Women, Lifelong Learning and Employment

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Executive Summary

This paper reports on research on the employment effects of lifelong learning for a cohort of British women. Responsibility for caring for children and other dependent family members continues to be borne mainly by women, and they frequently have spells out of paid employment as a consequence. Lifelong learning is often regarded as playing a key role in maintaining and enhancing the employability of women returners. It is argued that lifelong learning can prevent skills depreciation for women who have had long breaks from paid employment and that those who missed out on initial education may require lifelong learning in order to obtain essential basic skills To date, however, the evidence on whether lifelong learning really does have beneficial employment effects has been very sparse.

The data used in this paper came from the National Child Development Study (NCDS). The NCDS is a continuing longitudinal survey of people living in Great Britain who were born in the first week of March 1958. Members of the NCDS cohort have been interviewed on a number of occasions over the course of their lives so far, with the most recent surveys having taken place in 1991 when cohort members were 33 years old and in 2000 when they had reached the age of 42. Cohort members completed retrospective employment histories and this information is used to track respondents' transitions into and out of employment on a month-by-month basis.

The research focused on women who were not in work 1991 and examined whether lifelong learning which resulted in qualifications had any effect on transitions into employment between 1991 and 2000. Information on a range of qualifications is available in the NCDS data, including both academic and vocational qualifications.

Among the 1,443 women in the NCDS who were out of work in 1991, some 72 per cent made a transition into employment between 1991 and 2000. After controlling for many other factors which could influence such transitions including the presence of a partner and of children, health status and prior education, adult learning which led to a qualification substantially increased the likelihood that a woman would return to employment.

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1   Introduction

Lifelong learning is widely regarded as playing a key role in enhancing the economic performance and prospects of individuals and, indeed, of whole economies. The rhetoric emanating from organisations such as the OECD and the EU has stressed the importance of lifelong learning in developing and regenerating the stock of human capital. In the modern, knowledge-driven economy, it has been argued,   people must upgrade their skills in order to remain competitive and to prepare for frequent changes in jobs. Those who missed out on initial education require lifelong learning to acquire essential basic skills.   Those out of the labour force should undertake lifelong learning to prevent skills depreciation. Adult learning, then, is seen as crucial for long-term employability (OECD, 2003). As well as these economic benefits, lifelong learning can also contribute to social inclusiveness and the reduction of inequality through its assumed effects on employment prospects (Green et al, 1999; Field, 2000).

Despite all this rhetoric, there is very little evidence on the effects of lifelong learning. Quantitative research by economists has focused overwhelmingly on rates of return to qualifications obtained in initial education (e.g. Blundell et al, 1999) and on transitions into employment among young people (Russell and O'Connell, 2001; Micklewright, 1989) rather than the value of education for older workers. Educational researchers have, of course, studied adult education, but have concentrated on the measurement and analysis of participation in learning. They have looked at which groups of people are more or less likely to participate in learning and on how the recalcitrants who show no apparent interest in learning can be motivated to do so (Field, 2000; Sargant and Aldridge, 2002). This body of work, then, tends to assume that adult learning will have beneficial effects without enquiring into what those effects might be.[1] A further reason for the lack of evidence on the effects of learning is that assessing the benefits of learning is not an easy task. It requires longitudinal information on individuals who have completed courses, and may require follow-ups over long periods of time. Such data may be difficult to obtain or expensive to collect (Schuller, 2002).

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[1] See Jenkins et al (2002) for a more extensive discussion of the literature on economic effects of lifelong learning.

This paper contributes to the evidence base on the economic effects of lifelong learning through an analysis of women's transitions into employment. Although the participation of women in paid employment has increased greatly in developed economies over the last fifty years there remains a sizeable gap between male and female participation rates with women continuing to bear most of the responsibility for the care of children and other dependent family members (OECD, 2002). Women are therefore likely to have gaps in employment, often quite lengthy ones. It is plausible to suppose that they are a group for whom lifelong learning will be particularly important, as they will need to maintain and enhance their skills if they are to return to work. Recent government policy in a number of countries, including Britain, has focused on encouraging women, and especially lone mothers, back into employment (Gregg and Harkness, 2003; OECD, 2001). This research studies a cohort of British women to examine the effects of obtaining qualifications as adults on the likelihood that women will successfully return to the labour force after spells out of work.

2   Data and Methods

2.1   Data

The data used in this paper come from the National Child Development Study (NCDS). The NCDS is a continuing longitudinal survey of people living in Great Britain who were born in the first week of March 1958. Members of the NCDS cohort have been interviewed on a number of occasions over the course of their lives so far, with the most recent surveys having taken place in 1991 when cohort members were 33 years old and in 2000 when they had reached the age of 42.

In the recent NCDS surveys, cohort members have been requested to complete retrospective employment histories and this information can be used to track respondents' transitions into and out of employment on a month-by-month basis. Here the focus is on returns to work by women who were not employed in 1991. It is likely that this group of women share certain characteristics which differentiate them from NCDS women in general and it is important to be clear at the outset what these characteristics are. Table 1 provides some descriptive statistics comparing the sample of women not at work in 1991 with other NCDS

women who were in paid employment at that time.   Women out of employment in 1991 were far more likely to have had a child – 95 per cent had at least one child – than women in employment in 1991, among whom only 68 per cent had a child in the household at that point. The children of women who were not in work in 1991 also tended to be young children, with 46 per cent of these women having a child aged two or under, compared to about a quarter for those women in employment in 1991 who had children. The women not in employment in 1991 were more likely to have a partner than the employed women. The women who were out of work in 1991 also tended to be less qualified. Nearly a fifth had no qualifications at all, and only 17 per cent had high-level qualifications (NVQ-equivalent levels 4 or 5) while among women who were employed in 1991 a mere 10 per cent had no qualifications and 29 per cent had high-level qualifications.   Not surprisingly, the women who were not in work in 1991 also had little work experience prior to that date – over half of them had worked for less than 12 months in the five years prior to 1991.   The sample selected for analysis, then, consisted largely of mothers,   often with very young children but not, in the main, single mothers. They tended to be   poorly qualified. These characteristics are important to bear in mind when considering the results.

How did the women not in employment in 1991 define their activity status at that time in the work history questionnaires? Of the 1,443 women not in employment in 1991, over 90 per cent or 1,318 in total, classified themselves as "looking after home/family", while 49 said they were unemployed/seeking work, 71 stated that they were permanently sick/disabled and five, rather implausibly for people in their thirties, reported that they were "wholly retired".   Although in principle it might be of interest to draw a clear line between those who were unemployed and those who were engaged in family care responsibilities, in practice this distinction is very fuzzy. It is now well-established in the literature that women's retrospective recall of unemployment spells is much less reliable than that of men (Dex and McCullough, 1998; Jacobs, 2002). Recall will depend on how unemployment is defined in the questionnaire, on the alternatives available, and on women's subjective perceptions of whether they consider themselves primarily unemployed or as family carers. No distinction was therefore made between these two states.   As for returns to work, we did not differentiate between full and part time work, or between self-employment and waged work.[2] For the sample of 1,443 women who were not in work at the time of the fifth NCDS sweep in

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[2]   See Section 4 for some discussion of returns to full-time work.

March 1991, some 1,035, or about 72 per cent of the sample had made a return to employment by the time of the sixth NCDS sweep in 2000.

What distinguishes the women who did make a transition into employment between 1991 and 2000 (referred to here as the returners) and the women who remained out of work throughout this period (non-returners)? Table 2 compares them. It can be seen that the women who returned to work between 1991 and 2000 were more likely to be in partnerships than those who remained out of work throughout the period. Nearly all the women in the sample, both returners and non-returners had children by 1991 and many of these were very young children (two years old or less in 1991). Contrary to what might be expected, the proportion of women with children and the proportion of women with young children were somewhat higher among the returners than the non-returners.

There were some striking differences between the returners and the non-returners with regard to educational attainments and participation in adult learning. Initial educational attainments are usually found to have a strong positive impact on the likelihood of employment (Nickell, 1999). Here, initial education was defined in terms of the qualifications obtained by the age of 33. By this point in the lives of cohort members anything that could be viewed as even 'late' initial education would be fully complete. The 1991 sweep of the survey covered a wide range of qualifications (Ferri, 1993) and the highest qualification obtained by that date was coded using an NVQ equivalent scale to combine academic and vocational qualifications. Among the sample of women not employed in 1991 those who did return to work between 1991 and 2000 tended to have much higher qualifications than those who did not make a transition into employment in this period. About 29 per cent of those women who remained out of employment throughout the period had no qualifications at all in 1991 whereas this applied to only 14 per cent of those women who made a transition into employment between 1991 and 2000. Over a third of the returners were qualified to NVQ-equivalent level 3 in 1991 while less than a quarter of the non-returners had reached this level by 1991.

Lifelong learning was defined in terms of the academic and vocational qualifications that respondents obtained between the 1991 sweep of the NCDS (age 33) and the 2000 survey (age 42). The survey data include a very wide range of such qualifications, including GCSEs, AS and A levels, degrees and higher degrees, as well as a broad range of vocational

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qualifications (Ferri et al, 2003).   Among the women who made a transition into employment between 1991 and 2000, 35 per cent had also obtained a qualification during that period while only 17 per cent of those not making a transition into work had done so.

The returners also tended to have much more recent work experience prior to 1991 than the non-returners. Nearly two-thirds of those who remained out of work between 1991 and 2000 had worked for less than 12 months in the five years prior to March 1991. In contrast, rather more than half of those who did make a transition into employment over the 1991 to 2000 timespan had had one year or more of work experience in the five years up to 1991.

Attitudes towards market as opposed to domestic work are likely to make an important contribution to the explanation of female labour supply (Hakim, 2000; Marks and Houston, 2002).   Questions on attitudes regarding a whole range of social and political issues are available in NCDS and some responses to the statement, "Wives who do not have to work should not do so" are reported in Table 2. It can be seen that about 30 per cent of the non-returners agreed or strongly agreed with this statement while only 20 per cent of the returners did so. This suggests that there were differences in attitudes between returners and non-returners which need to be considered in any analysis of returns to work.

Table 2 also reports further background variables for the returners and non-returners including the type of school attended and the socio-economic status of the father. There do not seem to be major differences between the returners and non-returners on these variables. As the main focus of this paper is on the effects of adult learning it is also worth exploring the characteristics of learners and non-learners among the sample of women not in employment in 1991. Table 3 compares these learners and non-learners, with learning defined as obtaining a qualification between 1991 and 2000. Particularly noticeable here are the differences in education level and age 11 test scores on reading and maths between those who obtained qualifications between 1991 to 2000 and those that did not.

2.2   Method

From the descriptive statistics presented so far it will be apparent that there are a number of factors which could play some part in explaining whether women out of work in 1991

subsequently made a transition into employment by the year 2000. The information available in the NCDS means that the effects of learning on transitions into employment can be analysed controlling for a range of factors including family circumstances, economic circumstances and prior educational attainments.

Linear regression techniques – which would be the simplest method of controlling for the influence of several explanatory factors on a response variable – are not appropriate here because of the presence of censoring.[3] Instead, the method used is event history analysis. Not all women without a job in 1991 returned to work by 2000, and event history analysis enables this problem of censoring to be properly taken account of (Allison, 1984). We model the hazard i.e. the risk that a transition into work occurs in a particular month given that it has not occurred prior to that month using the Cox proportional hazards model. This is a continuous time framework in which the hazard at time t, h(t), is expressed as:-

$$h(t) = h_0(t)\exp(X\beta) \qquad (1)$$

where $h_0(t)$ is the "baseline hazard", capturing the effects of time dependence, while the explanatory variables, X, have a scaling effect, either raising or lowering the hazard in all months. A continuous time model is appropriate as there is a long observation period of nearly ten years with employment status recorded on a monthly basis. The Cox model is semi-parametric, with the influence of time on the risk of an event not modelled explicitly (Yamaguchi, 1991). This is an advantage here, where we are mainly interested in studying the effects of covariates rather than the details of time dependence.

In event history models a distinction is drawn between fixed covariates, such as sex, which do not change over time, and time-varying covariates, for example age or education level which could alter over time. Models in which lifelong learning is a fixed covariate and those where it is time-varying will be presented, although the latter specification is to be preferred since it allows for the time at which learning was completed to be taken into account, and rules our cases in which lifelong learning appears to have an effect on employment transitions even though the return to work occurred before the learning was undertaken.

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[3] For example, in a regression with the length of time (duration) before a return to work as the response variable, those who did not return to work in the observation period would either have to be dropped from the analysis or values of the response variable would have to be assumed for them. Either way, biased estimates would result.

While event history analysis can be used to deal with right censoring and the proper sequencing of events in a straightforward way, another methodological challenge is that of endogeneity bias. It might be the case that some women have certain characteristics which make it more likely that they will both acquire qualifications and return to work during the observation period. Perhaps some women in the sample are inherently more able or more motivated than others, for example. In this case an association between learning (leading to a qualification) and transitions into employment would be observed but it would be incorrect to infer that the learning was aiding the transition into employment – rather unobserved characteristics would be determining both the participation in learning and the gaining of a job. The strategy for dealing with potential endogeneity bias is to control for factors which influence both the likelihood of undertaking lifelong learning and also the individual's chances of making a transition into employment. The rich longitudinal data available in the NCDS means that it is possible to condition for a large number of individual characteristics in the model, including all the variables shown in Tables 2 and 3. Previous research has shown that test scores, such as the age 11 reading and maths scores, and highest qualification attained in intial education have a major impact on the probability of participation in lifelong learning (Bynner, 2001; Jenkins et al, 2003) and so it is particularly important to include these in the model.

3   Main Results

Differences between the learners and non-learners in terms of transitions back into employment are shown in Figure 1 which graphs survival curves for the two groups. Here the horizontal axis represents the number of months with March 1991 as the first month and the latest observations occurring in the 115th month, September 2000. The vertical axis shows the proportion of respondents who remained out of employment in each month. This starts at one, or 100 per cent, since all were out of work in the first month. It can be seen that those respondents who engaged in learning leading to a qualification between 1991 and 2000 tended to make more rapid transitions into employment compared to those who did not achieve a qualification in that time span. The median survival time (i.e. the point at which half of the group had made a return to employment) was exactly 50 months for the learners, whilst among the non-learners it was 72 months.

The results in Figure 1 suggest that lifelong learning which led to qualifications could be having an effect on returns to employment but it is far from conclusive for two main reasons. Firstly, there are no controls for other factors, such as prior education levels or the presence of a partner in the household, which will influence the likelihood of a return to work and which could differ systematically between learners and non-learners. Secondly, no account is taken of when the learning occurred. Those who obtained a qualification between 1991 and 2000 were more likely to return to work during that time, but it is quite possible that they obtained their qualification after returning to work, indeed perhaps even as a result of training courses attended whilst at work. So, formal statistical models are needed which can overcome these problems. Event history models will be used as outlined in the discussion of methodology above.

