfer know-how. We emphasize these linkages among investments in schooling, experience, and migration. We present decision models incorporating various migration and re-migration sequences and argue their value as tools for analysis of migration behavior, human resource policies, the transfer of know-how, and the diffusion of development.

I. RECENT APPLICATIONS OF HUMAN INVESTMENT MODELS TO MIGRATION

A. Migration as a private investment

In a 1962 article, Larry Sjaastad² looked at migration primarily as a form of private, rational decision-making -- as a

private investment that entails costs and engenders increments to lifetime earnings streams. To oversimplify, people discount expected earnings streams to set present values on themselves for alternative courses of action: migration or remaining put. In theory, people will move if they can increase their present value by an amount greater than the cost of moving. This added value might be attained if, by moving, a person finds a better market for his existing skills, upgrading himself within his occupation, or if migration provides an opportunity for him to change occupations, thereby acquiring a new skill and increasing his remuneration. Sjaastad emphasizes occupational change in attempting to analyze rural-urban migration and to account for observed age patterns in such migration.

Costs, according to Sjaastad, include direct costs of moving, earnings foregone while moving, earnings foregone while searching for employment and training for a new position. He gave special emphasis to the training or retraining costs of urban newcomers, which are identified with the initial excess of foregone rural earnings over realized urban wages. Returns (benefits) are the expected income stream at the destination.³

Sjaastad's primary concern was with the efficiency of migration as a process of resource allocation. He argued that much of the seemingly non-rational response or lack of response to economic incentives to move is really a matter of measurement methods which look at net migration rather than gross figures. He also criticized failures to disaggregate populations sufficiently before associating them with differential opportunities and earnings. In order to identify statistically the potential earnings streams of migrants at places of origin and destination. Sjaastad suggested that comparisons must be made among more homogeneous sub-groupings, specifying particular use of age-occupational classifications. (Curiously, he said nothing about classifications by schooling.)

Statistical averages of costs and earnings for each population category are used as proxy measures in a decision model that is fundamentally individualistic. Despite his work with the Upper Midwest Project, Sjaastad's interest in spatial resource allocation remains spatially neutral; hence we find neither aggregated human capital measures nor "regionalism." The important thang is the microeconomic allocative process.

B. Migration and a rationale of community investments in education

In his treatment of migration, Burton Weisbrod⁴ takes a very different tack -- even though he starts from the same base in human investment theory as Sjaastad and, like Sjaastad, computes "human capital" in present value terms.

Weisbrod sets up a model in which the community is treated not only as an aggregative entity that receives benefits and incurs costs, but also as a decision-making unit analogous to the individual decision-maker of micro-economic theory. The decision on which he focuses is local community investment in schooling. He is concerned with how migration will affect benefits accruing to the community from investments in education, and hence with how it affects the cost-benefit balances that would determine rational investment decisions. He argues that rational community behavior in this context will lead to under-investment in education on a national scale because of "spill-over" effects --"external benefits" of a community's investments that accrue to other communities. This treatment of the community as a decision unit has been attacked from several sides. However, the empirical part of Weisbrod's work is relevant to aggregative analysis of human capital gains and losses, flights of the imagination quite aside.

A careful study of Weisbrod's method for computing "spill-overs" points up the problems involved in assigning values to human capital flows. In working from incremental income⁵ streams associated with varying levels of educational attainment through high school graduation, he assumes, for instance, that the relevant income streams for valuing both in and out migrants of given age, race, and sex are the same. All those who migrate to and from the Clayton, Missouri community are valued at non-South rates, regardless of their origin or the location of their previous education. This is an empirical compromise dictated by data limitations, and is discussed by the author at some length.

C. Cost valuations of internal migration

Grubel and Scott⁶ focus on international migration of "human capital," and on arguments concerning "brain drains." Although they discuss individual decision-making in a framework similar to Sjaastad's, in their published work they emphasize the effects of out-migration on social welfare. There is no community decision unit, such as Weisbrod's; in fact, they discard aggregates and GNP in their theoretical presentations. Social welfare they define as the <u>per capita</u> incomes of all initial residents, whatever their place of residence after migration.

However, appealing as the welfare measure they suggest may be, it is no accident that in the end Grubel and Scott make no attempt at direct empirical assessments in such a framework; the practical difficulties are manifold. Instead, they go to quite the other expreme of empirical pragmatism. Not only do they forsake their welfare concept for an aggregative type of social assessment, but they also by-pass human capital measurement in present value terms, choosing to use cost assessments instead.⁷

National gains are measured by the cost-savings realized in acquiring human capital formed elsewhere without paying for its formation. National losses are incurred when a nation pays for the formation of human capital that others then acquire free.

Using figures from an annual census of foreign students in the United States, interesting estimates are derived for United States gains and losses. The value of the gain (saving in costs) to the United States of acquiring "non-returning foreign students" is taken as what it would have cost to "produce" an American equivalent. Against these costsavings are set the costs incurred by the United States in providing education for all foreign students. Similar human capital estimates are made for scientists and engineers who have migrated to the United States.⁸

Measurement of human capital in cost terms as a way of assessing the resources that have gone into the making of a man is one thing. Using cost valuations in assessing gains and losses through migration is quite another. The most serious distortions are apt to occur when reproduction cost estimates exceed present value. Thus, a fallacious cost view of human capital can explain many of the complaints that have been so common concerning Southern or Appalachian losses through migration. 9

D. Present value estimates of inter-regional migration

Rashi Fein, ¹⁰ like Weisbrod, was concerned with the measurement of aggregate human capital gains and losses of spatially defined units -- in Fein's case, regions within the United States. Like Weisbrod, Fein used a present-value measure of human capital (discounting future income streams at 5%). There is no decision theory in Fein's analysis, however, and he draws no inferences for public policy.

Fein's first task, a considerable one, was to lay out the census data in a form that would permit examination of gross 1955-1960 migration streams for males. Male migrant flows are disaggregated by age, race, and educational attainment. Focusing on the South and its sub-regions, he then computes net in or out flows for each age-race-education category. To get estimates of social net capital gains or losses associated with migration he first multiplies net flows by average discounted values of Southern income streams associated with each age-race-education category. These sub-aggregates are then summed to give the overall net gain or loss to the region. Present values have, in effect, become weightings for the various statistical categories. Although this procedure preserves the disaggregation by sex, age, race, and schooling, the distinction between characteristics of inflows and outflows is unfortunately lost in the procedure for valuing human capital. (We will come back to this later.)

II. ALTERNATIVE EARNINGS STREAMS AND ONE-WAY MIGRATION

From the above discussions of recent work, it is evident that analysis of migration in human investment terms has opened up over a wide front. There are at once common elements and sharp distinctions in problem foci, in theoretical frameworks applied, in the kinds of compromises made in using incomplete and sometimes inappropriate sets of data. Back of all this are some fundamental theoretical problems in decision theory on the one hand, some critical issues for public policy on the other. Theory and policy are in fact quite closely related. It is with such basic questions in mind that we ask: which earnings streams are the relevant ones in either private or social assessments of migration? Whichever the viewpoint, identification of the conceptually appropriate future earnings streams is a necessary first step. We start in this section with the simplest case -- one-way migration. This in fact is the only case for which earnings streams have been examined in anything we have seen.

