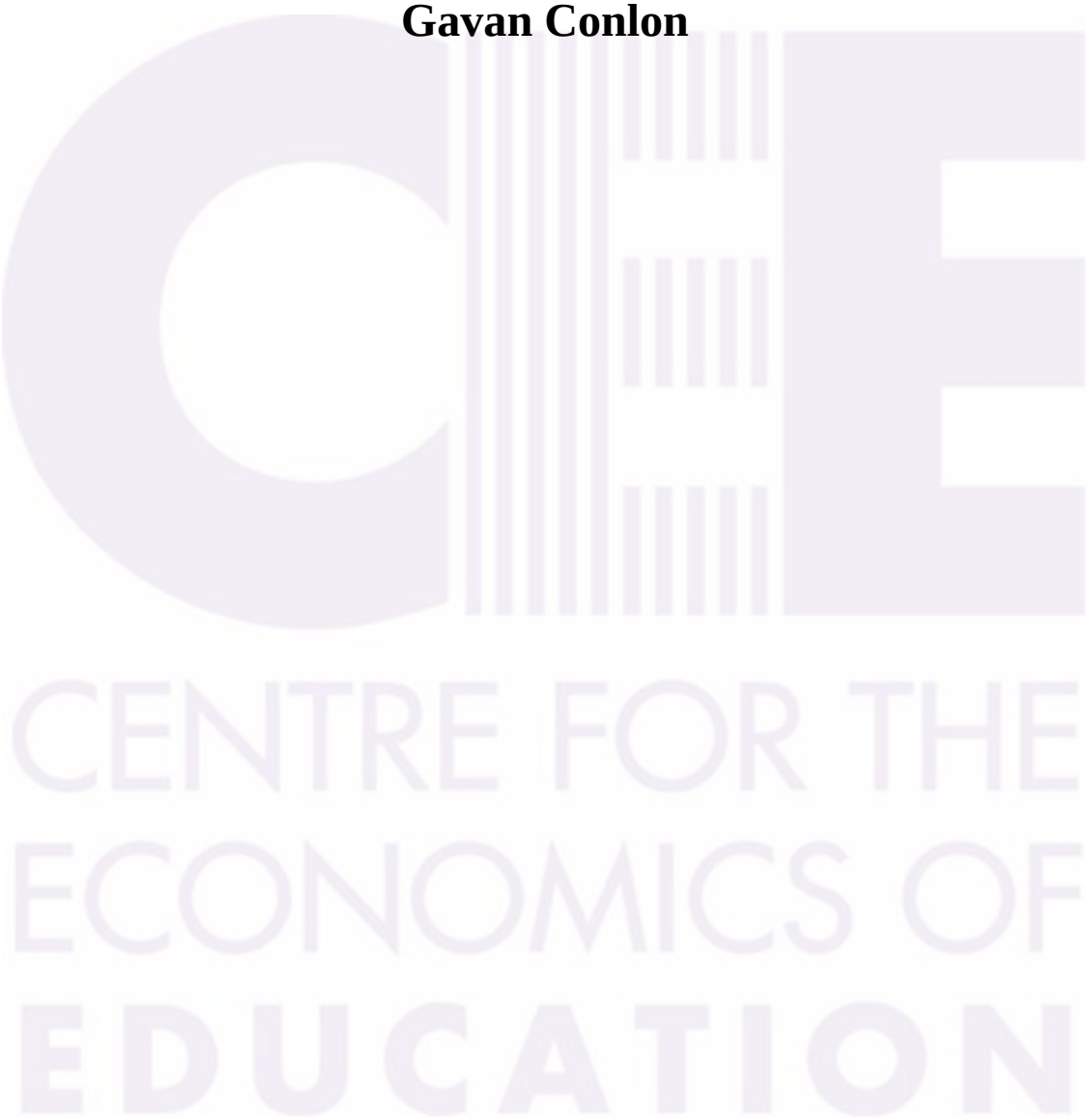
"The incidence and outcomes associated with the late attainment of qualifications in the United Kingdom"

Gavan Conlon



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Executive Summary

Successive governments in the United Kingdom have consistently attempted to increase the skills base by encouraging younger members of society to remain in education, increasing access to higher and further education and by removing barriers to learning later in life.

Although there are estimates of the incidence of educational participation[1] and the economic rewards achieved by those in possession of formally recognised qualifications, either in terms of labour market outcomes or earnings, little is known about the personal or family characteristics associated with those engaged in learning later in life. There is no formal definition of what exactly late learning refers to, insufficient quantitative information[2] relating to the incidence of adult learning, the associated costs and benefits or even whether the type of qualification or the method by which the qualification is undertaken is important.

This paper makes a *provisional* attempt to answer some of these questions. The conclusions are not intended to be definitive, but should be seen as a basis for other possible research work. However, some conclusions are clear and unambiguous. Learning undertaken later in life is widespread. Approximately one in three of the hours of education and training received by working age individuals in the United Kingdom are attributable to those above the age of twenty-five. This figure is substantially higher than the received wisdom in the academic arena. The costs and benefits associated with learning later in life remain difficult to compute due to the data limitations, however, it is illustrated that there is a sizeable penalty in terms of hourly wages and hours worked for late learners. Additional work must be undertaken as superior sources of data become available, as this area of work is currently under-researched. Rather than being at the periphery of education and training policy in the United Kingdom, late learning should continue to be seen as an important pillar within the general attempt to build the knowledge base within the United Kingdom.

[1] See DfEE (2001) for estimates of adult education enrolments in England

[2] See National Adult Learning Survey (NALS) for additional information relating to the incidence of late learning.

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Gavan Conlon is a research officer at the Centre for Economic Performance at the London School of Economics and centre co-ordinator at the Centre for the Economics of Education. All errors remain mine alone.

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1. Introduction

There have been numerous attempts to ascertain the return associated with additional years in education and various levels of qualification attainment in the United Kingdom. However, despite the government's continued attempts to raise the profile of late learning or adult learning, there remains scepticism regarding their incidence and little research on the extent, the costs or the benefits associated with this area of qualification attainment. Many of the existing studies (either by circumstance or design) in the rates of return literature have had as their main focus the straightforward benefits associated with an additional year of schooling or the earnings premium associated with a particular level of qualification, such as the difference in earning power between an individual holding an undergraduate degree as opposed to GCE 'A' levels (Blundell *et al*, 2000). This work generally has focused on those individuals who have attained their qualifications early in life. This is not a criticism of existing work, as generally there is a severe lack of information available pertaining to those that return to learning or undertake late learning[3].

However, the question remains: How extensive is adult or late learning?

Once this question is answered, it is possible to build on some of the existing research on rates of return in an attempt to assess the impact of late learning on labour market or earnings outcomes. It must be noted again that this area of research remains underdeveloped and will continue to do so as long as the existing information limitations persist.

As a consequence of the results presented in the early part of the paper, the second stage of this analysis attempts to ascertain the costs and benefits associated with late learning and the characteristics that are associated with alternative methods or stages of qualification attainment.

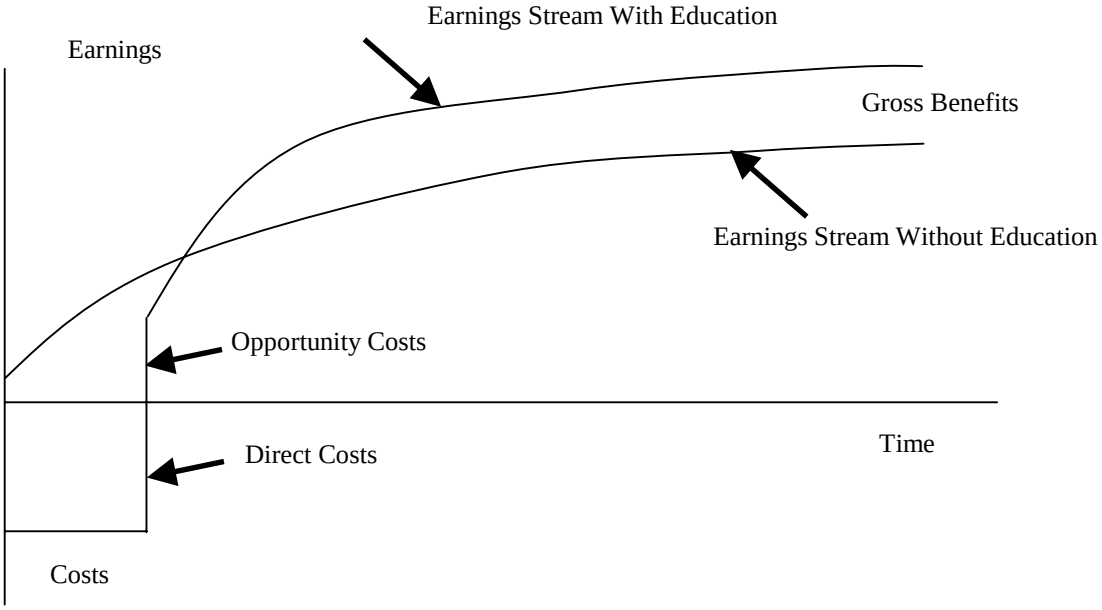
The paper is set out as follows: Section 2 provides a simple theoretical background to some issues relating to late learning. Section 3 discusses the methodological issues relating to the estimation of the incidence of late learning, the earnings premia associated with alternative combinations of academic and vocational qualifications and a presentation of the associated results. Section 4 provides estimates of the hourly and weekly penalties associated with late learning. Section 5 focuses on the employment outcomes achieved by late learners. Section 6 attempts to illustrate the characteristics of those enrolled and attending educational establishments while Section 7 concludes.

3 See 'An Audit of the Data Needs of the DfEE Centres for the Economics of Education and the Wider Benefits of Learning', Anna Vignoles with assistance from Tanvi Desai and Estela Montado, Centre for the Economics of Education, Discussion Paper No.1, November 2000 for a discussion of the relative strengths and weaknesses of alternative sources of information in addressing various issues associated with late learning.

2. The Incidence of Late Learning: A simple theoretical background

When commencing this work relating to the costs and benefits associated with late learning, there was an implicit belief that late learning was not really an important issue within the United Kingdom's education debate. In other words, while the undertaking and completion of qualifications later in life is undoubtedly important to the individual specifically and to society generally, the incidence of adult learning is so small as a proportion of the overall amount of education and training received that it does not in any way warrant substantial degrees of additional analysis. Why might there be an expectation of a low incidence of adult learning?[4]

On a theoretical level, one would plausibly expect to see a lower rate of educational participation amongst those later in life compared to younger age cohorts Referring to standard human capital theory (Becker, 1975), it is clear that undertaking additional levels of qualification can be seen as an investment. This investment will result in the incursion of costs during the time of qualification attainment and if it is believed that the qualification will add entirely to the productivity of the worker[5], it will have the effect of raising wages in the future. The economic decision to undertake additional levels of qualifications will depend crucially on the perception of the relative costs and benefits and the relative weight placed on the present and the future (i.e. the interest rate).



Formally, suppose that the differential between earnings with and without the qualification in question at time *t* is denoted by ΔY_t, the discount rate equals *r* and the cost of undertaking the qualification (both direct and indirect) equals *C*. Then, the present value of benefit equals the discounted differential in the earnings with and without the qualification which in turn equals $\sum_{i=1}^{T} \frac{\Delta Y_i}{(1+r)^i}$. Therefore, the qualification is undertaken if $\sum_{i=1}^{T} \frac{\Delta Y_i}{(1+r)^i} \geq C$

[4] As with the majority of studies relating to the estimation of the rate of return or earnings premium associated with specific qualifications, this paper looks at the private return and never considers the social return. To my knowledge, there is no reliable information source available that might allow a detailed and comprehensive analysis of the social returns to qualifications. Thus there is no attempt to ascertain the effect of qualification attainment on social cohesion, health and well-being or crime reduction.

[5] In other words, the signaling hypothesis is ignored.

The same theory applies to someone undertaking a qualification later in life, however, for a practical viewpoint, the decision to undertake the qualification (if it is based on an economic rationale[6]) is affected by the time for which the benefits accrue as a result of the qualification attainment. The earnings premium achieved by late learners *may* be as large as for an 'early starter', however, due to the fact that the qualification is attained later in life, these income differentials last for a shorter length of time than for the early starters. Therefore, the implication is that the present value of the benefits associated with late learning will not be as great as the benefits associated with early learning, which will result in an uneven distribution of qualification attainment across the age spectrum.

