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Changes in the Wage Structure and Participation in Education and Training for Young People: An Analysis of the England and Wales Youth Cohort Study

David Wilkinson
Policy Studies Institute

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DISCLAIMER

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EXECUTIVE SUMMARY

Introduction

Recent policy changes may have had a significant impact on the wage structure for young people. Such changes may influence participation rates in education and training for a number of reasons. The relative levels of income that young people receive in each of the three main routes available to them at age 16 - full-time education, a job or government supported training (GST) - may influence their choices at this age. Furthermore, an increase in wages for young people could also reduce the willingness of employers to offer training.

Policy interest in removing financial barriers to educational participation is evident through current pilots of Educational Maintenance Allowances (EMAs). However, if the level of wages from jobs available to 16 and 17 year olds increased, the impact of EMAs on educational participation could be undermined.

There is good reason to believe that there may have been a significant change in the wage structure for young people as a result of the introduction of the National Minimum Wage (NMW) in April 1999. The legislation applies to workers aged 18 and over, however, despite their exclusion from the legislation, it is nevertheless possible that if the wages of older workers increased as a result of the NMW, then the wages of 16 and 17 year olds might also have risen.

The main aim of this report is to identify whether there was any change in the level and distribution of pay of young workers between 1998 and 2000. The report also considers changes in the probability of receiving both on-the-job and off-the-job training between 1998 and 2000. Further to examining questions on actual pay rates we also consider whether there have been any associated changes in both pay expectations and the lowest level of pay that a young person would consider for a full-time job. This information could then possibly allow us to make inferences about participation decisions for young people.

The Data

The report is based on analysis of the England and Wales Youth Cohort Study (YCS), a regular survey which tracks a large nationally representative sample of young people between the ages of 16 and 19 through postal questionnaires and telephone interviews. This report draws on data from YCS Cohorts 8, 9 and 10, which has information on people reaching minimum school leaving age in summer 1996, 1998 and 2000. Comparisons are made for individuals aged 16/17 using data from Cohorts 9 and 10 in 1998 and 2000 and individuals aged 18/19 in the same years using data from Cohorts 8 and 9. At each age in each year the single largest group within the cohort was in full-time education. However, there were also significant numbers in jobs and training at both ages.

Pay Levels and Distribution

The NMW applies to workers aged 18 and over with a minimum rate in spring 2000 of £3.00 per hour for workers aged between 18 and 21 and a higher rate of £3.60 per hour for older workers. Before its introduction, around one in seven workers aged 18 to 21 were paid below £3.00 per hour, hence we would expect to see changes in the wage structure at age 18/19. It is unclear whether there will be similar wage adjustments for workers under the age of 18. If pay differentials between older and younger workers are maintained, or going rates for particular jobs are up-rated in line with the NMW, then we may also find changes in the structure of wages at age 16/17.

The analysis here is complicated slightly by definitional differences. The NMW applies to gross earnings, whilst the YCS questions on pay relate to take home pay. The differences between take home and gross pay need to be born in mind throughout the analysis. Although there will clearly be differences in the levels of these two pay measures, they will still move in the same direction. An increase in gross pay as a response to the NMW will be reflected in an increase in take home pay in the YCS data.

In both 1998 and 2000, roughly one-half of young people aged 16/17 were in a job or training at the time of the survey, the majority of whom had full-time education as

their main activity. At age 18/19 two-thirds of young people were in a job or training in both years, with roughly three out of ten of these having full-time education as their main activity.

At both ages average real hourly earnings increased for all people in jobs or training by five per cent between 1998 and 2000. At the bottom of the distribution the increase was much greater than at the top. At age 18/19, earnings at the 10th percentile increased by 14 per cent, whilst median earnings increased by four per cent and there was no change at the 90th percentile. Similarly at age 16/17 earnings at the 10th percentile increased by 19 per cent, whilst median earnings and earnings at the 90th percentile increased by just three per cent and two per cent respectively.

Looking at 1998 earnings levels, the median for both ages was above £3.00 per hour, the NMW rate for 18-21 year-olds, hence it is only where 1998 earnings were below the NMW rate that we see large increases in pay between 1998 and 2000. It is also notable that the increase at the bottom of the earnings distribution was large at age 16/17 as well as at age 18/19, suggesting that the NMW had an impact on pay even below age 18, the lowest age to which it applies.

There is also some evidence of clustering of pay close to both the age 18-21 NMW rate and the higher rate for people aged over. This analysis is made difficult by the fact that YCS only has data on take-home pay. However, at age 18/19, hourly pay is most frequent in the £3.20-£3.40 pay band in 1998, which is broadly equivalent to the NMW rate for gross pay that applied to workers aged over 21 from April 1999 onwards. This suggests that some employers adjusted pay in line with the NMW before it was introduced.

At age 16/17 hourly pay in 1998 was more common in two bands: the £2.60-£2.80 band, broadly equivalent to the NMW rate at age 18-21, and the £3.20-£3.40 pay band, broadly equivalent to the NMW rate that applied to workers aged over 21.

By 2000, pay at both ages was more concentrated in the £2.80-£3.00 pay band. This may reflect another anticipatory effect, as the NMW rate that applied to workers aged 18-21 was due to rise to £3.20 per hour in June 2000.

Looking at pay by main activity, we find that people who were on GST received the lowest pay in both years and also received the greatest increase in pay. In general, at both ages, the changes in hourly pay are consistent with the aggregate picture and also consistent with changes as a result of the introduction of the NMW.

Training Receipt for Those in Work

One of the main concerns about the increases in earnings for young workers identified above is that employers may offset having to pay higher wages by reducing the amount of training available for young workers. It is therefore important to assess whether young workers are also less likely to receive training.

The YCS allows a separate assessment of both on-the-job and off-the-job training, although because of changes in the questionnaire between Cohorts 9 and 10 it is not possible to provide an assessment of changes in off-the-job training at age 16/17. Roughly a quarter of young people of both ages received some on-the-job training in the last four weeks in both years, whilst one-in-ten people aged 18/19 received off-the-job training. There is considerable variation by main activity, with people in GST most likely to have received training, and people in part-time jobs less likely to have received training.