A. The net flow fallacy and estimates of human-capital gains and losses

In estimating human-capital gains and losses in the South, Fein took a short cut. As noted earlier, instead of valuing the gross inflows and outflows he took the net flows for each age-race-schooling category of males, computing the aggregate present values of these net flows on the basis of Southern lifeincome patterns. To the extent that he was dealing with flows among regions within the South he had no alternative; the needed income data are not available for sub-regions. Ideally we would want such figures, and we would want to maintain clear distinctions among parts of the South, for it is a very heterogeneous region. However, when it comes to flows between Southern and other regions the situation is changed; we have data on life-income streams by race, sex, age, and schooling that can differentiate at least on this gross regional dichotomy.

Weisbrod also used a single set of values in his study of gains and losses through migration into and out of the Clayton school district, in Missouri. Our chief criticism in his case is that he did not check for the sensitivity of his results to this decision. Since he was only incidentally interested in his quantitative results, and was not posing the more substantive and analytical questions concerning migration in which we are most interested, this omission is understandable, even if regretable.

We assume, with Sjaastad, that an individual will not normally migrate unless his potential discounted earnings stream in the new area is going to be at least as high as that at the area of origin. When the average stream for the area of destination is obviously lower than that in the area of origin, but people move anyway, this would suggest that the rational in-migrant is not typical of the area into which he is moving. When this happens even within particular race-sexage-schooling categories, the fallacy of using average incomes at the lower income destination for migrants to that area is underlined. Until data that distinguish migrants are available there can be no firm answer as to what is happening, and how. At present we can only hypothesize, meanwhile making some crude estimates as to what alternative hypotheses may imply.

The potential importance of taking market differences into account can be illustrated by making some simple calculations. The distribution of schooling among 1955-60 outmigrants from the South as a whole is very

213

close to the distribution of schooling among 1955-60 migrants into the South. However, except at college levels, incomes of white males with the same years of schooling are higher in the North than in the South. After a bit of rough pencil-and-paper work we picked \$40,000 as an average present-value figure for income streams of white male Southerners leaving the South and \$50,000 for white male migrants from other regions into the South.

Using Fein's method of valuing all migrants at Southern values, we have:

	Number Migrating ¹¹	Present Value (per migrant)	Total Value (millions)		
In	579,100	\$40,000	\$23,164		
Out	554,900	\$40,000	\$22,196		
Ne	et		\$968		

This, we argue, is a minimum estimate of the South's gain. Using the \$50,000 figure for in-migrants -- that is, valuing them at their origin rather than their destination, we have:

	Number Migrating	Present Value (per migrant)	Total Value (millions)		
In	579,100	\$50,000	\$28,955		
Out	554,900	\$40,000	\$22,196		
Net	:		\$6,759		

The net gain by this computation is almost seven times as great as that above and represents a substantial absolute increase, about 5.8 billion dollars. Actually the \$40,000 and \$50,000 with which we started are low estimates; raising them would raise the absolute discrepancy.

Using a more conservative ratio between non-South and South values will obviously decrease the differential, but even if we cut it drastically to 1. 10 rather than the 1.25 ratio above, still applying it to a Southern \$40,000 figure, we have:

	Number Migrating	Present Value (per migrant)	Total Value (millions)		
In	57 9, 100	\$44,000	\$25,480		
Out	554,900	\$40,000	\$22, 196		
Net	:		\$3,284		

On this conservative basis, the estimate still increases by a 3.4 multiple and the absolute increase is well over 2.2 billion dollars. However, we have not considered what proportion of the in-migrants may have been unsuccessful returning Southerners, or what proportion of the out-migrants were originally from the North. Our estimates are still gross oversimplifications. Until data that distinguish migrants and their associated income streams are available, there can be no firm answer.

Typically applications of human investment models to migration have suffered from insufficient disaggregation of the population of migrants, though industrious scholars in and outside of the Census Bureau are beginning to remedy the most serious gaps.¹² It is obvious by now that within-each-region disaggregation by age, sex, race, educational attainment, and income (preferably earnings) is needed. Both Weisbrod and Fein recognize this and adjust their human capital estimates accordingly. Actually for the 5% sample of the 1960 census we have within South and within North cross tabulations of all these variables plus 1960 occupations. However, there is no breakdown that would separate out migrants within each of these cells.

A possibility we would very much like to see followed up in 1970 would be refinement of the regional tables on incomes by sex, race, age, and schooling of 1960 residents in order to distinguish the new migrants (1955-60) from others, and each of these groups in turn by place of birth and occupation - ideally both at origin and destination. Obviously this will be possible only if all these items are obtained on the 25% sample.

Suppose we had all of this information. What else should we know to distinguish migrants and their earnings in a meaningful way? It is obvious that many other factors affect productivity and earnings streams of any given population of migrants. Ability, attitudes toward work, quality of schooling, environmental experiences as a youth, and job experience differentials will all be reflected in differential earnings streams. Important also are labor market imperfections that may partially segregate migrant from native populations of the same race, sex, age, and reported years of schooling.

Concerning ability and attitudes we will be brief. We can reasonably assume that the ability distribution for a given age, race, sex, education category of the population will not differ much among regions; hence we need not be concerned on this score with places of origin of migrants. However, in these pages we go further, to make the more vulnerable assumption that the average ability of migrants is no different from that of non-migrants once disaggregation has established homogeneity of population sub-groups in other critical respects. The saving feature of this assumption is the critical disaggregation presupposed. Differences in attitudes toward work are a problem that we will simply have to ignore for the present. It should be noted, however, that both ability and attitudes can be objectively assessed, and for special migrant groups this has been done.

Experience and quality of schooling differentials are at the heart of our analysis, and command more careful attention.

B. Schooling and experience

School-quality differences can be critical in the economics of migration from many points of view, one, but only one, of which is estimation of regional gains or losses in human capital through migration. If the distributions of quality of schooling among men of the same race and age with the same reported schooling were the same in one region as in another (or in urban as in rural areas,) we could forget about this problem. However, despite large within-area differences in quality of schools there are also large and significant differences between rural and urban schools and between schools in one region as against another.

To get at effects of differences in average quality of schooling we need to know where the migrant was schooled (ideally for secondary school by sub-region or state and by type of community). Present census data do not permit disaggregation by locus of schooling even on a broad regional basis. However, one could make some assumptions about the location of both schooling and previous job experience by looking at place of birth, place of 1955 residence, and 1960 residence in relation to age at the time of migration.