The results of a multivariate analysis of the "hazard" of returning to employment, with lifelong learning treated as a fixed covariate are displayed in Table 4. Hazard ratios are reported for each of the explanatory variables. A hazard ratio greater than one implies that that variable increases the risk of the event occurring, while a hazard ratio less than one shows that the risk has been reduced. This model includes a number of explanatory variables which could influence the transition into employment. The model is quite sparse, with controls for presence of a partner and of children in 1991, the number and age of children at that time, health status in 1991, work experience in the five years prior to that date and educational level in 1991, as well as lifelong learning leading to a qualification between 1991 and 2000. The presence of a partner increased the likelihood of a return to work between 1991 and 2000 as did the number of children. Those with children aged three to four years were also more likely to return to work than those with very young children (those aged two or under).

Previous research has shown that the age of the youngest child has significant effects on the probability that a women will make the transition into paid employment, with the presence of younger children slowing down the return to work, while larger numbers of children are also usually associated with a lower probability of being in work (Joshi et al, 1996; Macran et al, 1996). So, the fact that larger numbers of children were having a positive effect on transitions into employment here is a little surprising, although it might be explained by women with larger families needing to earn in order to support those families.

Women in poor health in 1991 or who were disabled were much less likely to make a transition into employment while the amount of work experience in the five years prior to 1991 increased the probability that women who were out of work in 1991 would obtain a job between then and 2000.

Compared to the base category of no qualifications women with qualifications were more likely to make a transition into employment. There is no evidence here that higher-level qualifications (NVQ equivalent levels four or five) increased the probability relative to those with lower levels qualifications – rather there appears to be a threshold effect of some qualifications versus none. Learning which led to a qualification between 1991 and 2000 retained its statistically significant association with returns to employment after controlling for these other factors.

Table 5 presents a much fuller model with many additional variables included in an effort to overcome potential endogeneity bias. The additional variables include intentions to have more children, a measure of attitudes towards women at work, scores on reading and maths tests at age 11, socio-economic background variables, the type of school attended and region. The inclusion of these additional variables seemed to have relatively little influence on the core variables already in the model as can be seen by comparing Tables 4 and 5. Most of the additional variables did not have statistically significant effects on the transition into employment. However, women who reported in 1991 that they were intending to have more children were less likely to make a return to work between 1991 and 2000; there is some evidence that those who attended secondary modern schools were less likely to make a return to work.

Dummy variables for region (in 1991) were included in the model as an, admittedly quite crude, attempt to control for circumstances on the demand side of the labour market. Although regional variations in unemployment rates were very small in the 1990s compared to preceding decades, (Jackman and Savouri, 1999) it seemed plausible that the ease of moving back into employment could still be influenced by the state of regional demand for labour. The results in Table 5 suggest that women in London and Wales who were out of work in 1991 were somewhat less likely than women in other regions to make a transition into employment by 2000 but these regional effects were statistically very weak.

Lifelong learning, measured as obtaining a qualification between 1991 and 2000, continued to be strongly and positively related with transitions back into employment by women who were out of employment in 1991 even in the presence of the full range of explanatory variables. Learning leading to a qualification was associated with an increase in the hazard of such a transition by some 34 per cent in this model and the effect was highly statistically significant.

Although it has now been shown that lifelong learning retains a strong association with transitions into employment even in the presence of many other explanatory variables, no account has yet been taken of when the learning occurs. This we proceed to do in Tables 6 and 7. Table 6 shows a sparse model, with a limited number of explanatory variables and Table 7 the full model with all available explanatory variables. In these models lifelong learning was entered as a time-varying covariate rather than a fixed covariate meaning that only learning which occurred prior to the (first) transition into employment is included in the model. Data are available on the year in which a qualification was obtained but not the month. Therefore, it was assumed conservatively that lifelong learning had effects only from the beginning of the year after it was obtained.[4]

In the 2000 sweep of NCDS there was one type of qualification, "other vocational qualifications" for which respondents were not asked when they obtained the qualification; there is also missing date information for some respondents on other qualifications, too. By focusing on the specific date at which qualifications were obtained the sample of learners was reduced from 432 to 325. The 107 who obtained a qualification between 1991 and 2000 but where the year in which the qualification was attained was not available were omitted from the analysis with learning as a time-varying covariate. In Table 7 the variable for intentions to have more children in 1991 was replaced by a time-varying covariate measuring the actual month in which women had a birth for any women having a child between 1991 and 2000, The results show that the effects of the other variables in the model were little influenced by the inclusion of time-varying covariates. It is clear that learning leading to qualifications continued to be strongly associated with transitions into employment between 1991 and 2000

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[4] For example if a respondent obtained a qualification at some point in 1995, she would have zeros on the lifelong learning variable until January 1996 and from then on the lifelong learning variable would take the value of one. Since learning may have an effect immediately from when the qualification is acquired, or even

for women who were not in work at the start of the period, in this model. Indeed the point estimate of the hazard ratio for learning leading to a qualification was 1.50.   Comparing Table 5 in which all variables were fixed and Table 7 which has births and learning leading to qualifications as time-varying covariates it can be seen that the estimates of most of the coefficients are quite similar, although the hazard ratios for presence of a partner in 1991, for having a child in the three to four year age range and for having obtained an NVQ-equivalent level 5 qualification by 1991 were all somewhat higher in Table 7. The model shown in Table 7 should be regarded as the preferred version as it allows only for learning which occurred prior to the employment transition and   because a full range of control variables were included.

4   Robustness Checks

In this section some further analyses are reported with the aim of checking how far different definitions of key variables affected results, as well as the validity of the assumptions underlying the models used. Readers in a hurry may prefer to skip this section and proceed to Section 5 where the implications of the main findings are discussed.   The results described here cover alternative definitions of lifelong learning, alternative definitions of what constituted a return to work, the validity of the proportional hazards assumption, whether the results are unduly influenced by the presence of statistical outliers, and the robustness of the findings in the presence of unobserved heterogeneity. Each of these topics will be considered in turn.

4.1   Alternative definition of learning

So far, lifelong learning has been defined in terms of obtaining qualifications between the ages of 33 and 42. One of the states in the monthly employment histories is full-time education and this can be included, along with learning which led to a qualification, to give a somewhat wider definition of lifelong learning. In total, 79 people in the sample of women out of work in 1991 undertook one month or more of full-time education between the ages of 33 and 42. Almost all of these also obtained a qualification so that broadening the definition of learning only increased the number of learners from 432 to 436.

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before, our analysis is then understating the real effects of learning.

When a variable reflecting this slightly broader definition of learning was used in the analysis with learning as a fixed covariate the results were as shown in Table 8. As expected the change made almost no difference to the results, as can be seen by comparing with the estimates in Table 5. There are some very slight differences in the reported hazard ratios, usually at the third decimal place.

Some analyses were also conducted with this wider definition of learning entered as a time-varying covariate. For those who had spells in full-time education it was necessary to make some assumptions about when the effects of the full-time education were assumed to start. Table 9 shows the results when the effects of learning were assumed to start from the month after the spell of full-time education began, while Table 10 reports results assuming that the effects of learning started from the month after the spell of full-time education was completed. These tables can be compared with the equivalent results for the narrower definition of learning in Table 7.

Compared to the main results, the effects of lifelong learning were larger with the alternative definition of learning. The hazard ratio was estimated at 1.50 in Table 7; this increased to 1.66 in Table 9, and to 2.02 in Table 10. Coefficients on other variables were essentially unchanged. It seems likely that, by including spells of full-time education in the definition of lifelong learning, some individuals will have had earlier start dates for when learning began to have some effect, and so are more likely to have education spells which were completed before they began work.

4.2   Alternative definition of employment

The results reported so far relate to women returning to any form of work, whether it was just a few hours a week or a full-time position. It is also worth considering whether obtaining a qualification between 1991 and 2000 was associated with returns to full-time work. Table 11 shows results when the definition of a return to work was narrowed to include only full-time work. It is clear that obtaining a qualification as an adult significantly raised the hazard of a return to full-time work. In fact, comparing the results in Table 11 with the equivalent results for full and part-time work in Table 5 it can be seen that the point estimate of the hazard ratio was higher in the model for full-time work at 1.53 compared to 1.34 in the

model with any form of work. Some other features of the full-time work model in Table 11 are also worth highlighting. Those women with no children in 1991 were more likely to return to full-time work than women with children; this was not the case for work in general. The presence of a partner in 1991 increased the hazard of returning to all forms of work but did not have a statistically significant effect when focusing on returns to full-time work only. Women with children of school age were also more likely to return to full-time work compared to women with children of two years or under, but this was not the case in the model for returns to any form of work.   These results make good sense, as they suggest that the presence of children, particularly young children, while not preventing a return to some form of work, did make it difficult to move into full-time work. The presence of a partner may make it easier to return to work, but the partner's earnings will reduce the necessity of finding full-time work.

4.3   The proportional hazards assumption

In Cox models with only fixed covariates, such as those in Tables 4 and 5, there are no interaction effects between time and the explanatory variables. These models are termed proportional hazard models. Tables 6 and 7 allow some variables (obtaining qualifications as an adult; birth of children from 1991 onwards) to alter with time but even here most of the explanatory variables are fixed and do not interact with time. It is important to test, then, whether the proportional hazards (PH) assumption is a reasonable one, or whether further or more complex interactions between covariates and time should be included.

The PH assumption was tested on the models in Tables 4 and 5 using the tests devised by Grambsch and Therneau (1994). Global tests suggested that the model in Table 5, which includes all available covariates satisfied the PH assumption, but that the more sparse model of Table 4 did not pass the test. Here, the relevant chi-squared statistic suggested that the PH assumption was not valid at the five per cent significance level. Further tests on specific covariates revealed that it was the age of youngest child variable which was causing this model to depart from proportional hazards.   A simple method for estimating a Cox model when one categorical covariate interacts with time is to make this covariate a stratifying variable.   So some stratified Cox models were run   with age youngest child as the stratifying variable. The baseline hazard function was allowed to vary by age youngest child but coefficients on other covariates were constrained to be equal across groups as in the

standard Cox model. Comparing the results from the stratified models with those from the equivalent unstratified models in Tables 4 and 5 suggested that this made little difference to the estimated effects of other   covariates. For example, the hazard ratio for the lifelong learning variable was   1.36 in Table 4 and 1.37 in the equivalent model stratified by age youngest child.   The conclusion reached, then, was that in general the PH assumption was reasonable. Moreover, even in the model where tests suggested the PH assumption might not be plausible, parameter estimates were little affected by relaxing the PH assumption.

4.4   Outliers

Statistical models can sometimes be sensitive to the presence of outliers – those with extreme values on certain covariates, or cases to which the model fits very poorly. To check whether this was a problem here some models were re-estimated with such cases omitted. From Table 18 it can be seen that a few individuals appear to have made very large advances in the highest qualification held between 1991 and 2000. One person in the sample reported no qualifications in 1991 but had a level five qualification by 2000, and eleven people were at either NVQ level zero or one in 1991 and had moved up to level four or five by 2000. While such dramatic improvements in educational attainments are not impossible over a ten year period, the most likely explanation is mis-reporting of qualifications attained at earlier sweeps of the NCDS. These eleven cases were dropped from the sample and the models re-estimated to see if there was any effect on the results. In fact, the deletion of these outliers made virtually no difference to the results obtained. For example, using the model in Table 5 the omission of outliers altered the coefficient on the qualifications obtained as an adult variable from about 1.34 to 1.36. This marginal strengthening of the coefficient on obtaining qualifications occurred because all of the eleven outlier cases had obtained a qualification between 1991 and 2000 but not all of them made a return to work. Some models were also estimated in which the five people who reported themselves as retired in 1991 were dropped from the sample, but this had similarly negligible effects on the results.

Another approach to determining whether outliers are important is to look at residuals from the estimated model. Deviance residuals were calculated for several of the models reported in the paper.[5]   Examination of the residuals did not suggest that large outliers were a problem. Nonetheless, the models were re-run omitting cases where the absolute value of the deviance

residual was greater than or equal to two. For the model shown in Table 5 deleting outliers on this basis reduced the sample size by 81 from 1,417 to 1,336. Dropping more than five per cent of the sample was bound to have some impact on the estimated coefficients, but overall results were little affected. All the variables which were statistically significant in Table 5 remained so when outliers were deleted. For example, the hazard ratio for the lifelong learning variable increased when outliers were omitted from 1.34 to 1.54. These findings do not suggest, then, that the results are particularly sensitive to the presence of outliers.

4.5   Unobserved heterogeneity

In the event history models described so far, the variation in hazard rates across individuals was assumed to depend only on observed differences in the explanatory variables. This is an assumption of no unobserved heterogeneity (Singer and Willett, 1993). In practice, there is likely to be some unobserved heterogeneity in any sample due to omitted variables, unobservable variables and measurement error. Ignoring the influence of unobserved heterogeneity could lead to biased estimates. Although the NCDS is a very rich dataset and enables the inclusion of factors often not available to researchers such as early test scores and attitude variables, it seemed worth investigating whether heterogeneity affected the results.

As incorporating frailty in a Cox model is difficult computationally, (Han and Hausman, 1990) much of our analysis of this topic used a parametric specification for the hazard. Common parametric forms for the hazard are the Weibull model, as in equation (2) and the Gompertz model shown in equation (3):-

$$h(t) = \alpha t^{\alpha-1} \exp(X\beta) \qquad\qquad (2)$$

$$h(t) = \exp(\gamma t)\exp(X\beta) \qquad\qquad (3)$$

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[5] See StataCorp (2003) for details of the procedure for calculating deviance residuals.

A standard way to allow for unobserved heterogeneity is to include a frailty term in the model, an unobservable multiplicative effect which shifts the individual's hazard function up or down. So, for example, with frailty, equation (2) would be modified to:-

$$h_i(t) = \alpha t^{\alpha-1} \exp(X\beta).v_i \qquad (4)$$

Here $h_i(t)$ is the hazard function for individual i. By assuming some convenient functional form for the v_i term it is possible to obtain estimates for the influence of unobserved random effects. Two such forms are the gamma and the inverse Gaussian distributions (Hougaard, 1986). So, Weibull and Gompertz hazard models were utilised with either gamma or inverse Gaussian frailty terms.

