Are Married Women Spatially Constrained? A Test of Gender Differentials in Labour Market Outcomes

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Abstract

Numerous studies have shown that females fare less well than males in terms of earnings and occupational attainment, but few acknowledge the role played by differential gender migration patterns. This paper examines the relationship between marital status, spatial migration and various aspects of female labour market outcomes. It builds on the existing literature by analysing the issue for the first time using British data and focuses particularly on the possibility of constrained regional migration resulting in overeducation. Our research utilises the only British dataset - the Social Change and Economic Life Initiative (SCELI) dataset - that permits a direct measure of overeducation. Though there is no indication of differential overeducation our results suggest that as a consequence of regional migration, married females are more likely to experience non-employment and a worsening of their relative earnings.

Key words: regional migration, employment, marriage, gender, overeducation.

INTRODUCTION

The cause of the gender gap in earnings and the disparate occupational distributions between the sexes is a matter of much controversy. One explanation focuses upon the role played by spatial migration and in particular the notion of "tied migration". Here migration for a married female in so far as it is determined by her husband's attempt at earnings maximisation, may act as constraint which has a deleterious effect on her attainment in the labour market both in terms of earnings and employment. The key driving force here is decision making within the family unit, where the interests of a married female within the family are subjugated to those of her spouse. This asymmetry stems from an average married female's lower earnings, lower attained human capital and reduced labour market participation rate relative to those of her spouse.

Though a considerable body of empirical work in the United States confirms that husbands fare better in the labour market than do wives after migration (see for example, Sandell, 1977 and Mincer, 1978) there appear to be no comparable UK studies of this issue. This paper attempts to fill this void by undertaking an empirical examination of the relationship between spatial migration, marital status and labour market outcomes using data from a 1986 British survey, the Social Change and Economic Life Initiative (SCELI).

Three particular issues are examined. First, do married females migrate more or less than unattached females? Second, why do married females migrate and what role is played by the husband's job? Third, what are the consequences for a married female of spatial migration in relation to employment, earnings and the utilisation of education in a particular job? This final aspect of a female's labour market position revolves around the question of whether married females suffer a loss in job level

when they undertake spatial migration, so that they possess more education than is required in their new job. As far as we are aware no studies have tried to ascertain whether spatial migration for married females results in greater overeducation. We are fortunate in this instance, since the SCELI dataset is the only UK dataset allowing one to address this aspect of spatial migration, containing as it does an explicit question on the educational requirements for getting a job.

The remainder of this paper has the following structure. In the next section a brief outline of the previous theoretical and empirical work in this area is provided. The following section describes our dataset and outlines the various measurement and empirical specification issues. The penultimate section discusses our results. A final section offers some concluding comments.

PREVIOUS THEORETICAL AND EMPIRICAL STUDIES

Traditional migration theory portrays migration as an event carried out by individuals in the absence of family considerations (Sjaastad, 1962). Individuals make migration decisions and in turn are affected by their decisions to migrate with other family members either ignored or assumed to follow passively the lead of the head of the household. Through the leverage of one's human capital, migration represents an investment which generates returns in terms of increased productivity and earnings, but also costs (pecuniary and psychic).[1] A migrant in a one-person household weighs up the expected future stream of benefits and costs discounted over time across a range of possible destinations, including the current region of residence, and moves to the region which offers the highest net benefit, if it is not already the current region of residence.

Other theories have placed the household at the centre of decisions to migrate (see for instance, Sandell, 1977 and Mincer, 1978). The basic premise is that family

gain rather than individual gain drives household migration. Family migration is a joint welfare maximising decision, where the objective is to maximise family income with the potential earnings of both partners taken into account.[2] A family, like an individual, chooses to live in the region which provides the highest net benefit and migrates if that area is not the current region of residence.

Within this framework Sandell (1977) and Mincer (1978) posit that the effect of migration on married women in two-income families is to reduce their post-migration labour market status. Crucial here is the distinction between a primary earner and secondary earner in the family. The former is not only pivotal in initiating moves but is also the chief beneficiary of relocation, whereas the latter is the constrained job-searcher. Mincer (1978) argues that husbands are typically the primary earners and wives the secondary earners owing to "their attenuated labour market participation with respect to their husbands", so that they are the ones who typically suffer. Married women are then characterised as "tied movers", in the sense that they move for the benefit of the family and in doing so bear a loss. The implication is that whilst migration is optimal for the family it is sub-optimal for the married female.[3]

The married female's post-move loss can manifest itself in a number of inter-related ways: lower labour market participation; higher unemployment; a loss of earnings and finally overeducation. Though there is now a considerable body of literature on overeducation the gender and spatial aspects of this phenomenon have been relatively unexplored.[4] The only theoretical work is by Frank (1978a and b). He argues that overeducation will be more marked for married women relative to men and single women. The basic premise is that for couples the search for a pair of jobs which will optimise family income will be spatially constrained. Only by chance will both parties maximise their incomes in the same labour market. The husband, being a

primary earner because of his higher stock of aggregate human capital and/or work hours, makes smaller compromises than the wife when changing jobs, resulting in differential overeducation. The penalty suffered by married females because of family constraints is argued to be more acute in smaller destination labour markets. Larger labour markets with higher numbers of vacancies offer the greater chance of both parties maximising their incomes, thereby improving the match for married females and so reducing differential overeducation. Hence, dual earner couples are more likely to concentrate in larger labour markets so as to maximise their opportunities of joint earnings maximisation.

