

The Effects and Determinants of Training

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This paper is circulated for discussion purposes only and its contents should be considered preliminary.

I. INTRODUCTION

Job training is an important subject for discussion, since the skills on which an economy depends are largely created by the process of training. Various theories, especially the human capital model, have focussed attention on skill acquisition through training as a central determinant of individual economic success. What little empirical literature exists on this subject concentrates almost entirely on the effects of individual, government sponsored, special training programmes for those not currently at work.^{1/} However, the vast majority of training experiences occur whilst the individual is in employment.

This study documents the extent of vocational training, taking place both on and off the job, and examines its effects and determinants. The data source is the National Training Survey (NTS) which provides comprehensive details of the training records of more than 50,000 men and women in Great Britain. (For details see Manpower Services Commission, 1976). This data has previously been analysed for men only by Metcalf and Nickell (1982) and by Nickel (1982).

The aim of this paper is to provide a comparative view of the training experiences of men and women. In particular, we pursue the

^{1/} For examples of analysis of government sponsored training schemes, see Bloch, 1979. For a rare analysis of on-the-job training using U.S. data, see Duncan and Hoffman, 1979.

following questions:

- (i) How much training is received by men and women during their lifetimes and is this training obtained during working hours or after work ?
- (ii) To what extent is training obtained by some types of people rather than others ?
- (iii) What effect does training of a given kind have on the occupational attainment and earnings of an individual ?

Section II of the paper contains a description of the amounts and types of training received by three groups: men, married women and single women. It also contains an overview of the differences between those who do and do not receive training. Section III investigates the probability of training in a ten-year period, using maximum likelihood estimation of a logit model. In Section IV we examine the effects of training on occupational attainment, occupational mobility, and earnings using regression analysis.

In the investigation of occupational attainment and mobility, the ranking of occupations (held at any date) is given by the average male hourly earnings in the occupation in 1975.^{2/} This provides a

^{2/} For details of this ranking, which uses data from the General Household Survey, see Nickell (1982), p.52.

cardinal ranking which is invariant through time and with respect to the proportion of women in the occupation. It follows the procedure adopted by Metcalf and Nickell (1982) and provides a convenient way of decomposing earnings differences into those which are consequent on getting into a higher paying job and those due to higher earnings within the same occupation.

II. TRAINING AND TRAINEES: A DESCRIPTION

In this section we present some descriptive statistics on the amount and types of vocational training received by men and women. We also investigate the extent to which those with training differ from those without training in their occupational status and mobility, earnings and other characteristics. Table 1 presents summary statistics on training pre 1965 and during the ten year period 1965-74. Tables 2 and 3 document the characteristics of those with and without training, whilst Tables 4-6 give further insights into the movements of each group within (or into) the labour market during 1965-75.

Table 1 contains evidence on vocational training obtained before 1965 for three groups: men, married plus widowed/divorced/separated (henceforth W/D/S) women and single (never married) women. For all three groups full-time training was by far the most frequent training experience, but by no means a universal one. By 1965, 57% of men had some full-time training and the percentage of men with such training was 17% higher than that for single women and 20% higher than for married women. Comparatively small proportions of men or women had obtained evening training (6-7%) or part-time training (3-5%). There was very

little difference between the figures for the small sample (who entered before 1965 and were working in 1975) and the large sample A (which in addition includes those not working at the time of interview).^{3/}

However, a slightly higher fraction of the small sample had undertaken training of each kind.

In addition to there being a significantly higher proportion of men with training, men were also likely to have experienced longer durations of training. For full-time training, 34% of men had accumulated more than 52 weeks of training compared with only 11% of married women and 13% of single women. These figures must be seen in the context of the average lengths of time since first occupation, which varied slightly from about 19 years for men to 18 and 16 years for married and single women. Thus training for 1 year represents about 5% or 6% of the individual's working life up to 1965, assuming continuous participation.

Table 1 also documents the amounts of the two most important kinds of vocational training (full-time and evening training) obtained during the ten year period 1965-74. For all men, the proportion receiving training of each type in this period is slightly over half that who had received training by 1965. Thus, nearly 70% of mature men (small sample and large sample A) had received no full-time training for ten years. The figures for large sample B, which includes those entering the labour market during this period, indicate as expected that training of young men was considerably more common; in fact about 64%

^{3/} The "small sample" is the largest on which the analysis of the three variables, occupational mobility and earnings, is possible.

of new male entrants received some full-time training.

For women there are greater differences between single and never married women in the proportions obtaining full-time training during 1965-74 than were evident for training obtained up to 1965. The proportion of single women (small sample) is nearly 90% of the corresponding proportion of men, whilst that for married and W/D/S women is only half that for men. Thus 85% of mature married women who were working at the time of interview had received no full-time training for ten years.

New female entrants were more likely to have experienced full-time training, as indicated by figures for large sample B. In fact, the high proportion of single women with full-time training reflects the fact that the sample size increases far more for this group than for any other, so that new entrants dominate this average. The percentages of married and single women entering during 1965-74 and receiving some full-time training were respectively 41% and 46%. The ratios of these figures to that for men quoted above (64%) are almost identical to the ratios between women and men receiving such training before 1965, indicating no increase over time in the relative amounts of full-time training received by men and women in the early years of their working lives.

As was the case for pre-65 training, the duration of training in 1965-74 varied considerably by sex and marital status. Whereas 13.6% of men had more than three months training and, of these, 7.8% had more than one year's training, the proportions of women achieving the same total duration of training are lower. 9.5% of single women accumulated at least 13 weeks of training and 6.4% had more than one year, but only

4% of married women experienced more than three months of training and, of these, only 2% were trained for one year.

The picture presented by the figures for evening vocational training is very different from that for full-time training. The proportions of women obtaining evening training during 1965-74 are higher than those for pre-1965, especially for working women, and more than twice those for men, for whom the proportions are smaller than pre-65 figures in line with full-time training. For new entrants during 1965-74, the proportions with evening training were .0651 (men), .1734 (married and W/D/S women) and .1573 (single women). Given that evening training is more likely to reflect enterprise and initiative by the employee than is full-time training, these figures suggest that women have recognised the importance of training and their own relative deprivation where full-time training is concerned and have attempted to remedy their lack of training by attending evening classes.

We also investigated training spell frequencies for the largest samples for which data were available, which include both workers and non-participants of all ages (sample sizes: 23,329; 21,194; 3,642 respectively). The proportion of single women with one or more spells of vocational training during 1965-74 slightly exceeds that of all men. However, despite the efforts to obtain evening training by working women, 73% of married women did not receive any vocational training over the period. Of those women, married or single, who did obtain at least one spell of training, 50% had only one spell, whereas two thirds of men who trained had more than one spell. This represents further evidence of the relative infrequency of vocational training experiences for women.

We now move on to consider the extent to which those who undertook some training were more successful than those who did not. Table 2 contains the mean values of occupational status in 1975, occupational mobility over the period 1965-75 and weekly earnings for those with and without full-time and evening training over the ten year period for those entering their first occupation before 1965. For all groups and both types of training, those with training had a higher mean occupational status in 1975. This did not only (or always) reflect greater occupational mobility between 1965 and 1974.^{4/} In all cases except one (married women, full-time training) occupational status was already higher by 1965 for those who trained during 1965-74. Nevertheless, for all groups except one (single women, evening training), training was associated with an extra 5-6% increase in occupational status over that experienced by those without training. For married women without training there was virtually no occupational advancement, whereas men without training enjoyed an average upward mobility of 4-6%. Single women without training were slightly less upwardly mobile than the corresponding group of men. Whilst full-time training by single women was associated with an increase in occupational mobility similar to those of other groups, single women with evening training surprisingly fared less well than those without such training.

As might be expected given their higher occupational status in 1975, those with training who were currently working had higher earnings than those without, this being true for both types of training and all

^{4/} For a more detailed discussion of occupational mobility, see Greenhalgh and Stewart (1982).

groups. For men, and for women in the case of evening training, the earnings differentials roughly correspond in percentage terms to the occupational status differentials. However, for both married and single women, the earnings differentials for those with full-time training are very much higher than the status differentials, indicating that these individuals receive higher weekly earnings within occupations. In the case of married women, there is a 27% differential in earnings, compared with a 6% differential in occupational status. We shall see below that this is partly the result of variations in hours of work, but not entirely so.

Another factor which is likely to contribute to the higher earnings and occupational status of those with training is their higher average school leaving age. Married women with and without full-time training show the smallest differences in schooling, with 70% of those with training having left school at age 15 or less, compared with 74% of those without training. For all the other comparisons, the proportion of those with training who left at 15 or below ranges from 8% to 24% lower than for non-trainers.

For the large sample A, used mainly in Table 2, single women are only 2-3 years younger on average than the other groups, but they have a significantly higher average school leaving age than men or married women. In addition there is considerable differentiation between those with and without training, leading to relatively high proportions of single women with training having left school at 17 or more. Table 2 also illustrates the extent to which those who train are younger than those who do not, the difference being more marked for

causing temporary withdrawal from the labour market. There is also the possibility that more highly trained married women have husbands who are also skilled and receive salaries which rise with age, causing their wives to withdraw their labour. We are not able to test these hypotheses since the data set does not provide details of dates of childbirth or husband's income.

For all three groups: men, married and single women, the upward mobility of those with training who began the period in the lowest occupations (38-70p) is extremely high, whereas 60-65% of those without training who started at this level were still there in 1975. Also, for all groups, those not in the labour force or long-term unemployed in 1965 are much less likely to be in these states by 1975 if they received training during the intervening period. This occurred despite rising unemployment rates for all groups and decreasing labour force participation rates for men and single women.

III. WHO TRAINS ?

In this section we examine the determinants of individual training. We will concentrate on training undertaken during the period 1965-74, so that we have information on the occupational position at the start of the period which, as we saw in Section II, is likely to be a relevant factor. We will examine separately the determinants of full-time and evening training. Table 2 indicates that age, occupational status at the start of the period and education, are all correlated with whether or not an individual trains. These are all included in our determinants of training equation together with marital status, the number of children and racial origins. For all variables the observed

effects are likely to represent a combination of supply and demand forces. The variables analysed are binary, indicating whether or not training of the given type was received. An appropriate model in these circumstances is the logit model and maximum likelihood estimates of the parameters in such a model are presented in this section.

We first consider the determinants of full-time training during the period. Table 6 presents logit estimates of the probability of full-time training for males, married females and single females. The marginal effect of any variable in the logit model (i.e. the estimate of the partial derivative with respect to that variable) is given by $\beta_i p(1-p)$, where β is the logit coefficient on the particular variable and p is the probability of training. Hence, the marginal effects are not constant. Simple but useful summary statistics can be obtained by evaluating these effects at the mean probability in the sample. These marginal effects at the mean are given in Table 6, in the third column for each group.