Table 12 reports a model in which the hazard follows a Weibull distribution and where it is assumed that there is no unobserved heterogeneity. This model is very similar, both in terms of which variables are statistically significant and the size of the estimated hazard ratios, to the Cox model of Table 7. The estimate of the parameter α in Table 12 of 1.18 suggests that the baseline hazard of returning to work tends to increase over time. In Table 13 a Weibull model with gamma frailty is reported. The parameter θ is the estimated variance of this frailty distribution. In this case a likelihood ratio test of the null hypothesis that θ was equal to zero was accepted, suggesting that unobserved heterogeneity was not important in this model. Note also that the estimated hazard ratios in Tables 12 and 13 are very similar. In a Weibull hazard model with inverse Gaussian frailty there was also no evidence to reject the null hypothesis that θ was equal to zero.[6]

Gompertz hazard models with and without unobserved heterogeneity were also estimated. Table 14 shows a model in which the hazard follows a Gompertz distribution without heterogeneity, while Table 15 reports an equivalent model, but incorporating heterogeneity, with an inverse Gaussian distribution assumed for the frailty distribution. In this case unobserved heterogeneity was statistically significant as can be seen by the likelihood ratio test on the parameter θ which was significant at the one per cent level.[7]

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[6] These results are not reported in a table but are available on request.

Despite these varying results for the heterogeneity component in the models, the estimated hazard ratios were very similar across all the different models. The estimates of the effects of covariates are largely unchanged across the models in Tables 12 to 14. In Table 15 the point estimates of some of the hazard ratios are somewhat higher, but still broadly of similar magnitude and qualitatively the results are unaltered, with the same variables observed to have statistically significant effects in all models. These findings, then, suggest that whether unobserved heterogeneity is important depends on the functional forms chosen for the hazard model and for the frailty distribution but that the inclusion of unobserved heterogeneity in the model had little impact on the estimated effects of covariates. This is by no means an unusual result in event history analyses (Andress, 1989).

5   Discussion

The core result of this paper is that lifelong learning which led to a qualification was strongly associated with the likelihood that women who were not employed in 1991 returned to work between 1991 and 2000. This finding appears robust to the various different model specifications and varying definitions of learning which have been investigated. In previous work using NCDS data, Jenkins et al (2002; 2003) studied the labour market effects of lifelong learning. They were mainly concerned with wage effects, and their results showed that adult learning leading to qualifications had no robust effects on wages. But they also utilised a probit model to investigate whether, among individuals who were not in employment in 1991, obtaining qualifications as an adult learner affected the probability that the individual would be in employment in 2000. They found that learning which resulted in a qualification was positively related to being in employment in 2000 amongst women but that there was no statistically significant effect of learning for men. However, the number of men in the NCDS who were not in employment in 1991 was small, with less than 300 cases.

The research presented here has analysed further the positive association of learning with transitions into employment for women, and extends the results of Jenkins et al (2002; 2003) in two important ways. Firstly, a range of variables reflecting the family circumstances of the women such as presence of a partner, presence of children and the age of the youngest

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[7]   The Gompertz hazard model with gamma frailty also suggested that unobserved heterogeneity was significant, at the five per cent significance level. In the interests of brevity these results are not reported in a table but can

child have been included in the models reported in this paper. It is well known that these factors are likely to be important in explaining observed patterns of employment amongst women (Macran et al, 1996). Secondly, unlike a probit model, the event history models used here can take account of when learning took place, ruling out cases where the transition into employment occurred before any learning activity was undertaken. The fact that the statistical association between learning leading to qualifications and employment transitions continues for women who were out of work in 1991 even in these event history models and in the presence of additional explanatory variables greatly reduces the possibility that the relationship is a spurious one, then.

There are a number of ways in which learning activity resulting in qualifications could have a beneficial influence on the probability of transitions into work. It is difficult to establish which of these provides the best explanation but we can at least outline the various possibilities and comment on their plausibility. Firstly, for women who were out of the labour force, acquiring a qualification of some kind could signal to potential employers that they are well-motivated individuals compared to other job applicants who have not engaged in learning in the recent past. It is well-established that employers tend to look less favourably on job seekers who have been out of paid work for some time, but this might apply less to women spending time out of the labour force to bring up young children than to the long-term unemployed. Certainly, it seems likely that managing to combine motherhood with the acquiring of additional qualifications, as would be the case for many of the learners in the sample, would be interpreted favourably by employers.   But workplace surveys and perhaps qualitative data would be necessary to gain further insights on this.

A second explanation for the observed results could be that the women were acquiring vocational qualifications which were highly relevant to the workplace and so directly enhanced their employability.   Some evidence of the types of qualifications obtained by women in the sample can be marshalled.   Table 16 provides a detailed breakdown of the types of qualifications which were obtained by women who were out of work in 1991. It can be seen that most of the qualifications were vocational with RSAs, NVQs, City and Guilds certificates and other vocational qualifications among the most common.   The highest academic and vocational qualifications obtained by female cohort members who were out of work in 1991 were classified using NVQ-equivalent scales and the results are reported in

be made available on request.

Table 17. It is apparent that 1,340 of these women did not acquire any academic qualifications between 1991 and 2000 and this confirms that vocational qualifications were much more likely to be obtained by the adult learners in the sample of women out of work in 1991.

Figure 2 simplifies further by using a single NVQ-equivalent scale to measure the level of both academic and vocational qualifications. This gives a picture of the highest level of qualification achieved overall.   Most of the qualifications obtained by women who were out of work in 1991 tended to be at NVQ-equivalent levels one or two, but a sizeable minority, about 36 per cent of the learners, achieved NVQ level three or above.   To what extent were those who did obtain qualifications achieving higher levels than they had in the past?   Table 18 cross-classifies the highest qualification achieved between 1991 and 2000 by the highest qualification held in 1991 for all the women who were both out of work in 1991 and achieved at least one qualification between then and 2000.   From this table it can be calculated that just over a third of these learners raised their highest level of attainment between the ages of 33 and 42.[8]   To summarise, then, the types of qualifications obtained were overwhelmingly vocational. The qualifications were often at a relatively low level but a substantial minority of about a third achieved qualifications at NVQ level three or above and a similar proportion of the sample raised the higest level of qualification which they had ever achieved. On this evidence, then, it is plausible to suppose that the qualifications could contribute to increased chances of transitions into work.

Of course, as mentioned earlier, a very different way of accounting for the relationship between learning and returns to work would be that certain types of women both happened to obtain qualifications and to return to work, due to some underlying and unobserved factor such as innate ability or motivation. This potential endogeneity problem was tackled in the analysis by including as many observable characteristics in the model as possible. The NCDS data are exceptionally rich so that many controls could be utilised including the results of early tests in maths and reading as proxies for innate ability, variables reflecting attitudes to work as well as other controls for social and educational background and family circumstances. Of course the possibility of endogeneity bias cannot be entirely ruled out, but

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[8]   Of the 428 female learners shown in the table some 146, or 34 per cent, attained a higher level of qualification than they had achieved up to 1991.

the inclusion of such a range of controls at least reduces the likelihood of its being a serious problem.

Apart from adult learning some of the main factors associated with transitions into employment were health status and previous work experience. Women who reported that they were in poor health or disabled in 1991 were much less likely to make a transition into employment between 1991 and 2000, as might be expected. Those women who had little work experience in the five years up to 1991 (with less than 12 months) were also much less likely to make a return to employment from 1991 onwards. Other influences on the transition into employment for the NCDS women in the sample were the presence of a partner, the presence of more than one child in the household compared to only one, and having a youngest child of three or four years of age in 1991 compared to those with very young children.

Initial education also increased the likelihood that women out of work in 1991 would return to employment. The estimates suggest a threshold effect, with those possessing some qualifications more likely to return than those with no qualifications. It is also worth bearing in mind the nature of the sample, in that well-qualified NCDS women were much more likely to be already in work in 1991.

Focusing on first transitions into employment, as is standard in event history analysis, leaves open the possibility that the women in the sample could be making only brief returns to work before becoming unemployed or dropping out of the labour force once more. In fact from Figure 3, which shows the number of women in the sample who were in work in each month from March 1991 onwards, it is clear that the number of women in employment was growing quite steadily throughout the period under consideration. Some 927 of the 1,443 women in the sample were in work by November 1999.[9] Moreover, the data in Table 19 demonstrate that once the women were in employment they tended to remain in that state. This table shows the proportion of months for which women were in employment once they had made the first transition. Nearly 80 per cent of women remained continuously in employment right up until the end of the time period for which we have data (the number of months depends on when the first transition into work occurred and on precisely when they

were interviewed). Only 5.4 per cent spent less than half of the months under observation in employment once they had made their initial return to paid work.

What kinds of jobs were respondents obtaining?   The data enable women who were going into full-time work and those who chose part-time work to be distinguished. Generally, most of those who obtained a job were in part-time work (see Figure 4). Amongst those in employment in month 25 (March 1993) almost three-quarters were employed part-time, with the rest in full-time work. Of women in work in month 100 (June 1999) just over two-thirds were in part-time work and nearly one third were working full-time.[10]

6   Conclusion

Using a longitudinal dataset a   strong association was established between adult learning and the probability that women who were out of work in 1991 returned to work between 1991 and 2000, even after controlling for a range of family and economic circumstances which also influenced employment transitions.   Adult learning was defined in terms of acquiring qualifications from the age 33 to 42, although the results were not materially affected by defining learning in a somewhat broader manner so as to include time spent in full-time education between the ages of 33 and 42 as well. In an earlier study which also used NCDS data it was reported that adult learning which resulted in a qualification appeared to have little or no impact on wages (Jenkins et al, 2003). This evidence on the economic effects of lifelong learning supports the view that such learning is more effective in enhancing the employment prospects of those out of work than in improving rewards for those already in work.

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[9]   This was the month in which interviews began in the most recent sweep of NCDS, and hence it is the last month before censoring begins.
[10]   A few women, less than one per cent of those in employment at any particular time, were classified as "employed, status unclear" meaning that we cannot determine whether they were working part-time or full-time.

TABLE 1 COMPARING NCDS WOMEN IN PAID WORK AND NOT IN PAID WORK IN 1991

	Not in Paid Work in 1991		In Paid Work in 1991	
Presence of a Partner in 1991				
	N	Per Cent	N	Per Cent
single	174	12.1	670	19.3
in partnership	1,259	87.3	2,774	79.7
status unclear	10	0.7	37	1.1
Total	1,443	100.0	3,481	100.0
Presence of a Partner in 2000				
Yes	1215	84.2	2792	80.2
No	228	15.8	689	19.8
Total	1443	100.0	3481	100.0
Presence of Children in 1991				
Yes	1371	95.0	2379	68.3
No	72	5.0	1102	31.7
Total	1443	100.0	3481	100.0
Age Youngest Child in 1991 (those with children only)				
2 yrs or under	636	46.4	611	25.7
3-4 yrs	320	23.3	445	18.7
5-10 yrs	372	27.1	1,089	45.8
11 yrs or more	43	3.2	233	9.8
Total	1,371	100.0	2,378	100.0
Highest Qualification Level in 1991 (NVQ equivalent levels)				
No Qualifications	264	18.4	336	9.7
Level 1	250	17.4	451	13.0
Level 2	470	32.8	1213	35.0
Level 3	202	14.1	461	13.3
Level 4	173	12.1	621	17.9
Level 5	75	5.2	380	11.0
Total	1434	100.0	3462	100.0
Work Experience in 5 Years Prior to 1991				
less than 1 yr	724	52.9	208	7.1
1 to less than 2 yrs	185	13.5	148	5.1
2 to less than 4 yrs	271	19.8	428	14.6
4 to 5 yrs	189	13.8	2,149	73.3
Total	1,369	100.0	2,933	100.0

	Not in Paid Work in 1991		In Paid Work in 1991	

Attitude to Women at Work
"Wives who do not have to work should not do so"

	Not in Paid Work in 1991		In Paid Work in 1991	
Strongly agree	54	3.9	64	1.9
Agree	265	19.3	418	12.5
Uncertain	171	12.5	374	11.1
Disagree	756	55.0	2005	59.7
Strongly Disagree	128	9.3	495	14.8
Total	1374	100.0	3356	100.0

Type of school attended

	N	Per Cent	N	Per Cent
Comprehensive	947	65.6	2295	65.9
Secondary Modern	264	18.3	596	17.1
Grammar	120	8.3	379	10.9
Fee Paying	71	4.9	169	4.9
Other	41	2.8	42	1.2
Total	1443	100.0	3481	100.0

Region in 1991

	N	Per Cent	N	Per Cent
North	62	4.3	195	5.6
North West	142	9.9	406	11.7
Yorks & Humber	145	10.1	355	10.3
West Midlands	115	8.0	312	9.0
East Midlands	83	5.8	222	6.4
East Anglia	58	4.0	136	3.9
South West	137	9.6	301	8.7
South East	399	27.8	765	22.1
London	82	5.7	251	7.3
Wales	86	6.0	185	5.4
Scotland	126	8.8	329	9.5
Total	1,435	100.0	3,457	100.0

Father's SES in 1974

	N	Per Cent	N	Per Cent
Missing/no male in Household	450	31.2	1,067	30.7
Professional	52	3.6	144	4.1
Intermediate	200	13.9	533	15.3
Skilled non-manual	86	6.0	236	6.8
Skilled manual	433	30.0	1,030	29.6
Semi-skilled non-manual	16	1.1	32	0.9
Semi-skilled manual	138	9.6	290	8.3
Unskilled	49	3.4	120	3.5

	N				N		
unclear	19	1.3			28	0.8	
Total	1,443	100.0			3,480	100.0	

	Not in Paid Work in 1991				**In Paid Work in 1991**		
Age 11 Test Scores							
	N	Mean	Std. Dev.		N	Mean	Std. Dev.
Reading	1239	15.7	5.6		3017	17.0	5.7
Maths	1225	16.2	9.8		3002	18.3	9.7
Parents' Years of Education							
Father	1045	9.9	1.8		2513	10.1	2.0
Mother	1066	10.0	1.5		2598	10.1	1.7

TABLE 2 COMPARING WOMEN WHO RETURNED TO WORK AND WOMEN WHO DID NOT RETURN 1991 TO 2000

Sample: NCDS Women not in Work in March 1991

	Non Returners		**Returners**	
Presence of a Partner in 1991				
	N	Per Cent	N	Per Cent
single	78	19.1	96	9.3
in partnership	324	79.4	935	90.3
status unclear	6	1.5	4	0.4
Total	408	100.0	1,035	100.0
Presence of a Partner in 2000				
Yes	304	74.5	911	88.0
No	104	25.5	124	12.0
Total	408	100.0	1,035	100.0
Presence of Children in 1991				
Yes	368	90.2	1,003	96.9
No	40	9.8	32	3.1
Total	408	100	1,035	100
Age Youngest Child in 1991 (those with children only)				
2 yrs or under	155	42.1	481	48.0
3-4 yrs	78	21.2	242	24.1
5-10 yrs	120	32.6	252	25.1
11 yrs or more	15	4.1	27	2.8
Total	368	100.0	1,003	100.0
Highest Qualification Level in 1991 (NVQ equivalent levels)				
No Qualifications	117	28.8	147	14.3
Level 1	62	15.3	188	18.3
Level 2	121	29.8	349	34.0
Level 3	50	12.3	152	14.8
Level 4	41	10.1	132	12.8
Level 5	15	3.7	60	5.8
Total	406	100.0	1,028	100.0
Participation in Lifelong Learning				
Obtained qualification 1991 to 2000	68	16.7	364	35.2
No qualifications, 1991 to 2000	340	83.3	670	64.8
Total	408	100.0	1034	100.0
Work Experience in 5 Years Prior to 1991				
less than 1 yr	254	64.6	470	48.2
1 to less than 2 yrs	40	10.2	145	14.9
2 to less than 4 yrs	64	16.3	207	21.2
4 to 5 yrs	35	8.9	154	15.8
Total	393	100.0	976	100.0