Empirical work is generally supportive of this characterisation of married female migration. Typically migration for married females disrupts married females labour market attachment (Lichter, 1980); increases the chances of unemployment (Mincer, 1978); leads to a loss in earnings or a smaller rise in earnings (Polacheck and Hovarth, 1977; Mincer, 1978; Sandell, 1977; Bartel, 1979); and is likely to result in a decline in the quality of employment, measured in terms of type of job. The empirical evidence with respect to overeducation is mixed. Frank (1978a) shows that overeducation is more common for married women in smaller labour markets with relatively fewer employees. On the other hand, McGoldrick and Robst (1996) find no such relationship.

To draw out the linkages between spatial migration, marriage, earnings and overeducation we present a simple model. The decision making unit is the family and the family endeavours to maximise its joint utility. Only pecuniary benefits associated with work are incorporated. The household's utility is a function of family income, Y_f; the wife's leisure time, L_w; and the husband's leisure time, L_h:

$$U = u(Y_f, L_w, L_h) \qquad (1)$$

The household maximises (1) subject to the usual time and budget constraints. The time constraints for the husband and wife are:

$$N_w + L_w = \overline{T}_w \qquad (2)$$
$$N_h + L_h = \overline{T}_h \qquad (3)$$

with $\overline{T}_w$ and $\overline{T}_h$ the total time available for wife and husband respectively and N_w and N_h the wife's and husband's labour supply. The budget constraint has family income equalling earned income:

$$Y_f = Y_w + Y_h = W_w N_w + W_h N_h \qquad (4)$$

where W_w is the wife's wage and W_h is the husband's wage. Overeducation enters the model via the wage equation. In particular, wages are determined as:

$$W_i = S + k(E - S) \qquad (5)$$

where i = wife or husband, S is years of required education and E is years of attained education. This simple specification posits that the wage is a function not only of the educational requirements of the job (S) but also the extent to which any attained education is utilised in the job *(E-S)*.[5] Where there is a match between required and attained education the earnings equation collapses to a job competition specification with wages a function solely of the job level independent of the workers' educational attainment ($W_i=S$).[6]

An important feature of this specification is that it is able to encompass two stylised facts established in the overeducation literature. It is worth detailing these here. First, the earnings of overeducated workers are generally found to be less than the earnings of those with the same level of education as themselves, but who are in jobs with the required level of education, but more than the earnings of their co-workers who have the required but lower level of education. For example, in a job

that requires 13 years of education, a worker with less (more) than 13 years of education earns less (more) than a worker with the required 13 years of education. Second, the earnings of undereducated workers are more than the earnings of those with the same level of education who work in jobs which require that level of education, but less than the earnings of their co-workers who have the required and higher level of education. For example, a worker having 13 years of education earns more in a job requiring 15 years of education relative to one requiring 13 years of education. However, they earn less than someone who has the required 15 years of education (for more details see Sicherman, 1991).

We can incorporate spatial migration arguments into this model by assuming that there are two regional locations; the current location (0) and all others grouped as one (1). Initially we assume that husband and wife are both perfectly matched in region 0. Earnings for both are determined solely by required education since $S\text{-}E = 0$. Making the further assumption that the husband is in the higher level job (the primary earner) he earns more than his wife. There is a gender wage gap attributable to different job levels.

Family income changes with migration. This means that its budget constraint also changes. If there is a move we have to deduct the costs of moving (C) from total family income:

$$Y_{f1} = Y_{w1} + Y_{h1} = W_{w1} N_{w1} + W_{h1} N_{h1} - C \quad (6)$$

Migration will take place when:

$$G_f = Y_{f1} - Y_{f0} > 0 \qquad (7)$$

here there is a net gain.

Let us assume that the husband is either offered a job (a job transfer from his existing employer) in region 1 or obtains a job in region 1 through his own

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endeavours. Either way the husband instigates the spatial move and obtains a higher level job with concomitant higher educational requirements. In his new job the husband will be undereducated.[7] Undereducation however represents for the husband a favourable match. But how is the husband able to obtain a job for which he is undereducated? The answer lies in another common finding in the overeducation literature that there exists a trade-off between the various components of human capital: formal education, experience and training. The upshot is that the husband is able to obtain this job via his higher experience and training.[8]

It is of course possible that the wife also gains separately and obtains a higher level job ($G_h > 0$ and $G_w > 0$). With her education fixed she also becomes undereducated and thus receives a wage premium over and above someone who is fully utilising their education. Marriage for the female does not then represent an impediment. However, the gender wage gap still exists assuming that there is not a large jump in the married females job level.

The interesting case arises when we consider that the wife may be forced to compromise, at least in the short run, and take a lower level job. Her overall employment or job level declines. The implication is that she is now overeducated. The extent to which this occurs clearly depends on a variety of factors including the size of the new regional labour market. What then is the implication for earnings? For the husband there is as before a gain in earnings ($G_h > 0$). For the overeducated female there is a loss in earnings relative to someone with the same level of education as themselves, but who is in a job with the required level of education. Regional migration still takes place though the wife is now the *tied mover*; the migration makes her worse off but she migrates because the family as a whole gains.

Alternatively, the loss to the female (where she is extremely overeducated) may outweigh the gain to the husband, so that there is no migration ($G_f < 0$). The husband in this case is the tied stayer. He would like to migrate (as he personally gains) but the family as a whole would lose out. Wives could also be "tied-stayers". Here a wife could gain individually through migration though this gain would be dominated by a loss to the husband, so that there is an overall loss to the family. Under these circumstances because wives are secondary earners they are compelled to stay and there is no migration.