I attempt to estimate the number of hours of education and training that is received by the population at or above the age of 25 as a proportion of education and training received by the entire working age population. The unit of analysis in this paper refers to the number of hours of education and training received by late learners relative to the working age population, *not* the number of late learners engaged in education and training as a proportion of the working age population[7]. Although other analyses prefer to report the absolute numbers engaged in adult education or the ration of adult learners to the working age population (or the entire population), the decision to estimate the extent of late learning in terms of hours and not people is due to the fact that this analysis attempts to incorporate the intensity of the receipt of education and training (albeit crudely), which is abstracted from when looking at the number of late learners only. There are of course problems with this methodology (for this reason and others which will be reviewed) but it is my opinion that this manner of analysis is preferable.

Secondly, there is no particular reason to define late learning as being related to those individuals aged at or above 25, however, the results presented are general enough to allow the reader to make a subjective estimate of the incidence of late learning according to their personal definition[8].

For the theoretical reasons stated above, there was every expectation that the incidence of late learning would be low. *Assuming* that the estimate of the incidence of late learning is 'low', it is entirely plausible to inform policy makers that although there are social and personal benefits associated with late learning (which exist but are difficult to gauge), more significant benefits accrue to the individual and to society through the increase of educational participation and qualification attainment at the lower end of the age spectrum. A policy implication *if* a low incidence of late learning were illustrated would be that it might be more appropriate to direct existing funding towards improving the knowledge base of younger members of society rather than mature students. The question remains to estimate the incidence of late learning in the United Kingdom. The results are somewhat surprising.

3. The Incidence of Late Learning: Methodology and Results

The estimates of the proportion of hours education and training undertaken by males aged between 25 and 59 and females aged between 25 and 55 are presented in Tables 1 and 2 and the methodology is described below[9]. It must be noted that these figures are only estimates

[6] Again it must be reiterated that this analysis focuses on the economic incentives associated with undertaking qualifications. Thus, no account is taken of other reasons why adult learning might take place. At present there is no reliable information source that allows accurate analysis of the reasons for undertaking additional qualifications and this information limitation also causes methodological difficulties when attempting to classify qualifications according to whether they are academic or vocational.

[7] For estimates of the incidence of adult education enrolments (i.e. headcount), see DfEE (2001)

[8] Note that the OECD definition of adult learning refers to those at or above the age of 25.

[9] The decision was taken to estimate the incidence of late learning for those men and women of working age only. There were two particular reasons for doing this. Firstly (as it turns out), there is a very low level of education and training undertaken by those above working age (though clearly non zero – see DfEE (2001) for

and they are crucially determined by the assumptions to be discussed. *The figures presented are for indication purposes only and are intended to act as a possible guide to other researchers.*[10] The estimates of late learning in the United Kingdom are based on information related to general education and training contained in the QLFS (every quarter between Summer 1994 to Winter 1998 and in the Spring quarter thereafter)[11]. The primary question used to estimate the incidence of late learning from the Labour Force Survey is as follows:

Have you received any education or training in the reference week, which is relevant to your current job or a future job?

From the responses to this question, it is possible to ascertain whether or not any education or training that has been received is relevant to the respondent's current job, or a job the respondent might be undertaking in the future and whether or not this education and training leads to a formally recognised qualification.

The next question in the Labour Force Survey examines the number of hours that the individual spent in receipt of education and training. Therefore, it is possible to ascertain the average number of hours that individuals who respond in the affirmative to the initial question concerning job related training spend in training. From this information, it is then possible to estimate the average number of hours of education and training that are received by individuals in receipt of job related training according to the alternative methods of provision (e.g. in the workplace, correspondence course, part-time university - FE College, full-time university - FE College, *etc*).

The next stage of the analysis presents the strongest assumption of the analysis and is as follows: in addition to those individuals who receive job related training, there are individuals who claim not to be in receipt of any education and training relating to any current or future job, but are enrolled and attending some form of educational establishment with the aim of attaining a formally recognised qualification.

We impute that these people (non-job related) receive the same number of hours of education and training (on average) as those individuals receiving job related training (by method of education provision). For instance, if an individual is receiving 10 hours per week job related training by attending a further education college part-time, then we make the assumption that all individuals attending a further education college part-time (non job related) also receive 10 hours training a week.

This may or may not be the case and is sensitive to the sample size of those receiving on the job training. However, given the limitations of the data and the fact that there is no explicit information relating to the number of hours of education and training that the second group receives, there is little alternative but to continue in this manner[12]

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the estimates of the numbers of individuals aged 60 and above enrolled in adult education) and thus the omission of those above working age results in no loss of generality to the overall findings. Secondly, the earnings information for those above working age is less robust than for the working age population, which hampers the second stage of the analysis.

[10] The figures presented relate to the number of hours of education and training undertaken by individuals in particular age groups. This paper does not in any way suggest that the estimates refer to the actual numbers of individuals undertaking education and training – simply the hours received.

[11] This information source is not ideal. It would be clearly superior to make use of an information source such as the National Child Development Study. It is the author's intention to undertake some research in this area as soon as the latest sweep of the NCDS becomes available. In addition, from September 2001, the Labour Force Survey will include information on adult participation in learning on a broadly defined basis (including non-taught and self-directed learning). This would be a clear improvement on the analysis presented here.

[12] It is clear that there are individuals that are in receipt of some form of education and training that is self-directed or self-taught. In this analysis using information from the Labour Force Survey in this period, there is no way that we can incorporate these individuals into the analysis. In addition, it might well be the case that the

Table 1: Cumulative Percentages of Hours of Education and Training Received by Males Aged 16-59: LFS Summer 1994 - Winter 1998, Spring 1999, Spring 2000

Age	1994*	1995	1996	1997	1998	1999**	2000**
16	0.057	0.062	0.060	0.162	0.159	0.154	0.157
17	0.142	0.150	0.158	0.294	0.293	0.279	0.285
18	0.230	0.237	0.246	0.390	0.393	0.376	0.392
19	0.313	0.327	0.330	0.459	0.473	0.453	0.465
20	0.388	0.405	0.397	0.516	0.534	0.510	0.533
21	0.444	0.459	0.457	0.568	0.582	0.577	0.591
22	0.498	0.509	0.500	0.607	0.618	0.614	0.637
23	0.544	0.552	0.541	0.637	0.642	0.643	0.665
24	0.579	0.585	0.575	0.663	0.665	0.670	0.682
25	0.609	0.615	0.608	0.689	0.684	0.687	0.702
26	0.635	0.642	0.637	0.710	0.704	0.704	0.718
27	0.659	0.665	0.657	0.726	0.721	0.719	0.733
28	0.682	0.690	0.683	0.745	0.741	0.738	0.750
29	0.704	0.713	0.704	0.762	0.758	0.754	0.765
30	0.729	0.737	0.726	0.778	0.776	0.771	0.779
31	0.752	0.753	0.747	0.797	0.793	0.790	0.793
32	0.769	0.772	0.767	0.815	0.807	0.806	0.809
33	0.786	0.789	0.784	0.831	0.820	0.819	0.824
34	0.803	0.806	0.804	0.846	0.835	0.837	0.838
35	0.818	0.822	0.824	0.856	0.848	0.850	0.851
36	0.839	0.836	0.841	0.868	0.860	0.864	0.868
37	0.853	0.850	0.854	0.879	0.870	0.876	0.881
38	0.866	0.865	0.868	0.888	0.881	0.890	0.890
39	0.879	0.877	0.879	0.900	0.892	0.898	0.900
40	0.889	0.888	0.891	0.909	0.902	0.909	0.911
41	0.900	0.899	0.901	0.919	0.911	0.915	0.918
42	0.910	0.908	0.911	0.927	0.919	0.923	0.927
43	0.919	0.916	0.921	0.934	0.927	0.931	0.935
44	0.926	0.925	0.929	0.942	0.935	0.937	0.942
45	0.933	0.934	0.937	0.949	0.944	0.943	0.948
46	0.942	0.942	0.943	0.953	0.951	0.948	0.953
47	0.951	0.950	0.953	0.959	0.957	0.954	0.959
48	0.957	0.958	0.959	0.964	0.963	0.959	0.964
49	0.963	0.964	0.966	0.969	0.969	0.966	0.970
50	0.970	0.970	0.972	0.975	0.973	0.973	0.975
51	0.976	0.976	0.977	0.980	0.978	0.977	0.978
52	0.981	0.981	0.981	0.984	0.982	0.984	0.981
53	0.985	0.986	0.987	0.988	0.987	0.988	0.984
54	0.989	0.989	0.990	0.991	0.990	0.991	0.987
55	0.993	0.991	0.992	0.994	0.993	0.993	0.989
56	0.995	0.994	0.995	0.996	0.995	0.996	0.993
57	0.996	0.996	0.997	0.997	0.997	0.998	0.996
58	0.999	0.999	0.999	0.999	0.998	0.999	0.999
59	1.000	1.000	1.000	1.000	1.000	1.000	1.000

intensity of the education and training received by the group where these skills are relevant to their current or future job may be greater than for those where it is not. This is an acknowledged weakness of this analysis.

* Note that for 1994, the percentages relate to the spring, summer and autumn quarters only.

** Note that for 1999 and 2000, the percentages relate to the spring quarter only.

Table 2: Cumulative Percentages of Hours of Education and Training Received by Females Aged 16-55: LFS Summer 1994 - Winter 1998, Spring 1999, Spring 2000

Age	1994*	1995	1996	1997	1998	1999**	2000**
16	0.057	0.053	0.056	0.156	0.146	0.155	0.147
17	0.143	0.132	0.140	0.292	0.274	0.287	0.258
18	0.233	0.216	0.217	0.381	0.370	0.372	0.347
19	0.317	0.302	0.299	0.452	0.448	0.452	0.425
20	0.385	0.375	0.374	0.508	0.511	0.510	0.501
21	0.459	0.439	0.438	0.558	0.556	0.569	0.547
22	0.511	0.494	0.485	0.594	0.597	0.605	0.583
23	0.553	0.533	0.525	0.622	0.625	0.634	0.606
24	0.580	0.567	0.558	0.648	0.649	0.659	0.631
25	0.609	0.596	0.589	0.674	0.671	0.684	0.652
26	0.632	0.622	0.614	0.695	0.690	0.704	0.672
27	0.652	0.641	0.638	0.712	0.707	0.719	0.693
28	0.677	0.661	0.659	0.731	0.725	0.737	0.713
29	0.701	0.684	0.681	0.748	0.742	0.754	0.729
30	0.719	0.707	0.698	0.765	0.760	0.771	0.743
31	0.737	0.725	0.720	0.782	0.779	0.785	0.762
32	0.752	0.743	0.743	0.799	0.792	0.798	0.777
33	0.769	0.762	0.759	0.815	0.806	0.812	0.791
34	0.786	0.778	0.778	0.830	0.821	0.829	0.807
35	0.802	0.796	0.797	0.843	0.837	0.844	0.820
36	0.818	0.814	0.813	0.855	0.851	0.856	0.833
37	0.835	0.829	0.830	0.869	0.865	0.873	0.848
38	0.851	0.847	0.848	0.881	0.879	0.885	0.863
39	0.863	0.862	0.866	0.895	0.891	0.898	0.878
40	0.879	0.878	0.879	0.905	0.903	0.908	0.891
41	0.891	0.891	0.893	0.915	0.912	0.918	0.901
42	0.903	0.905	0.906	0.925	0.920	0.928	0.911
43	0.916	0.915	0.919	0.933	0.929	0.936	0.920
44	0.926	0.926	0.930	0.942	0.937	0.945	0.929
45	0.939	0.937	0.939	0.949	0.947	0.951	0.938
46	0.952	0.947	0.945	0.955	0.955	0.958	0.948
47	0.963	0.958	0.954	0.962	0.961	0.965	0.957
48	0.974	0.968	0.965	0.969	0.968	0.970	0.966
49	0.979	0.975	0.973	0.975	0.975	0.976	0.972
50	0.984	0.981	0.979	0.981	0.979	0.982	0.978
51	0.989	0.987	0.984	0.986	0.985	0.988	0.983
52	0.993	0.991	0.989	0.989	0.989	0.991	0.988
53	0.995	0.996	0.994	0.993	0.993	0.995	0.994
54	0.998	0.997	0.997	0.996	0.995	0.997	0.997
55	1.000	1.000	1.000	1.000	1.000	1.000	1.000

* Note that for 1994, the percentages relate to the spring, summer and autumn quarters only.
** Note that for 1999 and 2000, the percentages relate to the spring quarter only.

