SCOTTISH MIGRATION : SOME THOUGHTS ON A HUMAN CAPITAL APPROACH

Introduction

For many years Scotland has experienced high levels of net emigration. Between mid-1951 and mid-1975 an estimated net 666,000 people left Scotland - an annual average loss of almost 28,000. Though clearly such high emigration rates warrant concern there has been little empirical study of the migration problem in Scotland. Hollingsworth (1) and the Scottish Council (2) are the two principal published studies - both now somewhat dated.

In the UK the quantitative literature on migration is more extensive (and more up to date). Hart (3), Jack (4), Creedy (5) and Gordon (6) each attempt to specify a model of inter-regional migration in the UK. Although these models differ in the variables included they have a common feature in that they attempt to explain the causes while ignoring the <u>effects</u> of migration - a point to which we shall return later.

A similar pattern of high emigration rates has characterised the Irish economy. Walsh (7) develops a model of migration between Britain and Ireland in which relative wage rates and unemployment play a key role in determining the level of migration.

However, it is in the United States and Canada that migration models have been tested most rigorously. Following the seminal work of Becker (8) and Sjaastad (9) the 'human capital' school of economists have come to dominate empirical investigations of migration on the other side of the Atlantic.

This article presents an outline of a larger study which is being conducted with the aim of specifying and testing a human capital model of migration both within Scotland and between Scotland and the rest of the UK. En route it is hoped to explore some general problems of migration analysis, and to confront specific hypotheses derived from human capital theory with data from the 1971 Census of Population.

Problems in Migration Analysis

The much quoted excerpt from Hicks' Theory of Wages that "differences in net economic advantages, chiefly differences in wages, are the main causes of migration" (10), has been the starting point for many studies of migration behaviour. The influence of this insight, however, has generally been limited to the inclusion of some form of wage relative in an equation specifying gross or net migration flows. There the matter has rested. This, we contend, has led to the mis-specification of many migration models.

Where labour is mobile between markets, and mobility is hypothesised to be induced by inter market income differentials, then the direction of causation is circular, and income differentials are in turn affected by labour flows. Since most migration models are specified as single equation systems, this interdependence is not recognised, or if recognised is generally dismissed with a caveat warning readers that ordinary least squares estimation of such a model may be biassed. It would appear, therefore, that in order to rigorously examine migration flows at an empirical level, the equation specifying migration behaviour must be set in the context of a simultaneous Variables such as income and system of economic activity. unemployment, and their time derivatives, which are accepted as exogenous in single equation models, must be made endogenous in this larger model. The application of such a model to empirical data using appropriate simultaneous equation techniques removes the problem of inconsistent parameter estimates inherent in most single equation studies.

However, even though simultaneity problems are tractable, there is a further difficulty, namely aggregation. A human capital approach to migration starts from a consideration of the determinants of migration at the individual level. Aggregation of these individual equations leads to a gross migration equation specifying outflow or inflow for a given region as a function of an amalgam of individual characteristics. However, as individuals are not homogenous with respect to age, education, occupation etc, on a priori grounds one would expect persons classified differently with respect to the above to differ in their migration behaviour. Thus the use of data which aggregate over classifications can lead to biassed parameter estimates with the extent of the bias unknown, especially in simultaneous systems.

This problem can equally arise when gross inflow and outflow

migration equations are summed to derive a single net flow equation. One advantage of the human capital approach is that it alerts one to the dangers of aggregation.

Although human capital theory may provide richer insights into the migratory process data limitations generally erode this advantage at the empirical testing stage. Nevertheless, though competing hypotheses may have indistinguishable testable formulations the human capital approach is preferable owing to its more rigorous micro-foundations and consequent highlighting of aggregation problems.

Human Capital Theory

Turning now to the development of the human capital approach to migration we first consider the decision process of the individual contemplating migration. The basis of human capital theory is that individuals act so as to maximise the discounted net present At any point in time a value of their future utility stream. prospective migrant can make a subjective assessment of his likely income in the remainder of his working life until retirement. Furthermore this assessment can be made for each possible Since expectations are involved the individual destination. makes assessments over a range of incomes, attaching a greater or lesser degree of certainty to each outcome. Uncertainty arises from a lack of adequate information both about future levels of income regardless of location, and about current income If we assume that individuals try to minimise levels elsewhere. uncertainty for any given level of income, this suggests a tradeoff may exist between increased expected income and increased uncertainty. This is shown in Fig 1.