The first component of experience, a very important one, is the learning that goes on outside of school during school years. There is ample evidence to show that youth from rural communities start at a disadvantage when they come to the city; the extent of the disadvantage varies with the nature of the rural area. This is one among many reasons why data concerning location at the time when a young man attended secondary school (or if he stopped short of that, where he last attend-¹³ In fact we strongly urge inclued school. sion in the 1970 census of information concerning the state and type of community in which a man resided at the time when he last attended school below the college level (or

alternatively, at, say, age 16).

The importance of what men learn on the job has been reappraised recently and given new theoretical respectability in the economics journals. If we accept Mincer's estimates, over a life-time investments in learning on the job typically exceed investments in schooling in the United States today. ¹⁴ In any case, whatever the relative magnitudes, learning through on-the-job training and experience is a major component in the formation of human competencies. Given this fact, we must ask what and how much of such learning has been built into which groups of migrants.

Taking it for granted that we will not be working with full life histories -- such data would swamp us in any case -- what might we hypothesize as the best statistical clues to sort out categories of migrants (and non-migrants) by experience? Obviously age is part of the picture. So is schooling if we look at the national scene, since over-all there is a positive correlation between schooling and on-the-job training and learning. However, this is much too crude an approximation. How do people of the same age and years of schooling differ in competencies acquired at work? As a first step we would look for two kinds of information: what a man was doing (his occupation) prior to migration, and where he was doing it.

The 1960 census does not provide information on prior occupations, and collection of data on past occupations is both difficult and expensive; however, this possibility has been considered for the 1970 census. If collection of such data proves feasible for a large enough sample, it will open up a range of possibilities for hypothesis testing that must challenge many researches on both migration and the economics of education.

There can be no doubt that work opportunities and with them opportunities for onthe-job training and learning vary substantially from one place to another. This is glaringly obvious if we look across nations on a world scale. It is sufficiently evident within the United States, and even if we control for age, sex, and prior schooling. There is a strong presumption that knowledge of the location in which men have acquired their work experience will improve statistical predictions of their competencies. How far a migrant's previous experiential learning may be transferrable to his new setting is another matter. Undoubtedly there is selectivity in such transferrability; he can move into the new environment carrying his experience with him only to the extent that the new environment gives scope for its use. This may contribute to differentiation of labor markets between natives and in-migrants, especially in the middle and higher occupational brackets. It is a reasonable generalization that unless a man can take enough of his acquired competencies with him to ensure earnings at least as high as those he would receive at home, our "average" migrant will not move -- at least not if he already has a substantial investment in such competencies and there is a demand for them at home. For youth who have little or no such investment the problem does not arise. Rather, the question may be, where can I go to get the best learning and long-term income opportunities?

We may systematize these comments concerning effects on potential earnings associated with location of schooling and experience by setting up a rough typology of schoolingwork combinations as between two regions, A and B. Within any age, sex, race, educational, and, ideally, prior occupational grouping of migrants who moved from place A to place B, we would distinguish the following (still deferring consideration of temporary migration and return):

1. Those born in A, but who migrated to B for schooling and work.

2. Those born in A and schooled in A, but who migrated to B as soon as their formal schooling was completed and who have worked only in B.

3. Those born in A and schooled in A who remained to work for some time in A, but moved to B before they were 40, continuing to work in B thereafter.

4. Those born in A and schooled in A who worked in A to at least the age of 40, migrating to B after that age.

1. The first category of individuals might be expected to have an age-earnings profile very close to or even the same as comparable life-time B residents of the same race, sex, age, years of schooling -- and perhaps prior occupation -- because all schooling and work experience is in B.

2. Those in the second category were schooled in A but their entire work experience is in B. We would expect their average earnings profiles to fall somewhere between those of life-time residents of A and of B, but closer to the latter. Deviations from average B earnings streams would be greater the greater the regional differences in average quality of schooling.¹⁵ It will be greater the greater the differences between out-of-school environment of the migrant's adolescent years (rural or urban, and where) and the environment into which he is moving. Related to this, though partially independent of it, is also the extent to which migrants from A enter labor markets in B that are distinct from those in which lifetime residents of B sell their services.

3. Migrants in category 3, should also, on the average, have future income streams falling somewhere between those of lifetime residents of A and of B. The older they are at migration and the more experience they bring with them, the closer we should expect them to be to the lifetime residents of their area of origin. Here (as also in case 2), if migrants to B work in branch organizations which have head offices in and are operated by individuals from A, their earnings streams should approximate A-type earnings. This is merely an extreme of differentiated labor markets -- islands of A located within the geographic boundaries of B. On the other hand, the younger the migrant the larger the part of his experience he will accumulate in B (segregation of labor markets aside), and the more clearly will his future income stream approach the B pattern.

4. If the movement to region B comes after age 40, it is probable that earnings in B will be similar to those in A where schooling and work experience were obtained. Noneconomic locational preferences for B aside, the A income potential should in fact give us a minimum estimate of earning streams in B. We assume that a rational person established in a career in A will not move after age 40 unless he can earn at least as much in his new location virtually from the start. Although there are exceptions, there is sufficient empirical evidence to show that after age 40 most men are recouping investments in themselves rather than making new ones, intuitive reasoning quite aside.

A fifth category which is really a special case of the fourth has quite different implications, however, Suppose an individual born in A, schooled and with his work experience in A, whose skill has become obsolete after age 40 (or somewhat earlier). In this case the migrating individual has suffered a severe "human capital loss." He has little or no learned competence to apply in either A or B, and his expected future earnings stream cannot be measured by an average in either area. Though a special case, this is an important one, which merits the special study that is beginning to be given to it.

C. Package migration and the transfer of experience

In discussing the locus of schooling and experience as related to likely future income streams of migrants we commented upon the possibilities -- in some cases the strong likelihood -- that there would be some differentiation of markets in which migrants and nonmigrants resident in a given area sell their services. We specified further that this differentiation could and does occur even among men of the same race, age, and years of schooling. Even if we went all the way from regions down to state economic areas in an attempt to assure greater homogeneity we would not necessarily get rid of such labor market differentiation.

Taking the more dramatic in-migrant labor market segments to illustrate the extreme case, there are "Northern firms" in the deep South, firms from the United States in Sao Paulo, French firms in the Ivory coast. Traditionally such "foreign" firms have preferred to import talent from their area of origin rather than to employ locals who lack not only the technical know-how acquired on a job but also, equally important, know-how with respect to how a modern Northern organization operates. 16 (In addition the Northern highschool graduate is likely to be better schooled than the Southern.) Many of the men who have been brought into the South when a Northern firm established a branch there would not otherwise have migrated; there would have been no opportunities for them to work in the South at jobs in which they could use their Northern skills and experience. Transfer of those skills would not have been possible. Conversely, the firm would not have moved into the South had it not been possible to bring Northerners with know-how along. This is what we mean by "package migration."¹⁷

To the extent that migration is associated with these segmentalized labor market structures, differences in earnings stream between migrants and permanent residents should appear. However, this assumes further that there are not parallel opportunities of a very different kind to which the local population has the readier access. This is more likely to happen at the top than in the middle of the income and status scale. Thus a traditional elite, experienced in its own culture and perhaps protected by other barriers to entry¹⁸ may well exist along with a "foreign" class of high-salary professionals and technicians. How far this pattern characterizes the South is not entirely clear, though the statistics on education, occupation, and income by region do suggest that it exists in some degree and is not uniform. Such a pattern is unstable, however. It fades away with development. Ultimately, we suspect, it is eroded more by the progress of native populations at the middle level than by any direct impact at the top.