To summarise, controlling for life cycle effects three key testable hypotheses emerge from this literature. First, that those with family ties (the married) exhibit less regional moves relative to unattached individuals; second, that wives who migrate on account of their husbands' employment will fare worse in the labour market, at least in the short run; third, that the negative labour market consequences for married females manifest themselves in overeducation, an inability to maintain employment and lower pay.

DATA, MEASUREMENT AND MODELS

Use is made in this study of the Social Change and Economic Life Initiative (SCELI) dataset. This survey covered six British local labour markets, chosen to reflect differing patterns of employment experience. The six local labour markets are the travel to work areas centred around the urban areas of Aberdeen, Coventry, Kirkcaldy, Northampton, Rochdale and Swindon. The survey, conducted between 1986 and 1987, was a random survey of households, involving interviews with the population aged between 20 and 60 and comprising approximately 1,000 individuals in each local labour market.

The dataset contains extensive work and life history information for each of its respondents.[9] Analysis of work histories permits documentation of each 'work history event' chronologically, thus allowing identification of spells in unemployment, length of experience both in terms of tenure in one job and total time in the labour market.[10] A rich array of job characteristics including information on trade union membership, required education, and time to proficiency are also recorded. Sample means of selected variables are given in Table 1.

Part of the life history data is information concerning changes of address since the respondent was fourteen years old – we know the year the respondent moved (though not, unfortunately, the month), and the *'district'* to where they moved. Where more than one change of address occurs within a calendar year, it is the final move that is recorded. We condensed the district information (over 200 values) to obtain *'regions'* (just 22 values).[11] With this information we could ascertain whether or not respondents had changed region (a *'regional migration'*) during each of the calendar years in their adult life.

There is also information on the marital history of each respondent, detailing changes between five marital states – single, married, separated, divorced and widowed. This information was condensed in this analysis to married and not married (single, separated, divorced, widowed). For their marital histories we had both the year and the month of the change. With this marital history information we were able to ascertain the marital status (married versus not married) that predominated for each calendar year in each respondent's adult life.

Taking both pieces of information together, we were able to look through each respondent's adult life, and for each calendar year in that period see if there was a regional migration (yes or no), and what their predominant marital status was in that

year (married or not married). Table 2 provides information on the year of each respondent's most recent regional migration. This is related to each respondent's marital status at the time of their most recent regional migration. In the first instance the figures reveal that married individuals (both males and females) are much more likely to have experienced a regional migration during their entire work histories relative to unattached individuals.

Further insight can be obtained by examining Figures 1 (males) and 2 (females). The data presented here shows the proportion of calendar years during which there was a regional migration.[12] Given the importance of marital status to the present study separate series are shown for married and not married respondents. Furthermore, given the clear link between the "*propensity to migrate*" and the respondent's age (at that point in their adult life) we show the propensity to migrate according to age band. What these figures show is that for the two married groups migration peaks, relative to the unattached, during the early years of one's adult life (age 21-24 range) and before the constraint arising from children appears. In contrast, the peak migration period for single males and females is in the age range 16-20 with a gradual decline from then on.

Information on the motives for migration was obtained from those individuals currently living in the urban area of Aberdeen.[13] The Aberdeen local labour market represents a high wage market, especially for males employed in the oil sector. Female earnings are not particularly high in Aberdeen. Thus single females are less likely to be enticed to Aberdeen relative to single and married males. As such the Aberdeen local economy represents precisely the type of labour market that would exhibit the phenomenon of "trailing wives"; the husband migrates to Aberdeen to obtain a high

oil industry wage (on-shore or off-shore) with the wife having to compromise in the labour market.

A number of reasons for migrating were identified including employer transfer, to secure a job, partner's job, to marry and to take up education. The raw statistics are given in Table 3 and clearly reveal that for men, whether single or married, their own employment drives their migration. For single females the dominant motive for migrating was to take up higher education. For married females migration was tied to their husband's employment; 69% migrated on account of their husband's job. Only 1% of married males migrated on account of their partner's employment.

To test whether these gender differentials hold with the introduction of controls a logit model was estimated. The first two responses (secured a job, employer transfer) were grouped together on the basis that both are related to the individual's own employment. All the other motives were combined. The dependent variable in the logit model is whether respondents moved for their own job (yes/no). A range of explanatory including marital status, age and educational qualifications at the time of the migration are incorporated. The results are discussed in the next section.

Aberdeen respondents were also asked whether their migration to Aberdeen had a deleterious effect on their own employment. The responses are documented in Table 4 and reveal that around 14% of female respondents saw the move as having a negative impact on their own employment. 27% saw it as an advantage. Of those respondents who had given up a job on moving equal percentages (27%) saw it as an advantage and as a disadvantage. Around 42% were indifferent. Thus, these results suggest that migration tied to a husband's employment is not necessarily perceived by females to be disadvantageous to their labour market circumstances.

Two explanations can be put forward. First, it is possible that the enhanced employment and earnings advantages for the husband make it easier for the female tied mover to migrate to Aberdeen even without an individual gain in her earnings. In fact, the gains achieved by the male may be of the magnitude that couples are willing to accept large losses for females and still be better off as a family. Though this is possible, we do not have precise information on this in our data set. Second, even though migrant wives may be of secondary importance in family income the types of skills and education that married females have are likely to be in demand across a range of locations, including Aberdeen. For example, part-time secretarial, nursing and teaching posts. Though these are less well paid than the male jobs the married female is able to accommodate her skills and thus does not perceive a spatial move on account of her husband as disadvantageous to her career.