After controlling for a range of determinants of training we find that 16/17 year-olds were less likely to receive on-the-job training in 2000 than in 1998. This fall in the probability of receiving on-the-job training was limited to those young people who were in a full-time job. Further investigation of this effect tried to determine whether this change was a result of changes in pay. There was no evidence that the fall in on-the-job training receipt for people aged 16/17 had anything to do with changes in pay.

Similar analysis at age 18/19 for both on-the-job and off-the-job training found that after controlling for a range of determinants of training there was no change in training receipt between 1998 and 2000. However, there was a change in the distribution of both types of training with an increase in training for people in GST

and a fall in training receipt for people in part-time jobs. Analysis of whether these changes were related to pay changes again found no evidence that this was the case.

Pay Expectations and Reservation Pay

The final piece of analysis focuses on measures of pay expectations and reservation pay. These measures may be related to the choice about whether to take up a full-time job or stay in full-time education. Young people who were not currently in a full-time job and who were looking for a full-time job were asked the following:

"If you were to start a full-time job in the next few months, how much weekly take home pay would you expect to earn?"

"What is the lowest weekly take-home pay you would consider for a full-time job?"

There is some evidence from other surveys that these concepts are unclear in the minds of respondents. Four out of five people reported that they set their reservation wage by reference to their household out goings, whilst factors that related to the labour market were considered influential in setting the reservation wage by only a few people. This is a very important issue and here the analysis of these measures is mainly concerned with determining whether it is believable that the questions have a labour market interpretation.

In both 1998 and 2000, roughly one in five of 16/17 year-olds and a similar proportion of 18/19 year-olds were not in a full-time job and were looking for full-time work. These included many whose main activity was full-time education. In all, around one-fifth of young people in full-time education were looking for a full-time job, whilst the majority of young people whose main activity was a part-time job or being out of work were looking for a full-time job.

On average expected pay increased by more for people at age 18/19 than at age 16/17. In addition the changes were generally across the whole distribution, particularly for people aged 18/19, and were not centred on pay levels close to the NMW. For young people in full-time education expected pay also increased by a large amount at both

ages at both extremes of the distribution, but not at the median. Similar changes were evident in our measure of reservation pay, although for young people who were in full-time education the increase was exclusively at the top of the distribution at age 18/19 and there were falls in reservation pay across the distribution at age 16/17.

These changes do not appear to be related to the introduction of the NMW and as such support the earlier assertion that these types of question do not have a labour market interpretation. From this conclusion it is not possible to say any more about the possible impact of the NMW on participation in full-time education.

Conclusions

Average real hourly earnings increased between 1998 and 2000 both at age 18/19 and at age 16/17. For both ages the increases were much larger at the bottom of the earnings distribution, in particular where hourly earnings in 1998 were below the level of the NMW. We would expect such a pattern of earnings changes at age 18/19 because the NMW directly applied to workers of this age. However, the NMW does not apply to workers aged under 18, so it is interesting to find that the pattern of earnings changes at age 16/17 is consistent with changes associated with the NMW.

Changes in expected pay and reservation pay were found not to be related to the introduction of the NMW and we conclude in line with previous research that these measures do not have a clear labour market interpretation. Thus we could not assess whether the NMW had an effect on participation in full-time education beyond the simple fact that jobs may have become more attractive to young people because actual pay has increased.

Overall training receipt at age 18/19 showed no significant change between 1998 and 2000 once other determinants of training were considered. However, training for people in GST increased whilst training for people in part-time jobs fell. At age 16/17, the probability that a young person received on-the-job training fell between 1998 and 2000 even once other determinants of training were considered. This was found to be limited to young people in full-time jobs. None of these changes in training receipt were found to be related to changes in pay over the period.

1 INTRODUCTION

Background

Participation rates in post-compulsory full-time education in Britain are still a matter of concern, despite the rapid rise of the early 1990s, as they are lower than in many OECD countries and have declined from their mid-1990s peak. Furthermore, the children of parents in low skilled (and often poorly paid) jobs have significantly lower staying-on rates than the children of parents in higher level occupations, and short-term income considerations may be one reason for this. There are similar concerns about participation rates in training for those young people in work.

Recent policy changes may have had a significant impact on the wage structure for young people and there are at least two theoretical reasons why such changes could influence participation in education and training. First, the relative levels of income that young people receive in each of the three main routes available to them at age 16 - full-time education, a job or government supported training (GST) - may influence their choices at this age. An increase in income from a change in the wage structure may therefore lower participation rates in full-time education.

Policy interest in removing any financial barriers to educational participation is evident in the current pilots of mandatory Educational Maintenance Allowances (EMAs) that have replaced the former discretionary system. These are testing whether the availability of EMAs increases rates of participation and retention in full-time education after age 16, and the effectiveness of different levels of allowance and different modes of delivery. However, if the level of wages from jobs available to 16 and 17 year-olds increases, the impact of EMAs on educational participation could be undermined.

The second reason why changes in the wage structure could influence participation in education and training for young people in jobs is that an increase in their wages could alter the willingness of employers to offer training to this age group. It is well

known that young people in work who receive training also receive lower wages. This may happen for a number of reasons. One factor is that young people are likely to be less productive whilst in receipt of training, so employers may pay lower wages to offset this lower productivity. The benefit to trainees is increased future productivity from the training, so they will be prepared to accept lower wages during training in exchange for higher future wages. However, employers cannot necessarily recoup the investment made in training an individual, because any individual may move to a new employer once they are fully trained. Therefore, it is optimal for employers to offer lower wages during training to offset the risk that trainees may leave their employment.

Given this relationship, any change in the wage structure could change the incentives for employers to offer training young workers, with an increase in wages predicted to reduce the amount of training offered.