The final step is to aggregate the total number of hours of education and training (either job related or non-job-related) by age. The estimates of late learning for men and women are presented in Tables 1 and 2. The most robust estimates relate to the figures presented for the years 1997 and 1998 and in particular the coefficients represent the cumulative percentages of the number of hours of education and training received by males (females) relative to the entire sample of working age males (females).

The figures illustrate that the percentage of the hours of the education and training (either related or unrelated to the individual's current or future job) received by those aged at or above 25 as a percentage of the entire working age population approximates one third. In addition, the figures indicate that the percentage of late learning has remained reasonably stable over the period in question[13].

The figures presented are percentages only. It is of course difficult to ascertain whether there has been any change in the incidence of late learning in absolute terms. However, the indications are that approximately one in three hours of education received by the population of working age actually accrues to those who might be considered adult learners. This number is surprising given the initial beliefs regarding the magnitude of late learning and also given the fact that the initial question in the Labour Force Survey refers to undertaking education and training in the reference week and not some longer period of time. As such, it is not the case that the estimation of the costs and benefits of late learning are trivial or to be ignored[14]. It appears to be the case that this component of education supply is crucial to the long-term financial and social well being of the economy and demands additional analysis as the information required to undertake significant research becomes available.

The next section looks at the earnings premia associated with alternative levels and types of qualifications

3.1. Qualifications and associated earnings premia

It is only recently that there has been any concerted attempt to research the return to alternative types of qualification (Conlon, 2000; Dearden, McIntosh, Myck and Vignoles, 2000). The literature in this area seems reasonably consistent and indicates that the academically trained outperform their vocational counterparts by approximately one level in the NVQ classification[15] of qualifications (Robinson, 1997). In other words, the earnings premium achieved by an individual possessing an NVQ level 2 academic qualification over those possessing no formally recognised qualifications is approximately equal to the premium

[13] Note that in a recent article based on a previous draft of this paper, Field (2001) infers that there has been an increase in the number of hours of education and training received by those aged at or below the age of 24. I do not agree with this inference. Although the data does indicate that the percentage of hours of education and training received by this cohort (males) has increased from 57.9% in 1994 to 68.2% in spring 2000, there appears to be a sudden jump (discontinuity) in the data between 1996 and 1997 for which I can find no explanation. Excluding this jump in the estimates for the distribution of hours attained, the results appear reasonably stable.

[14] Note, however, this analysis makes no attempt to ascertain the reasons for undertaking additional qualification (if non-job related). There is no indication as to whether those enrolled and undertaking additional qualifications are doing so for economic reasons or otherwise.

[15] Note that the classification of qualifications in the Dearden *et al* (2000) paper is not the same as the classification of qualifications presented in this paper. In particular, teaching and nursing qualification have been defined as vocational in type, as opposed to academic in nature in this paper. This may account for some of the discrepancies in the results pertaining to earnings differentials between the academically and vocationally trained between the two papers.

earned by an individual possessing a vocational qualification at NVQ level 3[16]. In addition, these earnings differentials appear consistently throughout the latter part of the 1990s and are invariant to the method of estimation (Ordinary Least Squares, Instrumental Variables, Heckman Selection Model) and the informational source (National Child Development Study and Labour Force Surveys) (Conlon, 2000).

However, despite this exhaustive analysis of the returns to specific levels of qualification, there has been little analysis of the earnings premia associated with either different types of qualification when in combination with each other or the importance of the stage in life at which these qualifications are attained.

It is clear that the analysis of the returns associated with alternative combinations of qualifications is important. It is not simply the case that individuals that have decided to stay within the educational system beyond the age of 16 undertake and complete additional academic or vocational qualifications eventually leaving the educational system and entering the labour market. A substantial proportion of individuals commence their studies with academic qualifications (of some description), but at a given point in time they decide (or the decision is made for them) that the vocational route of qualification attainment is more preferable or suitable (say) or simply decide to leave the education system entirely. Similarly, there are numerous incidences of individuals returning to education after a long period in the labour market in order to undertake a qualification funded by an employer or union (or decide to undertake the qualification merely as a consumption good).

Initially, therefore, rather than looking at the straightforward earnings premia achieved by individuals in possession of academic or vocational qualifications exclusively and the associated differentials between the academically and vocationally trained at a given level of qualification, this paper commences by looking at the returns to combinations of academic and vocational qualifications and questions whether there is any advantage or disadvantage resulting from the possession of single or multiple types of qualification.

3.2. Methodology

Prior to commencing the analysis, there are several issues that must be discussed relating to the definition and classification of academic and vocational qualifications. It may seem apparent and unworthy of discussion but how exactly do we define academic and vocational qualifications for the purpose of analysis? Unfortunately, the answers are difficult to come by and there is every probability that readers will disagree with the classification of academic and vocational qualifications presented here. In many situations, no problem arises. For instance, individuals possessing GCSE grades should clearly be considered as being in possession of an academic qualification and those in possession of a City & Guilds craft qualification are easily classified as holding a vocational qualification. However, taking two additional cases, the boundaries between academic and vocational qualifications are less distinct. For instance, most people might claim that an individual possessing a university degree is academically trained. However, it also clear that the subject of the degree level qualification is important. In criticism of previous work (Conlon, 2000), the unilateral categorisation of university degree holders as being academically trained was questioned, as those possessing medical or veterinary degrees (say) could generally be considered as possessing qualifications that are vocational in nature. Defining qualifications according to the nature or the specificity of the skills that are possessed does not alleviate the problem[17].

[16] Dearden, McIntosh, Myck and Vignoles (2000) illustrate that when analysing private rates of return rather than earnings premia the gap in the return between the academically and vocationally trained diminishes and the differential between the academically and vocationally trained decreases as the level of qualification increases.

[17] Even the adoption of a dictionary definition of vocational does not alleviate the problem since 'being so called or directed towards a special work in life or having a natural tendency to, or fitness for, such work' (Oxford

Table 3: Description of Vocational and Academic Qualifications by NVQ Equivalent: Labour Force Surveys 1979-1999

Highest Qualification		79	81	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00
NVQ level 5	Vocational	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	5	5	5
Higher Degree	Academic	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
NVQ level 4	Vocational	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	4	4
Member Prof. Institute	Academic	4	4	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Degree	Academic	-	-	-	-	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
First Degree	Academic	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Diploma in Higher Ed.	Academic	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	4	4	4	4	4
HNC/HND BTEC	Vocational	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Teaching (Further Ed)	Academic	-	-	-	-	-	-	-	-	4	4	4	4	4	4	4	4	4	4	4	4
Teaching (Secondary	Academic	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Teaching (Primary Ed)	Academic	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Teaching (Not Stated)	Academic	-	-	-	-	-	-	-	-	-	-	-	4	4	4	4	4	4	4	4	4
Nursing	Vocational	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
RSA Higher Diploma	Vocational	-	-	-	-	-	-	-	-	-	-	-	2	4	4	4	4	4	4	4	4
Oth Higher Ed. Below	Academic	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	4	4	4	4	4
NVQ level 3	Vocational	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3
GNVQ/GSVQ	Vocational	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3
2+ GCE 'A' Level	Academic	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
RSA Advanced Diploma	Vocational	-	-	-	-	-	-	-	-	-	-	-	2	3	3	3	3	3	3	3	3
OND/ONC/BTEC Natl	Vocational	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
C&G Advanced Craft	Vocational	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3
Scottish 6th Year	Academic	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3	3	3	3
2+ SCE Hr Passes A-C	Academic	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
NVQ level 2	Vocational	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2
1 GCE 'A' Level Pass	Academic	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2
1 SCE Higher Pass	Academic	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2
A/S Level	Academic	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2
Trade Apprenticeship	Vocational	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
GNVQ Intermediate	Vocational	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2
RSA Diploma	Vocational	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2
C&G Craft	Vocational	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
BTEC First or Gen Dip	Vocational	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2
GCSE A*-C (O level)	Academic	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
NVQ level 1	Vocational	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1
GNVQ Foundation Lvl	Vocational	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1
GCSE below C (CSE)	Academic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BTEC First or Gen Cert	Vocational	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1
SCOTVEC modules	Vocational	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1
RSA Other	Vocational	-	-	-	-	-	-	-	-	-	-	-	2	1	1	1	1	1	1	1	1
City and Guilds Other	Vocational	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1
YT/YTP Certificate	Vocational	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1
Other Qualification	Vocational	1	1	1	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1
No Qualifications	n/a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: Labour Force Survey (Spring 1979 - Spring 2000), Education and Training Statistics (2000)

English Dictionary, 2nd Edition) would satisfy most researchers' criteria for defining the medical or legal professions as being vocational in nature. In the same way, the decision to label RSA qualifications as being vocational rather than academic might be considered somewhat arbitrary.

Suppose that we consider that academic qualifications endow their recipients with skills that are considered to be general or transferable and the holders of vocational qualifications as possessing firm specific skills, then we have a suitable starting point for the classification of qualifications. However, it could still be claimed that an individual possessing RSA qualifications working as a secretary (who is defined as vocationally trained in this analysis) holds general transferable skills and should be considered to be academically qualified according to our definition and that a vet possesses extremely firm or industry specific skills and thus should be considered to be vocationally trained. To achieve a strict classification of qualifications according to whether they are academic or vocational is a major piece of research in its own right. I adopt the classification of qualifications (according to type) that I have previously adopted and is presented in Table 3.

The second issue relating to the classification of qualifications relates to the level within the National Vocational Qualification framework at which we classify each particular qualification. Qualifications have been classified according to the National Vocational Qualification framework. Thus, qualifications are labelled as being either academic or vocational in nature (as previously discussed) and corresponding to some particular level between NVQ level 1 and NVQ level 5. For the purposes of this analysis, qualifications are grouped according to the time taken for completion of the qualification and the entry requirements needed to commence the qualification. It is clear that entry requirements vary from institution to institution and this is not simply the case for 'vocational' qualifications. It is equally the case that the entry requirements are massively varied for 'academic' qualifications.

Turning to the time taken to complete the qualification, there is a substantial amount of ambiguity, which has been highlighted in previous studies and has a bearing on the estimates relating to the return to specific qualifications (Dearden, McIntosh, Myck and Vignoles, 2000). Information is available from all vocational qualification awarding bodies and in particular, the FEFC qualification database lists all qualifications and the time taken for their completion. For the purposes of this analysis, there is no alternative, given the source of cross sectional data, but to adopt the average time taken to complete the qualification[18].

For this analysis, information from the Quarterly Labour Force Surveys between spring 1996 and spring 2000 has been utilised. Although the time span is quite short, the data has been analysed in isolation as well as being pooled with the inclusion of seasonal and yearly dummies to provide more robust estimates of the earnings associated with alternative combinations of academic and vocational qualifications.

Turning to the model itself, the standard Ordinary Least Squares estimating equation is as follows:

$$\ln(\omega_i) = \sum_{k,j=0}^{5} \beta_{kj} QUAL_{kj\,i} + \omega' Z_i + \varepsilon_i$$

where $\ln(\omega_i)$ is the natural log of hourly wages for individual *i*, $QUAL_{k_i}$ represents the level of qualification obtained by individual *i*, for *k*,*j*=0,1,2,.....5. $QUAL_{k_i}$ is coded 1 if individual *i* has obtained a vocational qualification at level *k* as their highest qualification and 0 otherwise. In particular, academic (vocational) qualifications range from NVQ level 1 to

[18] The final point to note regarding the classification of qualifications is the fact that there is no need to classify people according to the highest qualification attained (academic or vocational) as might have been in the case for previous studies. This analysis identifies the highest level of academic or vocational qualification attained independently and simply combines the qualifications in a straightforward manner.

NVQ level 5 (4). Therefore, an individual may possess either academic qualifications at a particular level within the National Vocational Qualification framework only (NVQ level 3 academic and no vocational qualifications), or in combination of any of the 4 levels of vocational qualifications. Therefore, the β_{kj} coefficients provide the earnings premium associated with any particular combination of qualifications[19].