Further analysis of the consequences of a regional migration on labour market outcomes were conducted using the complete SCELI sample, focusing on overeducation, employment and earnings. Overeducation (and conversely undereducation) is taken to mean a level of educational attainment by workers which is greater than (less than) the educational requirements of their jobs. In SCELI wage and salary workers were asked "if they were applying today, what qualifications, if any, would someone need to get the type of job you have now?" Respondents had a choice of nineteen educational qualifications. Their responses were then used to create a new variable, REQUIRED, with six educational levels. In addition, all wage and salary respondents were asked to state which of these nineteen educational qualifications they had actually obtained. Again a six point scale variable was created (HIGHEDUC). Since, both variables are hierarchical and have the same six point scale a measure of over (under) education can be obtained by subtracting the required

qualifications variable from the actual qualifications variable. This generates an eleven point variable that encompasses an interval of values from -5 for those who have no qualifications but work in a job requiring a university/professional qualification, through to +5 for those who have a university/professional qualification but work in a job requiring no qualifications. Those who are adequately educated, that is they have the qualifications that their job requires, are coded zero.

Our dataset reveals that 31% of individuals are overeducated, 17% undereducated and the majority (52%) have the required level of education at the time of data collection. Mismatch is found to be more prevalent among males, though, this is reflected in higher levels of undereducation as opposed to overeducation relative to females. For males 19% are undereducated, 51% have the required level of education and 30% are overeducated, with the corresponding figures for females being 12%, 56% and 32% respectively.

The probability that a worker with particular characteristics is in a given mismatch category is determined using a multinomial logit model. Two sets of coefficients, β_1 (undereducated) and β_3 (overeducated) are estimated. From these coefficients it is possible to calculate the probability P_{ij} of individual i being undereducated ($j=1$) or overeducated ($j=3$), conditional on a vector of personal characteristics x_i. In our specification x_i includes demographic variables (gender, marital status and children), human capital variables (experience, tenure and time to proficiency), spatial migration variables and dummies for local labour markets. Though the specification is similar to that of McGoldrick and Robst (1996) they try and incorporate the effects of spatial migration by simply including a variable capturing the size of the local labour market. The argument being that a small labour market constrains employment choices open to females and thereby increases their

probability of overeducation. Rather than simply rely on six local labour market dummies our specification includes two interaction dummy terms, married females who have migrated in the last two years (marfmig) and married males who have migrated in the last two years (marmmig).

The implications for employment and earnings were deduced by examining each respondent's change of employment associated with their most recent regional migration. It is possible then to ascertain whether migration for married females results in a loss of employment and a loss in pay. In terms of the former a distinction is made between two states: employment and non-employment where the latter encompasses two further states, out of the labour market and unemployment. A logit model is run with the dependant variable (EMPSTAT) being whether they moved from employment to some other employment (coded one) or out of employment (coded zero). A range of explanatory variables is included, notably gender and age terms, education, public sector and trade union membership. To gauge whether migrants' pay had improved or not after the most recent migration we used a comparison variable where respondents were asked whether they were better paid, paid roughly the same or worse paid. The nature of this variable (PAYCHNG) only allows us to compare adjacent jobs. An ordered logit model was run with a specification similar to that under the employment change equation.

RESULTS AND DISCUSSION

Motives for Migration

The motives for migration for the Aberdeen only sample are modelled as a logit model and the logit estimates are presented in Table 5. The default here is single female. Thus, we find that marriage makes females less likely to migrate on the basis of their

own employment. Relative to single females, males (whether single or married) are more likely to migrate for their own jobs. The lack of a significant result for the male and married interaction term means that married males act in the same way as single males. These results may be related to the nature of the Aberdeen labour market. The predominantly male employment in the oil sector attracts males be they married or single. No such attraction exists for single females; they are less likely to be attracted to Aberdeen for employment.

Age has no discernible relationship with the motives for migrating. Those with professional/university qualifications are more likely to migrate for their own job. This accords with the notion that increased education raises migration since it increases the ability of potential movers to bear the risks of a regional move, and to relocate and vie for distant jobs. It is worth noting the fact that the highest educational qualification (educ5) includes many of the oil industry qualifications that are required to gain entry into the oil industry. This refers not only to the core oil industry jobs but also the support jobs such as financial accountants. In many cases the oil industry will attract qualified individuals from outwith Aberdeen.

Overeducation

The full empirical results are reported in Table 6. The first thing to note is that there exists a trade-off between the various forms of human capital; formal education, experience, tenure and time to proficiency. Therefore, workers might qualify for similar jobs by having different levels of formal education but similar levels of overall human capital. Those individuals with higher experience, tenure and time to proficiency tended to be more undereducated and less overeducated. Individuals with more (less) formal education than required compensate by having less (more)

experience, tenure and time to proficiency. Formal education then represents a substitute for the other forms of human capital investment for the over and undereducated. This is a well established result in the overeducation literature.[14]

Examining the demographic variables, it is clear from our sample that being a male rather than a female certainly raises the probability of being overeducated. This result, however, reflects the fact that the male term is biased because of the inclusion of the experience, tenure and time to proficiency terms in our specification. In other words, the three terms are proxies for male since males tend to have more of all three. In previous work when we excluded these three terms the male coefficient became negative thus indicating that males enjoy relatively more favourable matches than females.