As the number of "Northern" firms in

the "South" multiplies, and as a few and then a few more Southerners filter into and through these enterprises at the middle levels, the transfer of skill and experience from North to South becomes easier. Migrants now come in greater numbers without any special prior association with the enterprises in which they find jobs. The process of diffusion of development is well under way.

How much validity there may be in this theorizing concerning relations between migration and the process of diffusion of development remains to be seen. Existing evidence is spotty. But there is clearly a challenge to test hypotheses of this kind. To what extent are Southern labor markets differentiated or even sharply segmentalized? For any given race, age, and schooling, how do earnings of Southerners working in Southern-type firms compare with those in Northern-type firms in the South? How do earnings of similar individuals in Northern firms in the North compare with those in Northern firms in the South? Looking at the shapes of income streams and applying Mincer's method of analyzing on-the-job learning, do we find that Northern profiles transfer to the South intact? If there are differences between Northern firms in the South and Southern firms with respect to training and learning opportunities, who is reaping the benefits -migrants from the North (temporary or permanent) or locals? Over time are profiles in Southern firms changing -- and can we observe this in cross-section by comparing the border South with the deep South? Turning to data on occupations, types of firms quite aside, are occupation and occupation-earnings patterns quite different among migrants into the South and native Southerners of comparable racesex-age-schooling categories? Are these differences persistent, and repeated over large parts of the South, or are they changing?

Many of these questions concerning segmentalization of labor markets, transferrability of experience, the relative role of experience and schooling in shaping productivity, and the processes of diffusing skills might be tested by using human capital models and U.S. census data. ¹⁹

III. MIGRATION AND RE-MIGRATION

The common tendency to treat migration as though it were a once-and-for-all affair, often combined with a definition of migration that in itself suggests permanency, has many unfortunate results.

One of the more obvious of these may be faulty assessments of "brain drains" and gains (the latter rarely noted). It is evident that once remigration is considered new difficulties arise in such assessments. Are the migrants college students returning home, prodigal sons, disappointed job-seekers, retrained workers, retiring elders, or former political "outs" who are now "in"?

Further, how does the human capital value of these re-migrants differ from what it was when they first migrated? This question points to a more basic weakness of one-way migration simplifications; they disregard the duration of migration. There is a continuum from brief periods away at school or on a short-term job assignment to permanent residence at destination. To disregard temporary migration is to disregard the important linkages among private investments, on-the-job learning, and migration which, when coupled with regional differentials in quality and availability of schooling and experiential learning, can provide extremely important channels for the transfer and local acquisition of know-how. A developing country seeking to build up its cohorts of qualified people is faced with important choices as to how this can best be done. How many and which sorts of individuals should be sent for study and/or for work experience "abroad"? How many will return? What about the importing of outside experts on a temporary basis? How can these choices be evaluated from the points of view of the receiving and of the sending nations? What about problems of recruiting such men, of the strategies of inducing higher rates of return among those subsidized for study or training abroad, or in another region of the United States? Human investment decision models that incorporate re-migration sequences can aid in such evaluations. We will develop this theme in section III. First, however, we look briefly into the quantitative importance of re-migration as return to the sub-regions (Divisions) of birth within the United States and a few distinctive patterns in these respects.

A. The quantitative importance of re-migration in the United States

Although U.S. census publications do not permit breakdowns by earnings, sex, age, schooling, occupations for migrants -- let alone re-migrants -- they do permit a partial assessment of the extent of re-migration. This is made possible by the tabulations of 1960 division of residence against residence in 1955 and according to whether division of birth was or was not the same as that of residence in 1960. We selected three divisions as illustrations and computed for selected age and education groups the proportions of the white male 1955-60 in-migrants who were coming "back home" and of out-migrants who were returning to the division in which they were born. The results are shown in Tables 1 and 2.

The most striking feature of Table 1 is the generally high rates of return to division of origin. The only exception is the migrants into the Pacific Division, only a small proportion of whom were returning to the part of the country in which they were born. This is, of course, to be expected. Almost equally striking in the Pacific ratios is the extremely high proportion of the younger out-migrants who were returning to their home divisions and virtually regardless of educational attainment levels-though the proportion is less extreme for college graduates. As Table 2 shows, the ratio of in to out-migrants among young college men is exceptionally high for the Pacific Division, though in all age and schooling groups that division had net inflows.

At the opposite extreme is the East South Central region, which had net outflows in every case. The differences in the gross in and out movements were small, however. The most interesting thing to us in the East South Central figures is the rising proportion of inmigrants who were returning home as we move down from college graduates to the highschool drop-outs. This pattern is repeated for every age group. We strongly suspect that had we computed ratios below highschool 1-3 those ratios would have been even higher than for men with one to three years in highschool. Here a very distinctive migration and re-migration phenomenon is evident. It should come as no surprise, for this is a manifestation of "the poverty problem" in one of its most serious and difficult forms -- and of the failures of migration to solve problems of Galbraith's "insular poverty" where men have become obsolete or have never been sufficiently equipped to enter into jobs that offer opportunities for new training or learning.

The least predictable of the results, at least to us, were those for youth returning to the East North Central Division. Even though this has not been a growing area, we had expected that lower proportions of in-migrants would be returnees. Even the lowest ratios are around 30 per cent. It is interesting that the highest ratios are for young men, and are associated with absolute net in-flows, while in the older age categories the East North Central Division was a net loser in each of the age-schooling groups we examined. Such findings invite further speculation, but we resist that temptation in favor of a more generalized (and safer) procedure -- the presentation of migration and re-migration decision models with some of their analytical and policy potentials.