There is good reason to believe that there may have been a significant change in the wage structure for young people as a result of the introduction of the National Minimum Wage (NMW) in April 1999. Minimum rates apply to workers aged 18 and above. There was an introductory rate of £3.00 per hour for 18-21 year olds (60p below the adult rate) and an exemption for apprentices aged 18-21. No minimum was set for workers aged under 18. Increases to these introductory rates were implemented in 2000. The rate for 18-20 year olds rose to £3.20 per hour in June 2000 and the main rate increased to £3.70 per year in October 2000[1]. Further increases have also been announced to take effect in 2001, but the NMW continues not to apply to 16 or 17 year-old workers. For further details about the NMW see the two reports by the Low Pay Commission (1998, 2000).

The Government was cautious in its approach to younger workers. The announcement of the NMW rates by the President of the Board of Trade (Margaret Beckett) stated:

"We have been particularly mindful of the need to protect the position of young people. It is, in our view, essential that we avoid reducing the relative attractiveness to

[1] The regulations were also amended in October 2000 so that National Traineeships were also exempt from the NMW.

young people of staying on in education and training, and avoid discouraging employers from providing training for those in work."

Despite their exclusion from the legislation, it is nevertheless possible that if the wages of older workers increased as a result of the NMW, then the wages of 16 and 17 year-olds might also have risen. For example, if there is a going rate within a firm or industry for a particular job, then we may expect to find an increase in the rate for 16 or 17 year-olds performing the same job. Similarly, there may be a fixed differential between the rates of pay for 16 and 17 year-olds relative to older workers, so a mandatory increase for older workers may lead to increases for younger workers to minimise any change in the age specific differentials.

There may be other reasons for a change in the wage structure over the period under consideration. In April 1998 the New Deal for Young People (NDYP) was introduced for people aged 18 to 24 who had been unemployed for six months or more. NDYP offered a series of options for young people including subsidised jobs and education and training. Furthermore, there was a rapid expansion of the Modern Apprenticeship programme for young people over this period. Both of these programmes may also have changed the structure of wages for young people by influencing the supply of skilled labour. It is important that these possibilities are born in mind throughout the analysis. However, the NMW had a direct effect on pay for young people, and because of this direct impact it is likely to have had the greatest influence on changes in the structure of wages.

Aims of the report

The main aim of this report is to identify whether there was any change in the level and distribution of pay of young workers between 1998 and 2000. The report also considers changes in the probability of receiving both on-the-job and off-the-job training between 1998 and 2000. Further to examining questions on actual pay rates we also consider whether there have been any associated changes in both pay expectations and reservation levels of pay (the lowest level of pay that an individual would consider for a full-time job). It is unclear whether these measures will be affected in a similar way to actual pay. However, it is of interest to examine these

questions as pay expectations and reservation pay are likely to determine whether young people remain in full-time education or move into jobs or GST.

Structure of the report

Chapter Two of the report gives details of the data to be used in the report and a brief outline of the approach to be used. Chapter Three seeks to identify whether there has been any change in the wage structure for young people between 1998 and 2000. Chapter Four considers the impact of any changes in the wage structure on training receipt for those young people in work. Chapter Five looks at associated changes in pay expectations and reservation pay levels. Chapter Six concludes.

2 THE DATA

The England and Wales Youth Cohort Study

The analysis is based on Cohorts 8, 9 and 10 of the England and Wales Youth Cohort Study (YCS)[2]. YCS is a continuing follow-up study (funded by the Department for Education and Skills) of a series of cohorts of young people reaching minimum school leaving age. The first cohort became eligible to leave school in 1984; the tenth in summer 1999. Each cohort forms a large nationally representative random sample of young people in the relevant age group in both state and independent schools, excluding special schools. They are first surveyed in the spring following the end of the academic year in which they reach school leaving age, using a combination of postal questionnaires and telephone interviews, and are re-contacted at varying intervals thereafter.

The postal methodology together with the questionnaire's emphasis on education and training causes a response bias towards more able and more motivated young people. However, this is partially corrected by a sophisticated weighting matrix that ensures that the Sweep 1 sample is nationally representative in terms of sex, region, school type and GCSE results. Further weighting processes at Sweeps 2 and 3 correct for differential sample attrition. The appropriate weights are applied throughout this report, though where relevant, unweighted sample numbers are reported alongside weighted sample numbers.

Respondents in Cohort 8 were first contacted at age 16/17 in 1996 and again in 1998 at age 18/19. For Cohorts 9 and 10 contact was at yearly intervals. The first contact for Cohort 9 was in 1998 and the third contact was in 2000 at age 18/19. The first contact for Cohort 10 was also in 2000, at age 16/17, and these respondents are expected to be contacted again at age 18/19 in 2002. These dates are set out in Table 2.1.

[2] Full details of the methodology used for Cohort 8 can be found in Social and Community Planning Research (1997) and RSGB (1998). For Cohort 9: National Centre for Social Research (1999), RSGB (2000) and RSGB (2001a). For Cohort 10: RSGB (2001b).

From Cohorts 9 and 10 we therefore have information for individuals aged 16/17 in 1998 and 2000. Similarly from Cohorts 8 and 9 we have information for individuals aged 18/19 in the same years. We will attempt to identify at each age changes between 1998 and 2000 and where possible relate these changes to the possible impact of the introduction of the National Minimum Wage in 1999.

Table 2.1 Dates for YCS Cohort 8, 9 and 10 interviews at age 16/17 and 18/19.

	16/17 years-old	18/19 years-old
1996	Cohort 8 Sweep 1	
1998	Cohort 9 Sweep 1	Cohort 8 Sweep 2
2000	Cohort 10 Sweep 1	Cohort 9 Sweep 3
2002		Cohort 10 Sweep 3

The surveys are all quite large[3], although overall response rates are not particularly high.[4] There were many changes to the design of the Sweep 1 questionnaire for Cohort 10, which made it longer and more complex than for previous cohorts. This may explain the drop in the sweep 1 response rate to 55 per cent from 65 per cent for Cohorts 8 and 9.[5] It seems likely that response bias was increased as a result.[6] This creates a degree of discontinuity between YCS 9 and 10, because although response bias can be partially compensated for by weighting, it is unlikely to be completely eliminated. Further discontinuities are created by changes in question wording and order, and by differences in editing and coding procedures. These problems are discussed in more detail in the sections of the report where they are relevant.