Let us assume that the hypothetical migrant's income/uncertainty tradeoff may be described by the indifference map in Figure 1. For any given income the individual prefers as low a level of uncertainty as possible. Therefore the further north and east the indifference curve the higher the level of utility. Initially at point A, with income OG and uncertainty OD the individual is contemplating migration to a location to which a level of uncertainty OE attaches. It is obvious that his current income OG is insufficient to compensate for this increased uncertainty. To induce movement an income of at least OF (point C) must be expected in his new location. Lack of consideration of the role of uncertainty in migration studies has often led to subsequently unfulfilled a priori expectations of the explanatory power of income variables.

It is worth noting that at low levels of income the individual may exhibit risk preference, being prepared to accept a large increase in risk in return for a negligible rise in expected income. The prevalence of this effect may be determined by the adequacy of the safety net which the welfare state provides in the event of the migrant becoming unemployed. The adequacy of such provisions, as measured by the proportion of net earnings received from unemployment compensation, typically decreases as income rises. This imparts its characteristic curvature to the indifference map in its middle income range. Finally, at high income levels, the marginal utility of additional income is such that it cannot compensate for further increases in uncertainty. (The categorisation of incomes as low, middle and high is obviously imprecise).

If uncertainty was uniform at all locations income differentials would be amongst the most important determinants of migration behaviour. However, as shown in Figure 1 it is insufficient to consider income in isolation and ignore the uncertainty attaching to it.

The greater the information flows regarding different locations the lower the level of associated uncertainty and consequently the lower the income differential required to induce migration. Information flows depend on a number of factors.

Firstly, there is the effect of distance. Several studies (MacKay & Reid (11) Whelan & Walsh (12)) have indicated that direct approach to prospective employers and contacts arranged through family and friends are important methods of job search. In general, both these methods are dependent on personal

contact and their efficiency can be expected to decline with distance. However, if family or friends are already established at some other location this effect is diminished. Similarly, if a worker already has experience of work in a particular location, distance is a less effective barrier to migration. This, to some extent, explains the high incidence of re-migration.

Secondly, though not perhaps independently of distance, there is the influence of education. Higher levels of education will generally imply more efficient gathering of information. Α given store of information is likely, ceteris paribus, to be acquired with less effort the higher the level of education. Data from the Census of Population 1971 for Scotland are consistent with this interpretation. On making the plausible assumption that the socio-economic group of a migrant and his/ her level of education are highly correlated, the following If students and the economically inactive points may be noted. are ignored, the groups which display a propensity to migrate from Scotland to the rest of the UK in excess of their weight in the Scottish population, are primarily those in Census socioeconomic groups 1-5, i.e. the professional and self-employed. Junior non-manual and personal service workers also display a greater than expected propensity to migrate outwith Scotland. Manual workers, both skilled and unskilled, display a propensity to migrate only within local authority areas. These findings are broadly consistent with out hypothesis that those with higher levels of education tend to migrate over greater distances.

Thirdly, information flows differ in their effectiveness between occupational labour markets. For instance, in certain occupations, the existence of professional organisations is likely to improve the dissemination of information through such channels as specialised journals etc.

Turning now to the costs of migration there are again a number of aspects to consider. Not only, as we have just stated above, does distance proxy information flows, but also the costs incurred in relocation.

The total cost of migrating may be analysed in somewhat greater detail. It can be considered to consist of two components, one fixed and the other variable. For any individual, certain costs of migration are invariant with respect to his choice of destination. The costs of selling a house and any other durable assets are unaffected whether the migrant's destination is London or Liverpool. This effect is considerably diminished

if (a) the person is and intends to remain a council house tenant and/or (b) relocation costs are subsidised by Government. employers etc. Similarly, there may be a minimum charge for freighting services regardless of distance or weight. Such costs represent the fixed component. The remainder vary with such factors as the distance travelled, the number and age composition of the migrant's household, and regional variations in the legal etc. costs of taking up residence at the point of destination. These factors are obvious. The larger the migrant household, the greater the cost of transport over a given distance, both through increased numbers of persons and an increased quantity of personal effects. Such effects are likely to increase as the average age of household members rises. The overall cost rises with distance travelled, though probably not in a linear fashion.

