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GENERAL SKILLS, SPECIFIC SKILLS AND THE MIGRATION DECISION

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Introduction

Past research suggests that the relative lack of skills among workers retards geographic mobility [6, 10]. Long contends that this relationship seems operable within all occupational categories. He proposes that the highly skilled find their services in demand by other firms and are able to advance their careers by changing employers. In many cases, this will precipitate a change in geographic location.

Alternatively, Ritchey [14, p. 117] contends that the market for the highly skilled is more likely to cross labor market boundaries. These highly skilled workers are thus more apt to cross geographic boundaries as they change jobs. Schaeffer [16, p. 104] summarily concludes, "The accumulation of education, training, or job experience, by changing the value of a person's labor, opens up new job opportunities, thereby increasing the likelihood of a move."

However, these conjectures of the relationship between skills and the probability of migration ignore the basic distinction between general skills and specific skills. Higher levels of certain types of skills could clearly be expected to retard migration. For example, skills that are relatively more valuable to the worker's current employer will have a negative impact on geographic mobility.

This study contends that past research has failed to recognize the fundamental differences between the two types of skills — general and specific. It is contended that the possession of each of these types of skills affects geographic mobility differentially and that the failure to account for this difference has biased the results from past studies.

Specific Skills and General Skills

Becker [2] identified two types of job skills acquired by workers — specific skills and general skills. Specific skill acquisition is defined by Becker as training that increases the marginal productivity of the worker more in the firm providing the training than other firms. That is, as an individual accrues tenure with a firm, he/she acquires skills that are more valuable to this firm than to other potential employers.

Specific training affects the worker's productivity and wages in the current job, and its profitability depends upon the expected duration of employment. The theory of human capital proposes that labor turnover will be inversely related to the worker's amount of specific training.

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This negative relationship between turnover and the acquisition of job specific skills is attributable to the employer's compensation for these skills. The employer will provide a wage premium for these skills even though they are less marketable elsewhere. As stated by Becker [3, p. 29]:

Workers with training "specific" to an industry, occupation or country are less likely to leave that industry, occupation or country than other workers, so their industrial, occupational or geographic turnover would be less than average.

General skills, on the other hand, increase a worker's productivity in all firms equally. With their services in demand by other firms, the worker with high levels of general skills will suffer relatively little with a geographic move in comparison to a worker with low levels of general skills. Workers find that they are able to sell these skills to other firms and increase their salary by changing employers [1].

Thus, one would expect job turnover, and consequently migration, to be negatively related to the ratio of specific to general skills.

Empirical Model

Discriminant analysis will be employed to determine if the ratio of specific to general skills possessed by a worker is an important factor differentiating migrants from non-migrants. Discriminant analysis is a statistical technique that utilizes a designated rule to assign sample observations to a population. This rule is provided by the researcher and formulated according to *a priori* expectations about the population. A function is produced which is a linear combination of the designated explanatory variables and is formed by maximizing the ratio of among-group variation to within-group variation [9].

In this case, group one consists of all workers who lived in the same labor market at the time of the sample interviews in 1981 and 1982 (non-migrants), while group two consists of all workers who lived in different labor markets at the time of the sample interviews in 1981 and 1982 (migrants). The discriminant function employed is of the form:

$$D_i = d_{ij}z_j$$

where the z 's are the standardized values of "j" discriminating variables used in the analysis and D_i is a binary variable equal to zero or one according to migration status 1981-82 [see 4].

The following discriminating variables will be used:

INC81, EDU81, RACE, PROF81, HOM81, AGE81, CHOCCUP, RATIO81

INC81 = income from labor for the year 1981.

EDU81 = years of education acquired at the time of the 1981 interview.

RACE = a binary variable equal to one if the individual is white; zero otherwise.

PROF81 = a binary variable equal to one if the individual is a professional worker; zero otherwise.

- HOM81 = a binary variable equal to one if the worker lives in a self-owned home at the time of the 1981 interview; zero otherwise.
- AGE81 = age of worker at the time of the 1981 interview.
- CHOCUP = a binary variable equal to one if the worker reports a change in occupations between the 1981 and 1982 interview dates; zero otherwise.
- RATIO81 = numbers of months employed by current employer divided by total months of labor market experience.

Each of the above variables was included in the discriminant function to control for those factors that have been found, in previous studies, to significantly affect the decision to migrate. These studies have, in general, established that the probability of migration is closely associated with socioeconomic factors such as income, education and race.

Income serves as a proxy for the opportunity costs associated with transit between jobs located in two different localities. Income also proxies funds available to finance a geographic move. Thus the coefficient for the variable INC81 in the standardized canonical discriminant function (SCDF) could be either positive or negative.

Education has been found to be an important factor affecting the individual's decision to migrate. By being more capable of gathering and processing information about other geographic areas, the better educated have exhibited a higher propensity to migrate, *ceteris paribus* [7, 10]. Thus, the expected sign of the coefficient for EDU81 in the SCDF is positive.