[3] The number of sweep one respondents was 15,899 for Cohort 8, 14,662 for Cohort 9 and 13,698 for Cohort 10.
[4] The response rates at sweep one, taking into account all sources of non-response including wrong addresses were 65 per cent for Cohorts 8 and 9 and 55 per cent for Cohort 10.
[5] These changes were due partly to a wish to meet requests for information on new topics, and partly to a switch to a different fieldwork company.
[6] Increased response bias can be inferred from the overall range of weights, which is wider in YCS 10 than YCS 9 (0.50 to 2.97 compared to 0.62 to 2.57), and from the mean weighting factors for groups which typically have below average levels of response, which are greater in YCS 10 than YCS 9. For example, for males the mean weight is 1.07 in YCS 9 and 1.10 in YCS 10, for young people in the bottom third of GCSE results it is 1.42 in YCS 9 and 1.56 in YCS 10, and for persistent truants it is 1.26 in YCS 9 and 1.43 in YCS 10.

Main activity by age

In each survey there is a key question that identifies the main activity of respondents[7]. Table 2.2 indicates the main activity reported by respondents each spring at age 16/17 and age 18/19.

Table 2.2 Main activity in the spring at age 16/17 and age 18/19: 1998 and 2000.

	Age 16/17 in spring:		Age 18/19 in spring:	
	1998	2000	1998	2000
	%	%	%	%
Out of work / unemployed	5	5	7	6
Government supported training	11	9	6	9
Full-time job	10	9	33	30
Part-time job	3	2	7	7
Full-time education	69	72	42	42
Something else	2	2	4	5
Not answered	+	1	1	1
Total	100	100	100	100
Unweighted N	14662	13698	10130	6304
Weighted N	14662	13691	10103	6221

+ indicates less than 0.5 per cent but greater than 0.
Note age 16/17 in spring 1998 represents Cohort 9 and age 16/17 in spring 2000 represents Cohort 10. Similarly, age 18/19 in spring 1998 represents Cohort 8 and age 18/19 in spring 2000 represents Cohort 9.

For each age cohort in each year the largest percentage of the cohort was in full-time education: 69 per cent of 16/17 year-olds in spring 1998 and 72 per cent in spring 2000 and 42 per cent of 18/19 year-olds in both years. These YCS estimates at age 16/17 differ slightly from the official participation estimates, whilst the YCS estimates at age 18/19 overstate the proportion in full-time education.[8]

[7] The question for the first sweep of Cohort 9 at age 16/17 asks " We would like to know what you are doing at the moment. Please tick one box to show us what your main activity is. The options include "out of work/unemployed"; "Modern Apprenticeship, National Traineeship or other government supported training [sometimes known as Youth Training (YT)]"; "full-time job (over 30 hours a week)"; "part-time job (if this is your main activity)"; "full-time education at school or a college of further education (or 6th form college/ tertiary college)"; "doing something else". There is space for respondents to report what they are doing when they respond "doing something else". A similar question was asked in the cohort 10 survey and similar questions were asked at age 18/19 in Cohorts 8 and 9.

[8] The official estimates of participation in full-time education in England (DfES Statistical First Release, SFR 30/2001 and DfEE Statistical First Release, SFR 28/2000) are derived from a variety of sources. The official estimates give figures of 69 per cent for the school year 1997/98 and 71 per cent for the school year 1999/2000 at age 16/17, and 38 per cent and 37 per cent respectively at age 18/19. Note also that the estimates of young people's main activity given in Table 2.2 are based on the single YCS question on main activity. As such they differ slightly from estimates given in other analyses

At age 18/19 just under half of the cohort was either in a job or some form of GST in both years, with the majority of these young people in a full-time job. There is a rise in the proportion reported to be in GST, which is not evident in the official estimates, and an equivalent fall in the proportion reported to be in a full-time job. This may be a result of the introduction of the New Deal for Young People (NDYP) causing some confusion in respondents' minds. If they were on a job-related option of NDYP then they may have reported to YCS that they were in a full-time job, whilst the official administrative figures would count them as being on GST.

At age 16/17, roughly a quarter of the cohort were in a job or GST in spring 1998 compared with roughly a fifth of the cohort in spring 2000. This fall more or less offsets the rise in the proportion of young people in full-time education. However, these apparent changes may result from a change in the design of the questionnaire between Cohorts 9 and 10.

There seems to be little evidence here that the introduction of the NMW has had any adverse affect on participation in full-time education, particularly at age 16/17. However it is possible that participation rates could have been higher still without the NMW.

based on YCS data (for example, Payne 2001), which combine information from other survey questions.

3 PAY LEVELS AND DISTRIBUTION

Introduction

The main aims of the report are to determine whether there has been a change in the wage structure at age 18/19 and at age 16/17 and to see whether any identified changes can be related to the introduction of the NMW. We would expect significant changes at age 18/19 because the NMW applies directly to all workers aged 18 and over, with a minimum rate in spring 2000 of £3.00 per hour for workers aged between 18 and 21. Furthermore, Wilkinson (1998) shows that in 1998, before the introduction of the NMW, around one in seven workers aged 18 to 21 were paid below £3.00 per hour. However, it is unclear whether there will be similar wage adjustments for workers under the age of 18 and analysis of YCS data provides a good opportunity to identify any knock-on wage adjustments for younger workers.

The analysis focuses on both the level and distribution of pay, so that we can identify effects close to or below the level of the NMW. Analysis of the YCS data does not allow for a simple comparison with reported pay data and the NMW rates because the YCS survey questions are all concerned with take-home pay after deductions, but including bonuses or overtime. The NMW rates relate to pay before deductions, so comparisons are a little imprecise, although analysis of take-home pay in this context is still revealing.