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	Non Returners		**Returners**	
Attitude to Women at Work				
"Wives who do not have to work should not do so"				
Strongly agree	23	6.1	31	3.1
Agree	91	24.1	174	17.5
Uncertain	54	14.3	117	11.7
Disagree	181	48.0	575	57.7
Strongly Disagree	28	7.4	100	10.0
Total	377	100.0	997	100.0

Type of school attended	N	Per Cent	N	Per Cent
Comprehensive	263	64.5	684	66.1
Secondary Modern	76	18.6	188	18.2
Grammar	28	6.9	92	8.9
Fee Paying	23	5.6	48	4.6
Other	18	4.4	23	2.2
Total	408	100.0	1035	100.0

Region in 1991				
North	21	5.2	41	4.0
North West	45	11.1	97	9.4
Yorks & Humber	41	10.2	104	10.1
West Midlands	25	6.2	90	8.7
East Midlands	26	6.4	57	5.5
East Anglia	15	3.7	43	4.2
South West	24	5.9	113	11.0
South East	101	25.0	298	28.9
London	31	7.7	51	5.0
Wales	33	8.2	53	5.1
Scotland	42	10.4	84	8.2
Total	404	100.0	1,031	100.0

Father's SES in 1974				
Missing/no male in Household	144	35.3	306	29.6
Professional	18	4.4	34	3.3
Intermediate	50	12.3	150	14.5
Skilled non-manual	15	3.7	71	6.9
Skilled manual	113	27.7	320	30.9
Semi-skilled non-manual	3	0.7	13	1.3
Semi-skilled manual	38	9.3	100	9.7
Unskilled	18	4.4	31	3.0
unclear	9	2.2	10	1.0
Total	408	100.0	1,035	100.0

	Non Returners			**Returners**		
Age 11 Test Scores						
	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Reading	345	14.9	5.9	901	15.9	5.6
Maths	345	14.8	10.4	901	16.3	9.8
Parents' Years of Education						
Father	283	10.1	2.2	762	9.9	1.7
Mother	289	10.1	1.7	777	10.0	1.5

Note: Returners are women not in work in March 1991 who spent at least one month in employment between then and 2000. Non-returners are women not in work in March 1991 who remained out of work for all months between then and their interview date in 2000.

TABLE 3 COMPARING LEARNERS AND NON-LEARNERS

Sample: NCDS Women not in Work in March 1991

Learning defined as obtaining qualification(s) 1991 to 2000

	Non-learners		Learners	
Presence of a Partner in 1991				
	N	Percent	N	Per Cent
Single	143	14.16	31	7.2
In Partnership	863	85.45	395	91.4
Status Unclear	4	0.4	6	1.4
Total	1,010	100	432	100.0
Presence of a Partner in 2000				
Yes	841	83.3	373	86.3
No	169	16.7	59	13.7
Total	1,010	100.0	432	100.0
Children in the Household in 1991				
No	56	5.5	16	3.7
Yes	954	94.5	416	96.3
Total	1,010	100.0	432	100.0
Age Youngest Child in the Household				
(Those with children only)				
2 years or under	424	44.4	212	51.0
3 to 4 years	208	21.8	112	26.9
5 to 10 years	285	29.9	86	20.7
11 to 15 years	37	3.9	6	1.4
Total	954	100.0	416	100.0
Education Level in 1991				
(NVQ equivalent levels)				
No qualifications	235	23.4	29	6.8
Level 1	199	19.8	50	11.7
Level 2	318	31.7	152	35.4
Level 3	114	11.4	88	20.5
Level 4	102	10.2	71	16.6
Level 5	36	3.6	39	9.1
Total	1,004	100.0	429	100.0
Work Experience in 5 Years Prior to 1991				
missing/incomplete data	47	4.7	27	6.3
less than 1 year	534	52.9	190	44.0
1 to less than 2 years	121	12.0	64	14.8
2 to less than 4 years	189	18.7	82	19.0
4 to 5 years	119	11.8	69	16.0
Total	1,010	100.0	432	100.0

	Non-learners		Learners	

Attitudes to Women at Work
"Wives who don't have to work should not do so"

	Non-learners		Learners	
Strongly Agree	46	4.8	8	1.9
Agree	212	22.1	53	12.8
Uncertain	131	13.7	40	9.6
Disagree	495	51.7	260	62.7
Strongly Disagree	74	7.7	54	13.0
Total	958	100.0	415	100.0

	N	Per Cent	N	Per Cent
Type of School Attended				
Comprehensive	671	66.4	275	63.7
Secondary Modern	198	19.6	66	15.3
Grammar	64	6.3	56	13.0
Fee-Paying	44	4.4	27	6.3
Other	33	3.3	8	1.9
Total	1,010	100.0	432	100.0

Region in 1991				
North	45	4.5	17	3.9
North West	93	9.3	49	11.4
Yorks/Humber	98	9.8	47	10.9
West Midlands	86	8.6	29	6.7
East Midlands	57	5.7	26	6.0
East Anglia	47	4.7	11	2.6
South West	84	8.4	53	12.3
South East	274	27.3	125	29.0
London	63	6.3	18	4.2
Wales	57	5.7	29	6.7
Scotland	99	9.9	27	6.3
Total	1,003	100.0	431	100.0

Father's SES in 1974				
Missing/no male in Household	327	32.4	123	28.5
Professional	37	3.7	15	3.5
Intermediate	121	12.0	79	18.3
Skilled non-manual	55	5.5	31	7.2
Skilled manual	305	30.2	128	29.6
Semi-skilled non-manual	10	1.0	6	1.4
Semi-skilled manual	103	10.2	34	7.9
Unskilled	36	3.6	13	3.0
unclear	16	1.6	3	0.7
Total	1,010	100.0	432	100.0

	Non-learners			**Learners**		
Age 11 Test Scores						
	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Reading	870	14.8	5.6	375	17.4	5.6
Maths	870	14.5	9.7	375	19.2	9.9
Parents' Years of Education						
Father	716	9.8	1.7	328	10.2	1.9
Mother	732	9.9	1.5	333	10.1	1.5

TABLE 4 COX MODEL OF HAZARD OF RETURNING TO EMPLOYMENT, 1991 TO 2000, BASIC MODEL

Cox Proportional Hazards Model. No time-varying covariates.

	Haz. Ratio	Std. Err.	z	P>|z|
Partner Present in 1991	1.276	0.142	2.190	0.029 **
No children	0.932	0.174	-0.370	0.708
Number of Children in 1991 (base one)				
Two children	1.551	0.139	4.920	0.000 ***
Three or more children	1.423	0.142	3.540	0.000 ***
Age youngest child in 1991 (base 2 years old or less)				
3 to 4 years old	1.247	0.102	2.700	0.007 ***
5 or more years old	1.031	0.083	0.380	0.705
Health status in 1991				
Poor Health/Disability in 1991	0.169	0.052	-5.780	0.000 ***
Education Level in 1991 (base no qualifications)				
NVQ level 1	1.483	0.167	3.500	0.000 ***
NVQ level 2	1.319	0.136	2.680	0.007 ***
NVQ level 3	1.306	0.161	2.160	0.031 **
NVQ level 4	1.247	0.161	1.710	0.087 *
NVQ level 5	1.395	0.227	2.040	0.041 **
Participation in Lifelong Learning				
Learning leading to Qualification, 1991 to 2000	1.362	0.094	4.470	0.000 ***
Work Experience in 5 years before 1991 (base < 1 year)				
1 to less than 2 years	1.375	0.133	3.290	0.001 ***
2 to less than 4 years	1.376	0.124	3.550	0.000 ***
4 to less than 5 years	1.789	0.177	5.870	0.000 ***
Missing Work Experience Data	1.926	0.277	4.550	0.000 ***

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1425
Log likelihood	-6799.651
LR chi2(17)	230.19

TABLE 5 COX MODEL OF HAZARD OF RETURNING TO EMPLOYMENT 1991 TO 2000.
FULL MODEL WITHOUT TVCs

Cox Proportional Hazards Model. No Time-varying covariates.

	Haz. Ratio	Std. Err.	z	P>|z|	
Partner Present in 1991	1.252	0.142	1.980	0.048	**
No children	1.032	0.198	0.160	0.870	
Number of Children in 1991 (base one)					
Two children	1.500	0.142	4.290	0.000	***
Three or more children	1.395	0.147	3.150	0.002	***
Age youngest child in 1991 (base 2 years old or less)					
3 to 4 years old	1.247	0.104	2.650	0.008	***
5 or more years old	1.024	0.085	0.290	0.773	
Intentions to Have More Children (base, no)					
Yes, Intends to have more	0.720	0.078	-3.050	0.002	***
Intentions Data Missing	0.895	0.063	-1.570	0.117	
Health status in 1991					
Poor Health/Disability in 1991	0.177	0.055	-5.570	0.000	***
Education Level in 1991 (base no qualifications)					
NVQ level 1	1.430	0.170	3.000	0.003	***
NVQ level 2	1.352	0.153	2.670	0.008	***
NVQ level 3	1.370	0.189	2.280	0.023	**
NVQ level 4	1.380	0.204	2.180	0.029	**
NVQ level 5	1.689	0.310	2.860	0.004	***
Participation in Lifelong Learning					
Learning leading to Qualification, 1991 to 2000	1.339	0.096	4.070	0.000	***
Work Experience in 5 years before 1991 (base < 1 year)					
1 to less than 2 years	1.435	0.144	3.610	0.000	***
2 to less than 4 years	1.426	0.132	3.820	0.000	***
4 to less than 5 years	1.858	0.192	6.010	0.000	***
Missing Work Experience Data	2.034	0.305	4.740	0.000	***
Attitudes to Women at Work: "Wives who do not have to work should not do so" (base, strongly disagree)					
Strongly agree	0.705	0.150	-1.640	0.100	*
Agree	0.908	0.124	-0.710	0.479	
Uncertain	0.823	0.119	-1.350	0.177	
Disagree	0.981	0.111	-0.170	0.864	
Missing Attitude Data	0.573	0.118	-2.700	0.007	***
Age 11 Scores on Maths and Reading Tests (base, lowest quartiles)					
Maths first quartile (highest)	0.820	0.122	-1.340	0.181	
Maths second quartile	0.930	0.123	-0.550	0.584	
Maths third quartile	1.063	0.122	0.530	0.598	
Reading first quartile (highest)	1.110	0.163	0.710	0.477	
Reading second quartile	1.047	0.133	0.360	0.717	
Reading third quartile	0.989	0.117	-0.090	0.928	
Missing age 11 test data	0.962	0.128	-0.290	0.773	
Father's socio-economic status in 1974 (base, unskilled)					
Professional	0.940	0.255	-0.230	0.821	
Intermediate	1.132	0.239	0.580	0.559	
Skilled non-manual	1.459	0.332	1.660	0.098	*
Skilled manual	1.106	0.218	0.510	0.608	
Semi-skilled non-manual	1.140	0.390	0.380	0.701	

Semi-skilled manual	1.093	0.234	0.410	0.678
Status unknown	0.818	0.307	-0.530	0.593
No male head of household	0.838	0.203	-0.730	0.466
Type of Secondary School attended (base, comprehensive)				
Secondary modern school	0.813	0.072	-2.330	0.020 **
Grammar school	0.934	0.117	-0.540	0.587
Public school	0.896	0.142	-0.690	0.489
Other school	1.013	0.224	0.060	0.952
Parental Education (Years of Schooling)				
Father's education	0.985	0.025	-0.600	0.551
Father's education missing	0.944	0.328	-0.170	0.869
Mother's education	0.944	0.029	-1.870	0.061 *
Mother's education missing	0.637	0.230	-1.250	0.211
Region (in 1991 base, Yorkshire/Humberside)				
North	0.875	0.165	-0.710	0.479
North West	0.957	0.141	-0.300	0.767
West Midlands	1.165	0.175	1.020	0.306
East Midlands	0.998	0.170	-0.010	0.992
East Anglia	1.165	0.218	0.810	0.415
South West	1.172	0.167	1.120	0.263
South East	1.007	0.120	0.060	0.952
London	0.744	0.133	-1.660	0.096 *
Wales	0.791	0.139	-1.340	0.182
Scotland	1.009	0.154	0.060	0.952

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1417
Log likelihood	-6734.87
LR chi2(57)	291.53

**TABLE 6 COX MODEL OF HAZARD OF RETURNING TO EMPLOYMENT, 1991 TO 2000.
BASIC MODEL WITH TVCs**

Qualifications obtained and Births Occurring, 1991 to 2000 entered as
time-varying covariates.

	Haz. Ratio	Std. Err.	z	P>|z|
Partner Present in 1991	1.320	0.152	2.420	0.016 **
No children	0.929	0.179	-0.380	0.703
Number of Children in 1991 (base one)				
Two children	1.541	0.144	4.630	0.000 ***
Three or more children	1.487	0.155	3.810	0.000 ***
Age youngest child in 1991 (base 2 years old or less)				
3 to 4 years old	1.360	0.117	3.580	0.000 ***
5 or more years old	1.044	0.087	0.520	0.605
Health status in 1991				
Poor Health/Disability in 1991	0.161	0.052	-5.680	0.000 ***
Education Level in 1991 (base no qualifications)				
NVQ level 1	1.514	0.175	3.590	0.000 ***
NVQ level 2	1.376	0.146	3.010	0.003 ***
NVQ level 3	1.428	0.180	2.820	0.005 ***
NVQ level 4	1.337	0.180	2.150	0.031 **
NVQ level 5	1.585	0.278	2.630	0.009 ***
Participation in Lifelong Learning				
Learning leading to Qualification, 1991 to 2000	1.495	0.189	3.180	0.001 ***
Work Experience in 5 years before 1991 (base < 1 year)				
1 to less than 2 years	1.379	0.142	3.120	0.002 ***
2 to less than 4 years	1.463	0.137	4.070	0.000 ***
4 to less than 5 years	1.858	0.196	5.860	0.000 ***
Missing Work Experience Data	2.169	0.326	5.160	0.000 ***

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1321
Log likelihood	-6162.57
LR chi2(17)	216.61

TABLE 7 COX MODEL OF HAZARD OF RETURNING TO EMPLOYMENT, 1991 TO 2000 FULL MODEL WITH TIME-VARYING COVARIATES.