The role of marriage is contingent upon gender. Marriage plays no discernible role in allocating females into our two mismatch categories. For males being married raises the probability of being undereducated. This clearly represents a more advantageous match for the married male and perhaps reflects the greater financial responsibility men bear and therefore a greater need/desire to fully exploit what education they have obtained.

However, it is important to incorporate the effects of regional migration into the analysis. Regional migration appears to have an effect only for males. For married females, regional migration within the previous two years appears not to change the probability of being either overeducated or undereducated. For married males on the other hand, a regional migration within the last two years makes overeducation less likely. That is, they gain from spatial migration.

One argument put forward is that it is not marriage but family size which constrains married females. In particular, the number of dependent children in the

household may be expected to constrain choice whereby females are forced into jobs for which they are overeducated. The results reveal that for females with children (fem kids) the probability of undereducation declines with no discernible impact on overeducation detected. For males with children (mal kids) the probability of being overeducated is reduced.

Being located in a particular local labour market appears, in general, not to be related to mismatch. Exceptions are Rochdale which reduces the probability of undereducation and Aberdeen which raises the probability of overeducation. Two points are in order. First, many of the local labour markets are not distinct geographic areas. The size of the local labour market could be misleading since many of these local labour markets are part of and well integrated within a wider labour market. For example, Rochdale is part of the Manchester conurbation and is hence "larger" than the Aberdeen labour market. Second, what matters is the structure of the local labour market in terms of the type of jobs available and the composition of the workforce. For example, part of the explanation of greater overeducation in Aberdeen has to lie in the fact that this labour market has a higher proportion of graduates relative to the other local labour markets, with 28.7% of Aberdeen wage and salary workers having higher or professional qualifications.[15] Furthermore, the Aberdeen labour market has more workers with O and A level qualifications and much lower numbers with zero qualifications relative to other local labour markets. Though Aberdeen has a superior job profile (in terms of required education) relative to the other localities the profile of its workers (in terms of attained qualifications) is even higher than other localities with the result that it cannot provide its superior workforce with favourable matches to the extent that other local labour markets can.

Most Recent Regional Migration

Next we looked at each respondent's most recent regional migration and the employment changes that were associated with that migration. Respondents that have not migrated during their working lives are excluded from this stage of the analysis. The results of the logit equation are presented in Table 7. We find that males are significantly more likely to remain within employment; this gender difference is reinforced when we consider the effect of marriage - it encourages employment maintenance for males while discouraging it for females. This result provides strong support for the argument that migration is beneficial to married males and detrimental to married females.

In Table 8 we examine changes in pay, estimating this model with an ordered logit. The first thing to note is that men clearly do better than women in terms of pay. The disadvantageous position of females is almost significantly compounded by being married. In particular, married females are less likely to see an improvement in their pay, though the t-statistic of -1.626 indicates that this effect is significant at only 8.9%. Again our results indicate that the benefits of migration accrue largely to males with married females experiencing a wage loss when they migrate.

CONCLUSION

In this paper we have tried to ascertain the combined effects of marriage and spatial migration on labour market outcomes. An individual's employment circumstances are captured in three ways: overeducation; employment and earnings. First, of all we discover that married individuals, be they male or female, experience higher migration rates than those unattached. However, this migration occurs at an early age when married couples typically do not have children. Second, we find that males are much more likely to migrate to Aberdeen for reasons relating to their own employment and

married females are much less likely to do so. For married females other reasons, such as partner's employment, are more important. This is supportive of the view that married female migration patterns are dictated by the husband's employment. Third, and with respect to the benefits of migration we find that married males benefit when they migrate. They are more likely to experience a fall in overeducation and more likely to retain employment. The evidence for married females suggests that they are least likely to retain employment and they tend to lose pay (almost significantly) relative to their single female counterparts.

There is, however, no support for Frank's theory of differential overqualification or overeducation in these results. Married women who migrate are no more likely to be overeducated than single women or non-migrants. Why this is so remains to be determined. Since, however, married female migrants are less likely to move directly into a new job it could be that such females prefer to continue their job search until they find a job at the requisite level of educational requirements and are able to do so because of the improved economic position of their spouse. Given the fact that only a minority of females move geographically and that the decline in pay is only marginally significant it is unlikely that differential overqualification can explain more than a small part of the overall gender earnings differential, though we have not directly tested this hypothesis in this paper.

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Table1. Sample Means

	Combined Sample		Males Only Sample		Females Only Sample	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
UNROVER	0.133	0.678	0.061	0.712	0.203	0.636
male	0.496	0.500				
female and married	0.372	0.483			0.737	0.441
male and married	0.352	0.478	0.711	0.453		
fem kids	0.387	0.791			0.768	0.974
mal kids	0.399	0.837	0.806	1.042		
fmarmig	0.011	0.105			0.022	0.147
mmarmig	0.021	0.142	0.042	0.200		
experience (months)	165.421	113.651	185.922	124.560	145.282	97.736
tenure (months)	63.102	64.937	71.135	72.476	55.210	55.460
timeprof (months)	11.893	14.120	16.222	15.225	7.640	11.450
Aberdeen	0.185	0.388	0.179	0.383	0.190	0.393
Coventry	0.160	0.366	0.175	0.380	0.145	0.352
Kirkcaldy	0.158	0.365	0.157	0.364	0.158	0.365
Northampton	0.164	0.370	0.165	0.371	0.162	0.369
Rochdale	0.168	0.374	0.161	0.367	0.176	0.381