Perhaps the most striking difference between the results for married women and the other two groups is the coefficient on occupational position at the start of the ten year period. This is positive for men and single women, but negative for married women. For men and single women it is those who were previously in the higher jobs who are more likely to undertake training, whilst for married women it is those who were previously in the lower jobs. A doubling of 1965 occupational wage induces an increase of 8.9 percentage points in the probability of training for men and 9.6 for single women, while inducing a decrease of 3.4 percentage points for married women (all evaluated at the mean). Since the mean probabilities of training differ substantially for men

and married women, it is useful to express these effects in terms of estimated elasticities and these are presented for selected variables in Table 7. We can see that the doubling of 1965 occupational wage considered above increases the probability of training by 45% for men and 61% for single women, while decreasing that for married women by 39%.

In Table 8 we present the predicted probabilities of training for the person with a "basic set of characteristics" and for deviations from this basic set. The "basic person" chosen is aged 45 (the mean for men), was in an occupation in 1965 whose value on our scale is 93p/hour (the geometric mean for men), is married but has no children, is white and has no educational qualifications at the start of the period. The predicted probability of undertaking full-time training during the period 1965-74 for a person with such characteristics is .2713 if male and .1154 if female. Returning to the effect of 1965 occupational position, we can see from Table 8 that, whilst for the basic person (in a 93p/hour occupation), the male probability is about $2\frac{1}{3}$ times the female, for the person alike in all respects except being in a 60p/hour occupation in 1965, it is about $1\frac{1}{2}$ times and, for a 125p/hour occupation, it is about 3 times.

As predicted by economic theory, the probability of undertaking training declines with age for all three groups. In fact age has a stronger effect on the probability of training than any other variable in the equation. Each additional year of age reduces the probability of training by 6% in the case of men and single women and by 7% for married women. In fact the non-linearity of the logit model means that this understates the estimated impact for larger age differences. The probability of training if aged 30 in 1965 is, ceteris paribus, nearly

six times greater than that if aged 60 in the case of men, over six times in the case of single women and in excess of seven times as great in the case of married women.

The racial effect is of opposite sign for men and married women and is insignificant in the case of single women. Non-white males are, ceteris paribus, less likely to undertake training than white males, the difference in probability being about .05. Non-white married women, on the other hand, are more likely to train by about .12. Studies of labour supply generally show higher participation rates for black women and lower rates for black men when compared to whites. The findings for full-time training are consistent with greater and lesser involvement in the labour market by these respective groups of non-whites.

Single men are, ceteris paribus, less likely to train than married men. The difference in probability is about .09. The widowed, divorced and separated fall between the two in terms of probability. Single women, on the other hand, are ceteris paribus more likely to train than married women in the case when the remaining characteristics are as in the basic set, the difference in probability here being about .07. Again the effect for the widowed, divorced and separated falls between that for the single and the married.

The presence of children in the household reduces the probability of training for all three groups. It should be noted that, in the case of single women, the children are likely to be siblings in most cases, rather than their own, and it is interesting to see that they still have a negative impact on the probability of training. For both men and married women, two young children (aged 0 to 10 in the middle of

the period 1965-74) reduce the probability of training by about .06, ceteris paribus, although this represents a much greater proportional reduction for married women than for men since in this case men are nearly four times as likely to train as women.

Men who already have some qualifications in 1965 are more likely to undertake training in the following ten years than those without, unless they have nursing or teaching qualifications (presumably mainly the latter). This suggests that the majority of male teachers have done as much full-time vocational training as they are going to do before 1965. By contrast, the possession of a nursing or teaching qualification by women (married or single) does increase the probability of full-time training during the period and, for single women, it is the only group of qualifications that has a positive effect. In the case of married women, all except degree-level qualifications are significant and all but one have positive effects. The interesting exception is that those with clerical or commercial qualifications or lower grade CSE's as their highest qualification have a lower probability, ceteris paribus, of undertaking full-time vocational training during the period than those with no qualification at all. This presumably reflects the types of jobs that the two groups enter. Those in clerical and secretarial jobs tend not to undertake additional training after their initial training.

We now turn our attention to the determinants of evening training. Table 9 presents estimates of the logit model for men and married women. However, the results for single females are not based on the logit model. The likelihood maximisation routine could not be persuaded to converge

despite using various starting values. The combination of small cell sizes and collinearity between the variables appears to make the likelihood surface somewhat irregular. OLS estimates are presented instead, but should be treated with some caution for the reasons mentioned above. The elasticities and predicted probabilities using Table 9 are presented in Tables 7 and 8 above.

Unlike the case of full-time training, occupational position at the start of the ten year period has a positive effect on the probability of married women undertaking evening training. The elasticity for married women is almost as large as that for men. The impact of age is slightly less negative than that on full-time training, but it is still highly significant and a major determinant. The racial differences, however, are insignificant for all three groups.

Unlike full-time training, women are, ceteris paribus, more likely to undertake evening training than men: more than twice as likely in the case of the person with the basic set of characteristics. Another difference from the full-time results is the increased importance of the higher qualifications. Those with 'A' level or equivalent as their highest qualification in 1965, for example, are more than twice as likely, ceteris paribus, to undertake evening training during the period in the case of men and the effect for married women is almost as large. Married women with a nursing or teaching qualification as their highest qualification in 1965, but otherwise having the basic set of characteristics, have a probability of .1318 of undertaking evening training during the following 10 years, over 2½ times that for those with no qualifications. In the case of men the difference is even wider, the estimated probability being .1270, over five times that for those with no qualifications in 1965.

Comparing the predicted probabilities of evening training for men and married women, we observe a very different position from that for full-time training. The probability of undertaking such training for a man with the basic set of characteristics is less than half that for a comparable married woman. This compares with men being $2\frac{1}{3}$ times as likely in the case of full-time training. The age effect on evening training is slightly greater for men than for married women (Table 7), which is the opposite of the relative position for full-time training. The effect of children on the probability of evening training also differs from that on full-time training, being roughly equal for men and married women.

The results of the logit model, which estimates a reduced form of the supply of and demand for training relevant to particular individuals, thus confirm and elucidate the impression gained from the descriptive statistics for those with and without training. We now turn to a detailed analysis of the effects of this training.

IV. THE EFFECTS OF TRAINING

We saw in Section II that those with training generally attained higher occupational status and earnings than those without; and also that the two groups differed in a number of characteristics known to be correlated with economic success. This section therefore proceeds to examine the ceteris paribus effects of various amounts and types of training on occupational attainment, occupational progress and earnings. The main dependent variables used are occupational status and earnings. The measure of occupational attainment used was derived by ranking

occupations by the average male hourly earnings within the occupation.^{6/}
 This ranking is only a measure of status to the extent that status is correlated with average hourly pay. However it does avoid some of the weaknesses of "status" rankings and provides a useful adjunct to the analysis of male-female earnings differences, differences in occupational attainment providing part of the explanation, the remainder being due to differences in men's and women's earnings within each occupational group. The two equations using this dependent variable differ in that the second looks at occupational attainment in 1975 conditional on the individual's position in 1965, whilst the first is unconditional.

The earnings variable used in the third equation is derived from the National Training Survey data, which recorded only into which of ten groups an individual's earnings fall. It is used, as proposed by Stewart (1982), by fitting a lognormal distribution to each of the sample distributions of earnings (for men, married women, single women) and constructing the conditional expectation of earnings for each group as the dependent variable. This provides a simple and convenient one-step estimator which, as Stewart (1982) demonstrates, is a good approximation to the Maximum Likelihood estimator and considerably better than the more ad hoc possibilities such as using midpoints. The loss of information due to the grouping is not great.

As is well known, models relating earnings (or occupational

^{6/} This procedure follows work for men only by Metcalf and Nickell (1982), Nickell (1982), using the National Training Survey data. The data for this ranking were from the General Household Survey, 1975, which contains more details of earnings and hours of work than the National Training Survey.

status) to a set of labour market characteristics present problems for estimation, due to the possibility that some omitted variables, such as innate ability, are correlated with included variables, such as years of schooling, leading to biases in the estimated returns to particular characteristics. In order to circumvent these problems, given data on two or more points in the individual's lifetime, it is possible to specify a 'fixed effects' model in which the unobservable error is partitioned into an individual effect (assumed to be constant or to vary through time in a specified fashion) and a random effect. This model can be estimated using first differences, or an appropriate transformation of the variables, to yield unbiased estimates.

The problem with the latter model is that differencing eliminates the initial effects of characteristics which have not changed over the period and leaves only the continuing effect. Thus, if those with extra schooling start out in better jobs than those without, this element of the returns to schooling is lost and the model only estimates the extent to which the lifetime profiles of the two groups diverge.

Since very little is known about the relationship between occupational status and individual characteristics by sex, we present below estimates of equations using occupational status and earnings as dependent variables, recognising that in some instances the private rates of return to acquiring a certain characteristic may be overstated if there is a positive correlation across the sample between ability and possession of the characteristic.

For some comparisons between men and women, these 'biased' estimates are relevant for assessing social rates of return. For

example, we saw above that single women are less likely to receive full-time training than men. If single women were found to have higher 'returns' to such training than men, reflecting their higher average ability and the fact that the market does not automatically reach equilibrium on margins involving comparisons between the sexes, society would gain by training more single women and less men. Unbiased estimates of the returns to training men and women of given ability level would not highlight this misallocation of resources.

As well as the occupational status and earnings equations, we also estimate an equation for occupational progress, which uses occupational status (in 1975) as the dependent variable and includes occupation at a previous point in time (1965) as a right-hand-side variable. This general model incorporates as nested hypotheses the simple fixed effects model which leads to a difference equation formulation and a model in which errors are serially correlated but no part of the error is fixed (see Appendix). For variables which do not change between the points of observation, there are some difficulties in the interpretation of the coefficients, but for characteristics acquired after 1965, such as recent training, these coefficients represent the true effects (again see Appendix).

By comparing coefficients from the earnings and occupational attainment equations, we are able to partition the effects of, say, training on earnings into the effects on occupational attainment and the

"within occupation" effects.^{7/} To facilitate these comparisons we adopt the same specification for the independent variables included in the occupational status and earnings equations and this specification is identical for all three groups: men, married plus W/D/S women and single women. This means that compromises had to be made regarding variables which are more appropriate for one group than for others, such as hours worked by married women. In another paper (Stewart and Greenhalgh, 1982) the work history patterns and current working hours of married women are examined in greater detail and appropriate modifications are made to the regression equations to take account of characteristics unique to this group. We shall indicate below any instances where the findings of that paper shed further light on the results presented here.