As already mentioned, human capital theory asserts that people base decisions not only on current utility (arising from present income) but also on expected utility in future years. This is done by discounting future expected utility flows to derive a present value of the utility stream. To arrive at a net present value the costs of migration must be subtracted.

One would expect that older people would discount their utility over a shorter period. As a direct consequence the costs of migration will assume greater importance for such people. This effect will be strengthened if they have bassed their prime This hypothesis, again, is borne out by an earning years. examination of migration data from the 1971 Census of Population An analysis of the age structure of migrants to for Scotland. the rest of the United Kingdom from.Scotland in the twelve months preceeding the Census reveals that over half were aged less than 24, and three quarters aged less than 34. Considered in isolation, these figures might perhaps be taken as a consequence of a population distribution skewed heavily in favour of younger ages. This is not a viable explanation. The age distribution of migrants differs significantly, in the statistical sense, from that of the parent population. Migrants are over-represented, compared to their population weights, in all age groups, except 10-14, up to age 44. The same conclusion broadly holds for those people moving within Scotland during the Conversely, if individuals consider not only their same period. own welfare but also that of any dependents (who may outlive them) some weight may be given to the dependentsp utility stream and the discounting period may be correspondingly lengthened. (It may be the case that the whole analysis could be profitably couched in household rather than individual units).

However, continuing to use individuals as basic units, we assume that a net present value may be evaluated for each of a set Assuming that the individual finds that his of locations. expected utility could be increased by moving we now consider the likelihood that he will, in fact, move. The probability of finding and securing employment will, to a large extent, depend on the level of activity in the labour market. Previous studies have tended to use unemployment to proxy labour market conditions. However, a perusal of census data reveals that few migrants are registered unemployed. Because of this difficulty a number of studies have used changes in employment as an alternative proxy for labour market conditions. Again this has its disadvantages. Gross levels of migration between regions can vary widely without a consequent fluctuation in the level of employment. Also, the demand for additional employment may be met within the local labour market with no consequent effect on migration flows - by a reduction in unemployment or by the inflow of persons, previously inactive, on to the labour market, e.g. married women.

Another variable which could be included, separately, is the rate of labour turnover, i.e. the rate at which people are changing their jobs. When turnover is high, one would expect the level of migration to be high if the probability that a vacancy is filled by a migrant remains fairly constant. In the situation cited above, where employment is invariant, though gross migration flows are fluctuating, turnover statistics may be quite sensitive to these fluctuations. Unfortunately, little information on turnover is available for the regions of the UK.

Of course, not all potential migrants need to find employment For instance, retired people have no need to before moving. consider labour market conditions before moving. However, by definition, all migrants have to find new accommodation. Again, given a potential increase in discounted utility through migration, one has to consider the probability of finding and securing accommodation in a new location. This probability of course, depends on conditions in the housing market. Just as migration is likely to be affected by expansion of employment and high rates of labour turnover, so it is likely to be influenced by construction of new houses and high housing turnover rates. Further, the pattern of housing tenure Thus, in Scotland, strongly influences the housing market. migration patterns differ substantially between owner-occupiers local authority tenants. This is exemplified in Table 1.

Table 1 Percentage Distribution of Migrants in Wholly Moving Families (within one year of Census date)

Scotland

	Owner Occupied	Local Authority	Privately Rented
Total population	27.6	57.7	14.6
All migrants within Scotland	24.9	57.8	17.2
Migrants within local authority a	reas 19.4	66.9	13.7
Migrants between ""	" 37.9	36.7	25.4

Source: Census of Population (Scotland) 1971: Migration Tables II

It is apparent that the breakdown by tenure of all migrants within Scotland does not differ significantly from the breakdown of total population. (Rows 1 and 2). The privately rented sector, as one might expect, has significantly heavier weighting However, when one amongst migrants than the total population. comes to consider movement between and within local authority Tenants of local areas, substantial differences emerge. authorities are heavily under-represented in movements between local authority areas and over-represented in movements within The implication is that local authority tenants these areas. are more mobile than owner-occupiers over short distances, but less so over long distances. This can be explained partly by the allocation system for local authority housing and partly by the differing socio-economic structures of council tenants and Council houses in Scotland are generally owner occupiers. allocation by reference to a housing list. This system tends to discriminate in favour of short-distance moves (within a housing district) and moves in response to changes in family size, as against long distance moves for vocational reasons. However, the low mobility of council tenants can also be attributed to their socio-economic structure, which is more concentrated on lower socio-economic groups, e.g. semi-skilled and unskilled manual workers, than that of owner-occupiers. This being so, one can then argue that owner-occupiers are likely to be better educated, have better information about opportunities in distant locations and so are more mobile over long distances.