Table 2. The Extent of Regional Migration

	Single Females	Married Females	Single Males	Married Males
1986	34	27	30	18
	(3.51%)	(1.10%)	(3.31%)	(1.01%)
1985	18	51	36	53
	(1.86%)	(2.09%)	(3.97%)	(2.96%)
1984	22	57	25	43
	(2.27%)	(2.33%)	(2.76%)	(2.40%)
1983	23	46	22	33
	(2.37%)	(1.88%)	(2.43%)	(1.84%)
1982	13	36	19	44
	(1.34%)	(1.47%)	(2.09%)	(2.46%)
1981	13	49	18	24
	(1.34%)	(2.00%)	(1.98%)	(1.34%)
1976-1980	79	223	61	179
	(8.14%)	(9.12%)	(6.73%)	(10.01%)
1966-1975	101	364	61	285
	(10.41%)	(14.89%)	(6.73%)	(15.93%)
Prior to 1965	57	256	50	257
	(5.88%)	(10.47%)	(5.51%)	(14.37%)
Never migrated	610	1,335	585	853
	(62.89%)	(54.62%)	(64.50%)	(47.68%)
Total Sample	970	2,444	907	1,789

Table 3. Motives for migrating to Aberdeen by marital status and gender (%)

Marital status at move	Secured a job	Employer transfer	Partner's job	Take-up education	To marry	Other
Single male	9	46	-	26	2	17
Single female	2	22	7	40	10	20
Married male	28	52	1	7	4	8
Married female	-	3	69	11	8	10

Table 4. Effects of move to Aberdeen on employment prospects for female respondents who migrated because of husbands employment

Impact of Migration	Gave up job?				Total	
	Yes		No			
	Number	%	Number	%	Number	%
Advantage	7	26.9	14	26.4	21	26.9
Disadvantage	7	26.9	4	7.5	11	14.1
No difference	11	42.3	24	45.3	35	44.8
Not relevant	1	3.8	10	18.9	11	14.1
Total	26	100	52	100	78	100

Table 5. Logit Regression Results - Motives for migrating (Aberdeen only)

Dependent variable: respondent migrated for reason of own job (=1)
Number of observations = 327
Log likelihood = -121.95798

	Coeff	t-stat
constant	-4.09	-1.673
male	1.44	3.670
female and married	-3.95	-4.794
male and married	0.311	0.601
agethen	0.16	0.945
agethen2	-0.001	-0.683
educ1	0.917	0.695
educ2	0.537	0.613
educ3	0.913	1.575
educ4	-0.219	-0.426
educ5	1.40	2.572

Table 6. Multinomial Logit Estimates: Probability of being over and undereducated (full sample)

Dependent variable = UNDROVER
Number of observations = 3479
Log likelihood = -3321

	Undereducation		Overeducation	
	Coeff	t-stat	Coeff	t-stat
constant	-1.67	-8.152	0.032	0.209
male	0.13	0.645	0.40	2.704
female and married	-0.106	-0.60	-0.009	-0.066
male and married	0.313	1.76	0.089	0.583
fem kids	-0.23	-2.38	0.022	0.393
mal kids	-0.026	-0.38	-0.16	-2.44
fmarmig	0.28	0.504	0.22	0.622
mmarmig	-0.25	-0.78	-0.91	-2.724
experience	0.002	4.84	-0.002	-4.39
tenure	0.001	2.515	-0.004	-6.03
timeprof	0.006	2.054	-0.021	-6.38
aberdeen	-0.24	-1.42	0.33	2.517
coventry	0.030	0.19	-0.113	-0.794
kirkcaldy	-0.25	-1.47	0.014	0.100
northampton	-0.16	-0.99	0.006	0.041
rochdale	-0.367	-2.194	-0.164	-1.193

Table 7. Logit Regression Results - Employment to Employment - Migrants Only

Dependent variable = EMPSTAT
Number of observations=2574
Log likelihood = -598

	Coeff	t-stat
constant	1.80	2.000
male	0.60	2.478
female and married	-0.927	-4.319
male and married	0.671	2.341
agethen	0.0942	1.574
agethen2	-0.001	-1.959
educ1	-0.337	-0.938
educ2	0.176	0.631
educ3	-0.074	-0.325
educ4	-0.173	0.581
educ5	-0.206	0.961
whpublic	0.226	6.286
whunion	0.278	7.827

Table 8. Ordered Logit Regression Results - Pay Changes for Migrants Only

Dependent variable = PAYCHNG
Number of observations = 1353
Log Likelihood = -1225