Jobs and training

Before considering any information about pay we must first identify those individuals who are currently in a job or training[9]. Note that young people could be in a job or training even if their main activity was something quite different: for example, many

[9] The precise question is as follows:
"At any time since the end of Year 11, have you had a full or part-time job or been in training?"
If the response was yes, the respondent is routed to the following question:
"Are you currently in a full or part-time job or training?"
The wording in the 2000 questionnaire is slightly different. Instead of asking about "training", it asks about "government supported training".

school or college students work part-time at evenings or weekends, or have full-time jobs during the holidays.

Table 3.1 shows that in spring 1998 54 per cent of all young people aged 16/17 were currently in a job or training, as were 47 per cent of people aged 16/17 in spring 2000. At age 18/19 roughly two-thirds of all young people were in a job or training in both years. There was quite a large fall in the percentage of 16/17 year-olds in a job or training between 1998 and 2000. This partly reflects the changes identified in Table 2.2 where more young people remained in full-time education. However, this fall may also be related to the change in the wording of the questionnaire whereby in Cohort 9 the question asks about "training" whilst in Cohort 10 the questionnaire asks about "government supported training".

Table 3.1 Percentage of young people currently in job or training by age

	16/17 year-olds		18/19 year-olds	
	1998	2000	1998	2000
% currently in job or training	54	47	66	67
Unweighted N	14489	13327	9939	6198
Weighted N	14470	13264	9883	6103

Jobs and training by main activity

Table 3.2 gives the main activity of those in a job or training. At age 16/17 the majority of people who were in a job or training had full-time education as their main activity (58 per cent in spring 1998 and 64 per cent in spring 2000).

By age 18/19 roughly one half of the cohort was in a full-time job as a main activity. There was a sizeable fall between 1998 and 2000 from 51 to 46 per cent, compensated by an increase from nine to 14 per cent of the cohort in GST. This expansion of GST may be a result of the introduction of the New Deal for Young People, NDYP, which was introduced nationally in April 1998. The NDYP programme is a mandatory programme for 18-24 year-olds reaching six months unemployment duration. After a period of intensive job search assistance, participants enter one of four options which include a subsidised job or some form of GST.

Roughly three out of ten people in jobs or training at age 18/19 were in full-time education in both years and roughly one in ten were in a part-time job. For both age groups and in both years there was a small number of people who reported they were in a job whilst they were out of work or unemployed or whilst their main activity was doing something else (that is, not a job or training or full-time education or unemployed). Given these very small numbers these respondents are excluded from all subsequent analysis of jobs and pay in this report.

Table 3.2 Main activity of young people currently in job or training by age

	16/17 year-olds		18/19 year-olds	
	1998	2000	1998	2000
	%	%	%	%
Main activity				
Out of work / unemployed	1	0	+	+
GST	18	14	9	14
Full-time job	18	16	51	46
Part-time job	5	4	10	11
Full-time education	58	64	28	29
Something else	+	1	1	1
Not answered	+	+	+	+
Total	100	100	100	100
Unweighted N	7853	6593	6083	3853
Weighted N	7774	6359	6503	4096

+ indicates less than 0.5 per cent but greater than 0.

The level and distribution of pay

Any analysis of pay for young people needs to bear in mind that a large number of these individuals in work are in full-time education, and jobs for these people are a secondary activity. Nevertheless, a possible increase in the rate of pay for such individuals may make work more attractive and full-time education less so. The structure of earnings for those in full-time education will be considered in more detail below, but to begin with we consider the whole sample of young people in jobs or training to see whether there has been any change in the pay structure between 1998 and 2000.

Throughout the analysis the pay figures have been adjusted taking into account increases in average earnings. All 1998 earnings data are increased by 8.6 per cent, the equivalent of 4.2 per cent per year, in line with the increase in the Average Earnings Index between spring 1998 and spring 2000. The 2000 figures remain unadjusted, so the numbers reported here are in spring 2000 prices.

Table 3.3 The mean and distribution of real[1] earnings[2] and hours

	Real Weekly Earnings £	Usual Weekly Hours	Real Hourly Earnings £	Weighted (Unweighted) N	Percentage Increase in Real Hourly Earnings 1998-2000
		1998 - Age 18/19			
Mean	112	30	3.87	5891	
10th percentile	37	9	2.41	(5559)	
Median	109	37	3.71		
90th percentile	185	45	5.43		
		2000 - Age 18/19			
Mean	118	30	4.06	3531	5
10th percentile	40	10	2.75	(3391)	14
Median	120	36	3.87		4
90th percentile	190	45	5.44		+
		1998 - Age 16/17			
Mean	60	22	3.10	7061	
10th percentile	18	6	1.40	(7179)	
Median	48	16	3.03		
90th percentile	122	40	4.52		
		2000 - Age 16/17			
Mean	58	20	3.26	5803	5
10th percentile	19	6	1.67	(6061)	19
Median	45	14	3.13		3
90th percentile	120	40	4.62		2

+ indicates less than 0.5 per cent but greater than 0.

1. The earnings figures are adjusted by the average earnings for April to June in each year. This means that the 1998 figures are increased by 8.6 per cent, the equivalent of 4.2 per cent each year.
2. Earnings are usual take-home pay after deductions but including bonuses or overtime.

Table 3.3 gives the mean, median and 10th and 90th percentile of weekly pay, weekly hours and hourly earnings for all 16/17 and 18/19 year-olds in jobs or training[10]. The top two panels give information at age 18/19. The upper of these panels is for 1998

[10] The sample excludes a small number with hourly pay of 75p or less per hour or £15 or more per hour. This amounts to around one per cent of those with information on pay. These cases are likely to be the result of data errors. In cases of apparently very low pay, the respondent may have written weekly pay in the space provided for monthly pay, or given hourly rather than weekly pay. In some cases of apparently very high pay, there may be a mistake in the usual weekly hours. Incorrect extreme values distort the mean, but the cut-off point for discarding them is arbitrary. The analysis here follows that of Payne (2001).

and the lower panel for 2000. The bottom two panels give the same information at age 16/17.