One of the main pitfalls of the human capital approach is the discrimination between influences on migration which depend on some other factor and those that are truly independent. Just such a difficult arises in the above argument. One must

question whether housing tenure and socio-economic structure separately and independently influence migration. Now it is obvious that they are not independent. Lower socio-economic groups are concentrated in local authority housing, whereas the upper groups tend to be owner-occupiers. However, one can check that housing does have some influence by examining levels of mobility within a particular socio-economic group. For instance, the evidence suggests that skilled manual workers who are also owner occupiers are much more mobile between local authorities than are skilled manual workers in local authority accommodation. The same is true of several other groups.

Thus, if one assumes that movements across local authority boundaries are more likely to result from changes in employment than movements within boundaries, there are grounds for arguing that owner-occupiers find it more easy to change their accommodation for economic reasons, and that the observed high levels of mobility of owner-occupiers is not simply determined by their socio-economic structure.

A final feature of the migration decision, not yet mentioned, is the role of psychic costs and benefits. Proximity to relatives and friends, to beautiful scenery and to recreational centres, may strongly influence the migration decision. Human capital adherents claim to incorporate such features at the theoretical level by adding a 'physic income' term to their formulation of a migration equation. This term is generally discounted at the same rate as the monetary income expression. However, at the practical level, measurement of psychic income is virtually impossible.

The only empirical work on this problem has been carried out in the US, where Liu (13) has found a positive correlation between migration and high values of various quality of life indicators. Even this method cannot take account of strength of family ties etc.

Most investigators ignore psychic costs and benefits at the empirical stage thus pushing these effects into the residual terms. As a result independent variables rarely account for more than two-thirds of the variability of migration flows, the remainder being left unexplained in the residuals.

Conclusion

In a short article it is not possible to discuss all aspects of migration. Here we have summarised the main aspects of human capital theory in its application to migration and also mentioned some of the difficulties which arise when one attempts to identify independent influences on the level of migration.

From 1971 Census data we have observed that geographical mobility in Scotland is concentrated among the young and those in the upper socio-economic groups - as implied by human capital theory. Further, the pattern of housing tenure would also seem to exert an independent influence on migration, though it is difficult to disentangle this effect from that of socioeconomic structure.

It is hoped that a more extensive empirical study of migratory behaviour in Scotland will be contained in a forthcoming Fraser of Allander Institute Discussion Paper.

References

- (1) T H Hollingsworth Internal Migration Statistics from the Central Register for Scotland of the National Health Services. Journal Royal Statistical Society (a) 1968
- (2) The Scottish Council (Development & Industry); Emigration and Immigration, the Scottish situation, 1966
- (3) R A Hart The Economic Influence on Internal Labour Force Migration. Scottish Journal of Political Economy 1972
- (4) A B Jack A Short Run Model of Interregional Migration. Manchester School 1970
- (5) J Creedy Interregional Mobility: A Cross Section Analysis Scottish Journal of Political Economy 1974
- (6) I Gordon Employment and Housing Streams in British Inter-Regional Migration. Scottish Journal of Political Economy 1975
- (7) B M Walsh Information, Expectations and Human Migration. Journal of Regional Science 1974
- (8) G S Becker Investment in Human Capital: A Theoretical Analysis. Journal of Political Economy 1962
- (9) L A Sjaastad The Costs and Returns of Human Migration. Journal of Political Economy 1962
- (10) J R Hicks The Theory of Wages, 2nd Edition. London Macmillan 1963
- (11) D I MacKay & G L Reid Redundancy, Unemployment and Man-Power Policy. Economic Journal 1972
- (12) B J Whelan & B M Walsh A Study of Redundancies in Ireland. Economic and Social Research Institute, Dublin, Mimeo 1976
- (13) B Liu Differential Net Migration Rates and the Quality of Life. Review of Economics and Statistics 1976