The use of the various dependent variables and our desire to compare coefficients across equations also means that the equations must be estimated initially on a compatible, and therefore restricted, sample (referred to above as the small sample). As noted above, this small sample is restricted to those who had an occupational status in 1965. This is obviously necessary to estimate the occupational progress equation. There is thus an implicit age restriction on the sample with, amongst others, all those under 25 years of age in 1975 being omitted. We will examine in Section IV.2 whether the conclusions for the other two equations need to be modified when those with less than 10 years potential experience are included in the sample (large sample B).

^{7/} Although we talk about the effects of training, a strict temporal ordering is not necessarily implied. In some cases the start of training and mobility may coincide in time (e.g. promotion on the condition that training is undertaken). However, in such cases the mobility would not occur without the accompanying training and hence the implied causality is intentional.

Secondly the small sample is restricted to those currently earning. This is clearly necessary for the estimation of the earnings equation but is not required for the occupational equations. Thirdly, those who refused to answer the earnings question were omitted from the small sample. We will also examine below whether the conclusions for the occupational equations need to be modified when those without a recorded earnings variable for either of these reasons are included in the sample (large sample A).

As regards the explanatory variables in the equations, two separate approaches are adopted. The first of these, which will be referred to as the basic equation, is a straightforward augmented human capital model. In the standard human capital framework, earnings and occupational status are functions of education and experience.^{8/} The experience profile is represented in this paper by a quadratic and the education effects by six dummy variables for age left full-time education. The former is standard and the latter is adopted to allow the returns to different years of education to differ.

Since our aim here is direct estimation of the effects of post-education training, this formulation is then augmented in the following way. We distinguish between the training undertaken and the qualifications obtained since leaving full-time education (if any). These qualifications are represented by seven dummy variables and the grouping of the qualifications is given in, for example, Table 10. The impacts of five types of training are examined: recent full-time training (1965-

^{8/} For some married women the actual number of years of labour market experience will differ from the conventional measure due to labour market interruptions. See Greenhalgh and Stewart (1982) for discussion of this topic.

74), recent evening training (1965-74), earlier full-time training (pre-1965), pre-1965 part-time training and pre-1965 evening training. In each case we use dummy variables according to the number of weeks of training undertaken.

This approach has several advantages. Firstly, it does not impose an equal return to the training irrespective of duration and no return to additional weeks, as would the use of single dummy variables. Secondly, it does not impose an equal increment to the return for each additional week of training, as would the use of a continuous weeks variable. Finally, by using a "missing weeks" category, we can obtain a solution to the problem of how to treat those cases in which training of a specified type was undertaken but the duration was not recorded.^{9/} As one would expect, this is more prevalent for pre-1965 training than for that undertaken since 1965.

To summarise, our basic (human capital) formulation contains variables to represent years of (potential) experience, age at which left full-time education, qualifications obtained since leaving full-time education, and weeks of various types of training undertaken. Equations of this form are then estimated separately for males and for married and single females. In the equations for men and married women a further dummy variable is included to represent the widowed, divorced and separated and, in the male equation, another to differentiate married from single men.

^{9/} Alternative solutions to the problem might be to omit such cases, or to arbitrarily impose some number of weeks for the unrecorded durations. Both of these solutions may impose biases of unknown magnitudes.

There are clearly a number of different ways in which this basic equation could have been formulated. To check the sensitivity of our conclusions to the particular formulation chosen for the basic model, two modified versions, thought to be the most important alternative formulations, were also estimated. The first modification concerns the measurement of the amount of full-time education received. "Education" has been measured in the main specification by age on completion (roughly speaking the input to the education process). An alternative is to measure it by the highest qualification obtained whilst in full-time education (roughly speaking the output from the education process). This alternative is used in the first modified version of the basic equation.

The second modification concerns the specification of the training variables themselves. An alternative, already mentioned, is to use for each category an incidence (dummy) variable and a duration (continuous) variable. The second modified version of the basic equation uses this alternative. This revives the problem of how to treat those cases in which training was undertaken but of unknown duration. It was decided to omit these cases from the samples used for the estimation of the second modified version.

These modified versions of the basic equation have been estimated in all cases with a view to examination of the sensitivity of our results to the specification chosen. For simplicity the results for these modified versions are not presented in full in addition to the chosen formulation (which would result in a trebling of the number of tables in this section). Their important features will be mentioned

and compared in the text as the main results are discussed.

A final point concerning the specification of the basic equation is that the occupational progress equations (1975 position conditional on that in 1965) contain two additional variables to represent the difference between desired training (either on the part of the employee or the employer) and the amount of training actually undertaken. The first dummy variable indicates those individuals who had been unsuccessful in an attempt to obtain training during the period 1965-74, whilst the second indicates those individuals who had turned down an offer of training during the period 1965-74. This investigates whether these individuals were disadvantaged by their own (or their employer's) decision.

The basic (human capital) equation represents our first approach to the estimation of the effects of training. A criticism that might be levelled against this approach is that, whilst it (and the various modifications examined) represents an adequate modelling of the main influences that need to be standardised for when attempting to estimate the effects of training, there are many other variables that are relevant to the occupation and earnings determination process that have not been included. For the present purposes this is only important if some of these additional factors are correlated with training. To investigate this possibility an extended equation is estimated based on a more eclectic approach to the process behind earnings and occupational attainment. Variables representing a number of alternative theories are added to the basic equation. These include family variables, school-type variables, past unemployment and sickness, reason for leaving first occupation and country of birth variables. Results for this equation will be presented and discussed in Section IV.3.

IV.1 The Effects of Training in the Compatible Sample

This section examines the effects of training in the compatible (small) sample using the basic equation. The results are presented in Tables 10 to 12. Table 10 gives the results for occupational attainment, Table 11 for 1975 position conditional on that in 1965, and Table 12 those for earnings. In examining these results, it should be remembered throughout that any qualifications obtained as a result of the training are included as separate variables and thus there is a two-fold effect to consider for any training occurrence with a formal qualification at the end of it.

We consider the results for occupational status first (Table 10). The experience profiles are as expected: they rise in the early part of the working life and reach a peak with about 25-30 years of experience. Those for males and married females are very similar in shape (but not intercept) while that for single women is much steeper in early working life than the other two. Thus, ceteris paribus, the gap between men and single women narrows with experience. This may represent a learning process on the part of employers as they distinguish women who are not going to have families from those who are.

In considering the results for age at which left full time education, it should be remembered that this sample does not contain anyone under 25 years of age in 1975 and hence the appropriate minimum compulsory school leaving age faced by all those in the sample was 15 or less. Thus, leaving full-time education at 16 represents post-compulsory schooling. All six dummy variables are highly significant for all three

groups and the indicated returns make interesting reading.

For men, those who left at 16 achieve a position, ceteris paribus, about 19% above those who left at 15 or below. Those who left at 17 get slightly higher and those at 18 slightly higher again: about 32% above those who left at 15 or below. However, then the returns remain constant: those who left at 19 or 20 reach, other things being equal, similar occupational levels to those who left at 18. It is not until we get to those who completed full-time education at 21 or above that we see another jump (of about 19%). They reach a level, other things being equal, some 57% above those who left at 15 or below. This seems intuitively reasonable: once 18 has been reached ('A' levels or similar), the next major barrier is 21 (Degree, HNC/HND or similar) as far as type of occupation then entered is concerned. Many of those leaving full-time education at 19 or 20 will be those who embarked on, but did not finish, a longer course.

Before looking at the results for women, it is interesting to note that the alternative formulation of the basic equation that uses qualifications obtained instead of leaving age, tells a very similar story. For men, again the return to 'O' levels or equivalent is about 20%, whilst those with 'A' levels or equivalent reach levels about 27% above those without any qualifications, other things being equal. Those with HNC/HND or equivalent reach about 53% above and those with a degree reach about 64% above those without qualifications. Thus there is a strong numerical correspondence with the leaving-age results.

Turning our attention to the leaving-age results for women given in Table 10, the pattern for single women is similar to that for men in as

far as the main jumps appear to be the initial one at 16 and those at 18 and 21. However, the magnitudes are generally smaller than those for men. The return to leaving at 16 is 19% as for men, but those who leave at 21 or above reach a level about 34% above those who left at 15 or below, compared with a differential of 57% for men. Married women leaving at 16, 17 or 18 obtain slightly smaller returns than single women, but a major difference exhibited by the results for married women is that they do experience sizeable returns to leaving at 19 and 20, as well as at 21. Married women leaving at 21 reach a level 64% above those leaving at 15 or below.

We next consider the effects of training of different durations. It should be remembered that these durations refer to the total weeks accumulated within the relevant period, not necessarily to a single continuous spell. Men with full-time training during the period 1965-74 achieve a position, ceteris paribus, about 7% above those without (computed as the weighted average over duration categories) and there does not appear to be a significant extra return to additional weeks of training above 4. Married women experience a weighted average return of about 5%; returns are lower than this for more than 13 weeks and training over a year in duration carries an insignificant return. Single women experience a much higher return, on average about 10%, but again durations above a year provide an insignificant return. It must be remembered, of course, that these returns are for training that does not end in a formal qualification. A training occurrence that does will provide (in general) a higher differential. This may be the reason for the insignificant returns for women from durations over 12 months. It is likely to be just such training spells that result in the obtaining of qualifications at the end.

The results obtained from the alternative formulation of the basic equation, using incidence and duration variables in place of the weeks dummies, provide a very similar picture for all types of training. We will quote just one set for comparison, those for full-time training during the period 1965-74. Men have an estimated incidence effect of 7% and an insignificant duration effect, while married women have an incidence effect of 6% and a significantly negative duration effect, giving a decline of about 2% per 52 weeks. Single women have an incidence effect of 14% and an insignificant duration effect. Hence, in all three cases, the results for recent full-time training are similar from the two formulations. Thus, despite the lower proportions of women receiving full-time training, the returns for single women are above the other groups and the returns for married women are slightly below those for men.

Turning now to the full-time training received longer ago (pre 1965), the picture is somewhat different. For men the shorter durations no longer have a significant impact, whilst those over a year provide a return of about 7%, which is similar to the 'post 1965' return. For married women also, the impact of the shorter durations is insignificant, whilst for durations over a year, it is significantly negative. Again the reason for this may well lie in the fact that this is net of the effect of any formal qualification obtained. Finally, for single women, all are insignificant (the coefficient on "missing weeks" may be disregarded, being based on an extremely small cell).