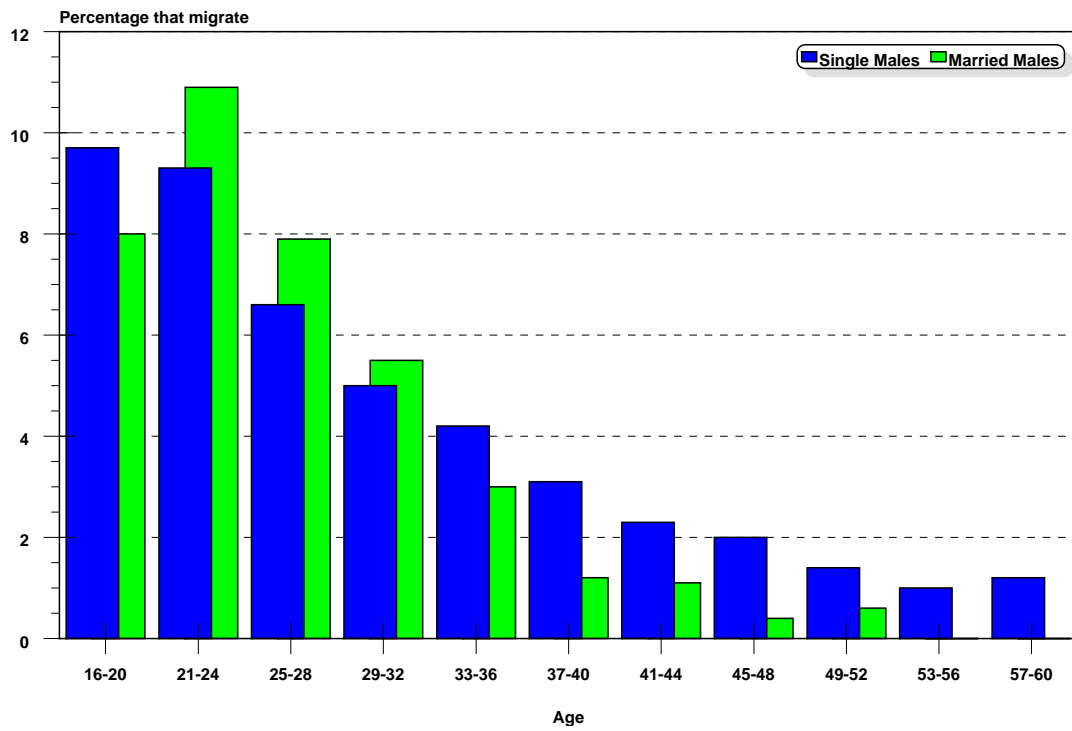|	Coeff	t-stat
male	0.414	2.493
female and married	-0.314	-1.626
male and married	0.058	0.375
agethen	-0.044	-0.881
agethen2	0.0003	0.433
educ1	0.53	1.700
educ2	0.038	0.194
educ3	0.22	1.287
educ4	0.035	0.164
educ5	0.432	2.922
stability	0.068	0.162
tenure	0.014	4.695
whpublic	-0.099	-2.010
whunion	0.088	1.978

Fig.1. Proportion of calendar years during which there was a regional migration for males across age and marital status.
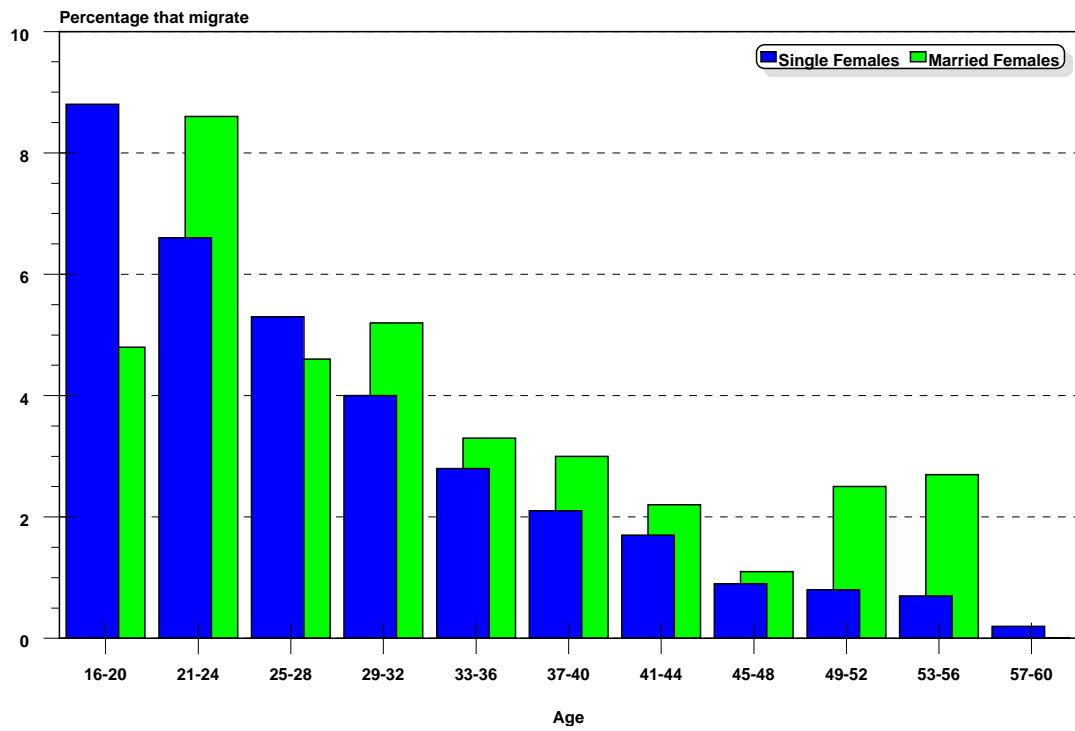
Fig. 2. Proportion of calendar years during which there was a regional migration for females across age and marital status.

APPENDIX

Glossary of Variables

Dependent Variables

UNDROVER	three point variable indicating whether respondent is currently undereducated (coded -1), adequately educated (coded 0) or overeducated (coded 1). This is the dependent variable in the multinomial logit in Table 6.
EMPSTAT	dummy variable indicating whether the respondent was in non-employment (coded 0) or employment (coded 1) after their most recent migration. This is the dependent variable in the logit model in Table 7.
PAYCHNG	three point variable indicating whether respondent saw a decline in their pay (coded -1), no change in their pay (coded 0) or increase in their pay (coded 1) after the most recent migration. This is the dependent variable in the ordered logit in Table 8.