Z_i is a vector of variables consisting (though not entirely) of

- Accommodation Details
- Marital Status
- Number of Dependent Children under 16
- Employment Status of Other Adults in Household
- Unemployment Status of Other Adults in Household
- Inactivity Status of Other Adults in Household
- Years Since Leaving Full-Time Education
- Region of Residence
- Industry
- Union Membership
- Temporary or Permanent Contract
- Firm Size
- Public / Private Sector

The decision has been taken to estimate simple ordinary least squares models rather than adopting an instrumental variables or Heckman selection approach. Note that for data sources such as the Labour Force Surveys, it has been illustrated that OLS estimates of the coefficients associated with given levels of qualification attainment may be either upwardly or downwardly biased if no allowance is made for the possible measurement error in educational qualification attainment, ability bias and composition bias. However, recent work by Dearden (1999) concludes that despite the estimating biases (which generally negate each other), when estimating an ordinary least squares regression, the coefficients produced in a standard wage equation provide reasonable estimates of the returns to qualifications[20]. This is especially the case when considering the economic outcomes of males where the problem of composition bias (selection into employment)[21] is generally avoided. In this

[19] Note that the decision has been taken to ignore those possessing NVQ level 5 vocational qualifications as the sample sizes are small

[20] 'Recent papers on non-experimental evaluation of social programmes have shown that even with rich data, OLS will produce biased estimates of the effect of a treatment (*e.g.* an extra year of education or an additional education qualification) if the distribution of characteristics of those who have undertaken the treatment and those who have not, do not overlap or if there is not "common support". In the returns to education literature, this may be quite likely if for example we are trying to estimate the return to undertaking a degree versus taking no school qualifications. It is very likely that the overlap of characteristics of those who undertake no school qualification and those who undertake degrees is very small, and if we want to know how much the group of individuals who have no qualifications would benefit by undertaking a degree, we have to make the comparison only with those individuals with degrees who have similar characteristics (the effect of treatment on the non-treated). Similarly, to estimate the impact of undertaking a degree versus no school qualifications for those who have undertaken a degree, we have to make the comparison with those individuals with no degrees who have similar characteristics to those with the degrees (the effect of treatment on the treated). These estimates may be quite different and if this is so, then it has very important policy implications' Dearden (2000).

[21] Note that the author has undertaken extensive work looking at the returns to academic and vocational qualifications in the United Kingdom for males aged between 16 and 59 between 1993 and 1998 using both the National Child Development Study (5th Follow Up) and the Labour Force Surveys (between 1993 and 1998).

paper, the earnings premia of both males and females over the unqualified are estimated separately and thus the reader should be aware of the difficulties associated composition bias when looking at the estimates relating to prime aged females[22].

3.3. Presentation of results

The results presented here incorporate previous analyses of the standard earnings premia achieved associated with the *highest qualification attained, whether academic or vocational, over those possessing no formal qualifications*. Referring to Tables 4 (males) and 6 (females), these estimates are in bold for the pooled data and illustrate that the earnings premium achieved over the unqualified increases as the level of qualification increases for both the academically and vocationally trained. It is clearly illustrated that the academically trained males achieve an earnings premium over their vocational counterparts at every level of qualification[23]. Turning to the pooled estimates presented in the right hand column and the bottom row of Table 4, the earnings differential between the academically and vocationally trained increases by approximately 4-6% for each successive increase in the level of qualification. Thus, for males at NVQ level 1, the differential in earnings between the academically and vocationally trained stands at 4.5%. At NVQ level 2, the premium rises to 9.8%, continuing to widen to 21.4% upon reaching NVQ level 4. These results coincide with previous work (Conlon, 2000).

The estimates for women are remarkably similar to those produced for men. There is (unsurprisingly) an increasing relationship between higher levels of qualification attainment and the earnings premium achieved over the unqualified. However, the main difference in outcomes between males and females relates to the differential in earnings between the academically and vocationally trained, though explicable given the nature of the analysis. Considering that the majority of traditional vocational qualifications have been male orientated and dominated, these estimates appear to provide a reasonable intuitive explanation of earnings differentials. In particular, at low levels of formally recognised qualification (NVQ levels 1 and 2) the academically trained achieve a 2.3% and 11.5% earnings premium over their vocational counterparts respectively. However, at higher levels of qualification (NVQ level 3 and 4), the relative performance of vocationally trained females deteriorates substantially. The differential stands at 16.7% at NVQ level 3 and 29.8% at NVQ level 4.

However, the straight differential between the academically and vocationally trained is not the primary focus of this work. The earnings premia associated with different combinations of academic and vocational qualifications is illustrated for males in Table 4 and Figure 5, whereas the equivalent results are presented for women in Table 6 and Figure 7.

Looking at Figures 5 and 7, some interesting comparisons can be made and require substantial additional analysis. It appears to be the case that it is not simply the level or the type of qualification that has a bearing on the earnings premium achieved by the qualified over the unqualified, but the combination of qualifications achieved plays an important role

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This work did not look at combinations of academic and vocational qualifications, but solely at the earnings premium associated with the highest level of academic or vocational qualification, when the level of qualification is controlled for. It was found that the differential in earnings between the academically and vocationally trained approximates one level of the National Vocational Qualification framework and that the differential between the academically and vocationally trained is independent of the method of estimation (OLS, Instrumental Variables, Heckman selection Model) and the information source.

[22] Note that throughout this analysis, there is no attempt to analyse the social costs or benefits associated with late learning. Although obviously desirable, the data limitations simply do not allow this.

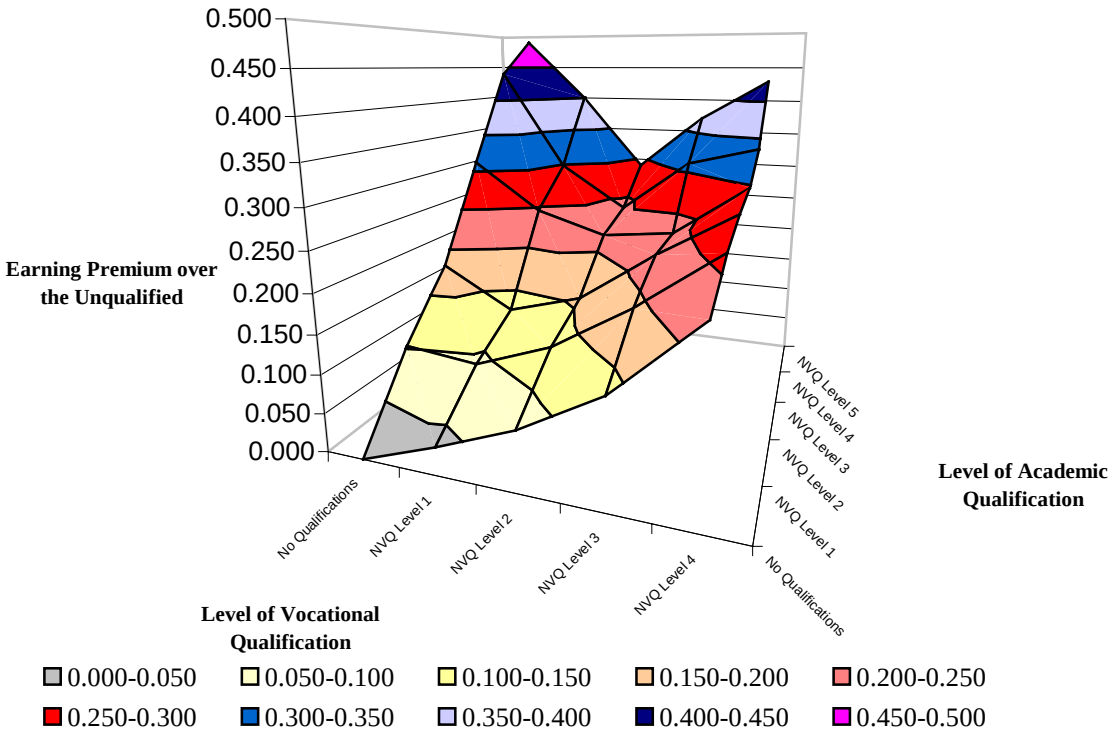
[23] See Dearden, McIntosh, Myck and Vignoles (2000) for alternative estimates of the earnings differentials between the academically and vocationally trained

in earnings outcomes. No attempt is made to explain these phenomena and they are reported for indicative purposes only, since the explanation probably lies in the order in which the qualifications are undertaken, but again, without access to robust longitudinal data, the importance of the chronological order of qualification attainment (though clearly important) cannot be assessed.

Table 4: Returns to combinations of Academic and Vocational Qualifications in the United Kingdom: 16-59 Year old Males: LFS 1996-2000 (pooled)[24]

Qualification Level	Academic Level 5	Academic Level 4	Academic Level 3	Academic Level 2	Academic Level 1	No Academic Qualifications
Vocational Level 4	0.429 (.012)	0.336 (.009)	0.297 (.009)	0.283 (.007)	0.263 (.011)	**0.226** (.011)
Vocational Level 3	0.371 (.020)	0.311 (.012)	0.228 (.017)	0.224 (.006)	0.190 (.007)	**0.133** (.007)
Vocational Level 2	0.290 (.031)	0.237 (.017)	0.217 (.020)	0.156 (.007)	0.129 (.007)	**0.076** (.006)
Vocational Level 1	0.400 (.030)	0.298 (.018)	0.246 (.019)	0.128 (.009)	0.092 (.010)	**0.036** (.008)
No Vocational Qualifications	**0.491** (.006)	**0.440** (.005)	**0.312** (.006)	**0.181** (.005)	**0.102** (.005)	0.000

Figure 5: Returns to Combinations of Academic and Vocational Qualifications in the United Kingdom: 16-59 Year old Males: LFS 1996-2000 (pooled)

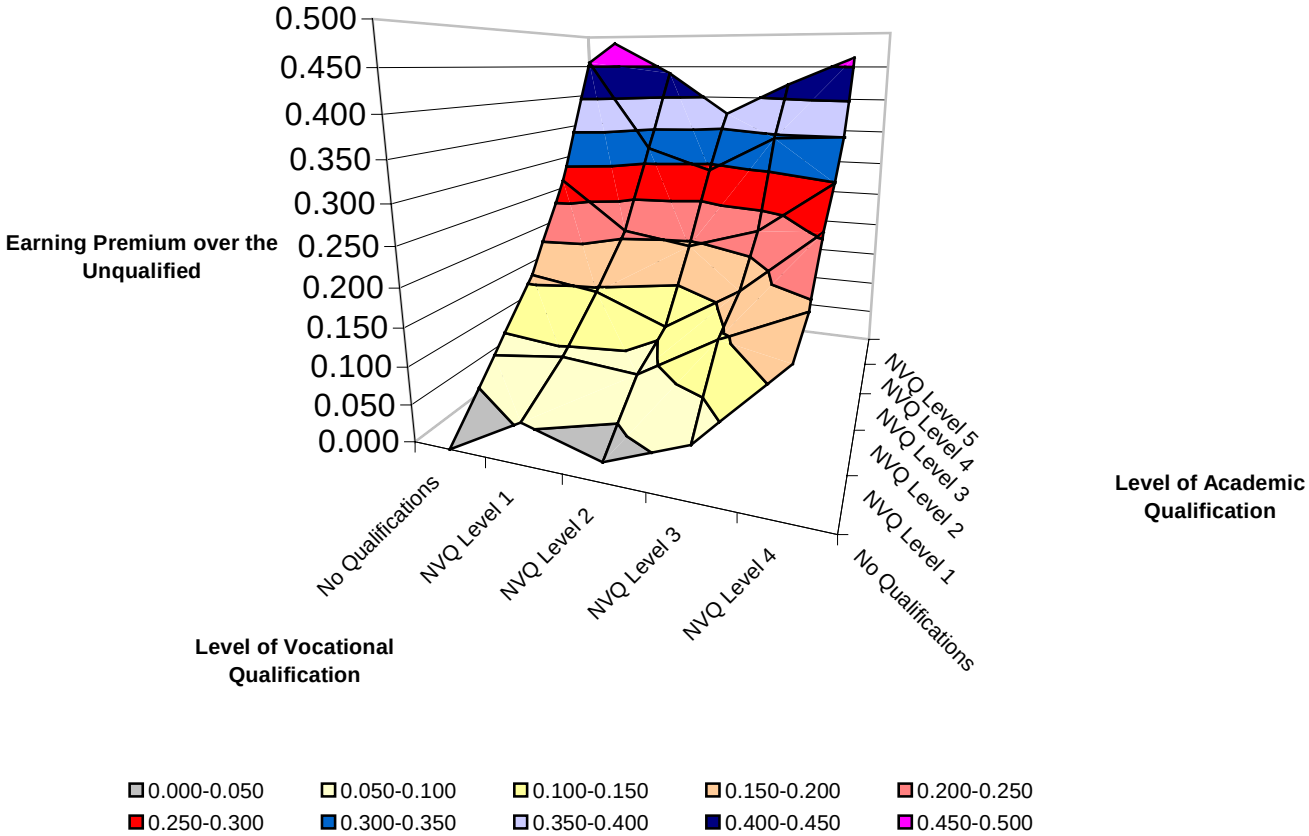


[24] Full estimates available on request. Sample size = 109,187, R-squared = .5674. Standard errors in parentheses.