The relative magnitudes for the three groups of the returns to evening training during the period 1965-74 differ somewhat from those for full-time training during that period. Firstly, the weeks pattern

is extremely different. For all three groups 4 weeks or less provides no significant return. For men, only durations in excess of a year have a significant impact - about 6%, giving a weighted average effect of 4%. For married women, however, all except the shortest accumulations have a significant impact and the average effect is about 7%. For single women the return to longer durations is about 14%, and the weighted average return is 12%. Thus the observed smaller proportion of men taking evening training is compatible with them having recognised the lack of returns to short durations.

The effects of pre-1965 evening training are very similar to those for more recent training of this type for both men and married women. However, for single women all coefficients are insignificant. In the case of day release training pre 1965, all the coefficients are insignificant for both groups of women, whilst for men the shorter spells carry no significant return but the longer ones have an effect of 7-10%. None of the above findings on the effects of training are altered when the modified specification of the basic equation using highest qualification obtained in place of age on completion of full-time education is estimated.

We now turn our attention to the additional impact of any formal qualifications that may be obtained from these spells of training. For single women all except a degree are insignificant and that carries a differential of 31%. Married women have a similar return to a degree and, whilst other qualifications are significant, this is the highest return. However, for men the return to a degree is only 18%, whereas HND/HND or similar is the highest at 30%. For married women the return

the HNC/HND or similar is only 12%. The other main difference between the groups concerns the return to clerical or commercial qualifications which is 20% for men, but only 7% for married women.

As mentioned previously, there is a two-fold effect to consider for a training course with a formal qualification at the end of it. So far we have only looked at these effects separately. It is instructive to consider the joint effects also. We will do this by way of a couple of illustrations. Firstly, consider a full-time course of duration in excess of a year, undertaken during the period 1965-74 and resulting in the City & Guilds Full Technical Certificate. By combining the relevant estimated coefficients in Table 1, we find that the return to such training for men would be 23%, while for married women it would be 15%, about two-thirds as much. As a second illustration, consider a 6-month evening course undertaken in the last 10 years and resulting in some form of clerical or commercial qualification. In this case the estimated returns would be 25% for men and 19% for married women, higher for both than in the first example and with the return for married women about three-quarters that for men. Other combinations can be examined according to the reader's fancy.

Finally, from Table 10, it is interesting to note that married men attain an occupational position some 5% above single men on average. The position of the widowed, divorced and separated lies roughly half way between the two, but is statistically not significantly different from either. The position of widowed, divorced and separated women is also not significantly different from their married counterparts.

Table 11 presents the results for the analysis of occupational progress. It is useful to note for purposes of interpretation that an equation with the change in occupational status between 1965 and 1975 as dependent variable and the same explanatory variables would produce identical estimated coefficients on all variables except 1965 position, on which the estimated coefficient would be less by exactly 1. The fact that for all three groups this coefficient would then be negative, is an indication of "regression towards the mean" in the process of occupational progress for each group.

It can be seen from Table 11 that 1965 occupational position has less influence, ceteris paribus, on that reached in 1975 for married women than for single women and men. This is due in part to the interruptions to labour market experience that some of that group will have had during the intervening years. However, this is far from being the full explanation for the difference: when variables are included to represent these interruptions, this difference still remains (see Stewart and Greenhalgh, 1982).

Significant coefficients in Table 11 on variables representing training pre-1965, indicate an effect longer lasting than their immediate impact. For single women none of the coefficients are significant, whilst for married women evening training has such an effect. In the case of men, evening training does not have a lasting effect, but part time training does; whilst full-time training has some negative coefficients, but all are small in magnitude.

Turning our attention to training during the period 1965-74, the interpretation is somewhat different. Looking at full-time training first, we saw in Table 10 that men with full-time training during the

period will have reached a position in 1975 on average 7% higher, other things (excluding 1965 position) being equal, than those without. However, those who undertook training during the period started out higher on the occupational scale (see discussion in Section 11) and we can see from Table II that their advantage given 1965 position is only about 4%. There is a similar decline in the effect for single women (from 10% to 7%) and we saw in Section III that, for both these groups, the probability of full-time training during the period 1965-74 increases with 1965 position. However, this is not the case with married women. In fact the reverse is true; the probability decreases with 1965 position. We can see in Table 11 that the coefficients for married women have increased very slightly, but not appreciably: the return given 1965 position is still roughly 5% on average and is now higher for married women than for men.

In the case of evening training, the effects for men and single women are reduced to 1% and 3% respectively. This is supported by Section III, where it was shown that the probability of evening training during the period 1965-74 increases with 1965 position for these two groups. This was also true for married women: however the reductions in their coefficients in Table 11 are negligible (from 7% to 6%). It is interesting to note that, for both types of recent training, the results for married women given 1965 positions do not differ significantly from the unconditional ones given in Table 10. For both married and single women, the returns to training of either type, given 1965 position are higher than those for men.

The additional returns to any qualifications obtained since leaving full-time education are now all insignificant for single women, whilst for men the coefficients are all reduced by roughly half. Again, the position

for married women differs considerably from that for men and single women. All coefficients except that on clerical and commercial qualifications (now insignificant) are almost identical to what they were before. These differences suggest that, for individuals who are likely to participate continuously, the benefits from qualifications are reaped at the beginning of the working life, but for those experiencing interruptions, there are benefits to be gained at later stages, perhaps by avoiding downward mobility due to interruptions.

Finally the results for the two additional variables, representing the difference between desired training (by employer and employee) and training actually undertaken, make interesting reading. The variable which indicates those individuals who turned down an offer of training during the period 1965-74 has an insignificant effect for both men and single women, but a significantly negative impact on the occupational progress of married women, resulting in a reduction of about 3% on average. Hence it would seem that married women are penalised for turning down training offers, while the other two groups are not.

This suggests that employers may take the act of rejecting an offer of training as a signal of lack of commitment to the labour market and of an increased likelihood of leaving in the near future. Occupational progress is then impaired by this signal. However, as usual, there are also some supply-side explanations. It may be that some married women turn down offers of training in the anticipation of leaving the labour market in the near future and do not seek occupational advancement for exactly the same reason. Alternatively it may be that, independent of any leaving plans or expectations, those women who turn down training offers are less highly motivated towards occupational

advancement and that they make less occupational progress for the same reason.

For whatever reasons, married women who turn down offers of training make less occupational progress than those who do not and this difference is in addition to that as a result of the lost return to the training itself (a total difference in the region of 10%). It is also interesting to note, perhaps contrary to expectations, that a slightly lower proportion of married women turned down offers of training during the period than of men and single women: 2.4% of married women, compared with 2.9% of men and 3.0% of single women. However, it should be remembered that married women get fewer offers of training in the first place than the other two groups.

The difference in the means between the three groups is slightly more marked for the variable reflecting unsuccessful attempts to obtain training. Only 1.2% of married women had been unsuccessful in an attempt to obtain training during the period 1965-74, as compared with 2.5% of men and 2.4% of single women. However, the variable has an insignificant effect (over and above the lost return to the training itself) for all three groups.

Table 12 presents the results for the determinants of earnings in the small sample. The experience profiles for men and married women are steeper than for occupational attainment. This is as expected, since earnings within an occupation increase with years of experience as well as occupational attainment. However, the profile is flatter, and in fact insignificant, in the case of single women.

The effects of age left full-time education for single women are all larger than in Table 10. There is an education effect on earnings within an occupation, as well as on occupational attainment. For men and married women it appears that this is only the case for the top two categories, i.e. for those who completed full-time education at 20 or above.

The effects of recent training (1965-74) for men are all very similar to those on occupational position (Table 10). Hence, for men, training in the period 1965-74 affects occupational attainment but not earnings given occupational position. For women the position is considerably different. The full-time coefficients for single women are all slightly higher than in Table 10, while the longer evening spells which were significant are now insignificant. For married women there is a dramatic increase in the effect of full-time training compared with Table 11 and there is also an increase in the effect of the longer spells of evening training. However, both of these results (and that for single women) are due almost entirely to the incidence of part-time working, particularly among married women. When a dummy variable to indicate those currently working part-time is included in the equation (quoted in Stewart and Greenhalgh, 1982), the training coefficients for earnings become very similar to those for occupational attainment given in Table 10. For women, the main effects of recent training are to increase both occupational attainment and the probability of currently being in full-time work.

Turning to the qualifications obtained since leaving full-time education, we can see that for married women (as for the other two groups), the returns to the top three qualification categories are considerably

higher for earnings than for occupational position. This is not the result of the increased probability of working full-time, since the higher qualifications increase earnings (including those of full-timers) given occupational position as well as increasing occupational attainment.

Married men and widowed, divorced and separated men earn more than single men, given occupational position, as well as reaching higher occupational levels ceteris paribus. Table 12 also shows that widowed, divorced and separated women earn considerably more than currently married women. This is largely, but not entirely, due to their higher probabilities of working full-time. Once this difference is allowed for, the earnings differential is only about 3%, but is still significant. Finally, there is also a very large difference in the value of the constant term between married women and men. A large part of this also is due to the different probabilities of being in part-time work.

IV.2 Sample Modifications

In this subsection we examine the effects of two modifications to the sample: broadly the inclusion of non-earners and the inclusion of younger workers. We look first at the extension of the sample to include non-earners. The effects we are examining are average effects; for some individuals they will be above this average and, for some, below. Those currently out of the labour market might be a non-random group with respect to this dispersion and, if this were the case, the effects we are considering might be over- or under-stated in the small sample. The main findings of Table 10 still stand, although there are some minor differences between the results worthy of discussion. The first of

these is that the experience profiles are, as one would expect, flatter for all three groups when non-earners are included in the sample.

Turning to full-time training during the period 1965-74, the effects of the different durations are slightly altered for single women, however the average effect is still about the same. For men and married women, the results are even closer to those in the small sample. In the case of pre-1965 full-time training, the shorter spells are now significant for married women, however the magnitudes of the coefficients have changed little.

Finally, the returns to qualifications obtained since leaving full-time education are not greatly altered either. For married women we observe slightly reduced effects for the middle range qualifications and for single women HNC/HND or similar and clerical and commercial qualifications are now significant, but the overall picture is much the same.

The results for occupational progress using this sample are even more similar to the small sample results than those just considered and so will not be discussed here.

We now consider the results obtained by including in the sample the group (mainly younger workers) who entered the labour market for the first time after 1965. Once again, although there are some differences between the results, the main findings of Table 10 still stand.