Qualifications obtained and Births Occurring, 1991 to 2000 entered as time-varying covariates.

	Haz. Ratio	Std. Err.	z	P>|z|	
Partner Present in 1991	1.385	0.166	2.720	0.006	***
No children	1.034	0.209	0.170	0.868	
Number of Children in 1991 (base one)					
Two children	1.552	0.152	4.490	0.000	***
Three or more children	1.514	0.167	3.760	0.000	***
Age youngest child in 1991 (base 2 years old or less)					
3 to 4 years old	1.363	0.122	3.470	0.001	***
5 or more years old	1.005	0.088	0.060	0.951	
Births, 1991 to 2000 (base, no)					
Child Born 1991 to 2000	0.695	0.063	-4.030	0.000	***
Health status in 1991					
Poor Health/Disability in 1991	0.166	0.054	-5.530	0.000	***
Education Level in 1991 (base no qualifications)					
NVQ level 1	1.479	0.186	3.110	0.002	***
NVQ level 2	1.444	0.172	3.090	0.002	***
NVQ level 3	1.525	0.222	2.900	0.004	***
NVQ level 4	1.613	0.258	2.990	0.003	***
NVQ level 5	1.967	0.392	3.400	0.001	***
Participation in Lifelong Learning					
Learning leading to Qualification, 1991 to 2000	1.501	0.199	3.050	0.002	***
Work Experience in 5 years before 1991 (base < 1 year)					
1 to less than 2 years	1.423	0.152	3.300	0.001	***
2 to less than 4 years	1.567	0.153	4.590	0.000	***
4 to less than 5 years	1.952	0.218	5.990	0.000	***
Missing Work Experience Data	2.510	0.421	5.490	0.000	***
Attitudes to Women at Work: "Wives who do not have to work should not do so" (base, strongly disagree)					
Strongly agree	0.726	0.165	-1.410	0.159	
Agree	0.911	0.130	-0.650	0.517	
Uncertain	0.779	0.121	-1.610	0.108	
Disagree	0.972	0.117	-0.230	0.814	
Missing Attitude Data	0.730	0.177	-1.300	0.195	
Age 11 Scores on Maths and Reading Tests (base, lowest quartiles)					
Maths first quartile (highest)	0.870	0.137	-0.890	0.376	
Maths second quartile	0.976	0.137	-0.170	0.864	
Maths third quartile	1.117	0.135	0.920	0.360	
Reading first quartile (highest)	1.071	0.167	0.440	0.659	
Reading second quartile	1.086	0.148	0.610	0.544	
Reading third quartile	1.049	0.130	0.390	0.698	
Missing age 11 test data	1.086	0.153	0.580	0.560	
Father's socio-economic status in 1974 (base, unskilled)					
Professional	0.912	0.264	-0.320	0.750	
Intermediate	1.106	0.248	0.450	0.654	
Skilled non-manual	1.528	0.368	1.760	0.078	*
Skilled manual	1.075	0.223	0.350	0.729	
Semi-skilled non-manual	1.021	0.377	0.060	0.954	

Semi-skilled manual	1.084	0.245	0.360	0.720
Status unknown	0.872	0.345	-0.350	0.730
No male head of household	0.835	0.217	-0.700	0.487
Type of Secondary School attended (base, comprehensive)				
Secondary modern school	0.821	0.076	-2.120	0.034 **
Grammar school	0.834	0.118	-1.290	0.198
Public school	0.855	0.144	-0.930	0.350
Other school	1.026	0.244	0.110	0.915
Parental Education (Years of Schooling)				
Father's education	0.986	0.027	-0.510	0.610
Father's education missing	1.135	0.415	0.350	0.730
Mother's education	0.939	0.032	-1.850	0.064 *
Mother's education missing	0.480	0.187	-1.880	0.060 *
Region (in 1991 base, Yorkshire/Humberside)				
North	0.901	0.175	-0.540	0.591
North West	1.099	0.170	0.610	0.541
West Midlands	1.175	0.185	1.020	0.307
East Midlands	0.939	0.175	-0.340	0.734
East Anglia	1.149	0.225	0.710	0.480
South West	1.259	0.189	1.530	0.126
South East	1.043	0.131	0.330	0.739
London	0.726	0.137	-1.700	0.090 *
Wales	0.854	0.158	-0.850	0.394
Scotland	0.957	0.154	-0.270	0.787

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1271
Log likelihood	-5896.34
LR chi2(56)	282.55

TABLE 8 COX MODEL OF RETURNING TO EMPLOYMENT WITH ALTERNATIVE DEFINITION OF LEARNING

Model with no time-varying covariates.

	Haz. Ratio	Std. Err.	z	P>|z|
Partner Present in 1991	1.254	0.142	1.990	0.047 **
No children	1.032	0.198	0.160	0.871
Number of Children in 1991 (base one)				
Two children	1.500	0.142	4.290	0.000 ***
Three or more children	1.397	0.148	3.160	0.002 ***
Age youngest child in 1991 (base 2 years old or less)				
3 to 4 years old	1.247	0.104	2.640	0.008 ***
5 or more years old	1.021	0.084	0.250	0.805
Intentions to Have More Children (base, no)				
Yes, Intends to have more	0.722	0.078	-3.030	0.002 ***
Intentions Data Missing	0.896	0.063	-1.550	0.120
Health status in 1991				
Poor Health/Disability in 1991	0.177	0.055	-5.570	0.000 ***
Education Level in 1991 (base no qualifications)				
NVQ level 1	1.430	0.170	3.000	0.003 ***
NVQ level 2	1.353	0.153	2.680	0.007 ***
NVQ level 3	1.371	0.189	2.290	0.022 **
NVQ level 4	1.376	0.204	2.160	0.031 **
NVQ level 5	1.690	0.310	2.860	0.004 ***
Participation in Lifelong Learning				
Qualification obtained or time in f/t education, 1991 to 2000	1.339	0.096	4.080	0.000 ***
Work Experience in 5 years before 1991 (base < 1 year)				
1 to less than 2 years	1.435	0.144	3.610	0.000 ***
2 to less than 4 years	1.424	0.132	3.810	0.000 ***
4 to less than 5 years	1.854	0.191	5.980	0.000 ***
Missing Work Experience Data	2.036	0.305	4.740	0.000 ***
Attitudes to Women at Work: "Wives who do not have to work should not do so" (base, strongly disagree)				
Strongly agree	0.705	0.150	-1.640	0.101
Agree	0.907	0.123	-0.720	0.472
Uncertain	0.822	0.119	-1.350	0.176
Disagree	0.980	0.111	-0.180	0.857
Missing Attitude Data	0.573	0.118	-2.710	0.007 ***
Age 11 Scores on Maths and Reading Tests (base, lowest quartiles)				
Maths first quartile (highest)	0.822	0.122	-1.330	0.185
Maths second quartile	0.930	0.123	-0.550	0.584
Maths third quartile	1.062	0.122	0.530	0.599
Reading first quartile (highest)	1.107	0.162	0.690	0.488
Reading second quartile	1.047	0.133	0.360	0.718
Reading third quartile	0.987	0.117	-0.110	0.912
Missing age 11 test data	0.962	0.128	-0.290	0.772
Father's socio-economic status in 1974 (base, unskilled)				
Professional	0.947	0.257	-0.200	0.841
Intermediate	1.138	0.241	0.610	0.540
Skilled non-manual	1.466	0.334	1.680	0.093 *
Skilled manual	1.111	0.219	0.540	0.591
Semi-skilled non-manual	1.143	0.391	0.390	0.695

Semi-skilled manual	1.095	0.235	0.420	0.671
Status unknown	0.822	0.308	-0.520	0.601
No male head of household	0.837	0.202	-0.740	0.462
Type of Secondary School attended (base, comprehensive)				
Secondary modern school	0.812	0.072	-2.350	0.019 **
Grammar school	0.935	0.117	-0.540	0.590
Public school	0.890	0.141	-0.740	0.460
Other school	1.015	0.224	0.070	0.948
Parental Education (Years of Schooling)				
Father's education	0.985	0.025	-0.600	0.550
Father's education missing	0.950	0.330	-0.150	0.882
Mother's education	0.944	0.029	-1.890	0.059 *
Mother's education missing	0.634	0.228	-1.270	0.206
Region (in 1991 base, Yorkshire/Humberside)				
North	0.876	0.166	-0.700	0.484
North West	0.955	0.140	-0.320	0.753
West Midlands	1.165	0.175	1.020	0.307
East Midlands	0.996	0.169	-0.020	0.980
East Anglia	1.166	0.218	0.820	0.412
South West	1.169	0.166	1.100	0.271
South East	1.008	0.120	0.060	0.949
London	0.743	0.133	-1.660	0.096 *
Wales	0.792	0.139	-1.330	0.183
Scotland	1.010	0.155	0.070	0.946

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1417
Log likelihood	-6734.84
LR chi2(57)	291.59

TABLE 9 COX MODEL OF RETURNING TO EMPLOYMENT WITH ALTERNATIVE DEFINITION OF LEARNING

Adult learning and Births Occurring, 1991 to 2000 entered as
time-varying covariates.
Learning includes months in f/t education as well as any qualifications obtained

	Haz. Ratio	Std. Err.	z	P>|z|	
Partner Present in 1991	1.396	0.167	2.790	0.005	***
No children	1.033	0.209	0.160	0.872	
Number of Children in 1991 (base one)					
Two children	1.540	0.151	4.400	0.000	***
Three or more children	1.504	0.166	3.700	0.000	***
Age youngest child in 1991 (base 2 years old or less)					
3 to 4 years old	1.349	0.121	3.350	0.001	***
5 or more years old	1.002	0.088	0.020	0.982	
Births, 1991 to 2000 (base, no)					
Child Born 1991 to 2000	0.702	0.063	-3.920	0.000	***
Health status in 1991					
Poor Health/Disability in 1991	0.167	0.054	-5.510	0.000	***
Education Level in 1991 (base no qualifications)					
NVQ level 1	1.462	0.184	3.010	0.003	***
NVQ level 2	1.426	0.170	2.980	0.003	***
NVQ level 3	1.494	0.218	2.750	0.006	***
NVQ level 4	1.586	0.254	2.880	0.004	***
NVQ level 5	1.923	0.383	3.280	0.001	***
Participation in Lifelong Learning					
Qualifications obtained or time in f/t education, 1991 to 2000	1.657	0.199	4.200	0.000	***
Work Experience in 5 years before 1991 (base < 1 year)					
1 to less than 2 years	1.423	0.152	3.310	0.001	***
2 to less than 4 years	1.553	0.152	4.510	0.000	***
4 to less than 5 years	1.954	0.218	6.000	0.000	***
Missing Work Experience Data	2.461	0.413	5.370	0.000	***
Attitudes to Women at Work: "Wives who do not have to work should not do so" (base, strongly disagree)					
Strongly agree	0.735	0.168	-1.350	0.178	
Agree	0.933	0.134	-0.480	0.628	
Uncertain	0.795	0.124	-1.480	0.140	
Disagree	0.985	0.119	-0.130	0.897	
Missing Attitude Data	0.746	0.181	-1.210	0.227	
Age 11 Scores on Maths and Reading Tests (base, lowest quartiles)					
Maths first quartile (highest)	0.866	0.136	-0.920	0.359	
Maths second quartile	0.974	0.136	-0.190	0.850	
Maths third quartile	1.115	0.135	0.900	0.366	
Reading first quartile (highest)	1.074	0.167	0.460	0.645	
Reading second quartile	1.092	0.148	0.650	0.516	
Reading third quartile	1.051	0.130	0.400	0.690	
Missing age 11 test data	1.083	0.153	0.570	0.572	
Father's socio-economic status in 1974 (base, unskilled)					
Professional	0.933	0.270	-0.240	0.809	
Intermediate	1.101	0.247	0.430	0.667	
Skilled non-manual	1.517	0.365	1.730	0.083	*
Skilled manual	1.075	0.223	0.350	0.728	

Semi-skilled non-manual	1.008	0.372	0.020	0.982
Semi-skilled manual	1.074	0.242	0.320	0.751
Status unknown	0.871	0.345	-0.350	0.727
No male head of household	0.832	0.216	-0.710	0.480
Type of Secondary School attended (base, comprehensive)				
Secondary modern school	0.815	0.076	-2.200	0.028 **
Grammar school	0.816	0.115	-1.440	0.151
Public school	0.855	0.144	-0.930	0.350
Other school	1.023	0.244	0.090	0.924
Parental Education (Years of Schooling)				
Father's education	0.985	0.027	-0.540	0.587
Father's education missing	1.137	0.415	0.350	0.725
Mother's education	0.941	0.032	-1.790	0.073 *
Mother's education missing	0.487	0.189	-1.850	0.064 *
Region (in 1991 base, Yorkshire/Humberside)				
North	0.905	0.176	-0.520	0.606
North West	1.115	0.173	0.700	0.481
West Midlands	1.193	0.188	1.120	0.263
East Midlands	0.945	0.176	-0.300	0.762
East Anglia	1.173	0.230	0.810	0.416
South West	1.258	0.189	1.530	0.126
South East	1.056	0.133	0.430	0.665
London	0.732	0.138	-1.660	0.098 *
Wales	0.857	0.158	-0.830	0.404
Scotland	0.958	0.154	-0.270	0.788

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1271
Log likelihood	-5892.62
LR chi2(56)	290.00

Note: for adults entering full-time education, the effects of learning are assumed to start in the month after the spell of learning began.