Table 1						Table 2							
RETURN MIGRATION RATES AMONG 1955-60 MIGRANTS IN- TO AND OUT OF THE EAST SOUTH CENTRAL, EAST NORTH CENTRAL, AND PACIFIC DIVISIONS: WHITE MALES IN SE- LECTED AGE AND SCHOOLING CATEGORIES					NUMBER OF 1955-60 WHITE MALE IN-MIGRANTS AND OUT- MIGRANTS FOR WHOM RESIDENCE WAS REPORTED: THE EAST SOUTH CENTRAL, EAST NORTH CENTRAL, AND PACIFIC DIVISIONS								
Proportion of 1955- 60 in-migrants who were returning to division of birth <u>1960 Age</u> <u>25-29 30-34 35-39</u>			Proportion of 1955- 60 out-migrants who were returning to division of birth <u>1960 Age</u> 25-29 30-34 35-39				1955-1960 In-migrants <u>1960 Age</u> 25-29 30-34 35-39			1955-1960 Out-migrants <u>1960 Age</u> 25-29 30-34 35-39			
Highschool 1-3 Highschool 4 College 1-3 College 4	. 59 . 52 . 46 . 32	. 56 . 42 . 35 . 32	. 53 . 36 . 26 . 28	. 24 . 32 . 37 . 30	. 18 . 23 . 26 . 30	. 17 . 23 . 23 . 27	Highschool 1-3 Highschool 4 College 1-3 College 4	7300 13367 6781 9752	5750 7960 4067 7485	4280 6716 3441 5372	9585 16279 8064 13743	6955 9296 4573 9577	5145 7690 3679 6303
EAST NORTH CENTRAL						EAST NORTH CENTRAL							
Highschool 1-3 Highschool 4 College 1-3 College 4	. 43 . 56 . 53 . 40	. 30 . 36 . 34 . 34	. 27 . 30 . 30 . 30 . 30	. 29 . 25 . 22 . 18	. 29 . 21 . 18 . 21	. 26 . 19 . 18 . 20	Highschool 1-3 Highschool 4 College 1-3 College 4	18305 36831 17920 33906	10884 14659 8615 24707	7455 12030 6752 15326	15488 25922 13918 31472	15558 21715 11793 28233	13185 20856 10456 20950
PACIFIC						PACIFIC							
Highschool 1-3 Highschool 4 College 1-3 College 4	.09 .10 .15 .11	.06 .07 .09 .12	.05 .07 .09 .09	.60 .61 .60 .46	. 46 . 42 . 38 . 37	.47 .36 .30 .30	Highschool 1-3 Highschool 4 College 1-3 College 4	22146 36646 22645 35438	20800 27640 14578 27629	16556 26411 12942 19899	14764 31305 16439 16825	10011 14452 7592 13764	7453 13301 7432 9626

Source: Computed from data in the 1960 U.S. Census of Population, Lifetime and Recent Migration, PC (2) 2D, Table 8. Ratios are computed excluding persons for whom residence was not reported. Source: Same as Table 1

B. Decision models for migration and re-migration

The interpretation of migration behavior in economic terms and the analysis of potential strategies in social policy require something more than aggregative estimates of gains and losses.

With this in mind, we have developed models that begin with the individual viewpoint but are transformed into social decision models as parameter values are readjusted to allow for cost and income transfers, as individually expected earnings are replaced by socially expected or realized productive contributions, and as probability values are applied to allow for rates of return and non-return of migrants. The models allow choices with respect to locus, duration, and sequences of schooling and experiential learning. Relevant earnings streams are those of an "average individual" within a sex, race, age, and initial educational attainment and occupation category. Our presentation is necessarily summary. 20

The following notation is used:

- ลage at the first decision point relating to migration
- bdate of actual or intended out-migration
- age at return from residence abroad m-
- nretirement age
- expected earnings in the year t at the R₊ place of origin prior to (or in the absence of) any migration

D₊expected earnings abroad in the year t

- Y_expected earnings in the year t at the place of origin for migrant returnees (t > m - a)
- direct cost in the year t of schooling or training in the area of origin
- K_{+} direct cost in the year t of schooling or training abroad Z_{\perp}^{0} - direct cost
- direct cost of out-migration incurred
- z_{1}^{h} in year t z_{1}^{h} direct cost of return migration incurred in year t
- discount rate r-
- Vpresent value of future income streams
- superscript denoting a particular race, jage, sex, school attainment, and occupation (if any) at time a

We limit ourselves to the following possible migration sequences:

1. Remain in the area of origin permanently (no migration)

$$V_{1}^{j} = \sum_{t=a}^{n} \frac{R_{t} - C_{t}}{(1+r)^{t-a}}$$

2. Migrate immediately and remain permanently in the area of destination

$$V_2^j = \sum_{t=a}^n \frac{D_t - K_t - Z_t^o}{(1+r)^{t-a}}$$

3. Migrate immediately, remain temporarily in the area of destination, then return to the area of origin •

$$V_{3}^{j} = \sum_{t=a}^{m-1} \frac{D_{t} - K_{t} - Z_{t}^{0}}{(1+r)^{t-a}} + \sum_{t=m}^{n} \frac{Y_{t} - Z_{t}^{n}}{(1+r)^{t-a}}$$

4. Remain temporarily in the area of origin, then migrate permanently

$$V_4^j = \sum_{t=a}^{b-1} \frac{R_t - C_t}{(1+r)^{t-a}} + \sum_{t=b}^n \frac{D_t - K_t - Z_t^o}{(1+r)^{t-a}}$$

5. Remain temporarily in the area of origin, migrate and remain temporarily in the area of destination, then return to the area of origin

$$V_{5}^{j} = \sum_{t=a}^{b-1} \frac{R_{t} - C_{t}}{(1+r)^{t-a}} + \sum_{t=b}^{m-1} \frac{D_{t} - K_{t} - Z_{t}^{o}}{(1+r)^{t-a}} + \sum_{t=m}^{m} \frac{Y_{t} - Z_{t}^{n}}{(1+r)^{t-a}}$$

1. Individual Choices

An individual has many alternatives within each of the five sequences. To illustrate the complexity of choice, we begin with sequence one, the simplest case. Think of a high school graduate deciding about his future. He must weigh going to work immediately against spending one, two, five, or more years in school during which his earnings are low or zero. He must weigh schooling now against schooling later If he is in the United States, he is faced with a bewildering array of institutional settings. Each of the above carries implications for cost streams (C_{\downarrow}) and for future earnings (R_{\downarrow}) .

Each of the schooling choices can be associated with a set of alternative occupational and job choices with varied amounts of experiential learning. The potential occupation and/or job choice implies visualizing a series of future yearly earnings (R values). These separate streams may differ in their present value and in the amount of associated experiential learning.

A person may choose between positions with higher learning potential which pay little at first but will bring higher pay later and positions with less or negligible potential which pay well at first but promise little or no earnings increase in the future. 21 The relation of

experiential learning to earnings stream differences and the place of experiential learning in our models is less observable than that of schooling. Schooling obviously involves foregone earnings: most students do not work or they have earnings far below what they might have if employed full-time. And schooling also carries direct costs -tuition, books, fees -- that are only too evident to all who have paid them at one time or another. However, costs to an individual of experiential learning, embedded as they are in the earnings streams and usually involving less contrast in earnings, are less conspicuous even when they are cumulatively substantial.²²

From the above it is apparent that even within sequence one, there are potentially almost an infinity of schooling and experience mixes from which to choose, each with its earnings stream and associated costs. Within sequence two, the possibilities for mixint schooling and experience are increased as a geographical dimension is introduced; within sequence three, the number of possibilities is further multiplied as the geographical progression becomes more complicated; and so forth.