Table 6: Returns to combinations of Academic and Vocational Qualifications in the United Kingdom: 16-55 Year old Females: LFS 1996-2000 (pooled)[25]

Qualification Level	Academic Level 5	Academic Level 4	Academic Level 3	Academic Level 2	Academic Level 1	No Academic Qualifications
Vocational Level 4	0.464 (.009)	0.350 (.009)	0.299 (.008)	0.256 (.006)	0.191 (.010)	**0.175** (.011)
Vocational Level 3	0.442 (.026)	0.345 (.013)	0.225 (.015)	0.169 (.007)	0.144 (.010)	**0.068** (.012)
Vocational Level 2	0.373 (.031)	0.291 (.015)	0.194 (.017)	0.107 (.007)	0.084 (.007)	**0.026** (.007)
Vocational Level 1	0.439 (.018)	0.322 (.009)	0.209 (.010)	0.145 (.005)	0.092 (.006)	**0.055** (.006)
No Vocational Qualifications	**0.489** (.007)	**0.456** (.005)	**0.280** (.006)	**0.159** (.004)	**0.079** (.004)	0.000

Figure 7: Returns to Combinations of Academic and Vocational Qualifications in the United Kingdom: 16-55 Year old Females: LFS 1996-2000 (pooled)



[25] Full estimates available on request. Sample size = 115,024, R-squared =.5335. Standard errors in parentheses.

Prime aged males specialising in the attainment of academic qualifications achieve an earnings premium over males specialising in vocational qualifications. Somewhat surprisingly, however, they also earn a premium over males possessing the same level of academic qualification, who also possess some additional level of vocational qualification. In particular, males in possession of degree level qualification (say) achieve a premium of 44.9% over those possessing no formal qualifications, however, they also earn a 10% earnings premium over those males possessing a degree and a vocational qualification at NVQ level 4. This differential between equivalently qualified 'academics' is exacerbated as the level of vocational qualification decreases.

In the case of males possessing equivalent levels of academic qualifications where one of the males possesses an additional vocational qualification at NVQ level 2, the prime aged male holding an academic qualification only earns 18.3% more than the male holding both types of qualification.

Thus it appears that the possession of vocational qualifications in addition to high levels of academic qualifications (NVQ levels 3, 4 and 5) has the effect of dragging down male earnings relative to the formally unqualified.

This phenomenon occurs only for the high level academically trained. At lower levels of academic qualification, the addition of increasing levels of vocational qualifications has the effect of increasing the earnings premium over the unqualified. For the vocationally trained, there is little ambiguity relating to the specialisation of qualification attainment. Irrespective of the level of vocational qualification obtained, the accumulation of increasing levels of academic qualifications has the effect of increasing the earnings premium achieved over both the specialist vocationally trained and the unqualified.

Therefore there appears to be an incentive for the vocationally trained to undertake and complete additional levels of qualifications, irrespective of whether they are academic or vocational, though there is a premium to the prospective learner to undertake additional academic qualifications. There is an incentive for the high level academically trained NOT to undertake any vocational qualifications but to continue to specialise on the academic path of qualification attainment.

Turning again to the earnings premia of females with combinations of academic and vocational qualifications over the formally unqualified a slightly different picture emerges compared to prime aged males. As mentioned before, there is an increasing relationship between the earnings premium achieved over females possessing no formal qualifications, irrespective of whether the qualifications in question are academic or vocational. The differential in earnings between females holding only academic and vocational qualifications is more dispersed than the equivalent differential in earnings premia illustrated for males. However, when combinations of qualifications are considered, the results illustrate the same properties as those of males though are nowhere near as extreme. In particular, on average, a female possessing an academic qualification at NVQ level 4 achieves a 47% earnings premium over those possessing no qualification, however, as the level of vocational increases from NVQ level 1 to NVQ level 4, the premium achieved by those possessing additional vocational qualifications falls by 11.8%, 15.6%, 12% and 10.5%, respectively, compared to those that specialise in academic qualifications.

Again as with the results relating to males, at the lower end of the qualification spectrum the same qualitative results are illustrated. In particular, females possessing academic qualifications at NVQ level 2 achieve a 15.9% premium over the unqualified, but as the level of vocational qualification increases, the premium of the academically and vocationally trained increases, reaching 26.9% at NVQ level 4.

Finally, turning to those possessing only vocational qualifications, the earnings premium achieved over the unqualified increases as the level of vocational specialisation

increases. However, as with prime aged males, those females possessing a combination of academic and vocational qualifications unilaterally outperform those females possessing just vocational qualifications. Therefore, it is illustrated for both males and females that there is an incentive for the vocationally trained and the low level academically trained to undertake and complete additional levels of academic qualification whereas at higher levels of academic qualification there is a clear incentive not to undertake additional levels of vocational qualification but to continue on the path of academic qualification attainment.

Table 8: Returns to Academic and Vocational Qualifications in the United Kingdom
16-59 Year old Males: LFS 1996-2000

Level of Qualification		I 1996	II 1996	III 1996	IV 1996	I 1997	II 1 997	III 1997	IV 1997	I 1998	II 1998	III 1998	IV 1998	I 1999	II 1999	III 1999	IV 1999	I 2000	I 1996-I 2000
Academic	**Vocational**																		
5	4	0.433	0.464	0.420	0.500	0.393	0.440	0.468	0.413	0.414	0.439	0.511	0.460	0.574	0.402	0.419	0.450	0.429	0.445
5	3	0.298	0.148	0.401	0.558	0.266	0.605	0.601	0.400	0.299	0.400	0.413	0.515	0.475	0.436	0.393	0.470	0.456	0.364
5	2	0.149	0.298	0.586	0.300	0.300	0.214	0.193	0.214	0.185	0.284	0.282	0.617	0.355	0.323	0.451	0.358	0.550	0.283
5	1	0.454	0.465	0.541	0.637	0.560	0.402	0.382	0.356	0.164	0.496	0.451	0.419	0.471	0.349	0.480	0.484	0.590	0.435
5	0	0.534	0.448	0.535	.0596	0.528	0.538	0.502	0.472	0.444	0.463	0.514	0.507	0.505	0.460	0.494	0.519	0.517	0.511
4	4	0.449	0.323	0.362	0.355	0.386	0.371	0.285	0.337	0.373	0.331	0.323	0.376	0.3012	0.333	0.376	0.347	0.308	0.349
4	3	0.334	0.259	0.433	0.396	0.347	0.358	0.225	0.353	0.374	0.420	0.360	0.301	0.391	0.297	0.270	0.222	0.385	0.326
4	2	0.255	0.163	0.304	0.198	0.180	0.277	0.184	0.365	0.313	0.174	0.439	0.232	0.332	0.160	0.319	0.244	0.234	0.266
4	1	0.485	0.171	0.281	0.460	0.377	0.290	0.239	0.228	0.216	0.277	0.510	0.359	0.353	0.211	0.311	0.300	0.297	0.313
4	0	0.469	0.423	0.461	0.477	0.454	0.438	0.452	0.419	0.418	0.446	0.469	0.471	0.448	0.406	0.446	0.424	0.450	0.449
3	4	0.330	0.296	0.260	0.310	0.254	0.336	0.257	0.280	0.348	0.272	0.264	0.405	0.352	0.344	0.305	0.289	0.369	0.300
3	3	0.285	0.257	0.113	0.276	0.339	0.310	0.202	0.188	0.177	0.116	0.258	0.222	0.212	0.152	0.238	0.219	0.323	0.230
3	2	0.139	0.157	0.137	0.287	0.061	0.174	0.118	0.206	0.117	0.198	0.294	0.272	0.175	0.312	0.405	0.237	0.288	0.225
3	1	0.340	0.251	0.293	0.275	0.284	0.371	0.235	0.099	0.311	0.256	0.273	0.120	0.241	0.102	0.219	0.247	0.259	0.263
3	0	0.366	0.259	0.305	0.317	0.335	0.351	0.281	0.309	0.283	0.318	0.336	0.311	0.291	0.322	0.284	0.284	0.312	0.310
2	4	0.304	0.273	0.262	0.322	0.264	0.341	0.264	0.279	0.291	0.265	0.275	0.341	0.280	0.284	0.299	0.304	0.312	0.289
2	3	0.254	0.246	0.183	0.279	0.257	0.203	0.269	0.230	0.237	0.218	0.265	0.259	0.256	0.222	0.203	0.207	0.264	0.230
2	2	0.203	0.172	0.124	0.220	0.150	0.165	0.181	0.125	0.147	0.163	0.208	0.157	0.174	0.182	0.176	0.134	0.201	0.169
2	1	0.217	0.179	0.231	0.182	0.128	0.115	0.105	0.069	0.126	0.091	0.196	0.171	0.153	0.110	0.129	0.119	0.186	0.147
2	0	0.212	0.121	0.188	0.207	0.188	0.213	0.184	0.185	0.198	0.153	0.187	0.211	0.204	0.158	0.465	0.179	0.201	0.190
1	4	0.360	0.246	0.297	0.303	0.302	0.260	0.270	0.277	0.284	0.264	0.351	0.252	0.277	0.197	0.278	0.265	0.260	0.273
1	3	0.150	0.106	0.149	0.233	0.225	0.218	0.201	0.177	0.204	0.193	0.223	0.208	0.234	0.177	0.221	0.216	0.196	0.198
1	2	0.166	0.123	0.145	0.192	0.130	0.141	0.155	0.172	0.156	0.113	0.170	0.152	0.176	0.100	0.154	0.110	0.123	0.148
1	1	-0.054	0.176	0.112	0.099	0.122	0.121	0.105	0.087	0.107	0.081	0.157	0.134	0.151	0.045	0.124	0.098	0.144	0.109
1	0	0.113	0.063	0.075	0.081	0.116	0.116	0.095	0.122	0.097	0.091	0.115	0.128	0.141	0.079	0.137	0.083	0.127	0.111
0	4	0.219	0.253	0.301	0.393	0.163	0.270	0.236	.0211	0.192	0.193	0.233	0.289	0.364	0.205	0.231	0.255	0.190	0.236
0	3	0.176	0.101	0.121	0.152	0.150	0.180	0.146	.0122	0.126	0.153	0.182	0.179	0.134	0.127	0.159	0.124	0.178	0.143
0	2	0.144	0.088	0.118	0.136	0.054	0.104	0.106	0.055	0.073	0.094	0.105	0.077	0.104	0.076	0.097	0.072	0.087	0.091
0	1	0.078	0.053	0.120	0.051	0.084	0.068	0.075	0.017	0.057	0.041	.080	0.081	0.086	0.046	0.071	0.008	0.111	0.066

Table 9: Returns to Academic and Vocational Qualifications in the United Kingdom
16-55 Year old Females: LFS 1996-2000