One difference concerns full-time training during the period 1965-74. For men and married women the effects are very slightly

reduced: by about 1% on average. However, relative to one another, they are still about the same. The effects for single women are reduced considerably. Whereas in the small sample they experience returns larger than both men and married women, they are now slightly smaller than both these groups. Hence, that particular conclusion from Table 10 does not appear to carry over. That the result should be different for this group is not particularly surprising, because there is a more dramatic change in the composition of the sample for single women than for other groups when moving from the small sample to large sample B.

The other main difference concerns the experience profiles. It is not surprising that these should change, since we are adding to the sample a group of individuals for all of whom $X \leq 10$ and the quadratic is only an approximation to the shape of the profile. However, it is interesting to note that, whilst the initial slope roughly doubles for men, it is lower than in Table 10 for both groups of women.

The results for earnings using this sample are, firstly, that the modification to the effects of full-time training 1965-74 for single women is much as for the occupational status equation, but again the remainder of the training results are very similar to those in the small sample. There are three other main differences. Firstly, the returns to HNC/HND or similar, 'O' levels or similar, and clerical and commercial qualifications obtained since leaving full-time education by single women are now significant, whereas they previously were not. Secondly, there is a fall in the returns to leaving at 16 for men and single women. This is because, for a number of those added to the sample, this had become the compulsory minimum school leaving age. Finally, the experience profile, whilst much steeper for men and single women, "turns over"

for married women. This is because we have added to the sample full-time (and hence higher earning) women with less than ten years of experience. When the currently working part-time dummy variable is included (see Stewart and Greenhalgh, 1982), the profile reverts to its more commonly found shape.

In general, the conclusions drawn from Section IV.1 do not need to be drastically revised in the light of the estimates using the larger samples.

IV.3 The extended equation

In this subsection we examine the results for the extended equation estimated on the small (i.e. compatible) sample. The effects of the training variables for all three groups remained virtually unchanged when additional variables were included reflecting household composition, school type, aspects of employment history and race. Most other coefficients also change very little, although the returns to leaving full-time education aged 16 to 18 are reduced slightly. Thus, in general, the conclusions about training drawn in Section III.1 on the basis of the basic equation do not need to be modified in the light of the results for the extended equation.

The new variables in the extended equation are, however, of interest in their own right and their estimated coefficients warrant some comment. Only a few coefficients on the new variables presented in Table 14 are significant for single women. Hence, we will concentrate on the results for men and married women.

For men, both children variables (infants and school-age children) have an insignificant effect on occupational attainment, occupational progress and earnings. However, for married women both variables are significant in all three equations. Both ages of children reduce the occupation position of married women by about 2% per child, both unconditional and conditional on 1965 position. The reduction in earnings is far greater in both cases: 17% for infants and 9% for school-age children. However, this is mainly due to the fact that married women with children are much more likely to be working part-time than those without. When the dummy variable for working part-time is included, the effects fall to 4% for infants and 2% for school-age children (see Stewart and Greenhalgh, 1982).

The type of school attended has an effect in all three tables, particularly for men. The occupational attainment of men is increased, ceteris paribus, by 8% by having attended a Grammar school, by 10% by having attended an Independent school and by 17% by having attended a Direct Grant school. The coefficients in the earnings equations are not greater, in fact in one case (Direct Grant schools) it is less. Hence, having attended one of these three types of school increases the occupational position of men, but not their earnings given occupational position. These effects are not just labour market entry effects. All three have a significant effect given 1965 position. For married women, only attendance at a Grammar school has a significant effect, although the coefficients on the Direct Grant variable are numerically greater. Having attended an ESN school, as one might expect, reduces both occupational position and earnings.

Neither the number of unemployment spells nor the number of sickness spells in the last ten years affect either the occupational position or the earnings of married women. However, they reduce the earnings of men by 8% and 6% respectively without having an effect on occupational attainment. Having left their first occupation because of redundancy or dismissal, reduces the earnings of men by 3% and those of married women by 5%, whilst having left because qualified for better work increases male earnings by 3% and has no significant effect on female earnings.

Finally, the occupational attainment of West Indian and Indian and Pakistani men and West Indian women, is ceteris paribus, about 9% lower than their white counterparts. For men the corresponding figures for earnings are 14% and 18% lower respectively, while West Indian women earn more ceteris paribus. This is due in part, but not entirely, to the fact that they are more likely to be working full-time than white women.

V. CONCLUSIONS

The findings of this study can now be summarised in relation to the questions posed in the introduction. Firstly there is the question of how much vocational training is received. The National Training Survey shows that women receive significantly less full-time training than men even when they first enter the labour market and this inequality is compounded in the case of married women by later periods of non-participation and part-time work. Neither men nor women appear to receive very much part-time training and in fact courses taken outside working hours constitute the second most prevalent type of training.

This evening training is more frequently undertaken by women.

Our second question concerns the type of people who receive vocational training. In the case of full-time training, men and single women are more likely to train the higher is their occupational status, whereas married women are less likely. However higher status married women are more likely to obtain evening training; the same is true for both other groups. For all three groups, the probability of training declines with age, as predicted by human capital theory.

Our third concern is with the benefits from training activities. Training which does not result in a formal qualification yields significant returns which are demonstrated by both the occupational status and earnings analyses. For men and single women, the returns are predominantly from occupational advancement, rather than from increasing earnings in the same job. Married women gain in both ways, partly by being more likely to work full-time if trained. Recent training yields larger returns for both single and married women than men; this suggests that resources may not be optimally allocated at the present time. A complete assessment of this question would require computation of present values over different lifetime participation patterns. Regardless of the efficiency question, inequalities arise if single women do not acquire adequate investment in human capital because employers see them as future wives.

Training which results in some kind of formal qualification, particularly a vocational one, is much more effective in raising an individual's prospects than that which does not. Since short durations of training are as beneficial as longer ones when no qualifications are

obtained, this suggests that resources should be directed either to these short spells, or to longer spells resulting in vocational qualifications.

The unique nature of the NTS data set has provided valuable information in a hitherto neglected area which is of great interest to both economists and policy makers. Nevertheless, many questions remain for future research.

TABLE 1 : Proportions with Vocational Training by Type of Training

	All Men	Married and W/D/S women	Single Women
	Training before 1965		
<u>Small Sample</u> ¹			
Full-time training	0.570	0.372	0.402
Part-time training	0.053	0.037	0.030
Evening training	0.070	0.067	0.073
<u>Large Sample A</u> ²			
Full-time training	0.563	0.360	0.381
Part-time training	0.049	0.033	0.031
Evening training	0.069	0.061	0.068
	Training during 1965-74		
<u>Small Sample</u> ¹			
Full-time training	0.312	0.154	0.275
Evening training	0.042	0.097	0.103
<u>Large Sample A</u> ²			
Full-time training	0.287	0.127	0.227
Evening training	0.036	0.068	0.090
<u>Large Sample B</u> ³			
Full-time training	0.396	0.192	0.417
Evening training	0.048	0.109	0.145

NOTES:

1. Small Sample includes those entering the labour market before 1965 who were reporting earnings at the time of interview. Sample sizes are: 13621; 8350; 629 for men, married and single women respectively.
2. Large Sample A includes all those entering the labour market before 1965, whether or not they were earning at the date of interview. Sample sizes are: 17,693; 17,714; 941 respectively.
3. Large Sample B includes those entering the labour market up to 1974, who were reporting earnings at the time of interview. Sample sizes are: 18,241; 9,836; 2,848 respectively.
4. Because of difficulties in the construction of our data tape from the raw NTS tapes we did not have complete information on part-time training during 1965-74. We estimate that this type of training was received by no more than 5% of each group.

TABLE 2 : Success Variables and Characteristics for Those With and Without Training During 1965-74

	All Men				Married and W/D/S Women				Single Women			
	Full-time training		Evening training		Full-time training		Evening training		Full-time training		Evening training	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Occupational Status in 1975 ¹	112.05	99.94	120.57	102.77	95.27	89.74	100.99	89.69	108.00	97.10	116.19	97.94
Occupational mobility between 1965 and 1975 ¹	10.39	4.49	11.40	5.98	6.08	0.36	5.35	0.78	9.15	3.40	2.87	4.88
Weekly earnings at time of interview ²	60.34	52.98	64.72	55.15	27.11	21.32	24.53	21.76	42.95	35.16	42.95	36.60
Age at time of interview ³	38.88	47.47	39.77	45.20	37.58	43.00	38.83	42.56	37.42	44.37	38.87	43.19
Occupational status in 1965 ³	101.67	95.46	109.17	96.79	89.18	89.38	95.64	88.92	98.85	93.70	113.32	93.06
Percentages with school leaving age: ³												
15 or less	68.64	79.45	56.83	77.09	70.14	73.97	63.00	74.23	54.93	62.77	39.29	63.13
16	17.70	10.84	20.50	12.51	16.00	13.54	16.71	13.65	19.72	17.17	14.29	18.09
17 or more	13.66	9.71	22.67	10.40	13.86	12.49	20.29	12.12	25.35	20.05	46.43	18.79

NOTES:

1. Occupational status and mobility were measured by average male hourly earnings in the occupation in 1975; figures for Large Sample A.
2. The recorded earnings bands were converted to a cardinal scale using the conditional means within bands from a pre-fitted log-normal distribution, see Stewart (1982); figures for Small Sample.
3. Figures for Large Sample A.

TABLE 3 : Success Variables and Characteristics by Hours Worked and Training for Married and W/D/S Women

Hours worked at 1st Jan.1975:	Full-time Worker				Part-time Worker				Other			
Training during 1964-1974:	Full-time training		Evening training		Full-time training		Evening training		Full-time training		Part-time training	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Sample proportion: ³												
Large Sample A	0.22	0.78	0.09	0.91	0.09	0.91	0.10	0.90	0.10	0.90	0.04	0.96
Small Sample	0.23	0.77	0.10	0.90	0.09	0.91	0.10	0.90	0.13	0.87	0.07	0.93
Occupational status in 1975	99.48	96.13	110.41	95.56	86.55	85.25	94.39	84.41	94.28	89.26	97.90	89.44
Occupational mob- ility between 1965 and 1975	8.82	4.58	12.43	4.84	0.56	-2.50	1.34	-2.61	5.39	-0.03	1.48	0.45
Weekly earnings at time of interview (£)	33.78	29.37	36.23	29.67	17.64	16.95	17.64	16.95	19.11	17.99	19.69	17.99
Age at time of interview	41.01	44.78	41.48	44.19	37.97	43.23	39.32	43.14	32.68	41.96	34.13	41.32
Occupational status in 1965	90.67	91.56	97.93	90.72	86.00	87.75	93.06	87.02	88.89	89.29	96.41	88.99

NOTES:

1. All figures relate to married plus widowed/divorced/separated women. 'Full time' refers to 30 or more hours per week. 'Other' includes non-participants and/or those not stating weekly hours.
2. Occupational status, mobility and age figures are for Large Sample A. Earnings figures are for the Small Sample.
3. The proportions for full-time and part-time workers differ slightly as between the Small Sample and Large Sample A because some individuals who were not reporting earnings at time of interview, who had been working on 1st January 1975, were included in Large Sample A.