In theory, one could identify the costs and earnings streams for every conceivable combination within and between each of the five migration sequences and select that one giving the highest present value. However, many combinations can be immediately discarded as unpromising ones. Furthermore, in practice any one individual will be constrained by his native ability, his interests, his financial situation, behavior of acquaintances, etc. The possibilities actually considered are reduced to the most promising and feasible ones, even to choices among two or three specific combinations for which costs and benefits are weighed and compared.

The most interesting aspect of this exercise for analysis of migration concerns how the locale of schooling and/or experiential learning up to any given age affects subsequent income streams for each work location which might be chosen after that age.

How great are the differences in particular cases? How stable are they? What explains them? How fully do they, in turn, explain migrant behavior? By what processes and how rapidly are they changed in the wake of migration? These questions are key ones for a positive economics that would go beyond traditional resource allocation to merge decision theory into a theory of development dynamics.

2. Social Choices and Migration Probabilities

Now, suppose we shift our viewpoint to a social one, for instance that of a regional or national body which is deciding whether or not to subsidize study outside the area. Social gains and losses may be evaluated by using the same basic models used for individual decisions. However, the costs and returns are now those to the society. For example, all costs of educational services (teacher time, physical facilities, etc.) are real social costs, even though subsidies may reduce or eliminate such costs to the individual. ²³

Permanent migration, as in sequences 2 and 4, is commonly regarded as unambiguous loss from a social viewpoint. This position, which assumes that to add to the productivity of an area an individual must be physically present, has been challenged. ²⁴ However, in most cases policy-makers are concerned with the problem of non-return and regard physical presence as a crucial consideration from the national or regional point of view.

Temporary migration, as in sequences 1, 3, and 5, when viewed socially as a training alternative, requires a major adjustment.²⁵ Unless a government coerces in some way, it cannot insure that those trained at home will stay at home or that those trained abroad will necessarily return. Therefore it is necessary to allow for the possibility that students trained at home will emigrate and that students trained outside will not return. This is done by including probabilities in the models.

As an example, we focus on comparisons between longer and shorter periods of training abroad. Let α_t^m be the probability that students trained outside the area for (m - a) years will return before age t. To illustrate, sequence three then becomes:

$$V_{3m}^{j} = \sum_{t=m}^{n} \frac{\alpha_{t}^{m} Y_{t}^{m} - (1 - \alpha_{t}^{m}) Z_{t}^{h}}{(1 + r)^{t-a}} - \sum_{t=a}^{m-1} \frac{K_{t} + Z_{t}^{o}}{(1 + r)^{t-a}}$$

For each value of (m-a) there will be a different set of income variables, Y_t^m , and of probabilities of return, α_t^m . The probability set α_t^m is likely to be a declining function of (m-a); the rate at which α_t^m declines will be one of the critical elements in the comparison of social net returns from longer or shorter periods of training abroad. In this form the equation refers to one individual (or a fraction thereof) but with appropriate identification of Y, K, and Z it is also a marginal social benefit-cost summation.

Another type of comparison involves locus of training for any given training period as, for

instance, in a comparison of sequences 1 and 3. A concrete example is the argument over establishing local medical schools (versus training doctors abroad or out-of-state). The answer will depend on rates of migration and retention as well as on the relative cost and quality of the training in each locality. The argument usually given is that probabilities of retention for those trained at home so exceed the probability of return for those trained elsewhere as to outweigh all other considerations. From a "nationalistic" or "localistic" point of view, the economic validity of this argument will depend, among other things, upon who bears the costs of training in the alternative locales.

Another practically important issue is whether and how long students sent overseas should be allowed or encouraged to stay beyond formal schooling in order to acquire experience. The solution will depend, in part, on what "wastage" from non-return is associated with the experiential learning. This "wastage" is incorporated into our social decision model by introducing the migration probabilities.

The dependence of social policy upon understanding individual behavior is particularly evident in attempts to decrease wastage by influencing rates of out-migration and remigration. Also, knowledge of how migration probabilities vary with individual characteristics within each schooling-work alternative would provide guidelines for efficient selection of individuals to the training programs, further reducing wastage.

3. Long Versus Short-term Importations of Highly Qualified Manpower

As a final example of human capital models applied to migration, we turn to decisions in developing nations concerning imported skills. We by-pass comparison of more training of local people against more importing of outside talent to focus on models weighing three alternatives in the purchase of foreign experts' services: a one-man, long-term contract, a sequence of short-term contracts to several people, and a system of two-year rotations between two individuals.

When decisions involve a continuous series of replacements, the succession of short income streams can be regarded as one long one. The equivalence is not complete, however. The sharpest contrasts and associated problems can be most clearly illustrated by looking at human capital migration from the point of view of the developing nations and their needs for highly qualified manpower from the more advanced economies. There is much discussion today of alternatives and combinations in the flow of high-level manpower for shorter or longer stays in the developing nations. In the terminology of the previous section, should a man be kept abroad for a period (m-a) = 2 or for, say, (m-a) = 5, or 10, or even 20 years? For that matter, what about double appointments in which two individuals alternate with each other at home and abroad?

Let us designate the present value to the importing country, X, of a single individual for 10 years as V_x^1 , that of two individuals who replace each other every two years over a period of 10 years as $\,V_X^2$, and that of a sequence of five individuals staying two years each as V_x^5 . In the third case, on our assumption that each successive individual is the twin of his predecessor D_t for t = 1 will have the same current year value as D_t where t = 3, 5, 7, or 9 and D_t where t = 2 will have the same value as where t = 4, 6, 8, or10. We make the simplifying assumption that the importing country pays for all travel expenses. The maximum present values and hence amounts that the importing country would be justified in paying for the production streams generated by each of these alternatives can be represented as follows:



We can simplify in comparing these alternatives by assuming that the amounts and timing of travel costs paid by the receiving country are the same in all three cases. This is evidently the case as between $V_{\rm X}^2$ and $V_{\rm X}^5$, and it is consistent enough with common practice respecting travel allowances for vacation at home in the case of expatriates on long-term appointments. Which alternative will yield the highest present value then depends upon the summations or sets of terms incorporating the D's.

If there is any learning on the job at all, the V_x^5 stream will clearly have the lowest present value. In fact, if we had made any allowance for direct outlays on training, this disadvantage of the V_{X}^{5} stream would be still more apparent. There is good reason for the widespread concern over the cutting off of so many technical assistance activities at two years per man, and even stronger reason for the increasingly firm attempts to adhere to a two-year minimum, to permit men to learn about the situation in a strange environment and to attain a reasonably high level of effectiveness in it. Two year appointments may serve very well when there is a special job that needs to be done by a man with unusual qualifications, after which the requirements of the task are less demanding -- in other words, when the calibre of the first man has to be higher than that of his successors. But that is a different sort of situation, and not the "successive twin" case with which we started and

by which we defined V_x^5 . Comparison between V_x^1 and V_x^2 must be a bit more subtle. In case V_x^1 there is the advantage of continuity on the job in country X, but offsetting this is loss of contact with dynamic centers of activity in the expert's home country; he tends to fall progressively further behind his colleagues there. Case V_x^2 has the advantage that experiences in the home country and in the importing country may well feed into each other, to enhance a man's effectiveness in both. This is one of the arguments in favor of developing career opportunities in technical assistance by establishing supernumerary university posts (double staffing) in selected fields and locations.