TABLE 10 COX MODEL OF RETURNING TO EMPLOYMENT WITH ALTERNATIVE DEFINITION OF LEARNING

Adult learning and Births Occurring, 1991 to 2000 entered as
time-varying covariates.
Learning includes months in f/t education as well as any qualifications obtained

	Haz. Ratio	Std. Err.	z	P>|z|	
Partner Present in 1991	1.394	0.167	2.770	0.006	***
No children	1.017	0.206	0.080	0.933	
Number of Children in 1991 (base one)					
Two children	1.523	0.149	4.290	0.000	***
Three or more children	1.487	0.164	3.600	0.000	***
Age youngest child in 1991 (base 2 years old or less)					
3 to 4 years old	1.346	0.120	3.330	0.001	***
5 or more years old	1.007	0.088	0.070	0.940	
Births, 1991 to 2000 (base, no)					
Child Born 1991 to 2000	0.706	0.064	-3.860	0.000	***
Health status in 1991					
Poor Health/Disability in 1991	0.170	0.055	-5.460	0.000	***
Education Level in 1991 (base no qualifications)					
NVQ level 1	1.458	0.184	2.990	0.003	***
NVQ level 2	1.411	0.168	2.890	0.004	***
NVQ level 3	1.481	0.216	2.700	0.007	***
NVQ level 4	1.591	0.254	2.910	0.004	***
NVQ level 5	1.874	0.373	3.150	0.002	***
Participation in Lifelong Learning					
Qualifications obtained or time in f/t education, 1991 to 2000	2.021	0.245	5.810	0.000	***
Work Experience in 5 years before 1991 (base < 1 year)					
1 to less than 2 years	1.425	0.152	3.320	0.001	***
2 to less than 4 years	1.559	0.152	4.550	0.000	***
4 to less than 5 years	1.944	0.217	5.950	0.000	***
Missing Work Experience Data	2.441	0.409	5.320	0.000	***
Attitudes to Women at Work: "Wives who do not have to work should not do so" (base, strongly disagree)					
Strongly agree	0.736	0.168	-1.340	0.179	
Agree	0.938	0.134	-0.450	0.655	
Uncertain	0.796	0.123	-1.470	0.141	
Disagree	0.988	0.119	-0.100	0.919	
Missing Attitude Data	0.749	0.182	-1.190	0.234	
Age 11 Scores on Maths and Reading Tests (base, lowest quartiles)					
Maths first quartile (highest)	0.876	0.138	-0.840	0.399	
Maths second quartile	0.979	0.137	-0.150	0.882	
Maths third quartile	1.123	0.136	0.960	0.338	
Reading first quartile (highest)	1.066	0.166	0.410	0.682	
Reading second quartile	1.075	0.146	0.540	0.593	
Reading third quartile	1.040	0.129	0.310	0.754	
Missing age 11 test data	1.075	0.152	0.510	0.609	
Father's socio-economic status in 1974 (base, unskilled)					
Professional	0.962	0.278	-0.140	0.892	
Intermediate	1.105	0.248	0.440	0.656	
Skilled non-manual	1.515	0.365	1.730	0.085	*

Skilled manual	1.086	0.226	0.400	0.691
Semi-skilled non-manual	0.991	0.366	-0.020	0.981
Semi-skilled manual	1.096	0.247	0.410	0.685
Status unknown	0.894	0.354	-0.280	0.777
No male head of household	0.842	0.219	-0.660	0.508
Type of Secondary School attended (base, comprehensive)				
Secondary modern school	0.814	0.076	-2.210	0.027 **
Grammar school	0.803	0.113	-1.560	0.120
Public school	0.845	0.142	-1.000	0.316
Other school	1.019	0.243	0.080	0.936
Parental Education (Years of Schooling)				
Father's education	0.982	0.027	-0.640	0.520
Father's education missing	1.107	0.404	0.280	0.780
Mother's education	0.941	0.032	-1.780	0.075 *
Mother's education missing	0.490	0.191	-1.830	0.067 *
Region (in 1991 base, Yorkshire/Humberside)				
North	0.916	0.178	-0.450	0.650
North West	1.125	0.174	0.760	0.446
West Midlands	1.209	0.191	1.200	0.230
East Midlands	0.951	0.178	-0.270	0.788
East Anglia	1.189	0.233	0.880	0.377
South West	1.271	0.191	1.600	0.110
South East	1.059	0.133	0.460	0.649
London	0.731	0.138	-1.660	0.097 *
Wales	0.840	0.155	-0.940	0.345
Scotland	0.944	0.152	-0.360	0.720

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1271
Log likelihood	-5885.82
LR chi2(56)	303.60

Note: for adults entering full-time education, the effects of learning are assumed to start in the month after the spell of learning was completed.

TABLE 11 COX MODEL OF THE HAZARD OF RETURNING TO FULL-TIME WORK

No time-varying covariates.

Learning defined as obtaining qualification(s) 1991 to 2000

	Haz. Ratio	Std. Err.	z	P>|z|
Partner Present in 1991	1.080	0.196	0.430	0.669
No children	2.548	0.775	3.070	0.002 ***
Number of Children in 1991 (base one)				
Two children	1.569	0.272	2.600	0.009 ***
Three or more children	2.020	0.375	3.790	0.000 ***
Age youngest child in 1991 (base 2 years old or less)				
3 to 4 years old	1.298	0.195	1.740	0.082 *
5 or more years old	2.051	0.275	5.360	0.000 ***
Intentions to Have More Children (base, no)				
Yes, Intends to have more	0.546	0.112	-2.960	0.003 ***
Intentions Data Missing	0.795	0.093	-1.960	0.050 **
Health status in 1991				
Poor Health/Disability in 1991	0.307	0.131	-2.760	0.006 ***
Education Level in 1991 (base no qualifications)				
NVQ level 1	1.739	0.351	2.740	0.006 ***
NVQ level 2	1.639	0.317	2.550	0.011 **
NVQ level 3	1.123	0.282	0.460	0.645
NVQ level 4	1.736	0.427	2.240	0.025 **
NVQ level 5	1.719	0.542	1.720	0.086 *
Participation in Lifelong Learning				
Learning leading to Qualification, 1991 to 2000	1.528	0.180	3.610	0.000 ***
Work Experience in 5 years before 1991 (base < 1 year)				
1 to less than 2 years	1.582	0.264	2.750	0.006 ***
2 to less than 4 years	1.646	0.257	3.190	0.001 ***
4 to less than 5 years	2.046	0.343	4.270	0.000 ***
Missing Work Experience Data	2.541	0.553	4.280	0.000 ***
Attitudes to Women at Work: "Wives who do not have to work should not do so" (base, strongly disagree)				
Strongly agree	0.727	0.263	-0.880	0.377
Agree	0.831	0.197	-0.780	0.435
Uncertain	0.655	0.172	-1.610	0.107
Disagree	1.048	0.205	0.240	0.812
Missing Attitude Data	0.795	0.261	-0.700	0.486
Age 11 Scores on Maths and Reading Tests (base, lowest quartiles)				
Maths first quartile (highest)	0.774	0.189	-1.050	0.295
Maths second quartile	0.866	0.188	-0.660	0.507
Maths third quartile	0.840	0.166	-0.880	0.377
Reading first quartile (highest)	1.502	0.372	1.640	0.101
Reading second quartile	1.229	0.265	0.960	0.339
Reading third quartile	0.968	0.197	-0.160	0.871
Missing age 11 test data	1.132	0.251	0.560	0.577
Father's socio-economic status in 1974 (base, unskilled)				
Professional	0.332	0.184	-1.990	0.046 **
Intermediate	0.869	0.290	-0.420	0.675
Skilled non-manual	1.020	0.376	0.050	0.956
Skilled manual	0.828	0.254	-0.610	0.539
Semi-skilled non-manual	2.817	1.275	2.290	0.022 **

Semi-skilled manual	0.843	0.286	-0.500	0.615
Status unknown	1.306	0.714	0.490	0.626
No male head of household	0.791	0.299	-0.620	0.536
Type of Secondary School attended (base, comprehensive)				
Secondary modern school	1.031	0.150	0.210	0.835
Grammar school	0.913	0.194	-0.430	0.668
Public school	1.028	0.281	0.100	0.920
Other school	1.390	0.459	1.000	0.318
Parental Education (Years of Schooling)				
Father's education	1.021	0.046	0.450	0.649
Father's education missing	1.373	0.819	0.530	0.595
Mother's education	0.947	0.051	-1.010	0.314
Mother's education missing	0.777	0.482	-0.410	0.684
Region (in 1991 base, Yorkshire/Humberside)				
North	0.975	0.307	-0.080	0.936
North West	1.066	0.253	0.270	0.788
West Midlands	0.908	0.234	-0.370	0.709
East Midlands	1.469	0.380	1.490	0.137
East Anglia	0.997	0.323	-0.010	0.992
South West	1.128	0.262	0.520	0.605
South East	0.821	0.167	-0.970	0.332
London	0.967	0.279	-0.120	0.906
Wales	0.925	0.262	-0.270	0.784
Scotland	0.900	0.246	-0.390	0.700

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1407
Log likelihood	-2471.23
LR chi2(57)	173.37

TABLE 12 WEIBULL MODEL OF HAZARD OF RETURNING TO EMPLOYMENT

Time-varying covariates: Qualifications obtained and Births Occurring 1991 to 2000

	Haz. Ratio	Std. Err.	z	P>|z|	
Partner Present in 1991	1.387	0.166	2.740	0.006	***
No children	1.033	0.208	0.160	0.873	
Number of Children in 1991 (base one)					
Two children	1.546	0.151	4.450	0.000	***
Three or more children	1.510	0.167	3.740	0.000	***
Age youngest child in 1991 (base 2 years old or less)					
3 to 4 years old	1.373	0.123	3.550	0.000	***
5 or more years old	1.004	0.088	0.040	0.967	
Births, 1991 to 2000 (base, no)					
Child Born 1991 to 2000	0.678	0.061	-4.330	0.000	***
Health status in 1991					
Poor Health/Disability in 1991	0.166	0.054	-5.530	0.000	***
Education Level in 1991 (base no qualifications)					
NVQ level 1	1.471	0.185	3.070	0.002	***
NVQ level 2	1.437	0.171	3.050	0.002	***
NVQ level 3	1.524	0.222	2.900	0.004	***
NVQ level 4	1.614	0.258	3.000	0.003	***
NVQ level 5	1.957	0.390	3.370	0.001	***
Participation in Lifelong Learning					
Learning leading to Qualification, 1991 to 2000	1.492	0.196	3.040	0.002	***
Work Experience in 5 years before 1991 (base < 1 year)					
1 to less than 2 years	1.427	0.152	3.330	0.001	***
2 to less than 4 years	1.568	0.153	4.600	0.000	***
4 to less than 5 years	1.965	0.219	6.060	0.000	***
Missing Work Experience Data	2.546	0.427	5.570	0.000	***
Attitudes to Women at Work: "Wives who do not have to work should not do so" (base, strongly disagree)					
Strongly agree	0.735	0.167	-1.350	0.176	
Agree	0.917	0.131	-0.600	0.547	
Uncertain	0.785	0.122	-1.560	0.118	
Disagree	0.982	0.118	-0.150	0.879	
Missing Attitude Data	0.733	0.178	-1.280	0.201	
Age 11 Scores on Maths and Reading Tests (base, lowest quartiles)					
Maths first quartile (highest)	0.871	0.137	-0.880	0.381	
Maths second quartile	0.980	0.137	-0.150	0.884	
Maths third quartile	1.119	0.135	0.930	0.352	
Reading first quartile (highest)	1.069	0.166	0.430	0.668	
Reading second quartile	1.090	0.148	0.640	0.525	
Reading third quartile	1.051	0.130	0.400	0.688	
Missing age 11 test data	1.084	0.153	0.570	0.568	
Father's socio-economic status in 1974 (base, unskilled)					
Professional	0.904	0.261	-0.350	0.726	
Intermediate	1.104	0.248	0.440	0.658	
Skilled non-manual	1.533	0.369	1.780	0.076	*
Skilled manual	1.072	0.223	0.330	0.739	
Semi-skilled non-manual	1.034	0.381	0.090	0.927	
Semi-skilled manual	1.078	0.243	0.330	0.738	

Status unknown	0.876	0.347	-0.330	0.738
No male head of household	0.835	0.217	-0.690	0.487
Type of Secondary School attended (base, comprehensive)				
Secondary modern school	0.820	0.076	-2.130	0.033 **
Grammar school	0.843	0.119	-1.210	0.225
Public school	0.860	0.144	-0.900	0.369
Other school	1.027	0.245	0.110	0.912
Parental Education (Years of Schooling)				
Father's education	0.987	0.027	-0.460	0.647
Father's education missing	1.149	0.420	0.380	0.705
Mother's education	0.938	0.032	-1.880	0.061 *
Mother's education missing	0.476	0.186	-1.900	0.057 *
Region (in 1991 base, Yorkshire/Humberside)				
North	0.899	0.175	-0.550	0.582
North West	1.097	0.170	0.600	0.551
West Midlands	1.189	0.187	1.100	0.273
East Midlands	0.942	0.176	-0.320	0.749
East Anglia	1.146	0.225	0.700	0.487
South West	1.252	0.188	1.490	0.135
South East	1.042	0.131	0.330	0.740
London	0.731	0.138	-1.660	0.097
Wales	0.855	0.158	-0.840	0.399
Scotland	0.955	0.154	-0.290	0.775

Parameter Estimates	Estimate	Std Err
α	1.183	0.035

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1271
Log likelihood	-1683.83
LR chi2(56)	286.85

TABLE 13:HAZARD OF RETURNING TO EMPLOYMENT WEIBULL MODEL WITH GAMMA FRAILTY

Time-varying covariates: Qualifications obtained and Births Occurring 1991 to 2000

	Haz. Ratio	Std. Err.	z	P>|z|	
Partner Present in 1991	1.397	0.175	2.670	0.008	***
No children	1.033	0.212	0.160	0.873	
Number of Children in 1991 (base one)					
Two children	1.558	0.164	4.210	0.000	***
Three or more children	1.519	0.175	3.630	0.000	***
Age youngest child in 1991 (base 2 years old or less)					
3 to 4 years old	1.390	0.148	3.100	0.002	***
5 or more years old	1.006	0.090	0.070	0.948	
Births, 1991 to 2000 (base, no)					
Child Born 1991 to 2000	0.673	0.065	-4.130	0.000	***
Health status in 1991					
Poor Health/Disability in 1991	0.163	0.055	-5.400	0.000	***
Education Level in 1991 (base no qualifications)					
NVQ level 1	1.476	0.191	3.010	0.003	***
NVQ level 2	1.439	0.174	3.010	0.003	***
NVQ level 3	1.529	0.227	2.860	0.004	***
NVQ level 4	1.618	0.263	2.960	0.003	***
NVQ level 5	1.965	0.400	3.320	0.001	***
Participation in Lifelong Learning					
Learning leading to Qualification, 1991 to 2000	1.514	0.226	2.770	0.006	***
Work Experience in 5 years before 1991 (base < 1 year)					
1 to less than 2 years	1.435	0.160	3.250	0.001	***
2 to less than 4 years	1.585	0.175	4.160	0.000	***
4 to less than 5 years	1.994	0.263	5.230	0.000	***
Missing Work Experience Data	2.603	0.521	4.780	0.000	***
Attitudes to Women at Work: "Wives who do not have to work should not do so" (base, strongly disagree)					
Strongly agree	0.737	0.171	-1.320	0.188	
Agree	0.920	0.135	-0.570	0.568	
Uncertain	0.788	0.126	-1.490	0.136	
Disagree	0.988	0.125	-0.090	0.925	
Missing Attitude Data	0.734	0.181	-1.250	0.210	
Age 11 Scores on Maths and Reading Tests (base, lowest quartiles)					
Maths first quartile (highest)	0.871	0.140	-0.860	0.389	
Maths second quartile	0.981	0.140	-0.140	0.893	
Maths third quartile	1.122	0.139	0.930	0.351	
Reading first quartile (highest)	1.066	0.170	0.400	0.689	
Reading second quartile	1.091	0.151	0.630	0.528	
Reading third quartile	1.048	0.133	0.370	0.714	
Missing age 11 test data	1.083	0.156	0.550	0.580	
Father's socio-economic status in 1974 (base, unskilled)					
Professional	0.908	0.268	-0.330	0.743	
Intermediate	1.112	0.256	0.460	0.646	
Skilled non-manual	1.559	0.400	1.730	0.083	*
Skilled manual	1.077	0.229	0.350	0.725	
Semi-skilled non-manual	1.036	0.390	0.090	0.925	
Semi-skilled manual	1.084	0.250	0.350	0.725	