We would expect earnings to have increased by more at age 18/19 than age 16/17 since these workers are directly affected by the NMW. However, between 1998 and 2000, mean real hourly earnings increased by five per cent for both ages. This is a substantial rise at age 16/17 and suggests strongly that there were some knock-on effects on pay at this age.

In general the distribution of usual weekly hours is fairly stable between the two years for both age groups. Hence any changes in weekly earnings result from changes in hourly rates of pay. The biggest increase in real hourly earnings was at the bottom of the earnings distribution for both ages. The 10th percentile point of the real hourly earnings distribution increased by 14 per cent at age 18/19 and by 19 per cent at age 16/17. At the 90th percentile the increases were less than half a per cent at 18/19 and two per cent at 16/17, and at the median they were four and three per cent respectively. To understand how these increases relate to the NMW we need to consider the level of earnings at different points of the distribution in 1998. The NMW rate that applies to 18/19 year-olds was set at £3.00 per hour and the 10th percentile point of earnings were well below this rate for both ages in 1998. At the median and 90th percentile the hourly rates were already above £3.00 per hour in 1998, and at age 18/19 they were even above the adult rate of £3.60 per hour. Hence we would not expect a large increase in hourly rates at the top of the earnings distribution except by way of maintaining some earnings differentials with lower paid workers.

It is a little surprising to see similar wage adjustments at age 16/17 and 18/19 given that the policy only applies to workers aged 18 and above. We hypothesised in the introduction that there may have been increases for some 16/17 year-olds to maintain pay rates for specific jobs or to maintain differentials with older workers. It is also possible that employers may have raised wages for all workers to avoid any stigmatisation about paying any workers below acknowledged minimum rates.

It is also possible that employers may have anticipated the level of the NMW and raised earnings for low paid workers prior to 1998. The Government announced the NMW rates in June 1998 soon after the 1998 data being analysed was collected. However, the Low Pay Commission was appointed by Government in July 1997 to recommend the level at which the NMW should be introduced. At this time it was known that the NMW would soon come into effect, and many employers were thought to have raised pay rates for low paid workers prior to the official announcement of the rates. This was thought to be to avoid the embarrassment of being exposed as low paying employers once the rates were announced. There was widespread speculation about the rates and coverage of the NMW for a long time prior to the official announcement of the rates, so it is certainly plausible that some adjustment may have occurred prior to 1998. It is also possible that pre-1998 adjustments were greater for workers aged 18/19 than aged 16/17 if it was expected that the NMW rates would only apply to workers aged 18 and over.

Some evidence of how earnings clustered around the NMW rates is presented in Figures 3.1a and 3.1b. Here the distribution of take-home pay in 1998 and 2000 is plotted in 20p bands up to £4 per hour. Figure 3.1a gives the distribution at age 18/19 and Figure 3.1b at age 16/17. In both Figures the top graph is for 1998 and the bottom graph is for 2000.

The pay bands include pay greater than the bottom threshold and less than or equal to the top threshold, so for example the £2.80 - £3.00 pay band includes pay above £2.80 per hour up to £3.00 per hour. Changing the thresholds to include the bottom threshold and exclude the top threshold would change the graphs slightly. However, these figures are for take home pay and, as stated earlier, the NMW relates to gross pay, so any inferences made here are fairly rough.

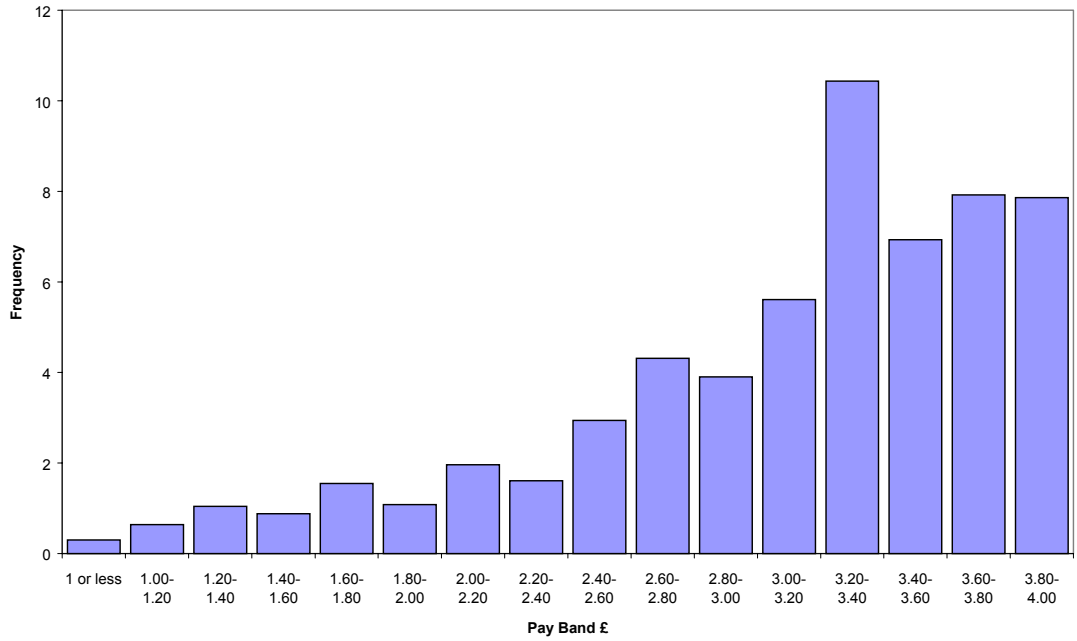
The increase in the 10^{th} percentile point is clearly shown by larger blocks for the lower pay bands in 1998 than in 2000. Figure 3.1a also shows a peak in the 1998 earnings distribution at age 18/19 at £3.20-£3.40 per hour. This level of take-home pay roughly corresponds to gross earnings of £3.60 per hour, the adult NMW rate and suggests that some employers may have anticipated this rate and set wages accordingly.