If V_x^5 is so likely to be the inferior choice for value to the importing country, why is this alternative so common in practice? Evidently there are two reasons. First is the political reaction to colonial experience and the desire to avoid entrenchment of foreigners who might build up too much power in the country. In many cases ex-colonial countries have quite deliberately made a trade-off between economic and political ends by their policies with respect to expatriates. However, this phase of the transition is fading, and with this change the economic decision models may have greater potential impact on policies. In strict-

ly economic terms, what can be said for V_{2}^{5} ? It seems clear that set against the lower present values of a V_x^5 stream are lower recruitment costs; it is easier to get good men for a short than for a long time, and primarily for two reasons: First, the pace of learning in the first year is likely to be especially high, and what is learned over a two-year period may have more transferrability to the job market in the expert's home country than the learning that cumulates with longer time abroad. He loses little, if anything, in carrying this learning home with him. Second, he has suffered less loss in getting out of touch and losing contacts with colleagues at home when his stay is not too prolonged. (In addition, a reasonably short term abroad may be enticing for quite noneconomic considerations that would pall if the stay were extended.) Thus set over against the lower value of the V_x^5 stream is the greater ease and lower cost of maintaining it.

This brings us back to V_x^1 against V_x^2 once again. Let us take another look at V_x^1 . Unless a man becomes a permanent migrant, he is likely to suffer a disadvantage when he returns home after a long stay abroad. He has foregone learning opportunities suited to his home country, and the experience he has accumulated in his years abroad often has limited transferability back into an advanced industrial nation. (In lesser degree this may happen with migration from North to South in the United States, unless the migrant is associated with a Northern or a Northern-type firm.) In order to attract a man for 10 years, it would be necessary to pay him a very high salary to compensate for this accumulation of obsolescence. There is evidently a point at which long-term stays abroad must become permanent ones if they are to prove beneficial both to the receiving country and to the individual involved.

 V_x^2 is quite another matter. In this case the learning process continues and contacts at home are maintained. No special bribe need be paid to attract a man into such a career. On balance it looks very much as though V_x^2 might come out as the best alternative in a large proportion of cases. Systematic application of human investment decision models to particular cases will help sort these alternatives out. They just might lead to some important innovations in technical assistance and in relations between Universities and the Department of State.

IN CONCLUSION

1. <u>Current methods of calculating hu-</u> man capital gains and losses from migration take a too simplistic view of migration.

a. Even adhering for the moment to the prevalent treatment of migration as if it

were a one-way affair, it is of the greatest importance that gross flows be analyzed: the critical problems and evidence concerning the effects of migration are concealed when net flows only are assessed -- even when the latter are broken down into finely disaggregated population categories.

b. Re-migration is important quantitatively. Furthermore, disregard of remigration leads to serious misinterpretations of even the gross flows and even when the latter are disaggregated on a number of key variables. The importance of analyzing re-migration is underlined where regions differ in quality of schooling and experiential opportunities and where there is rotating migration of obsolescent and undereducated men.

2. <u>Human investment decision models</u> provide useful conceptual and empirical tools when applied to migration, from both individual and social perspectives.

a. The models add insight into motivations of migrants. Understanding migrant behavior provides points of leverage for channeling migration to social purposes, and provides a means of determining to what extent the socially rational may coincide or conflict with effects of individual behavior that are rational.

b. Social decisions involving the locus of training may be put in a cost-benefit framework and evaluated. Major decisions such as whether to train elsewhere or at home can be weighed. Losses from non-return and their probabilities can be valued and included in assessing investment alternatives. The potential gains from policies to reduce rates of non-return could also be estimated.

c. Migration, coupled with regional differentials in quality of schooling and experience, can be examined as it relates to the diffusion of know-how among regions or nations. Of particular interest would be application of human capital concepts to understanding "package migration" as an agent of change.

d. Effects of social decisions to import manpower on a short-term continuous replacement basis, an alternating basis, or a long-term basis can be sorted out using human capital investment models. For each situation, individual decision models provide estimates of outlays necessary to attract the talent desired. Costs and benefits can be compared to determine the best alternative.

3. <u>Availability of census tapes with data</u> for samples large enough to permit refined breakdowns would permit new kinds of research on critical aspects of migration as a human investment. Potential contributions to both theoretical developments in the social sciences and to public policy formation are substantial.

a. Even if no data other than those

collected in 1960 were obtained, larger samples would permit multiple breakdowns that distinguish migrant status by origin, destination, and place of birth for Divisions, within existing categories on age-sex-race-income-educationoccupation tables.

b. All too sizeable a list of other items might be suggested, but we will use restraint. A high priority item would be occupation just prior to migration, but we recognize that occupation data are costly. Home residence of college students is presumably being included. We would be interested in dates of migration, together with state and type of community in which a migrant last resided, but we would not want to give up the identification of residence and other traits at a fixed time interval (5 years) before the census. Obviously not all these things can be done.

c. Because of the importance we attach to it, we list separately information concerning residence when last attending high school (or, for those who never entered high school, elementary school). Alternatively, the question could be asked for age 16, though this might be more difficult for some to answer. State of residence and type of community would both be desirable; together they should provide valuable indexes of the combined effects of quality of schooling and experiential learning from adolescent environment. Such information could be extremely useful not only in analysis of migration but in many other aspects of the economics of human resource development and utilization.

FOOTNOTES

¹ In the 19th Century, estimates of human capital gains and losses were made for the United States, England, and Germany, using both present values and cost replacement methods. Discussions of the estimates and methods may be found in: Richmond Mayo-Smith, <u>Emigration</u> <u>and Immigration</u>, New York: Scribner's Sons, 1892, Chapter VI, and in Grace Abbott, ed., <u>Historical Aspects of the Immigration Problem</u>, <u>Select Documents</u>, Chicago: The University of Chicago Press, 1926, pp. 370-381.

² Larry Sjaastad, "The Costs and Returns of Human Migration," <u>The Journal of Political</u> <u>Economy</u>, LXX, No. 5, Part 2, October, 1962, 80-93.

³ In his theoretical formulation, Sjaastad also considers "psychic" costs and benefits.

⁴ Burton Weisbrod, <u>External Benefits of Pub-</u> <u>lic Education</u>, Princeton, N.J.: Industrial Relations Section, Princeton University, 1964.