TABLE 4 : Employment and Occupational Status in 1965 and 1975 - Men

Status in 1975 Status in 1965	With full-time training during 1965-74							Without full-time training during 1965-74						
	Marginal Distrib- ution in:	Not in Labour Force	Long Term Unem- ployed	Employed				Marginal Distrib- ution in:	Not in Labour Force	Long Term Unem- ployed	Employed			
	1975 1965	1975 1965	1975 1965	38-70	71-90	91-130	131+	1975 1965	1975 1965	1975 1965	38-70	71-90	91-130	131+
Not in Labour Force	1.2	35.0	5.0	1.7	16.7	16.7	25.0	2.0	62.2	4.9	0.1	7.3	5.3	19.1
Long Term Unemployed	0.4	0.0	38.9	0.0	38.9	11.1	11.1	0.9	4.5	73.6	0.9	10.0	7.3	3.6
Employed: 38 - 70	6.6	1.2	0.9	27.9	32.4	23.7	13.8	10.4	2.7	1.9	65.2	15.4	7.5	7.1
71 - 90	32.5	2.0	2.0	1.5	50.8	29.6	14.1	35.2	4.1	3.4	1.9	71.3	11.3	8.0
91 - 130	38.5	1.1	1.2	1.4	13.0	58.2	25.2	28.9	2.9	3.3	1.5	11.5	63.7	17.1
131+	20.9	1.3	1.7	1.7	11.4	17.6	66.2	22.6	2.0	2.4	0.9	6.1	7.4	81.2

NOTES

1. In Tables 4, 5 and 6 the samples used are Large Sample A.
2. For employed persons, the groups 38-70, 71-90, etc., refer to the occupational rank (average hourly earnings, 1975, in pence per hour).
3. The matrix shows the positions in 1975, for each category in 1965, percentage by row.
4. Long-term unemployed indicates a spell of unemployment of 3 months or more; shorter spells were not recorded by the NTS.

TABLE 5 : Employment and Occupational Status in 1965 and 1975 - Married and W/D/S Women

Status in 1975 Status in 1965	With full-time training during 1965-74							Without full-time training during 1965-74						
	Marginal Distrib- ution in: 1975 1965	Not in Labour Force	Long Term Unem- ployed	Employed				Marginal Distrib- ution in: 1975 1965	Not in Labour Force	Long Term Unem- ployed	Employed			
				38 - 70	71 - 90	91 - 130	131+				38 - 70	71 - 90	91 - 130	131+
		33.7	0.8	8.0	23.8	25.7	7.9		31.6	0.9	15.8	22.0	22.6	7.0
Not in Labour Force	30.9	20.5	0.9	9.8	29.8	30.2	8.8	36.4	35.9	0.6	14.0	22.9	20.2	6.3
Long Term Unemployed	0.3	14.3	14.3	0.0	42.9	28.6	0.0	0.6	15.0	66.0	2.0	9.0	5.0	3.0
Employed: 38 - 70	15.9	41.7	1.1	15.5	17.7	19.2	4.8	14.3	23.1	0.5	57.9	9.5	6.4	2.7
71 - 90	21.5	36.3	0.4	6.0	39.4	14.4	3.5	17.7	26.4	0.6	6.5	59.2	5.5	1.7
91 - 130	25.7	41.8	0.5	4.2	10.4	35.5	7.7	25.1	34.7	0.4	3.8	5.9	50.8	4.4
131+	5.7	38.3	2.3	2.3	9.4	18.0	29.7	5.7	29.3	0.6	5.2	5.1	9.0	50.8

NOTE

See notes to Table 4.

TABLE 6 : Logit Estimates of the Probability of Full-time Training between 1965 and 1974

	Males			Married Females			Single Females		
	Logit Coefficient	Asymptotic "t-ratio"	Marginal Effect	Logit Coefficient	Asymptotic "t-ratio"	Marginal Effect	Logit Coefficient	Asymptotic "t-ratio"	Marginal Effect
<u>Occupational Status in 1965:</u>	.6264	(9.07)	.1281	-.4478	(-4.19)	-.0494	.7907	(2.39)	.1385
<u>Age:</u>	-.0818	(-43.76)	-.0167	-.0757	(-28.40)	-.0084	-.0762	(-8.66)	-.0133
<u>Non-white:</u>	-.2728	(-2.36)	-.0558	.8320	(5.13)	.0918	.3480	(0.49)	.0609
<u>No. of Children 5-15:</u>	-.1576	(-8.79)	-.0322	-.3850	(-15.90)	-.0425	-.4760	(-2.50)	-.0834
<u>Married:</u>	.5215	(7.88)	.1066	-	-	-	-	-	-
<u>Widowed/Divorced/Separated:</u>	.3947	(3.36)	.0807	.3063	(3.85)	.0338	-	-	-
<u>Qualifications: highest obtained before 1st January 1965:</u>									
Clerical/Commercial/CSE less than Grade 1/SLC lower	.4659	(3.03)	.0953	-.2358	(-2.49)	-.0260	-.4563	(-1.34)	-.0799
CSE Grade 1 or City & Guilds Ordinary or 'O' Levels	.4648	(8.15)	.0950	.1649	(2.27)	.0182	.0675	(0.28)	.0118
City & Guilds Advanced or ONC/OND or 'A' Levels or City & Guilds Full Tech.	.3826	(5.08)	.0782	.4282	(2.92)	.0472	-.3602	(-0.86)	-.0631
Nursing or Teaching	.2713	(1.53)	.0555	.2710	(2.16)	.0299	.6646	(2.11)	.1164
HNC/HND or Other Profess. or University Diploma/Certificate/First and/or Higher Degree	.2128	(2.77)	.0435	.2860	(1.41)	.0316	-.0054	(-0.01)	-.0009
<u>Constant Term:</u>	-.6680	(-2.11)		3.3992	(6.89)		-1.6506	(-1.09)	
<u>Proportion with full-time training 1965-74</u>	.2866			.1263			.2264		
<u>Sample Size:</u> (Large Sample A)		17,707			17,718			9,11	

TABLE 7 : Estimated Elasticities (Evaluated at the Means) of the Probability of Training
1965-74 with Respect to Selected Variables

Variable	Full-Time Training			Evening Training		
	Males	Married Females	Single Females	Males	Married Females	Single Females
Occupational Status in 1975	.45	-.39	.61	.52	.45	1.85
Age in 1975	-2.63	-2.80	-2.52	-2.05	-1.71	-1.58
No. of children aged 5-15 in 1975	-.09	-.32	-.06	-.05	-.07	-.01

TABLE 8 : Variation in the Predicted Probability of Training 1965-74 with Personal Characteristics

	Full-time training		Evening training	
	Males	Females	Males	Females
Average Probability	.2866	.1313	.0364	.0674
Person with basic set of characteristics ¹	.2713	.1154	.0248	.0521
Deviations from the basic characteristics ²				
1965 Occupational position:				
60p/hour	.2205	.1370	.0197	.0424
75p/hour	.2455	.1256	.0221	.0471
110p/hour	.2925	.1079	.0271	.0564
125p/hour	.3094	.1025	.0290	.0599
Age in 1975: 30	.5594	.2887	.0491	.0952
60	.0984	.0402	.0124	.0280
Non-white:	.2208	.2306	.0292	.0462
2 children (aged 5-15 in 1975):	.2136	.0569	.0219	.0440
Single:	.1810	.1831	.0199	.0678 ³
Highest qualification in 1965 is 'A' Level or equivalent:	.3530	.1668	.0681	.0951

NOTES:

1. A person with the basic set of characteristics is aged 45, in an occupation in 1965 whose value on our scale is 93p/hour, is married but has no children, is white and has no educational qualifications.
2. The deviations from the basic set of characteristics are considered singly.
3. This prediction uses the OLS estimate for single women.

TABLE 9 : Logit Estimates of the Probability of Evening Training between 1965 and 1974

	Males			Married Females			Single Females 1		
	Logit Coefficient	Asymptotic "t-ratio"	Marginal Effect	Logit Coefficient	Asymptotic "t-ratio"	Marginal Effect	Logit Coefficient	Least Squares t-ratio	Marginal Effect (OLS Coefficient)
<u>Occupational Status in 1965:</u>	.5447	(3.77)	.0191	.4951	(3.68)	.0306		(4.50)	.1653
<u>Age:</u>	-.0472	(-11.24)	-.0017	-.0432	(-12.19)	-.0027		(-3.66)	-.0033
<u>Non-white:</u>	.1654	(0.67)	.0058	-.1268	(-0.45)	-.0078		(-0.95)	-.0705
<u>No. of Children 5-15:</u>	-.0649	(-1.61)	-.0023	-.0886	(-3.02)	-.0055		(-0.29)	-.0050
<u>Married:</u>	.2249	(1.51)	.0079	-	-	-		-	-
<u>Widowed/Divorced/Separated:</u>	.2455	(0.09)	.0009	.1600	(1.49)	.0099		-	-
<u>Qualifications: highest obtained before 1st January 1965:</u>									
Clerical/Commercial/CSE less than Grade 1/SLC lower	.8620	(3.03)	.0302	.1901	(1.72)	.0118		(0.33)	.0116
CSE Grade 1 or City & Guilds Ordinary or 'O' Levels	.5785	(4.82)	.0203	.4088	(4.52)	.0253		(2.34)	.0674
City & Guilds Advanced or ONC/OND or 'A' Levels or City & Guilds Full Tech.	1.0550	(7.90)	.0370	.6472	(3.73)	.0400		(-0.05)	-.0022
Nursing or Teaching	1.7429	(7.22)	.0611	1.0150	(8.27)	.0627		(2.62)	.0961
HNC/HND or Other Profess. or University Diploma/Certificate/First and/or Higher Degree	1.0682	(7.61)	.0374	.8677	(4.42)	.0536		(1.57)	.0788
<u>Constant Term:</u>	-4.2403	(-6.29)		-3.2003	(-5.11)			(3.15)	-.5319
<u>Proportion with Evening Training 1965-74</u>	.0364			.0662			.0893		
<u>Sample Size: (Large Sample A)</u>		17,707			17,718			941	

NOTE:

1. The likelihood maximisation routine for the logit model could not be persuaded to converge irrespective of starting values. Hence for single females we present OLS estimates.