Explanatory Variables

male	a (0,1) dummy for the respondent being male
female and married	a (0,1) female and married interaction dummy
male and married	a (0,1) male and married interaction dummy
mfemmig	married females who migrated that year
mmalmig	married males who migrated that year
marfmig	a (0,1) female, married and migrated in last 2 years interaction dummy
marmmig	a (0,1) male, married and migrated in last 2 years interaction dummy
agethen	age of the respondent at the time of the change in employment.
agethen2	square of agethen at the time of the change in employment or migration

higheduc	highest education qualification on a six point scale
educ1	a (0,1) dummy for the respondent having a basic education qualification (derived from higheduc)
educ2	a (0,1) dummy for the respondent having a trade apprenticeship / commercial qualification (derived from higheduc)
educ3	a (0,1) dummy for the respondent having an O-level or equivalent (derived from higheduc)
educ4	a (0,1) dummy for the respondent having an A-level or equivalent (derived from higheduc)
educ5	a (0,1) dummy for the respondent having a university or professional qualification (derived from higheduc)
required	required education on the same six point scale as higheduc
femkids	female interacted with the number of dependent children
malkids	male interacted with the number of dependent children
stability	Proportion of the respondents working life spent in employment
experience	the total time (in months) that the respondent has been employment (either wage and salary work or self-employment) not including the current job spell
tenure	the time (in months) that the respondent has been employed in the current job
timeprof	the time (in months) that the respondent feels a new employee would take to be able to do their current job
whpublic	a (0,1) dummy for public sector at the time of the change in employment or migration
whunion	a (0,1) dummy for trade union membership status at the time of the change in employment or migration
aberdeen	(0,1) dummy for the respondent currently living in Aberdeen

coventry	(0,1) dummy for the respondent currently living in Coventry
kirkcaldy	(0,1) dummy for the respondent currently living in Kirkcaldy
northampton	(0,1) dummy for the respondent currently living in Northampton
rochdale	(0,1) dummy for the respondent currently living in Rochdale

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NOTES

[1] For a review of the human capital models of migration see Molho (1986).

[2] This assumes a family ruled by a benevolent dictator or a completely altruistic family (Sen, 1983).

[3] Mincer assumes that the entire family moves, ruling out geographically dispersed families. Within the context of internal migration in developed countries this is a reasonable assumption, although within the context of developing countries this may be a less than convincing assumption (Stark, 1991).

[4] For example, in a recent overview of the overeducation literature by Hartog (1997) there is no mention of this aspect of overeducation.

[5] The incorporation of both supply (actual attained education) and demand (required education) variables is in keeping with an assignment model of earnings (Sattinger, 1993).

[6] For details of the job competition model see Thurow (1975).

[7] Alternatively, we may assume that one or both of the husband and wife are overeducated in region 0 and migration for the husband removes the overeducation. A further possibility is that there is a distribution of earnings in each occupation, so that migration could occur in the absence of under or overeducation. For example, all managers may require a degree, but a regional migration may imply promotion to a more senior job. In essence, which of these cases predominates is an empirical issue.

[8] For details see Sloane, Battu and Seaman (1996).

[9] The retrospective nature of the work and life history sections of SCELI may give rise to the possibility of recall bias (Hovarth, 1982). However, Pissarides (1991) suggests that in similar studies in the USA, recall bias may not be a significant problem. Further, the SCELI survey required individuals to reconstruct, in detail, consecutive events within their work histories. Through this process, and with cross-checking made during the interview process, the possibility of recall bias should be minimised.

[10] Excluding time spent unemployed.

[11] The 22 regions are North East & Cumbria; Yorkshire & Humberside; East Midlands; East Anglia; South East; South West; West Midlands; North West; Wales; Grampian; Tayside; Central; Fife; Lothian; Borders; Dumfries & Galloway; Strathclyde; Highlands; Western Isles; Orkney & Shetlands; Northern Ireland; and all others.

[12] In the dataset we have information on each respondent's current age. This ranges from 20 years to 60 years. This allows us to determine each respondents date of birth. Next, we go through their adult work history starting at the calendar year 16 years after their date of birth. Looking at that calendar year, we

find out whether they were married or not (single, separated, divorced, widowed) for the majority of that calendar year. This then determines how we treat them in terms of their marital status. This leaves us with a dataset where there is one observation for each calendar year in each respondent's adult life (141,278 observations). This contains migrate (a 0,1 dummy), agethen (their age during the year in question) and married (a 0,1 dummy). We split the sample up in terms of the respondent's age during the calendar year in question. These ages are grouped, for example, 16 years to 20 years. We then take the average of the migrate dummy. This is the proportion that we report. Thus, if we have a value of 12% (or 0.12) for a particular age band, then this means that 12% of our observations in that age band migrated during that year.

[13] A series of questions was asked of people regarding their *first* migration (after reaching the age of 18) into Aberdeen, which was not necessarily their most recent migration into Aberdeen. These questions were confined to the Aberdeen sample only.

[14] For further details see Sloane, Battu and Seaman, (1997).

[15] This compares with figures of 27.1% (Northampton), 23.2% (Swindon), 18.7% (Coventry), 23.4% (Rochdale) and 20.9% (Kirkcaldy).