Past studies have concluded that race is a significant factor affecting the worker's decision to migrate. Past research on white/non-white migration rates confirm the higher rates for the white group [8]. Thus, a positive sign is expected for the estimated coefficient of the variable, RACE in the SCDF.

Migration scholars have also identified occupation as an important work force characteristic affecting geographic mobility. Past studies have found professional workers to be more mobile than other workers [7]. It is expected that the sign of the coefficient of the variable PROF81 will be positive in the SCDF.

Personal or family attributes have been determined to influence the migration decision. Migration researchers have concluded that, as expected, family and community ties are important features discouraging geographic mobility. The two variables HOM81 and AGE81 proxy this inertia due to familial factors. Lansing and Mueller [8] reported a negative relationship between the probability of migration and home ownership. And numerous studies have substantiated the negative relationship between age and the probability of migration [5, 14]. Accordingly, the signs of the coefficients for the variables HOM81 and AGE81 are expected to be negative in the SCDF.

Schlottman and Herzog [17] examine the relationship between what they term "career" variables and geographic mobility. Their career variables include a change in occupation and/or a change in industry of employment.

They found that failure to recognize these "career" variables understates the impact of economic factors on the decision to migrate while it overstates the impact of social-psychological attributes. They found a positive and statistically significant relationship between the variable CHOCCUP and the probability of migration. They do not, however, investigate the theoretical underpinnings for these career variables. This research contends that these "career" variables are a function of many labor market variables, one of which is the ratio of specific to general skills proxied in this case by the variable RATIO81.

According to the hypothesis advanced earlier, the sign of the estimated coefficient for the variable RATIO81 should be negative. Little empirical research has been performed investigating the relationship between skill levels and the decision to migrate. Polachek and Horvath [13], using a difference-in-means test, found that those who migrated possessed less tenure with their current employer than the non-mover. This difference was statistically significant at the 99% level of confidence.

However without controlling for past migration, the tenure variable serves simply as a proxy for past migration. And it has been well established that those who have moved in the past are much more likely to move than those who have never moved. It has been contended that those who have moved previously have a greater stock of information about job opportunities in other labor markets and use this information in obtaining a job in another location.

This research provides an alternative explanation for the higher mobility rates for those who have moved previously. Quite likely those who have been more mobile in the past are those same workers who possess a lower ratio of specific skills to general skills. This explanation accords with theoretical notions and does not reduce the variable measuring prior mobility to a residual factor capturing an information phenomenon.

In an effort to separate the impacts of information (as captured by prior mobility variable) and skills (as captured by RATIO81) on the migration decision, it is essential that each variable be rigidly controlled. Accordingly, the empirical analysis which follows will examine the impact the RATIO81 on the migration decision controlling for prior migration experience.

The Data

Data for this study were obtained from the Panel Study of Income Dynamics (PSID) compiled by the Institute for Social Research at the University of Michigan. It provides income, education, age, employment status and many other demographic details for more than 6500 individuals. Additionally, each individual's residence is identified by state and county for each year of the entire sample period, 1968-1982. Use of the PSID data minimizes or eliminates many problems migration researchers encounter with the Public Use Samples generated from decennial censuses. Since yearly data are available, circular moves can be detected and accounted for. Importantly, individual characteristics are known at the time of the move and do not have to be extrapolated from earlier years.

A geographic move was defined as a move that involves a change in geographic residence by BEA region. These regions are defined by the Bureau of Economic Analysis (BEA) and represent clusters of counties which form integrated labor markets. Briefly, these BEA areas encompass Standard Metropolitan Statistical Areas (SMSA's) and surrounding counties to form a local labor market for metropolitan areas. For non-metropolitan areas, counties were combined into BEA areas so that they included both the place of employment as well as residence for most inhabitants.

Additionally this study will examine only the migration behavior of employed members of the work force. The unemployed have been found to be more geographically mobile than the employed. Since the variable RATIO81 for the unemployed workers has a value of zero, it is necessary to exclude the unemployed from the analysis or else the variable RATIO81 becomes simply a proxy variable for employment status.

The next section presents the findings from the empirical tests on the PSID data.

Empirical Findings

Table 1 below presents the differences between migrants and non-migrants on the discriminating variables identified earlier. In order to control for prior mobility experience, only those who were "at risk" to primary¹ migration are included.

Examining the discriminating variables, one finds that, except for income, the mean values of each variable is statistically different according to migration status and the difference is in the predicted direction.