Level of Qualification		I 1996	II 1996	III 1996	IV 1996	I 1997	II 1 997	III 1997	IV 1997	I 1998	II 1998	III 1998	IV 1998	I 1999	II 1999	III 1999	IV 1999	I 2000	I 1996-I 2000
Academic	**Vocational**																		
5	4	0.475	0.362	0.259	0.537	0.363	0.467	0.567	0.544	0.500	0.449	0.534	0.596	0.559	0.385	0.519	0.497	0.565	0.482
5	3	0.445	0.607	0.673	0.329	0.400	0.312	0.539	0.513	0.429	0.388	0.510	0.476	0.524	0.449	0.456	0.602	0.205	0.476
5	2	0.482	0.588	0.370	0.392	0.491	0.550	0.277	0.555	0.277	0.364	0.595	0.385	0.339	0.424	0.340	0.425	0.382	0.460
5	1	0.467	0.461	0.599	0.595	0.510	0.478	0.478	0.561	0.503	0.452	0.510	0.333	0.348	0.448	0.482	0.386	0.541	0.470
5	0	0.438	0.556	0.532	0.545	0.555	0.507	0.524	0.553	0.505	0.518	0.535	0.508	0.476	0.494	0.527	0.533	0.628	0.519
4	4	0.365	0.344	0.398	0.337	0.362	0.383	0.358	0.373	0.355	0.385	0.415	0.326	0.361	0.383	0.385	0.361	0.336	0.370
4	3	0.290	0.319	0.388	0.410	0.410	0.156	0.305	0.480	0.324	0.418	0.346	0.393	0.320	0.316	0.358	0.412	0.362	0.355
4	2	0.336	0.233	0.376	0.410	0.379	0.329	0.360	0.353	0.348	0.369	0.264	0.293	0.341	0.228	0.305	0.315	0.379	0.319
4	1	0.350	0.402	0.335	0.312	0.354	0.407	0.343	0.391	0.319	0.344	0.419	0.317	0.409	0.329	0.352	0.368	0.327	0.357
4	0	0.480	0.487	0.474	0.510	0.505	0.463	0.449	0.527	0.484	0.460	0.496	0.457	0.473	0.451	0.452	0.471	0.507	0.475
3	4	0.245	0.291	0.229	0.283	0.348	0.350	0.264	0.372	0.334	0.262	0.330	0.306	0.353	0.351	0.357	0.318	0.366	0.313
3	3	0.195	0.190	0.186	0.223	0.246	0.243	0.182	0.203	0.402	0.261	0.337	0.156	0.185	0.262	0.188	0.311	0.304	0.223
3	2	0.136	0.409	0.164	0.373	0.246	0.357	0.303	0.209	0.198	0.294	0.256	0.186	0.137	0.234	0.283	0.215	0.135	0.226
3	1	0.242	0.175	0.157	0.198	0.218	0.214	0.174	0.240	0.237	0.274	0.182	0.214	0.283	0.239	0.225	0.184	0.353	0.221
3	0	0.214	0.262	0.214	0.230	0.318	0.262	0.309	0.298	0.299	0.287	0.323	0.262	0.300	0.319	0.310	0.300	0.366	0.269
2	4	0.291	0.279	0.289	0.246	0.306	0.256	0.261	0.317	0.235	0.223	0.276	0.230	0.271	0.256	0.304	0.264	0.316	0.267
2	3	0.098	0.167	0.164	0.167	0.246	0.202	0.184	0.241	0.217	0.197	0.181	0.158	0.194	0.173	0.178	0.203	0.253	0.188
2	2	0.102	0.146	0.113	0.103	0.143	0.166	0.127	0.168	0.128	0.141	0.192	0.083	0.126	0.156	0.131	0.167	0..107	0.133
2	1	0.164	0.144	0.125	0.156	0.181	0.158	0.141	0.163	0.178	0.190	0.170	0.130	0.149	0.157	0.192	0.142	0.229	0.160
2	0	0.131	0.147	0.133	0.150	0.159	0.185	0.151	0.184	0.183	0.183	0.173	0.150	0.173	0.164	0.167	0.378	0.214	0.159
1	4	0.026	0.146	0.360	0.177	0.279	0.211	0.195	0.162	0.192	0.166	0.173	0.179	0.226	0.259	0.256	0.201	0.199	0.202
1	3	0.177	0.217	0.220	0.181	0.111	0.150	0.163	0.169	0.188	0.195	0.180	0.099	0.257	0.202	0.147	0.142	0.114	0.169
1	2	0.013	0.110	0.078	0.044	0.099	0.079	0.130	0.129	0.131	0.108	0.101	0.105	0.102	0.133	0.092	0.177	0.179	0.104
1	1	0.114	0.141	0.099	0.109	0.132	0.094	0.117	0.134	0.138	0.095	0.129	0.092	0.127	0.117	0.137	0.084	0.094	0.112
1	0	0.041	0.072	0.102	0.078	0.090	0.063	0.089	0.091	0.092	0.126	0.115	0.067	0.101	0.073	0.096	0.101	0.065	0.091
0	4	0.271	0.175	0.163	0.068	0.154	0.112	0.147	0.160	0.112	0.194	0.214	0.116	0.255	0.247	0.272	0.218	0.283	0.177
0	3	0.233	-0.070	0.191	0.162	0.064	0.122	0.149	0.120	0.045	0.060	0.104	0.087	0.143	0.135	0.035	0.106	0.105	0.101
0	2	0.001	0.009	0.041	-0.039	0.041	0.024	0.064	0.106	0.059	0.074	0.053	0.052	0.016	0.086	0.042	0.057	0.028	0.043
0	1	0.081	0.076	-0.003	0.027	0.079	0.071	0.056	0.076	0.063	0.087	0.091	0.047	0.107	0.119	0.038	0.074	0.052	0.068

4. Costs Associated With Alternative Methods of Learning

Despite the lack of information contained relating to alternative methods of learning and the stage at which learning is undertaken, the estimation of the returns associated with given qualifications is only half the story. In the results presented, it is also possible to look at the earnings premium or penalty associated with the method of qualification attainment, whether it is by correspondence course or part-time learning (say), in an attempt to estimate the costs incurred to the individual undertaking the qualification in question. It is difficult to provide more robust results due to the relatively small sample sizes involved and it must be noted that these estimates refer to the earnings of individuals while they are still attending the course or training programme in question. In addition, the initial estimates refer to the differential in hourly earnings between those undertaking additional qualifications compared to those not presently enrolled in the educational process. It is clear that it is also beneficial to analyse the differential in weekly earnings to gauge the full costs (measured in terms of a reduced earnings stream) since it is probable that those in full-time education (in particular) are unlikely to be greatly affected by reduced hourly wages but certainly likely to be affected by reduced hours.

Thus, turning to the actual estimates of the earnings premia associated with different methods of qualification attainment, Table 10 indicates the earnings premia (penalties) associated with different forms of educational attainment for both males and females controlling for a similar vector of exogenous variables expressed in the previous methodology section. The earnings penalties (premia) are expressed in terms of hourly earnings, whereas in a latter section (Table 11), these penalties (premia) are expressed in terms of weekly earnings. In each case the reference categories are those males (females) of the same age cohort who are not enrolled on any educational course.

Looking at the entire population of males, those males in full time education suffer (approximately) a 5% penalty compared those males not enrolled and undertaking a formal qualification, however, there is no reason to believe that this penalty is homogeneous across the age spectrum. In fact, when an identical analysis is repeated for those aged 24 and below and 25 and above separately, males under the age of 25 actually suffer a 4.19% earnings penalty relative to those not enrolled or attending any educational establishment, whereas those aged 25 and above suffer 5.89% penalty. Thus a different picture emerges compared to the entire sample of males. Turning to those in part time education, the under 25s achieve a 13% penalty and those males undertaking late learning part-time suffer a 4% penalty. This compares with a penalty of 8% for the entire sample of males.

A very similar phenomenon is illustrated for women. Referring to the entire sample of females, the average hourly wage penalty achieved by those attending a university or further education college full time stands at 4.36%. However, when the distinction is made between the early starters and the late learners, again a fundamentally different picture emerges. Females aged between 16 and 24 suffer a hourly earnings penalty of 3.4% compared to those not attending any qualification course while those in the older age bracket suffer a 10.31% wage penalty. Turning to those enrolled in a part time qualification course, the estimates indicate that relative to the baseline category, part time learners suffer a 6.63% penalty if they are under 25 and a 1.53% penalty if they are between 25 and 55.

Therefore, it has been illustrated that when simply looking at the entire male or female population, the estimates provided do not reflect the fact that an hourly earnings penalty occurs for those in full time or part-time education, nor the variation in the earnings penalty across the age spectrum resulting from educational enrolment. This result is interesting as it supports the prior belief that the returns to specific qualifications and methods of qualification attainment are heterogeneous across the age spectrum.

As previously mentioned, these estimates do not fully reflect the costs associated with late learning since individuals' weekly earnings are likely to be affected to a greater extent than their hourly earnings. Therefore in Table 11, the estimates of the earnings (expressed in terms of weekly earnings) associated with alternative methods of qualification attainment are presented.

These results are important since the cost of undertaking additional qualifications can be thought of as comprising two components – a straightforward wage effect but in addition, an hours effect. Using a similar methodology as before, it can be illustrated that there is indeed a substantial and statistically significant reduction in weekly earnings by those undertaking additional qualifications. In particular, for males aged below 25 (25 and above), there is a reduction in weekly earnings of 32.48% and 27.65% respectively if the qualification is undertaken full time in university or a further education college. Given the previous results relating to the differences in hourly earnings, this implies that (as a percentage of the overall reduction in earnings) 12% of differential in weekly earnings between those undertaking and not undertaking additional qualifications (for the under 25s) can be attributed to a wage effect, with the remainder attributable to a reduction in the number of hours actually worked (the hours effect). In the case of males at or above the age of 25 in full time education, the wage effect accounts for 22% of the differential in weekly earnings, the remainder being attributable to a reduction in the number of hours worked. Qualitatively, a very similar picture is illustrated for women in full time education.

Turning to those in part time education, a similar phenomenon is illustrated though the relative importance of the hours and the wage effect is more ambiguous. In particular, males in part time education under the age of 25 earn 21.91% less in terms of weekly earnings compared to those males not enrolled on any educational course.

This figure indicates that approximately 2/3 of the differential in weekly earnings is attributable to a wage effect whereas the remainder is attributable to an hours effect. For males engaged in late learning, the hours component and the wage component of the reduced weekly wages achieved by those in part time education are broadly equivalent. For females aged under 25, the wage component and the hours component of the weekly wage penalty suffered are broadly equal while the hours effect dominates the wage effect for those aged 25 and above.

This section has attempted to ascertain some of the costs associated with the undertaking of additional qualification and has illustrated the fact that the penalties associated with alternative methods of qualification attainment are heterogeneous across the age spectrum and can be broken down into an hourly wage component and an hours worked component. Broadly speaking, similar phenomena are illustrated for both males and females whether the qualifications are undertaken early or late in life, with the hours effect dominating the wage effect for those in full-time education with the opposite occurring for those in part-time education[26].

[26] Note however that this section and the previous section are closely related. It should be thought that this section describes the short term 'pain' associated with qualification attainment, whereas the previous section reflecting the returns to qualifications reflects the long term gain associated with qualification attainment.