Status unknown	0.881	0.355	-0.310	0.753
No male head of household	0.836	0.221	-0.680	0.496
Type of Secondary School attended (base, comprehensive)				
Secondary modern school	0.819	0.078	-2.100	0.036 **
Grammar school	0.845	0.122	-1.170	0.242
Public school	0.861	0.148	-0.870	0.382
Other school	1.029	0.249	0.120	0.906
Parental Education (Years of Schooling)				
Father's education	0.988	0.028	-0.420	0.675
Father's education missing	1.163	0.441	0.400	0.690
Mother's education	0.938	0.033	-1.850	0.064 *
Mother's education missing	0.472	0.188	-1.880	0.060 *
Region (in 1991 base, Yorkshire/Humberside)				
North	0.897	0.178	-0.550	0.581
North West	1.097	0.173	0.580	0.560
West Midlands	1.191	0.192	1.090	0.277
East Midlands	0.943	0.179	-0.310	0.755
East Anglia	1.148	0.230	0.690	0.489
South West	1.253	0.193	1.470	0.142
South East	1.043	0.133	0.330	0.745
London	0.728	0.140	-1.650	0.100 *
Wales	0.856	0.161	-0.830	0.408
Scotland	0.957	0.157	-0.260	0.791

Parameter Estimates	Estimate	Std Err
α	1.195	0.065
θ	0.034	0.157

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1271
Log likelihood	-1683.81
LR chi2(56)	286.90

LR test $\theta = 0$: chibar2(01) = 0.05, prob>=chibar2 = 0.413

TABLE 14 GOMPERTZ MODEL OF HAZARD OF RETURNING TO EMPLOYMENT

Time-varying covariates: Qualifications obtained and Births Occurring 1991 to 2000

	Haz. Ratio	Std. Err.	z	P>|z|	
Partner Present in 1991	1.387	0.166	2.730	0.006	***
No children	1.030	0.208	0.150	0.882	
Number of Children in 1991 (base one)					
Two children	1.558	0.153	4.520	0.000	***
Three or more children	1.519	0.168	3.790	0.000	***
Age youngest child in 1991 (base 2 years old or less)					
3 to 4 years old	1.370	0.122	3.530	0.000	***
5 or more years old	1.004	0.088	0.040	0.967	
Births, 1991 to 2000 (base, no)					
Child Born 1991 to 2000	0.681	0.061	-4.270	0.000	***
Health status in 1991					
Poor Health/Disability in 1991	0.164	0.053	-5.560	0.000	***
Education Level in 1991 (base no qualifications)					
NVQ level 1	1.483	0.187	3.130	0.002	***
NVQ level 2	1.449	0.172	3.120	0.002	***
NVQ level 3	1.534	0.223	2.940	0.003	***
NVQ level 4	1.627	0.260	3.050	0.002	***
NVQ level 5	1.984	0.396	3.440	0.001	***
Participation in Lifelong Learning					
Learning leading to Qualification, 1991 to 2000	1.462	0.194	2.860	0.004	***
Work Experience in 5 years before 1991 (base < 1 year)					
1 to less than 2 years	1.428	0.153	3.340	0.001	***
2 to less than 4 years	1.574	0.154	4.640	0.000	***
4 to less than 5 years	1.972	0.220	6.080	0.000	***
Missing Work Experience Data	2.548	0.427	5.580	0.000	***
Attitudes to Women at Work: "Wives who do not have to work should not do so" (base, strongly disagree)					
Strongly agree	0.723	0.165	-1.420	0.155	
Agree	0.910	0.130	-0.660	0.511	
Uncertain	0.776	0.121	-1.630	0.103	
Disagree	0.974	0.117	-0.220	0.824	
Missing Attitude Data	0.728	0.177	-1.300	0.193	
Age 11 Scores on Maths and Reading Tests (base, lowest quartiles)					
Maths first quartile (highest)	0.869	0.137	-0.890	0.372	
Maths second quartile	0.979	0.137	-0.150	0.877	
Maths third quartile	1.116	0.135	0.910	0.363	
Reading first quartile (highest)	1.073	0.167	0.450	0.651	
Reading second quartile	1.090	0.148	0.640	0.525	
Reading third quartile	1.055	0.131	0.430	0.669	
Missing age 11 test data	1.090	0.154	0.610	0.544	
Father's socio-economic status in 1974 (base, unskilled)					
Professional	0.899	0.260	-0.370	0.712	
Intermediate	1.103	0.248	0.440	0.662	
Skilled non-manual	1.529	0.368	1.770	0.078	
Skilled manual	1.072	0.223	0.340	0.737	
Semi-skilled non-manual	1.026	0.378	0.070	0.944	
Semi-skilled manual	1.080	0.244	0.340	0.732	
Status unknown	0.869	0.344	-0.350	0.723	

No male head of household	0.832	0.216	-0.710	0.478
Type of Secondary School attended (base, comprehensive)				
Secondary modern school	0.819	0.076	-2.150	0.032 **
Grammar school	0.839	0.118	-1.250	0.212
Public school	0.857	0.144	-0.920	0.358
Other school	1.024	0.244	0.100	0.920
Parental Education (Years of Schooling)				
Father's education	0.986	0.027	-0.500	0.619
Father's education missing	1.139	0.417	0.360	0.721
Mother's education	0.938	0.032	-1.890	0.059 *
Mother's education missing	0.474	0.185	-1.920	0.055 *
Region (in 1991 base, Yorkshire/Humberside)				
North	0.898	0.174	-0.560	0.579
North West	1.099	0.170	0.610	0.541
West Midlands	1.185	0.187	1.080	0.282
East Midlands	0.939	0.175	-0.340	0.737
East Anglia	1.148	0.225	0.700	0.483
South West	1.259	0.190	1.530	0.125
South East	1.043	0.131	0.340	0.737
London	0.726	0.137	-1.700	0.089 *
Wales	0.853	0.158	-0.860	0.390
Scotland	0.955	0.154	-0.290	0.775

Parameter Estimates	Estimate	Std Err
γ	0.006	0.001

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1271
Log likelihood	-1684.58
LR chi2(56)	287.57

TABLE 15 HAZARD OF RETURNING TO EMPLOYMENT GOMPERTZ MODEL WITH INVERSE GAUSSIAN FRAILTY DISTRIBUTION

Time-varying covariates: Qualifications obtained and Births Occurring 1991 to 2000

	Haz. Ratio	Std. Err.	z	P>|z|	
Partner Present in 1991	1.591	0.260	2.850	0.004	***
No children	1.075	0.291	0.270	0.789	
Number of Children in 1991 (base one)					
Two children	1.803	0.253	4.200	0.000	***
Three or more children	1.692	0.258	3.450	0.001	***
Age youngest child in 1991 (base 2 years old or less)					
3 to 4 years old	1.619	0.206	3.790	0.000	***
5 or more years old	1.046	0.125	0.370	0.708	
Births, 1991 to 2000 (base, no)					
Child Born 1991 to 2000	0.600	0.067	-4.610	0.000	***
Health status in 1991					
Poor Health/Disability in 1991	0.102	0.041	-5.700	0.000	***
Education Level in 1991 (base no qualifications)					
NVQ level 1	1.696	0.295	3.040	0.002	***
NVQ level 2	1.615	0.263	2.940	0.003	***
NVQ level 3	1.681	0.330	2.650	0.008	***
NVQ level 4	1.829	0.395	2.800	0.005	***
NVQ level 5	2.354	0.646	3.120	0.002	***
Participation in Lifelong Learning					
Learning leading to Qualification, 1991 to 2000	1.699	0.292	3.080	0.002	***
Work Experience in 5 years before 1991 (base < 1 year)					
1 to less than 2 years	1.605	0.242	3.140	0.002	***
2 to less than 4 years	1.863	0.260	4.450	0.000	***
4 to less than 5 years	2.556	0.426	5.640	0.000	***
Missing Work Experience Data	3.837	0.971	5.310	0.000	***
Attitudes to Women at Work: "Wives who do not have to work should not do so" (base, strongly disagree)					
Strongly agree	0.706	0.215	-1.140	0.253	
Agree	0.887	0.174	-0.610	0.541	
Uncertain	0.774	0.164	-1.210	0.226	
Disagree	1.014	0.169	0.080	0.936	
Missing Attitude Data	0.644	0.211	-1.340	0.180	
Age 11 Scores on Maths and Reading Tests (base, lowest quartiles)					
Maths first quartile (highest)	0.839	0.177	-0.830	0.406	
Maths second quartile	0.984	0.184	-0.090	0.932	
Maths third quartile	1.165	0.190	0.940	0.350	
Reading first quartile (highest)	1.051	0.219	0.240	0.810	
Reading second quartile	1.105	0.202	0.550	0.584	
Reading third quartile	1.016	0.169	0.090	0.925	
Missing age 11 test data	1.106	0.209	0.530	0.593	
Father's socio-economic status in 1974 (base, unskilled)					
Professional	0.969	0.376	-0.080	0.936	
Intermediate	1.217	0.368	0.650	0.515	
Skilled non-manual	1.859	0.606	1.900	0.057	
Skilled manual	1.147	0.319	0.500	0.621	
Semi-skilled non-manual	1.051	0.529	0.100	0.922	
Semi-skilled manual	1.173	0.355	0.530	0.598	

Status unknown	0.903	0.462	-0.200	0.842
No male head of household	0.801	0.275	-0.650	0.517
Type of Secondary School attended (base, comprehensive)				
Secondary modern school	0.800	0.101	-1.770	0.077 *
Grammar school	0.825	0.158	-1.000	0.315
Public school	0.902	0.208	-0.450	0.655
Other school	1.075	0.339	0.230	0.820
Parental Education (Years of Schooling)				
Father's education	0.988	0.038	-0.310	0.756
Father's education missing	1.326	0.657	0.570	0.570
Mother's education	0.920	0.042	-1.850	0.064 *
Mother's education missing	0.378	0.197	-1.870	0.062 *
Region (in 1991 base, Yorkshire/Humberside)				
North	0.863	0.228	-0.560	0.577
North West	1.092	0.230	0.420	0.675
West Midlands	1.210	0.260	0.880	0.376
East Midlands	0.943	0.235	-0.240	0.814
East Anglia	1.196	0.320	0.670	0.504
South West	1.329	0.276	1.370	0.171
South East	1.042	0.177	0.240	0.810
London	0.668	0.169	-1.600	0.110
Wales	0.860	0.212	-0.610	0.541
Scotland	0.984	0.212	-0.070	0.942

Parameter Estimates	Estimate	Std Err
γ	0.016	0.003
θ	1.307	0.702

* significant at 10%, ** significant at 5%, *** significant at 1%

Number of Observations	1271
Log likelihood	-1681.52
LR chi2(56)	293.22

LR test $\theta = 0$: chibar2(01) = 6.11, prob>=chibar2 = 0.007

Table 16 Qualifications Obtained between Ages of 33 and 42
Sample: NCDS Women Out of Labour Market in 1991

GCSE	45
AS level	2
A Level	11
Scottish school type qualifications	2
Degree	25
Professional degree level qual	12
Higher Degree	3
HE Diploma	18
PGCE	16
Other Teaching qualification	21
Nursing/paramedic qualification	16
BTEC	30
City & Guilds	65
RSA qualifications	110
Pitmans	13
NVQ	79
GNVQ	13
OND	2
HNC/HND	5
Apprenticeship	0
HGV	0
Other Vocational Qualification	111
Number of Women	1,442

**Table 17 Highest Academic and Vocational Levels
Achieved between ages of 33 and 42**

Sample: NCDS Women Out of the Labour Force in 1991

NVQ equivalent levels one to five

Academic Qualifications

No qualifications	1,340
Level 1	5
Level 2	40
Level 3	12
Level 4	42
Level 5	3
	1,442

Vocational Qualifications

No qualifications	1,056
Level 1	169
Level 2	101
Level 3	46
Level 4	44
Level 5	26
	1,442

Table 18 Highest Qualification Attained by age 33 and between Ages 33 and 42

Sample: Women Out of the Labour Force in 1991 (age 33)
who obtained qualification(s) between 1991 and 2000 (ages 33 to 42)

	Highest Qualification Level Attained 1991 to 2000					
Highest Qualification	**1**	**2**	**3**	**4**	**5**	**Total**
Level Attained by 1991						
0	12	11	3	2	1	29
1	17	19	6	7	1	50
2	61	36	26	23	5	151
3	27	32	11	16	2	88
4	20	16	3	20	12	71
5	14	7	4	8	6	39
Total	151	121	53	76	27	428

Note: NVQ equivalent levels

Table 19 Proportion of Time Spent in Employment after first Return

Sample: NCDS Women out of work in March 1991 who returned to work between 1991 and 2000

	Number	Percent
50 per cent or less	56	5.4
More than 50, up to 75 per cent	55	5.3
More than 75 but less than 100 per cent	108	10.4
Exactly 100 per cent	816	78.8
Total	1035	100

Figure 1 Survivor Curves for Remaining Out of Work, by Whether Undertook Learning Leading to Qualification, 1991 to 2000