TABLE 10 : Occupational Status - Basic Equation - Small Sample

Dependent Variable	Log (Average hourly earnings in 1975 occupation)					
Independent Variable	Males		Females		Single	
	Married, W/D/S					
<u>Experience: (Potential)</u>						
Number of years since first occupation began (Number of years since first occupation began) ²	.0036 -.00009	(7.44) (17.03)	.0031 -.0001	(3.31) (5.33)	.0147 -.0003	(4.92) (5.50)
<u>Schooling: Left full-time education at:</u>						
16	.1789	(608.00)	.1527	(375.66)	.1775	(35.65)
17	.2389	(426.56)	.1454	(171.83)	.1456	(12.08)
18	.2766	(318.95)	.1747	(121.88)	.2029	(16.93)
19	.2830	(128.66)	.2763	(86.79)	.2233	(7.34)
20	.2747	(76.32)	.4577	(350.33)	.2233	(8.65)
21 or over	.4497	(823.06)	.4919	(671.52)	.2916	(21.00)
<u>Qualifications: obtained since left full-time education</u>						
Clerical/Commercial	.1837	(19.15)	.0669	(13.23)	.0777	(1.82)
CSE Less than Grade 1/SIC Lower	-.0521	(0.25)	-.0729	(0.10)	.0809	(0.09)
CSE Grade 1 or City & Guilds Ordinary or 'O' Levels	.0635	(25.45)	.0828	(11.98)	.0023	(0.00)
City & Guilds Advanced or ONC/OND or 'A' Levels or City & Guilds Full Technical	.1263	(102.90)	.1669	(21.92)	-.0745	(0.23)
Nursing or Teaching	.0532	(4.22)	.0614	(18.12)	-.0324	(0.47)
HNC/HND or Other Professional or University Diploma/Certificate	.2629	(413.61)	.1170	(7.80)	.1620	(2.58)
First and/or Higher Degree	.1693	(46.86)	.2877	(32.09)	.2687	(6.08)
<u>Marital Status:</u>						
Married	.0482	(33.31)	-	-	-	-
Widowed/Divorced/Separated	.0249	(2.78)	.0105	(1.56)	-	-
<u>Training: dummies according to weeks</u>						
Full-time Training (1965-74), No. of weeks 1-4	.0722	(92.32)	.0557	(32.55)	.1275	(14.57)
5-13	.0584	(32.03)	.0765	(34.19)	.1269	(5.85)
14-52	.0697	(43.78)	.0379	(4.33)	.1661	(6.86)
53 and over	.0819	(70.73)	-.0257	(2.02)	-.0141	(0.08)
missing weeks	-	-	.0197	(0.11)	-	-
Evening Training (1965-74), No. of weeks 1-4	-.0052	(0.02)	.0252	(2.38)	.1890	(1.46)
5-13	.0203	(0.66)	.0753	(24.16)	.0871	(0.97)
14-52	.0392	(3.90)	.1080	(43.69)	.1403	(6.59)
53 and over	.0597	(9.48)	.0730	(13.78)	.1099	(3.59)
missing weeks	-	-	.0635	(2.09)	-	-
Full-Time Training (pre 1965), No. of weeks 1-4	.0205	(3.46)	.0114	(1.79)	.0390	(1.21)
5-13	.0095	(0.84)	.0040	(0.20)	-.0062	(0.03)
14-52	.0181	(5.06)	.0041	(0.15)	-.0080	(0.03)
53 and over	.0654	(135.47)	-.0492	(32.21)	-.0695	(3.53)
missing weeks	.0645	(4.15)	.0145	(0.16)	.7202	(5.91)
Part-time training (pre 1965) No. of weeks 1-4	-.0048	(0.02)	-.0002	(0.00)	-.1024	(0.58)
5-13	.0300	(0.97)	.0026	(0.01)	.0560	(0.04)
14-52	.0708	(10.06)	.0260	(0.99)	-.0610	(0.37)
53 and over	.0950	(47.63)	.0344	(2.12)	.0349	(0.09)
missing weeks	-.0309	(0.05)	-.0556	(0.17)	-	-
Evening Training (pre 1965), No. of weeks 1-4	.0351	(0.99)	.0016	(0.00)	-.0525	(0.15)
5-13	-.0182	(0.43)	.0826	(10.49)	-.0923	(0.55)
14-52	.0453	(7.63)	.0592	(13.62)	.0860	(1.51)
53 and over	.0713	(29.97)	.0699	(18.31)	.0816	(1.54)
missing weeks	.0109	(0.07)	.1051	(2.31)	.1633	(1.06)
<u>Constant Term:</u>						
R ²	4.3961	(50901.11)	4.3749	(38281.49)	4.2884	(2771.57)
	.2522		.2200		.2564	
<u>Sample Size:</u>						
	13,621		8,350		629	

TABLE 11: Occupational Progress - Basic Equation - Small Sample

Dependent Variable	Log (Average hourly earnings in 1975 occupation)					
	Males		Females		Single	
			Married, Wid/Div/Sep.			
Independent Variable						
Experience: (Potential)						
Number of years since first occupation began	-.0003	(0.09)	.0023	(2.29)	.0059	(1.26)
(Number of years since first occupation began) ²	-.00003	(3.03)	-.00004	(2.46)	-.0001	(1.59)
Schooling: Left full time education at:						
16						
17	.0806	(189.71)	.0919	(154.75)	.0765	(10.08)
18	.0912	(96.14)	.0833	(65.32)	.0568	(2.86)
19	.0958	(59.43)	.0979	(44.66)	.0938	(5.67)
20	.1347	(46.13)	.1597	(34.05)	.0597	(0.82)
21 or over	.0678	(7.36)	.2529	(120.37)	.0133	(0.05)
	.1249	(93.42)	.2712	(219.30)	.0113	(0.04)
Qualifications: obtained since left full time education						
Clerical/Commercial	.1062	(10.20)	.0238	(1.98)	.0245	(0.29)
CSE Less than Grade 1/SLC Lower	-.0507	(0.38)	-.0628	(0.09)	-.0314	(0.02)
CSE Grade 1 or City & Guilds Ordinary or 'O' Levels	.0306	(9.40)	.0811	(13.58)	.0813	(1.70)
City & Guilds Advanced or OMC/OND or 'A' Levels						
or City & Guilds Full Technical	.0812	(67.65)	.1626	(24.66)	-.0561	(0.21)
Nursing or Teaching	.0387	(3.56)	.0621	(22.02)	-.0299	(0.64)
HNC/HND or Other Professional or University						
Diploma/Certificate	.1311	(160.72)	.0904	(5.53)	.0443	(0.30)
First and/or Higher Degree	.0914	(21.74)	.2507	(28.92)	.1667	(3.70)
Marital Status:						
Married	.0289	(19.10)	-		-	
Widowed/Divorced/Separated	.0083	(0.50)	.0091	(1.42)	-	
Training: dummies according to weeks						
Full-time training (1965-1974) No. of weeks 1-4	.0466	(61.37)	.0569	(40.28)	.0999	(14.32)
5-13	.0373	(20.87)	.0768	(40.83)	.1109	(7.07)
14-52	.0423	(25.75)	.0474	(8.03)	.0732	(2.06)
53 and over	.0342	(19.57)	.0013	(0.00)	-.0258	(0.41)
missing weeks	-		-.0152	(0.08)	-	
Evening Training (1965-74) No. of weeks 1-4	-.0081	(0.07)	.0263	(3.08)	.0814	(0.42)
5-13	-.0039	(0.04)	.0695	(24.39)	.0350	(0.25)
14-52	.0089	(0.30)	.0995	(44.05)	.0359	(0.67)
53 and over	.0364	(5.59)	.0606	(11.27)	.0177	(0.14)
missing weeks	-		.0553	(1.89)	-	
Full-time training (pre 1965) No. of weeks 1-4	-.0005	(0.32)	-.0012	(0.02)	.0159	(0.32)
5-13	-.0225	(7.57)	-.0154	(3.52)	-.0327	(1.16)
14-52	-.0152	(5.68)	-.0081	(0.72)	-.0096	(0.06)
53 and over	.0094	(4.39)	-.0293	(13.57)	-.0518	(3.03)
missing weeks	.0012	(0.00)	-.0037	(0.01)	.1950	(0.68)
Part-time training (pre 1965) No. of weeks 1-4	-.0309	(1.35)	-.0160	(0.42)	-.0549	(0.26)
5-13	.0091	(0.14)	-.0160	(0.33)	-.0193	(0.01)
14-52	.0559	(10.03)	.0115	(0.21)	-.1185	(2.21)
53 and over	.0316	(8.34)	.0127	(0.34)	-.0188	(0.04)
missing weeks	-.0130	(0.01)	.0427	(0.12)	-	
Evening training (pre 1965) No. of weeks 1-4	.0410	(2.17)	.0083	(0.08)	.0089	(0.01)
5-13	-.0276	(1.58)	.0602	(6.62)	-.0407	(0.17)
14-52	.0177	(1.86)	.0400	(7.40)	.0670	(1.05)
53 and over	.0188	(3.33)	.0370	(6.07)	.0391	(0.57)
missing weeks	-.0016	(0.00)	.0599	(0.89)	.0353	(0.08)
Occupational Status in 1965:	.6643	(8083.69)	.4393	(1562.65)	.6995	(355.27)
Unsuccessful attempt to obtain training between 1965-74:						
	-.0231	(3.76)	-.0111	(0.27)	-.1043	(3.11)
Offer of training turned down between 1965-74:						
	.0105	(0.91)	-.0346	(5.16)	.0169	(0.11)
Constant Term:						
R ²	1.5423	(107.57)	2.5375	(2103.37)	1.3068	(58.95)
Sample Size:	.5314		.3438		.5387	
	13,621		8,350		629	