Table 10: Hourly earning penalties Associated With Alternative Methods of Qualification Attainment in the United Kingdom: 16-59 Year old Males and 16-55 Year Old Females: LFS 1996-2000 (pooled)[27]

	Males			Females		
	16-59	**16-24**	**25-59**	**16-55**	**16-24**	**25-55**
Sandwich Course	-.0808 (.012)	-.0441 (.013)	-.1716 (.064)	-.0351 (.010)	-.0483 (.011)	-.1183 (.089)
Full time University FE	-.0516 (.008)	-.0419 (.011)	-.0589 (.019)	-.0436 (.007)	-.0340 (.009)	-.1031 (.015)
Nursing	-.1713 (.032)	-.1473 (.086)	-.1860 (.035)	-.1008 (.013)	-.2241 (.030)	-.0782 (.014)
Part time University FE	-.0805 (.005)	-.1308 (.009)	-.0408 (.006)	-.0281 (.004)	-.0663 (.009)	-.0153 (.004)
Correspondence Course	.0173 (.007)	.0047 (.023)	.0193 (.007)	.0145 (.006)	.0382 (.0177)	-.0099 (.007)
N	**109460**	**17165**	**92295**	**115234**	**18352**	**96886**
R^2	**.5683**	**.4047**	**.4773**	**.5354**	**.3688**	**.5159**

Table 11: Weekly earning penalties Associated With Alternative Methods of Qualification Attainment in the United Kingdom: 16-59 Year old Males and 16-55 Year Old Females: LFS 1996-2000 (pooled)[28]

	Males			Females		
	16-59	**16-24**	**25-59**	**16-55**	**16-24**	**25-59**
Sandwich Course	-.4994 (.015)	-.6007 (.020)	-.2198 (.076)	-.6351 (.014)	-.6738 (.017)	-.3675 (.122)
Full time University FE	-.2003 (.010)	-.3248 (.016)	-.2765 (.023)	-.3442 (.010)	-.4171 (.013)	-.3803 (.021)
Nursing	-.1816 (.040)	-.4168 (.125)	-.1577 (.041)	-.1230 (.018)	-.4296 (.045)	-.0606 (.020)
Part time University FE	-.1279 (.006)	-.2191 (.014)	-.0743 (.007)	-.0763 (.006)	-.1201 (.014)	-.0612 (.006)
Correspondence Course	-.0024 (.009)	-.0439 (.034)	.0035 (.009)	.0129 (.009)	.0297 (.026)	.0111 (.010)
N	**109860**	**17259**	**92601**	**115515**	**18395**	**97120**
R^2	**.6491**	**.6803**	**.4710**	**.6699**	**.7076**	**.6430**

[27] Full estimates available on request
[28] Full estimates available on request

5. Late Learning and Employment Outcomes

It is clear by looking at the earnings penalties associated with additional qualification attainment is only one of the costs associated with undertaking and completing additional qualifications. The second primary concern for those engaged in qualification attainment might relate to the likelihood of being employed whilst enrolled. This section of the paper estimates the likelihood of being employed for those aged between 16 and 24 years of age and those aged 25 and above as well as for the entire population of prime aged individuals. This is done, as in the previous section, since there is a strong prior belief that the returns to qualifications (whether measured in terms of hourly earnings, weekly earnings or the likelihood of being employed) are heterogeneous across the age spectrum and thus simply looking at the entire population of males or females may provide a misleading impression of labour market outcomes and the outcomes associated with late learning.

The methodology in this section is similar to the previous sections. We estimate a standard probit model where the dependent variable is whether the individual is employed or otherwise (the alternatives being unemployment and labour market non-participation). The independent variables that are used in an attempt to explain the likelihood of being employed are a mixture of personal and labour market characteristics held by the individual and the model is explicitly expressed below:

$$prob(EMPNOT_i) = \delta' PERS_i + \eta' FAM_i + \phi' JOB_i + \varepsilon_i$$

where

$PERS_i$ is a vector of variables consisting of

- Marital Status
- Number of Dependent children under 16
- Age
- Ethnic Origin
- Highest existing qualification

FAM_i is a vector of variables consisting of

- Accommodation Details
- Employment Status of Other Adults in Household
- Unemployment Status of Other Adults in Household
- Inactivity Status of Other Adults in Household
- Region of Residence

JOB_i is a vector of variables consisting of

- Industry
- Union Membership
- Temporary or Permanent Contract
- Firm Size
- Public / Private Sector

Some of the key results are presented in Table 12. Referring to the first column, it is clear that there is a positive relationship between those in possession of qualifications and the likelihood of being employed, though there is not necessarily a strictly increasing relationship between increasing qualifications and the likelihood of being employed. In particular, for the entire population of males of working age, an individual in possession of a qualification at NVQ level 1 (equivalent) is (on average) almost 20% more likely to be employed compared to a male possessing no formally recognised qualifications. Males in possession of degrees (either undergraduate or postgraduate) are 28% or 39% more likely to be employed than the reference category. There is however, a slight dip in the probability of being employed for those in possession of NVQ level 3 qualifications, though considering this category is broadly comparable to those holding GCE 'A' levels and a substantial proportion of these people might be in the process of undertaking degree level qualifications (and therefore are not considered to be participating in the labour force), the estimates appear sensible.

As with the estimates of hourly earnings, it is also noted that there is a differential in the labour market outcomes achieved by males at any particular qualification level depending on the type of qualification that they are in possession of (academic or vocational). Males holding vocational qualifications at NVQ level 1 are actually 5% less likely to be employed than those holding no qualifications, and males holding vocational qualifications at either NVQ Level 2, 3 or 4 are only 10-12% more likely to be employed than those holding no formally recognised qualifications. The vocationally trained lag their academic counterparts at every level of qualification in the likelihood of being employed. These findings are qualitatively equivalent for both the sub samples of males and are illustrated in columns 2 and 3 of Table 12. Broadly similar results relating to females are also presented in columns 4-6 of Table 12. Since the effect of existing qualification attainment on labour market outcomes is not the primary focus of this work, the next section looks at the employment outcomes of those currently undertaking additional qualifications by age.

Turning to the cost of undertaking additional qualifications as measured by the likelihood of being employed, for the entire sample of prime aged males, the likelihood of being employed while undertaking a qualification part-time in a university or further education college is 11.6% less than for those not currently enrolled in any qualification course. For those undertaking a qualification by correspondence course, the likelihood of being employed is 13.3% greater than for those not currently enrolled. The corresponding figures for the entire female population stand at +2.50% and +8.93%.

However, differentiating between those males in the younger and older cohorts, a marginally different picture emerges. Looking at those undertaking qualifications by admission on a part-time university or further education college course (as an example), males aged less than 25 are 22.3% more likely to be employed relative to those not currently enrolled, whereas for those engaged in late learning, males are 21.8% less likely to be currently employed. This result is somewhat surprising and reiterates the original belief that labour market outcomes are heterogeneous across the age spectrum. In addition, this is an important point more generally since similar qualitative results are presented for the female late learners. There may be several costs associated with late learning in addition to inferior hourly or weekly earnings. There is also an increased likelihood that late learners suffer a worse outcome in terms of being employed compared to equivalently aged individuals not enrolled on any given qualification course.

Table 12: Probability of Being Employed According to Qualification, Professional Status and Enrolment Status by Age in the United Kingdom: 16-59 Year Old Males and 16-55 Year Old Females: LFS 1996-2000 (pooled)[29]

	Males			Females		
	16-59	**16-24**	**25-59**	**16-55**	**16-24**	**25-55**
Academic Level 1	.1941	.2574	.1237	.1515	.2484	.1321
	(.008)	(.019)	(.009)	(.007)	(.020)	(.008)
Academic Level 2	.2234	.3593	.1786	.2302	.4105	.1920
	(.008)	(.019)	(.008)	(.007)	(.019)	(.007)
Academic Level 3	.2072	.2091	.1743	.2461	.3098	.2021
	(.011)	(.025)	(.014)	(.010)	(.025)	(.012)
Academic Level 4	.2841	.3330	.2399	.3154	.4131	.2693
	(.010)	(.032)	(.011)	(.009)	(.032)	(.010)
Academic Level 5	.3937	.5177	.3533	.4229	.6981	.3726
	(.014)	(.079)	(.015)	(.014)	(.080)	(.015)
Vocational Level 1	-.0528	.0013	-.0523	.0995	.0960	.1046
	(.010)	(.023)	(.012)	(.006)	(.020)	(.007)
Vocational Level 2	.1002	.1653	.0930	.1026	.1535	.1028
	(.008)	(.020)	(.009)	(.008)	(.020)	(.010)
Vocational Level 3	.1208	.1809	.1159	.2010	.1893	.2123
	(.009)	(.022)	(.010)	(.010)	(.023)	(.012)
Vocational Level 4	.1143	.2699	.1044	.3449	.3802	.3470
	(.010)	(.033)	(.010)	(.009)	(.034)	(.010)
Sandwich Course	-.4268	-.3632	-.3644	-.1358	-.0720	-.3541
	(.030)	(.034)	(.151)	(.030)	(.034)	(.128)
FT University – FE College	-.9926	-.7819	-.8585	-.8381	-.6078	-.8923
	(.014)	(.022)	(.023)	(.013)	(.021)	(.021)
Nursing	-.5179	-.8017	-.4444	-.2571	-.9005	-.0084
	(.065)	(.149)	(.074)	(.030)	(.057)	(.037)
PT University – FE College	-.1163	.2236	-.2187	.0225	.1689	-.0024
	(.014)	(.030)	(.016)	(.010)	(.029)	(.011)
Correspondence Course	0.133	.1483	-.0140	.0893	.2564	.0618
	(.022)	(.069)	(.024)	(.018)	(.055)	(.019)
Not Attending	-.3272	-.1798	-.3830	-.1117	-.2052	-.0892
	(.038)	(.071)	(.045)	(.030)	(.067)	(.034)
Intermediate	-.2548	-.1319	-.2705	-.2554	-.2748	-.2556
	(.011)	(.040)	(.012)	(.016)	(.058)	(.017)
Skilled Non-Manual	-.3821	-.3914	-.3957	-.4625	-.5881	-.4595
	(.013)	(.037)	(.015)	(.017)	(.057)	(.018)
Skilled Manual	-.3821	-.3814	-.3780	-.6359	-.8556	-.6111
	(.013)	(.038)	(.013)	(.019)	(.061)	(.020)
Semi Skilled	-.5089	-.5687	-.4844	-.5230	-.7634	-.4881
	(.014)	(.037)	(.014)	(.017)	(.057)	(.019)
Unskilled	-.7133	-.8398	-.6566	-.5524	-.7577	-.5375
	(.017)	(.041)	(.017)	(.019)	(.064)	(.021)
R^2	.2833	.1459	.2931	.2884	.3943	.2734
N	528949	54834	447534	525629	85426	440203

[29] Full estimates available on request. Standard errors in parentheses.

6. Who Are the Learners, Who Are the Late Learners and What Are They Learning?

The results presented to date for indication purposes present an interesting picture and the scenario that we might expect to see on a theoretical level. However, the question regarding whom exactly participates in adult learning remains. In previous work, Dearden (1999) has attempted to ascertain who receives employer funded training on the job and she indicates that it is those that are already in possession of qualifications that are the very people that receive privately funded training. She illustrates that the benefits associated with this type of training approximates 10% in terms of increased hourly earnings if there is a qualification associated with the training programme and approximately 5% otherwise[30].

Although it is difficult to provide an exact definition of the term 'late learning', this section of the analysis concerns itself again with individuals at or above the age of 25, who might (or might not) be attending an educational institution with the aim of obtaining a formally recognised qualification.

To understand who exactly is engaged in learning and adult learning, we estimate variations of the following probit equation

$$prob(COURSE_i) = \delta' PERS_i + \eta' FAM_i + \phi' JOB_i + \varepsilon_i$$

The response variable is whether the individual is enrolled and attending an educational institution and is coded equal to 1 if this is the case and 0 otherwise. The explanatory variables are broken into three categories consisting of personal characteristics, family characteristics and job related characteristics, which are indicated on the next page:

$PERS_i$ is a vector of variables consisting of

- Marital Status
- Number of Dependent Children under 16
- Age
- Ethnic Origin
- Highest Existing Qualification

FAM_i is a vector of variables consisting of

- Accommodation Details
- Employment Status of Other Adults in Household
- Unemployment Status of Other Adults in Household
- Inactivity Status of Other Adults in Household
- Region of Residence

JOB_i is a vector of variables consisting of

- Industry
- Union membership
- Temporary of Permanent Contract
- Firm Size
- Public / Private Sector

[30] Note that in this analysis (and it is an accepted potential criticism) that the estimations relate to individuals who are enrolled on courses with the goal of obtaining formally recognised qualifications. This is, of course, not the complete story, though these limitations in the methodology are due to the lack of information.

These regressions were carried out on the entire population of adult males and females as well as the restricted sub-sample of males and females above the age of 25 in an attempt to illustrate the characteristics of the quite distinct groups of learners. The main results of the regressions are presented in Table 13. In addition, we carry out ordered probits in an attempt to ascertain the determinants of undertaking additional levels of qualification. This is done in an attempt to shed light on whether there is any difference in the route of qualification attainment between those who are early learners and those that undertake qualifications later in life. These results are presented in Table 14.