By 2000, when the actual minimum rates were imposed, this peak is no longer evident and earnings are more evenly distributed around this level. There is however, some evidence from the bottom graph of Figure 3.1a that take-home pay has clustered in the £2.80-£3.00 pay band. This level of take-home pay broadly corresponds to gross earnings of around £3.00 or £3.20 per hour, the former figure being the original minimum rate for workers aged 18-21 and the latter figure the minimum rate to be imposed from June 2000.

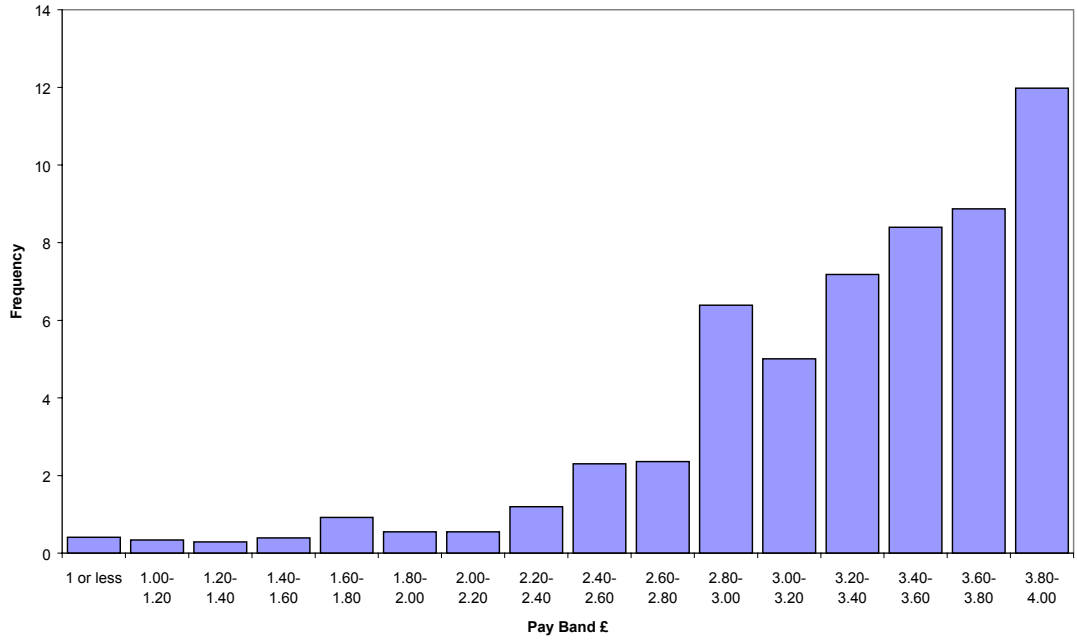
Turning to the distribution of earnings at age 16/17 shown in Figure 3.1b, there are two discernible peaks in the distribution in 1998. The first is at £2.60-£2.80 per hour, which in gross pay terms is close to £3.00 per hour. The second is at £3.20-£3.40 pay band, the same as the peak at age 18/19 and close to £3.60 per hour in gross pay. In 2000, there is a clear spike in the pay distribution at the £2.80-£3.00 pay band, partly due to large numbers of people reporting take home pay at £3.00 per hour. However this is consistent with gross pay of around £3.20 per hour suggesting some clustering of pay for those age 16/17 at around the minimum rate for 18-20 year-olds that was to be imposed from June 2000.

Figure 3.1a The distribution of real hourly pay at age 18/19, 1998 and 2000.