Time (months), month 1=March 1991, month 115=Sept 2000
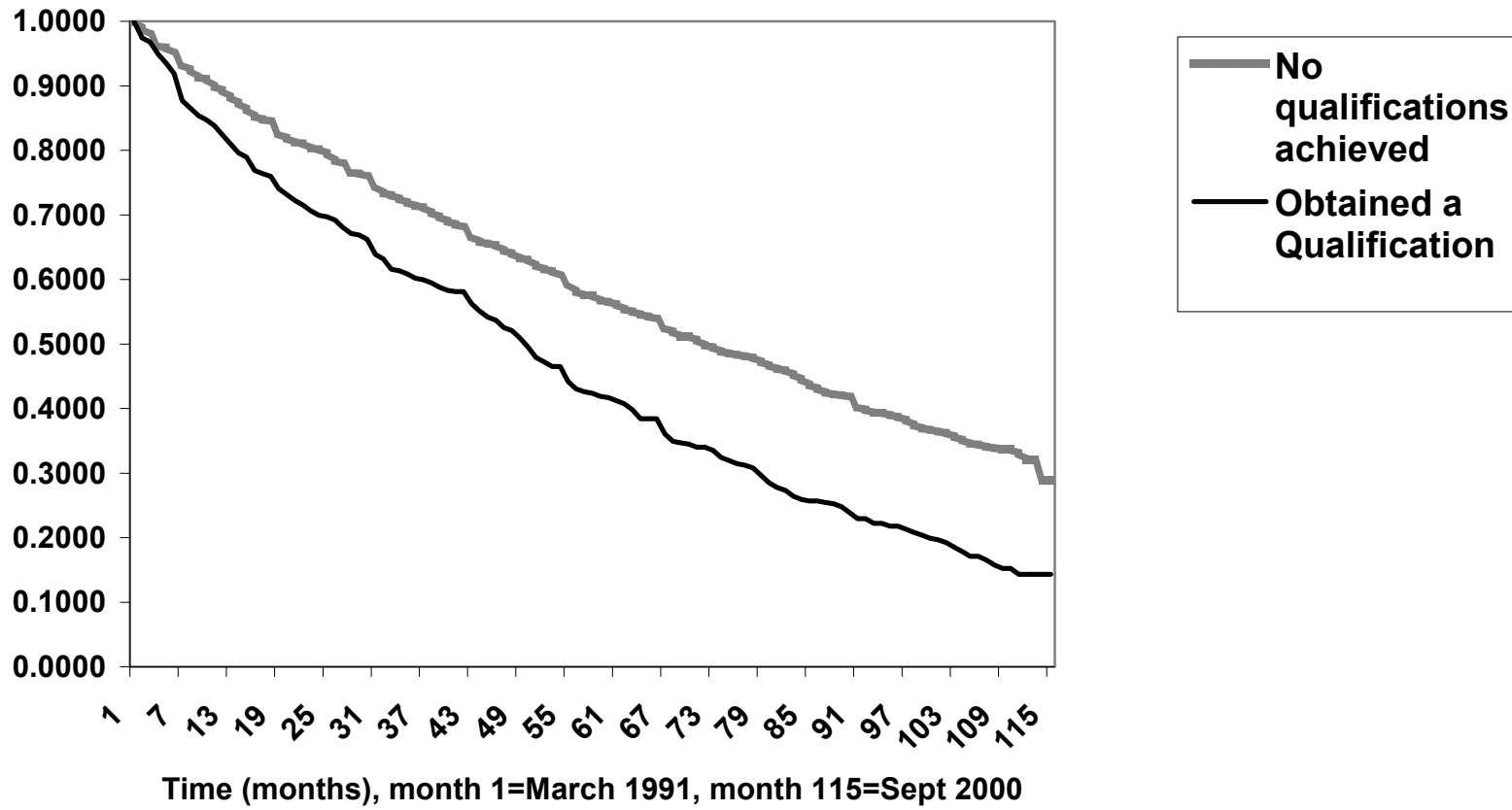
Figure 2 Highest Qualification Attained 1991 to 2000

(Sample: Women out of Work in 1991 who obtained a qualification between 1991 and 2000)
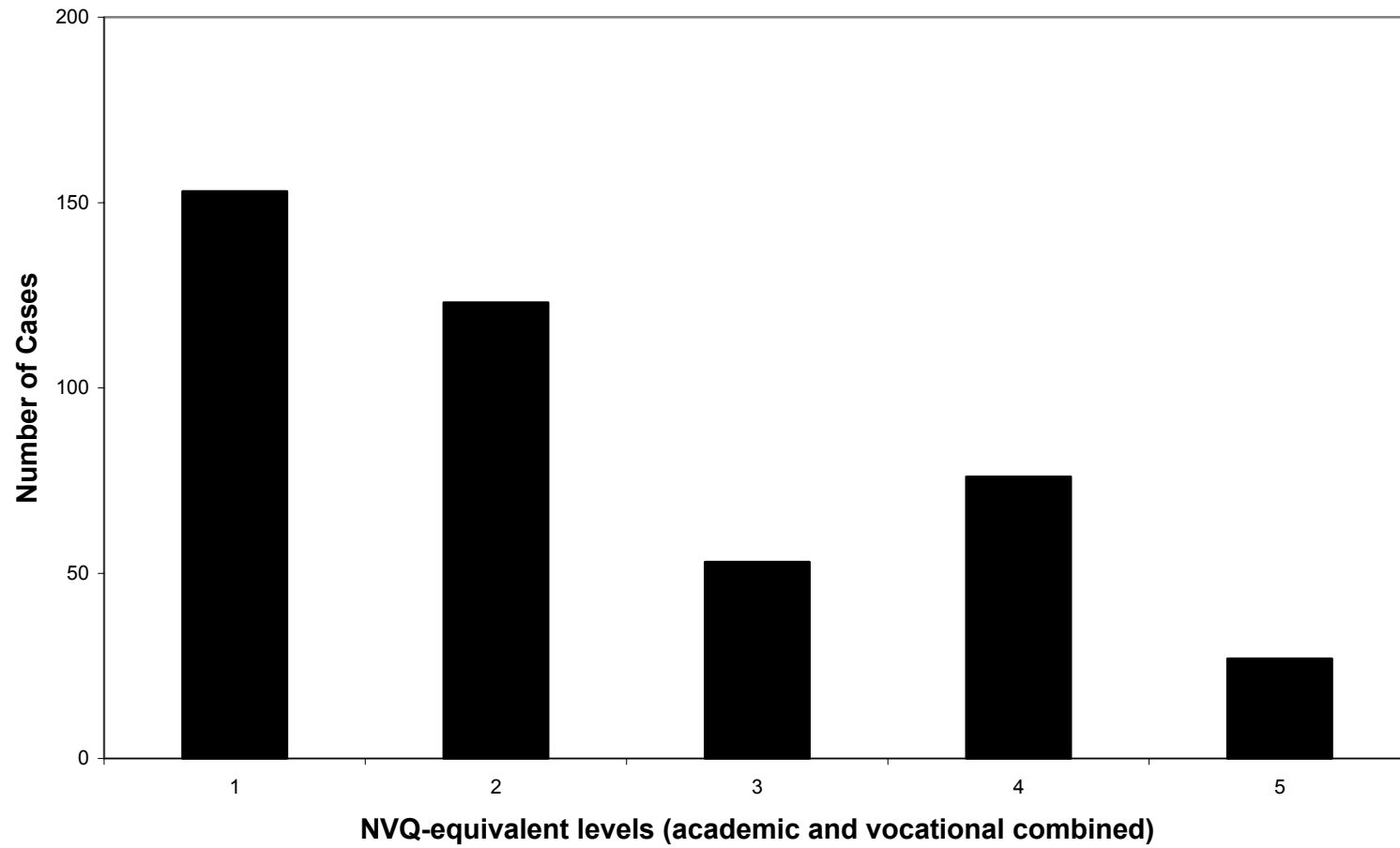
Figure 3 Numbers in Work

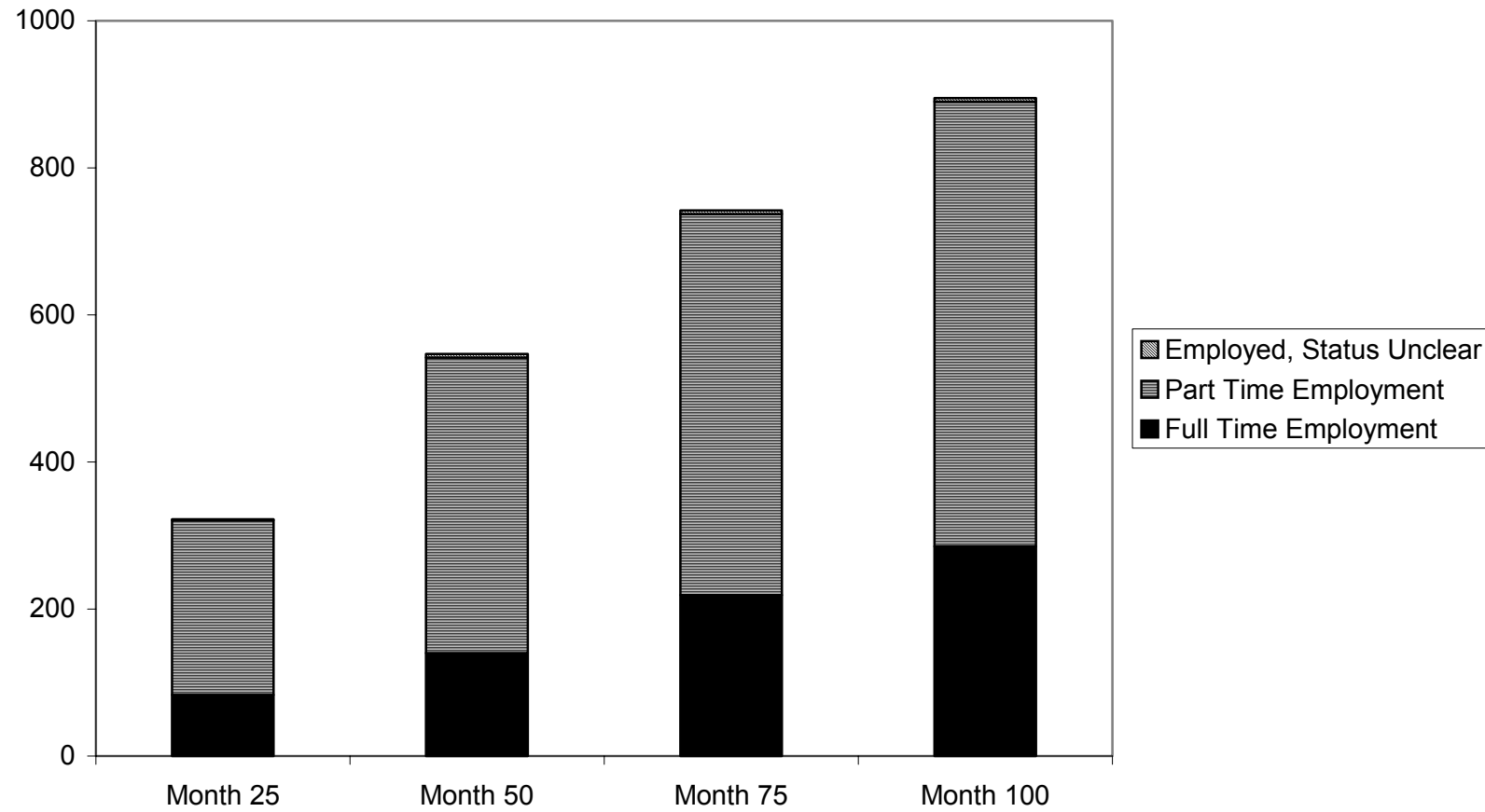**(Sample: women out of work in March 1991, month 1)**

Month (Month 1 is March 1991, Month 105 is Nov 1999)
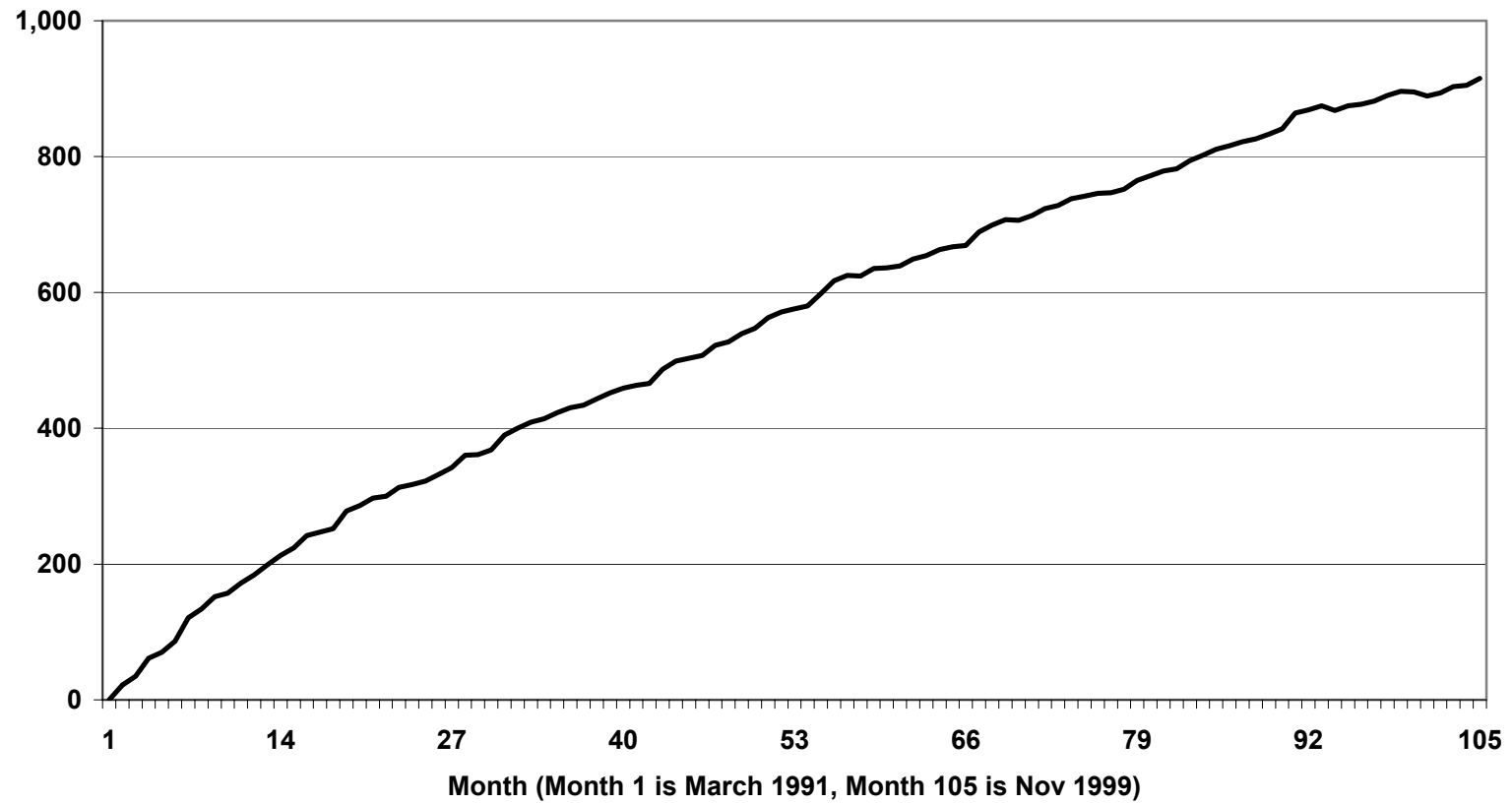
Figure 4 Activity Status Among Those Employed in Certain Months

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