TABLE 1
Difference-In-Means Test Between Migrants and Non-Migrants,
on Discriminating Variables

	Migrants	Non-Migrants
Mean 1981 Income	\$19,092	\$17,927
Mean Education ^a	13.3	12.3
Percent White ^b	75.7%	65.2%
Percent Professional ^c	20.7%	11.9%
Percent of Home Owners ^a	25.7%	60.1%
Mean Age ^a	31.2	35.7
Percent Who Changed Occupations ^c	55.7%	42.1%
Mean Ratio ^c	.75	.94
Number of Observations	82	2389

^aSignificantly different at the 99% level of confidence

^bSignificantly different at the 95% level of confidence

^cSignificantly different at the 90% level of confidence

¹ A worker "at risk" to primary migration is an individual living in his/her state of birth at the time of the 1981 interview. An individual "at risk" to repeat migration is a worker living outside his/her state of birth at the end of the 1981 interview.

Table 2, which follows, presents results from discriminant analysis performed on the sample data set. Each of the discriminant variables enters the standard canonical discriminant function (SCDF) with the expected sign, and the variable of interest, RATIO81, is a statistically significant variable in the determination of group membership (migration). This test of significance measured the amount of centroid separation added by the variable. In terms of relative importance, the variable RATIO81 ranks second in terms of distinguishing migrants from non-migrants (contribution in terms of F-value) and ranks second in terms of relative contribution to the overall discriminant score. In terms of overall prediction power the model classified 96.7% of the cases correctly.

TABLE 2
Standardized and Unstandardized
Canonical Discriminant Function Coefficients

Variable	Standardized ^a	Unstandardized ^b	Significance ^c Level
INC81	.28652	.00003	.98
EDU81	.23068	.08982	.99
RACE	.21535	.44679	.92
PROF81	.16992	.51993	.84
HOM81	-.79823	-1.62623	.99
AGE81	-.21273	-.01871	.87
RATIO81	-.30661	-.31912	.98
CHOCUP	.26497	.53404	.99
CONSTANT		-.27449	

Number of observations = 2471

^aStandardized discriminant function coefficients represent the relative contribution of the associated variable to the discriminant function.

^bUnstandardized discriminant function coefficients are the coefficients used computing the discriminant scores from raw data.

^cA test of significance for a change in Rao's V. This essentially is a test of whether the variable contributes to the separation of groups using a partial F-test.

Thus, the ratio of specific to general skills appears to be an important variable in predicting migration status. As the magnitude of this ratio increases, the probability of migration, as predicted, appears to decline. According to these results, a worker's probability of migration would decline 3.1% for every 10% increase in the ratio of specific to general skills.

Upon examination of the relationship between RATIO81 and prior mobility status, similar results were observed. When discriminant analysis was applied to all data and a variable was inserted to account for prior mobility, it was found that the size of the coefficient for the variable representing prior mobility

(PRIOR) was larger when the variable RATIO81 was absent from the discriminant analysis.² Additionally, the value of RATIO81 for repeat migrants was .8043 while for primary migrants it was .9308. This difference was statistically significant at the 99% level of confidence.

Moreover, in an examination of the relationship between the three variables MIGRAT, PRIOR, and RATIO81, the following partial correlation coefficients were obtained:

Between MIGRAT and RATIO81 (controlling for PRIOR)	=	-.0055
Between MIGRAT and PRIOR (controlling for RATIO81)	=	.0753
Between RATIO81 and PRIOR (controlling for MIGRAT)	=	-.0558
Each of these coefficients possesses the expected sign.		

These coefficients, along with the computations above, show that the primary migrant, as predicted, likely possesses a higher ratio of specific to general skills. In other words, the coefficient for the variable representing prior mobility used in other studies likely overstated repeat movers' propensity to migrate based upon the residual factors of information and risk. As stated by Kau and Sirmans:

Repeat migrants because of experience may have superior knowledge on expected moving costs as well as more efficient techniques in acquiring information and forming accurate expectations of the characteristics of the destination area.

This research has indicated that part of the reason for the higher probability of migration of the repeat migrant is due to their lower level of specific to general skills. With a lower relative investment in specific skills, the repeat migrant likely suffers a relatively lower loss on returns to his/her specific skills investment concurrent with a geographic move.

Conclusions

This research has found that, as expected, a higher ratio of specific to general skills possessed by a worker tends to reduce the probability of migration. Past studies that proposed that the probability of migration was encouraged by the acquisition skills ignored the important distinction between specific skills and general skills. This study demonstrates that migration research must distinguish between these two types of skills in order to more adequately measure the impacts of worker attributes on the decision to migrate.

Moreover this research indicates that past studies that failed to include a variable to account for the level of these skills has likely overstated the impact of prior migration on the decision to migrate. It is asserted that since repeat migrants likely invest relatively less in specific skills and relatively more in general skills, their probability of migration would likely be higher due to this investment pattern, *ceteris paribus*. In this study, due to data limitations, this

² In this discriminant function the variable PRIOR was a binary variable which took on a value of one for those "at risk" for repeat migration; zero otherwise.

final assertion could not be rigorously tested. The tests that were performed, however, lend at least partial support for this proposition and indicate that further research in this area is deserved. However, even accounting for this investment pattern, repeat migrants remain more geographically mobile, indicating that those factors identified in the literature as important determinants of their higher probability of migration are indeed important.

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