⁵ Census cross-classifications are by income, not earnings. There are substantial difficulties

involved in establishing a "correct" figure for such groups as proprietors. Neither income nor earnings is quite accurate.

⁶ See the following three articles of Herbert Grubel and Anthony Scott: (1) "The International Flow of Human Capital, the Brain Drain," <u>American Economic Review, Papers and Pro-</u> ceedings, LVI, No. 2, May, 1966, 268-274, (2) "The Immigration of Scientists and Engineers to the United States," <u>The Journal of</u> <u>Political Economy</u>, LXXIV, No. 4, August, 1966, and (3) "The Characteristics of Foreigners in the U.S. Economics Profession," <u>American Economic Review</u>, forthcoming.

⁷ Herbert Grubel, "Nonreturning Foreign Students and the Cost of Student Exchange," <u>International Educational and Cultural Exchange</u>, (a publication of the U.S. Advisory Commission on International Educational and Cultural Affairs), Spring, 1966.

⁸ Herbert Grubel and Anthony Scott, "The Immigration of Scientists and Engineers to the United States," <u>loc.</u> <u>cit.</u>

⁹ This, by the way, is where Grubel and Scott's social welfare view of effects on per capita incomes could prove especially fruitful-and empirically operational up to useful approximations.

¹⁰ Rashi Fein, "Educational Patterns in Southern Migration," <u>The Southern Economic</u> <u>Journal</u>, XXXII, No. 1, Part 2, July, 1965, 106-124.

¹¹ The figures for numbers migrating in and out of the South, exclusive of inter-South migration, are taken from William N. Parker's comment on the Rashi Fein article (see footnote 10), in <u>The Southern Economic Journal</u>, XXXII, No. <u>1</u>, Part 2, July, 1965, p. 126, Table I.

 12 A number of outstanding scholars have approached this topic from demography -- among them our chairman, Henry Shryock.

¹³ The critical importance of community characteristics in determining differences among schools in distributions of achievement has been well documented. See, for example, H. T. James, J. Alan Thomas and Harold J. Dyck, <u>Wealth, Expenditure and Decision-Making for Education</u>, in U.S. Department of Health, Education, and Welfare, Cooperative Research Project No. 1241, Stanford (School of Education), 1963, and Charles Benson, <u>et al.</u>, "State and Local Fiscal Relationships in Public Education in California," State of California Senate Fact Finding Committee on Revenue and Taxation, <u>Report</u>, Sacramento, March, 1965.

¹⁴ Jacob Mincer, "On-the-Job Training:

Costs, Returns, and Some Implications, "<u>The</u> <u>Journal of Political Economy</u>, LXX, No. 5, Part 2, October, 1962, 50-79.

At any given time, however, the aggregate on-the-job training embodied in the labor force will be the lower figure, since young people who have completed school have yet to accumulate the learning on-the-job that Mincer measures by opportunity costs.

¹⁵ This makes the further assumption that migrants average the same schooling quality as comparable nonmigrants in their area of origin.

16 Roy L. Lassiter reports Southern business preference for Northerners with high school education or more in "The Experience of Selected Manufacturing Firms with the Availability, Skills and Training of Manufacturing Workers in Florida, "Occasional Paper No. 1, Bureau of Economic and Business Research, College of Business Administration, University of Florida, 1961. The reluctance of U.S. firms abroad to employ local management is illustrated by John Shearer in his High-Level Manpower in Overseas Subsidiaries: Experience in Brazil and Mexico, Princeton, New Jersey: Industrial Relations Section, Princeton University, 1960, especially Chapter VI.

¹⁷ For some related discussions of transfer of know-how, see Mary Jean Bowman, "From Guilds to Infant Training Industries," in C. A. Anderson and Mary Jean Bowman, eds., <u>Education and Economic Development</u>, Chicago: Aldine Publishing Company, 1965, pp. 98-129.

¹⁸ However, the high incomes of the "traditional" or native elite groups may be largely property income (for instance, Southern farmers with college education) or their salaries may be bureaucratic sinecures (as in many developing areas).

19 In the 1970 census and thereafter, social security numbers may be included, making possible special studies that can be linked into census information for the same individuals. This should allow many kinds of research on migration that have not been feasible previously without incurring prohibitive costs. For example, a special survey might obtain rosters of individuals working in Southern firms and in Northern firms in the South. By matching, these individuals could be located in the census and their age, schooling, and migrant status identified. Such data would permit analysis of the degree of labor market differentiation and of native Southerners and immigrants of comparable age and education employed in establishments with Southern and Northern managers. Many other possibilities, including migration sequences as revealed by social security data, come to mind.

²⁰ The models used here are part of a family of such models for analysis of investment in human resources (and before that in business economics). Their relation to Gary Becker's approach is evident. (See his "Investment in Human Capital, "<u>The Journal of</u> <u>Political Economy</u>, LXX, No. 5, Part 2, October, 1962, and his <u>Human Capital</u>, Columbia University Press, 1964). However, for our purposes, comparison of present values taking an assumed external discount rate proved more flexible and is generally more appropriate than the "internal rate of return" comparison of Becker's.

21 Note that this description of choices, and our use of present value comparisons, requires no assumption with respect to year-to-year choices of alternatives or constancy of internal rates of return to successive self-investments such as Mincer used (op. cit.). For some remarks on Mincer's as one of a broader set of models that values the length of a contract term, see M. J. Bowman, "The Costing of Human Resource Development" in E. A. G. Robinson and J. E. Vaizey, eds., The Economics of Education (Proceedings of the 1963 Conference of the International Economics Association), London and New York: Macmillan and Co., 1964.

²² Stress here is on cost <u>to the individual</u> because we are speaking of an individual decision. There is no need to assume year-toyear matching of incomes and productivity even in social assessments, however, since only the present value enters into our social decision models; more than one income sequence can yield the same present value. Becker's "general" learning will cause no trouble. Some part of what he terms "specific" on-the-job training will escape measurement in the estimations of present values of income streams accruing to individuals.

²³ Evidently the use of shadow pricing for public cost and benefit assessments will sometimes be required -- where there are substantial discrepancies between present values of what men will be paid and what they will produce over ensuing years; this is why, earlier, we spoke of transformations from "individual earnings" to productive contributions. The discussion in this section identifies "social" returns with returns to the entire society, as measured by national product. Often foundations may take similar ultimate goals as a basis for decisions to allocate funds to one or another type of educational project in one or another location. Narrower definitions of "social' that balance flows into and out of one versus another public exchequer are a very different matter.

²⁴ For a listing and discussion of contributions to the area of origin which might be made from outside the area, see Harry Johnson, "Economics of the 'Brain Drain': The Canadian Case," <u>Minerva</u>, III, No. 3, Spring 1965, 299-311, and Herbert Grubel and Anthony Scott, "The International Flow of Human Capital, the Brain Drain," <u>op. cit</u>.

²⁵ One of the authors -- Myers -- has been developing implications of this approach more fully. Our discussion here is limited by space considerations.