In particular, looking at the first and fourth columns of Table 13, which relate to the characteristics of the entire male and female populations, it is clear that those individuals enrolled and undertaking formally recognised qualifications are the very people that are already in possession of formally recognised qualifications. There does not appear to be any great differential in the enrolment rates between those in possession of academic or vocational at the lowest level of qualification. Males already in possession of qualifications at NVQ Level 1 are approximately 15-17% more likely to be enrolled on an educational course compared to those not possessing any formally recognised qualifications. However, as the level of qualification increases there are differences in the extent of educational enrolment between the academically and vocationally trained. Relative to males possessing no formally recognised qualifications, males already in possession of an academic qualification at NVQ Level 4 are 40% more likely to be enrolled and undertaking additional qualifications, while males possessing vocational qualifications at the same level are only 23% more likely to be undertaking an additional qualification.

Looking at the restricted samples of early starters or late learners, those in possession of qualifications (academic or vocational) are more likely to undertake qualifications to high degrees of statistical significance. However, the most interesting feature that emerges is the fact that for the young cohort of males already in possession of vocational qualifications, there is only a marginal increase in the likelihood of undertaking additional qualifications relative to the formally unqualified. In particular, at NVQ levels 1 through 3, the increased likelihood of undertaking and additional qualification of any description is only 5% higher than for those not possessing any qualifications (whereas for the academically trained at the same level, the existence of prior academic qualifications exerts a substantially stronger effect on the likelihood of undertaking additional qualifications). If the concept of late or lifelong learning refers to the acquisition of additional skills, education and training throughout the individual's lifetime, then these figures indicate that late or lifelong learning is more associated with the academic route of qualification attainment.

These figures are replicated to a considerable extent for the female population. Disturbingly, the low likelihood of undertaking qualifications suffered by the younger cohort of vocationally trained males is replicated to an even greater extent for the younger cohort of females. Young women in possession of vocational qualifications are less likely to be enrolled and attending an educational establishment compared to women possessing no formally recognised qualifications. However, the older age cohort does not illustrate the same results. For both the male and female late learners, the possession of any previous academic or vocational qualification has the effect of increasing the likelihood of undertaking an additional qualification by at least 20%.

Table 13: Characteristics Associated With Those Engaged in Late Learning in the United Kingdom: 16-59 Year Old Males and 16-55 Year Old Females: LFS 1996-2000 (pooled)[31]

	Males			Females		
	16-59	**16-24**	**25-59**	**16-55**	**16-24**	**25-55**
Academic Level 1	.1510	.2174	.1214	.1738	.1894	.1695
	(.011)	(.021)	(.013)	(.011)	(.020)	(.013)
Academic Level 2	.3191	.5372	.2144	.3508	.5110	.2626
	(.011)	(.020)	(.011)	(.009)	(.020)	(.011)
Academic Level 3	.5392	.7570	.3820	.6429	.7316	.4928
	(.013)	(.026)	(.016)	(.011)	(.024)	(.015)
Academic Level 4	.4037	.1379	.3850	.4830	.0828	.4756
	(.012)	(.035)	(.013)	(.011)	(.032)	(.013)
Academic Level 5	.3535	.0214	.3155	.4778	-.0832	.4454
	(.016)	(.078)	(.017)	(.017)	(.075)	(.018)
Vocational Level 1	.1761	.0591	.2489	.1302	-.0641	.2047
	(.014)	(.027)	(.017)	(.009)	(.023)	(.010)
Vocational Level 2	.1335	.0442	.1821	.1376	-.1117	.2671
	(.011)	(.022)	(.013)	(.011)	(.022)	(.014)
Vocational Level 3	.2416	.0528	.3092	.2160	-.0819	.3410
	(.011)	(.024)	(.012)	(.013)	(.025)	(.015)
Vocational Level 4	.2396	.0183	.2926	.3049	-.0800	.3926
	(.011)	(.034)	(.012)	(.011)	(.033)	(.012)
Intermediate	-.2060	-.4129	-.1685	-.1346	-.3689	-.1099
	(.011)	(.037)	(.012)	(.016)	(.050)	(.017)
Skilled Non-Manual	-.2152	-.5791	-.1082	-.3371	-.5303	-.3094
	(.014)	(.036)	(.015)	(.017)	(.048)	(.018)
Skilled Manual	-.3853	-.4072	-.4068	-.3149	-.4499	-.2855
	(.013)	(.036)	(.014)	(.020)	(.052)	(.022)
Semi Skilled	-.4522	-.7201	-.3894	-.2748	-.5497	-.2344
	(.015)	(.042)	(.017)	(.018)	(.049)	(.020)
Unskilled	-.5369	-.7603	-.5685	-.5281	-.6692	-.5278
	(.021)	(.042)	(.029)	(.024)	(.059)	(.027)
R^2	.2097	.2643	.0953	.1590	.2450	.0689
N	298738	43329	255409	275433	44122	231311

[31] Full estimates available on request

Table 14: Routes of Progression: Characteristics Associated With Those Undertaking Additional Levels of Academic or Vocational Qualifications in the United Kingdom: 16-59 Year old Males and 16-55 Year Old Females: LFS 1996-2000 (pooled)[32]

Academic Qualifications	Males			Females		
	16-59	**16-24**	**25-59**	**16-55**	**16-24**	**25-55**
Academic Level 1	.0848 (.047)	.6695 (.070)	-.3847 (.069)	.2043 (.043)	.6277 (.066)	-.2442 (.061)
Academic Level 2	.5771 (.034)	1.4352 (.049)	-.0560 (.055)	.7153 (.031)	1.5169 (.045)	.0811 (.049)
Academic Level 3	1.2373 (.038)	2.9338 (.061)	.0401 (.059)	1.4945 (.035)	3.0278 (.054)	.4230 (.054)
Academic Level 4	1.6056 (.040)	3.4922 (.089)	.8050 (.051)	1.9419 (.038)	3.8541 (.078)	1.0897 (.049)
Academic Level 5	1.9228 (.050)	3.4649 (.188)	1.131 (.059)	2.1476 (.050)	4.1199 (.193)	1.2887 (.059)
Vocational Level 1	-.1688 (.046)	-.0533 (.070)	-.3002 (.070)	-.1754 (.029)	-.0958 (.051)	-.2196 (.038)
Vocational Level 2	-.1594 (.048)	-.0731 (.078)	-.2191 (.064)	-.1270 (.042)	.1804 (.072)	-.2392 (.055)
Vocational Level 3	.2121 (.039)	1.0379 (.069)	-.0695 (.049)	.2650 (.039)	.8202 (.064)	.0217 (.053)
Vocational Level 4	.2951 (.033)	.8450 (.077)	.1561 (.038)	.2675 (.031)	.6440 (.077)	.1501 (.034)
R^2	.2950	.4366	.1451	.2727	.4211	.1657
N	14558	7417	7141	18013	9129	8884

Vocational Qualifications	Males			Females		
	16-59	**16-24**	**25-59**	**16-55**	**16-24**	**25-55**
Academic Level 1	.0791 (.026)	.1731 (.038)	.0325 (.038)	.0601 (.025)	.2037 (.041)	-.0043 (.032)
Academic Level 2	.1798 (.024)	.4218 (.037)	.0502 (.033)	.1251 (.022)	.4167 (.029)	-.0160 (.028)
Academic Level 3	.1177 (.037)	.5248 (.057)	-.1075 (.051)	.0799 (.032)	.4652 (.055)	-.1233 (.041)
Academic Level 4	-.2331 (.037)	-.7836 (.092)	-.1419 (.044)	-.3494 (.032)	-.6176 (.083)	-.3551 (.038)
Academic Level 5	-.1975 (.055)	-.5795 (.242)	-.1989 (.060)	-.5571 (.055)	-.8264 (.235)	-.5883 (.059)
Vocational Level 1	.2030 (.031)	.2011 (.047)	.2333 (.044)	-.0117 (.022)	-.0079 (.046)	.0249 (.026)
Vocational Level 2	.3378 (.025)	.4555 (.037)	.2769 (.035)	.3126 (.024)	.3406 (.037)	.3256 (.032)
Vocational Level 3	.5766 (.026)	.8794 (.044)	.4692 (.033)	.4193 (.028)	.3753 (.045)	.4595 (.036)
Vocational Level 4	.3986 (.032)	.5518 (.079)	.3595 (.036)	.5836 (.027)	.1811 (.077)	.6456 (.029)
R^2	.0607	.0725	.0365	.0489	.0505	.0449
N	19305	7153	12152	23249	7068	16181

[32] Full estimates available on request

The final section of this paper looks at the marginal effect of academic and vocational qualifications on the likelihood of undertaking an additional level of academic or vocational qualification. This particular problem is analysed using an ordered probit model. Although the results presented are not in the form of marginal effects, there are clear trends that can be interpreted from the results presented in Table 14.

Turning to the entire sample of males, the first column of Table 14 indicates that the likelihood of undertaking an additional *academic* qualification depends on the existing level of qualification attained. Therefore, a male in possession of an academic qualification at NVQ level 1 is marginally (β=.0848) more likely to undertake an additional level of academic qualification compared to male not in possession of any formally recognised qualifications. The likelihood of undertaking additional academic qualifications increases as the level of academic qualification increases. On the other hand, for those males already in possession of vocational qualifications at NVQ levels 1 and 2, there is a decreased likelihood of undertaking an additional level of *academic* qualification compared to those not in possession of any existing qualifications. This result is somewhat surprising and indicates that there is a distinct tendency to remain on the qualification path that has originally been adopted.

Looking at the likelihood of obtaining an additional level of vocational qualification, the reverse outcome is demonstrated for the academically and vocationally trained and the low and the high qualified. In particular, the lower level academically trained (NVQ levels 1,2 and 3) are all more likely to undertake additional vocational qualification compared to those with no qualifications, however, at the highest levels of existing academic qualification, there appears to be a substantially lower likelihood of adopting vocational qualifications compared to those with no formal qualifications. For those males already in possession of vocational qualifications, there is an increasing likelihood of undertaking and completing additional vocational qualifications.

Broadly speaking, the results encompassing the entire population of males indicate that there is an increasing relationship between the likelihood of obtaining academic qualifications and increasing levels of qualification (academic or vocational); there is an increasing relationship between the undertaking of additional vocational qualifications and possession of existing vocational qualifications and a decreasing relationship between the undertaking of vocational qualification and increasing existing academic qualifications. Most importantly, the results presented indicate that there appears to be very little mobility between the two paths of qualification attainment.

However, these results only provide a broad brush of the outcomes of working age males. The results relating to the two sub-samples of males warrant additional analysis. In particular, although the results previously presented are replicated for those males aged between 16 and 24, males engaged in late learning achieve considerably different outcomes. Late learners with existing academic qualifications at NVQ levels 1 and 2 are marginally less likely to undertake additional academic qualification and substantially less likely than their younger counterparts. On the other hand, these males are marginally more likely to undertake additional vocational qualifications. The reverse of this trend is illustrated for those in possession of academic qualifications at NVQ levels 3,4 and 5.

Males aged between 25 and 59 in possession of vocational qualifications at low levels of qualification are marginally more likely to undertake additional vocational qualifications compared to those not in possession of any formally recognised qualifications. In addition, as the level of existing vocational qualification increases, there is an increasing likelihood of undertaking an additional level of vocational qualification.

Overall, there appears to be a distinct lack of mobility between the academic and vocational routes of qualification attainment. Young males in possession of academic qualifications are substantially more likely to undertake additional academic qualifications compared to both the vocationally trained and those not holding any qualifications. In addition, young men holding academic qualifications are less likely than their vocationally trained counterparts to undertake additional vocational qualifications.

For late learners, for those males in possession of low levels of academic or vocational qualifications, there is a reduced likelihood of obtaining additional academic qualifications and an increased likelihood of studying towards a vocational qualification compared to those with no formal qualifications. At higher levels of existing qualification, there is a decreased likelihood for the academically trained and an increased likelihood for the vocationally trained to undertake additional vocational qualifications relative to those with no formal qualifications.

9. Conclusions

Late learning is important. Approximately one in three of the hours of education and training received by working age individuals in the United Kingdom are attributable to those above the age of twenty-five. This figure is substantially higher than the received wisdom in the academic arena. The costs and benefits associated with late learning remain difficult to compute due to the data limitations. However, it has been illustrated that there might be a sizeable penalty in terms of hourly wages, hours worked and employment outcomes for late learners. Rather than being at the periphery of education and training policy in the United Kingdom, late learning should be seen as an important pillar within the general attempt to build the knowledge base within the United Kingdom.

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