TABLE 12 : Earnings - Basic Equation - Small Sample

Dependent Variable	Log (1975 weekly earnings)					
	Males		Females		Single	
Independent Variable			Married, Wid/Div/Sep			
Experience: (Potential)						
Number of years since first occupation began (Number of years since first occupation began) ²	.0147 -.0003	(94.57) (141.56)	.0142 -.0002	(17.89) (10.17)	.0035 -.00002	(0.13) (0.01)
Schooling: Left full time education at:						
16	.1541	(343.61)	.1485	(90.28)	.2436	(32.66)
17	.2539	(367.29)	.1831	(69.29)	.3119	(26.94)
18	.3157	(316.59)	.2038	(47.20)	.3350	(22.42)
19	.2929	(104.96)	.2962	(25.71)	.4835	(17.15)
20	.3517	(95.34)	.7368	(230.85)	.6267	(33.13)
21 or over	.5243	(852.64)	.6524	(300.39)	.5564	(37.16)
Qualifications: obtained since left full time education						
Clerical/Commercial	.1404	(8.53)	.1074	(8.67)	.0692	(0.70)
CSE Less than Grade 1/SIC Lower	-.2698	(5.17)	-.4336	(0.90)	.0987	(0.06)
CSE Grade 1 or City & Guilds Ordinary or 'O' Levels	.0938	(42.31)	.1332	(7.87)	-.0483	(0.18)
City & Guilds Advanced or ONC/OND or 'A' Levels or City & Guilds Full Technical	.1397	(95.93)	.1285	(3.30)	.0060	(0.00)
Nursing or Teaching	.1422	(22.97)	.2951	(106.58)	.2512	(13.70)
EC/END or Other Professional or University Diploma/Certificate	.2897	(382.64)	.3599	(18.79)	.2246	(2.41)
First and/or Higher Degree	.2636	(86.57)	.4174	(17.17)	.5077	(10.55)
Marital Status:						
Married	.1530	(255.48)	-		-	
Widowed/Divorced/Separated	.0961	(31.51)	.1631	(96.51)	-	
Training: dummies according to weeks						
Full time training (1965-1974), No. of weeks	.0770	(80.04)	.2218	(131.06)	.1618	(11.41)
5-13	.0477	(16.32)	.2759	(113.60)	.1462	(3.77)
14-52	.0610	(25.56)	.2966	(67.28)	.2627	(8.34)
53 and over	.0977	(76.65)	.2279	(40.37)	.1021	(1.96)
missing weeks	-		.4309	(13.30)	-	
Evening training (1965-1974), No. of weeks	.0069	(0.02)	-.0537	(2.76)	.1563	(0.43)
5-13	.0149	(0.27)	.0726	(5.71)	.1622	(1.64)
14-52	.0549	(5.84)	.0776	(5.74)	.0709	(0.82)
53 and over	.0442	(3.96)	.1817	(21.71)	.0020	(0.00)
missing weeks	-		.1310	(2.26)	-	
Full time training (pre 1965), No. of weeks	.0189	(2.25)	.0066	(0.15)	.0614	(1.45)
5-13	.0222	(3.54)	.0471	(7.05)	-.0142	(0.07)
14-52	.0544	(34.61)	.0127	(0.37)	.0197	(0.08)
53 and over	.0694	(116.32)	.0008	(0.00)	.0183	(0.12)
missing weeks	.0694	(3.66)	.0697	(0.95)	.3794	(0.80)
Part-time training (pre-1965) No. of weeks	-.0095	(0.06)	.0104	(0.04)	.2045	(1.12)
5-13	.0502	(2.06)	.0394	(0.43)	.8556	(4.77)
14-52	.0915	(12.82)	.0815	(2.49)	.0566	(0.15)
53 and over	.1259	(63.63)	.0661	(1.98)	.3732	(5.31)
missing weeks	-.0240	(0.02)	.6081	(5.38)	-	
Evening training (pre-1965) No. of weeks	.0282	(0.49)	.0157	(0.06)	.0350	(0.03)
5-13	.0311	(0.96)	.0527	(1.08)	-.2727	(2.34)
14-52	.0884	(22.18)	.0263	(0.68)	.0311	(0.10)
53 and over	.0851	(32.51)	.0279	(0.74)	.1569	(2.78)
missing weeks	.1602	(11.95)	.0783	(0.33)	.2992	(1.74)
Constant Term:	3.5879	(25836.75)	2.6835	(3663.12)	3.3219	(808.47)
²	.2660		.1600		.3214	
Sample Size:	13,621		8,350		629	

TABLE 13: The Effects of Other Characteristics on Occupation and Earnings

Other Characteristics:		Occupational Status			
No. infant children (<5 years)	-.2267 (1.94)	-.0250 (12.11)	-	-	-
No. 5-15 years children	-.0031 (1.44)	-.0246 (82.61)	-	-	-
Type of school: Grammar	.0741 (94.44)	.0375 (22.75)	.0628 (3.68)	-	-
Direct Grant	.1564 (13.97)	.0976 (2.55)	.6507 (5.66)	-	-
Independent	.0957 (31.07)	.0313 (2.58)	.0168 (0.09)	-	-
ESN	-.1463 (6.59)	-.2302 (16.26)	-.0408 (0.11)	-	-
No. unemployment spells 1965-74	-.0126 (1.78)	-.0057 (0.07)	-.0233 (0.30)	-	-
No. sickness spells 1965-74	-.0059 (0.56)	-.0041 (0.24)	-.0433 (0.99)	-	-
Left 1st occupation because of redundancy/dismissal	-.0327 (10.63)	-.0235 (2.89)	-.0559 (1.52)	-	-
Left 1st occupation because qualified for better work	.0371 (21.37)	-.0111 (0.72)	-.0591 (1.71)	-	-
West Indian	-.1008 (18.95)	-.0940 (12.11)	-.2013 (3.37)	-	-
Indian/Pakistani	-.0989 (15.23)	.0050 (0.01)	-.0326 (0.03)	-	-
Other Characteristics:		Occupational Progress			
No. infant children (<5 years)	-.0016 (0.17)	-.0287 (18.80)	-	-	-
No. 5-15 years children	-.0017 (0.73)	-.0227 (62.98)	-	-	-
Type of school: Grammar	.0409 (45.29)	.0224 (9.56)	.0490 (3.58)	-	-
Direct Grant	.0906 (7.42)	.0611 (1.18)	.5903 (7.43)	-	-
Independent	.0357 (6.81)	.0202 (1.28)	.0574 (1.60)	-	-
ESN	-.0831 (3.37)	-.1637 (9.73)	.0207 (0.05)	-	-
No. unemployment spells 1965-74	-.0366 (23.48)	-.0058 (0.08)	-.0114 (0.11)	-	-
No. sickness spells 1965-74	-.0082 (1.70)	-.0013 (0.05)	-.0407 (1.41)	-	-
Left 1st occupation because of redundancy/dismissal	-.0210 (6.94)	-.0228 (3.22)	.0007 (0.00)	-	-
Left 1st occupation because qualified for better work	.0011 (0.03)	.0060 (0.25)	.0056 (0.02)	-	-
West Indian	-.0493 (7.16)	-.0379 (2.33)	-.0608 (0.49)	-	-
Indian/Pakistani	-.0626 (9.65)	-.0195 (0.15)	-.0773 (0.26)	-	-
Other Characteristics:		Earnings			
No. infant children (<5 years)	-.0061 (1.22)	-.1894 (183.65)	-	-	-
No. 5-15 years children	.0034 (1.38)	-.0951 (324.55)	-	-	-
Type of school: Grammar	.0784 (81.55)	.0536 (12.32)	.1605 (11.90)	-	-
Direct Grant	.1226 (6.61)	.1414 (1.42)	.8599 (4.90)	-	-
Independent	.1075 (30.18)	.0774 (4.18)	.0145 (0.04)	-	-
ESN	-.2877 (19.65)	-.1787 (2.59)	-.3003 (3.09)	-	-
No. unemployment spells 1965-74	-.0863 (64.06)	-.0554 (1.59)	-.0553 (0.88)	-	-
No. sickness spells 1965-74	-.0652 (51.84)	-.0102 (0.39)	-.0918 (2.12)	-	-
Left 1st occupation because of redundancy/dismissal	-.0381 (11.07)	-.0543 (4.08)	-.0829 (1.76)	-	-
Left 1st occupation because qualified for better work	.0285 (9.72)	-.0082 (0.10)	-.1084 (2.85)	-	-
West Indian	-.1468 (30.99)	.2717 (26.81)	-.0135 (0.01)	-	-
Indian/Pakistani	-.2008 (48.34)	.1345 (1.55)	.1929 (0.50)	-	-

APPENDIX: Specification of the Error Structure

Let:

$$y_{it} = x'_{it}\beta_t + u_{it} \quad (1)$$

and either:

$$u_{it} = \rho u_{it-1} + v_{it} \quad (2)$$

or:

$$u_{it} = f_i + e_{it} \quad (3)$$

If (3) is correct, then differencing (1) gives:

$$y_{it} - y_{it-1} = x'_{it}\beta_t - x'_{it-1}\beta_{t-1} + e_{it} \quad (4)$$

so that our equation:

$$y_{it} = \alpha y_{it-1} + x'_{it}\gamma_t - x'_{it-1}\gamma_{t-1} + e_{it} \quad (5)$$

is a general model in which (4) is nested. Testing for $\alpha = 1$ will identify the special case (4); furthermore $\gamma_\tau = \beta_\tau$ for $\tau = t, t-1$, but for variables which do not change between t and $t-1$ only $(\beta_t - \beta_{t-1})$ can be estimated.

If (2) is correct, then (1) minus ρ times lagged (1) gives:

$$y_{it} - \rho y_{it-1} = x'_{it}\beta_t - x'_{it-1}\beta_{t-1}\rho + v_{it} \quad (6)$$

so that (5) may be interpreted as follows:

$$\rho = \alpha$$

$$\gamma_t = \beta_t$$

$$\gamma_{t-1} = \rho\beta_{t-1}$$

Hence for X variables which do not change between t and $t-1$, we can estimate $(\beta_t - \rho\beta_{t-1})$, whilst for characteristics acquired recently we can identify β_t , since $\beta_{t-1} = 0$. The term $(\beta_t - \rho\beta_{t-1})$ will overstate the effect of a pre-existing characteristic in improving the individual's position between t and $t-1$ so long as $\rho < 1$.

For all three groups, men married and single women, we obtain estimates of α which are well defined and fall between zero and one. Thus, we can reject (3) (since $\alpha \neq 1$), but we cannot reject (2) (since $\rho \neq 0$).

Nickell (1982) investigates a model in which the error term is composed of both a fixed effect and a serially correlated element, i.e.:

$$u_{it} = f_i + e_{it} \quad (3)$$

and

$$e_{it} = \rho e_{it-1} + w_t \quad (7)$$

Unfortunately, the estimation of this model is very expensive in computer time with large numbers of variables. As a result he has to drastically restrict the number of independent variables. Because we wished to experiment with different samples and specifications, we did not pursue this more complex model.

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