1998



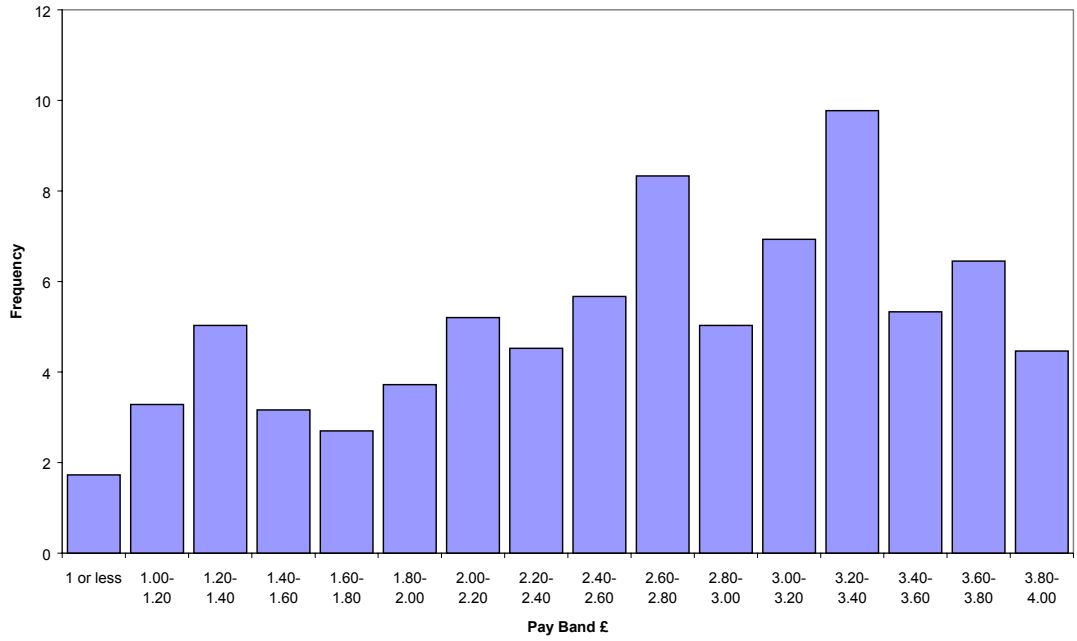
2000



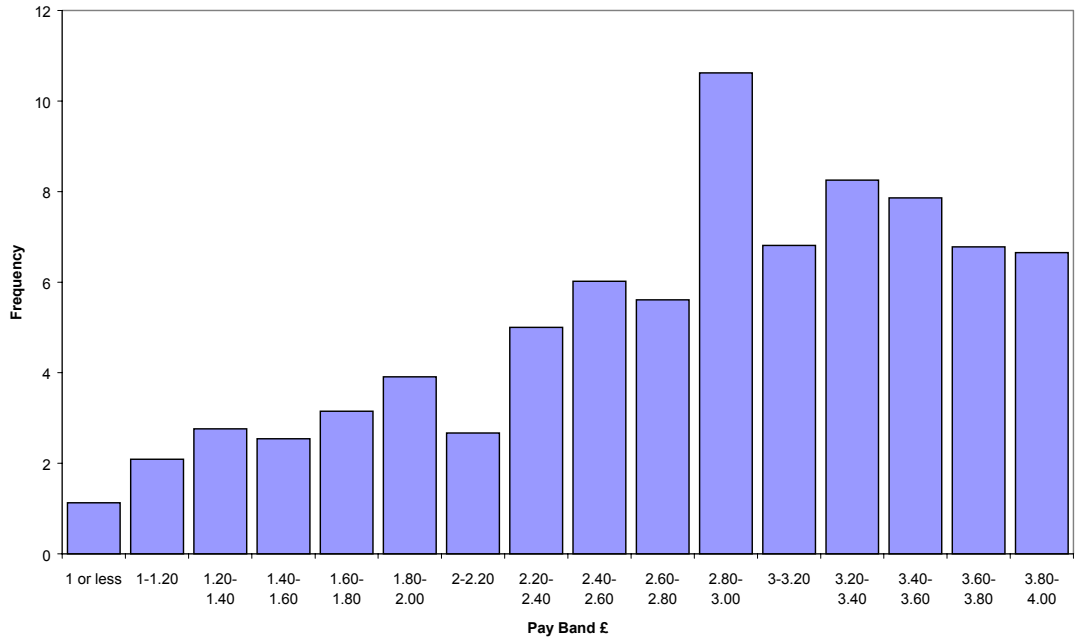
Note: The earnings figures are adjusted by the average earnings for April to June in each year. This means that the 1998 figures are increased by 8.6 per cent, the equivalent of 4.2 per cent each year. Earnings are usual take-home pay after deductions but including bonuses or overtime.

Figure 3.1b The distribution of real hourly pay at age 16/17, 1998 and 2000.

1998



2000



Note: The earnings figures are adjusted by the average earnings for April to June in each year. This means that the 1998 figures are increased by 8.6 per cent, the equivalent of 4.2 per cent each year. Earnings are usual take-home pay after deductions but including bonuses or overtime.

Table 3.3 and Figures 3.1a and 3.1b indicate a change in the wage structure at age 16/17 as well as at age 18/19 between 1998 and 2000. The evidence is in line with the changes being a result of the introduction of the NMW. The largest increases occur at a level of pay that was below the minimum rate before introduction and there is some evidence of a clustering of earnings at around the minimum rates. As noted in Chapter One there were other changes in the youth labour market that may have altered the structure of wages between 1998 and 2000. However, the changes identified here are consistent with the impact of the National Minimum Wage and this policy is likely to have had the most direct influence on pay. Hence it seems robust to conclude from here that the identified changes are primarily due to the introduction of minimum rates of pay for workers aged 18 and above.

The level and distribution of pay by main activity

We can investigate the data a little more closely by considering changes in the wage structure by the main activity of the respondent; see Table 3.4a for these changes at age 18/19 and Table 3.4b for changes at age 16/17. The estimates for those in GST at age 18/19 and in part-time jobs at ages 16/17 and 18/19 are based on quite small sample numbers so should be treated with some caution, particular when considering the extremes of the pay distribution.

Comparing mean real hourly earnings at age 18/19 by main activity shows that those in GST received on average the lowest pay. Mean earnings for those in GST in 1998 were just £2.75 per hour, below the NMW rate, whilst the mean for the other main activities were well above the NMW rate. In line with the analysis presented in Table 3.3 the increase in mean wages between 1998 and 2000 was largest for those with the lowest wage in 1998, that is young people in GST. Mean hourly earnings for these people increased by 13 per cent compared to seven, one and one per cent for those whose main activities were a full-time job, a part-time job and full-time education respectively.

Again the largest increases were at the 10^{th} percentile for the categories which had hourly earnings at the 10^{th} percentile below £3.00 per hour in 1998. For GST hourly earnings at the 10^{th} percentile rose by 30 per cent, for a full-time job 14 per cent and a

part-time job 11 per cent. There was little change in hourly earnings at the 10th percentile for those in full-time education, but this is the only activity where hourly earnings at the 10th percentile were already above £3.00 per hour in 1998.

Moving further up the earnings distribution, median earnings in GST were also well below £3.00 per hour in 1998 and the earnings at this point of the distribution increased substantially by 17 per cent. Median earnings for all the other main activities were already well above £3.00 per hour in 1998 and generally showed little change, the exception being the six per cent increase in median earnings for those in a full-time job. Similarly earnings at the 90th percentile were well above £3.00 per hour for all activities so we would not expect the NMW to have had much impact here. However, earnings at the 90th percentile still rose by six per cent for those in GST and by seven per cent for those in full-time education.

A similar pattern emerges at age 16/17. GST is associated with the lowest pay levels and the largest increases in pay between 1998 and 2000. In 1998, even hourly earnings at the 90th percentile for those in GST were below £3.00, hence the increases in GST earnings were found across the distribution. However, the increase at the 10th percentile was smaller than at the 90th percentile, highlighting the existence of some very low paying GST jobs for 16/17 year-olds. There was little change in the distribution of earnings at age 16/17 for those whose main activity was a full-time job, despite the fact that earnings at the 10th percentile in 1998 were only £1.74 per hour. It seems that the NMW has not impacted on pay rates here and there remain many full-time jobs for young people with very low pay. For part-time jobs there was a large increase in 10th percentile earnings of 23 per cent from £1.88 to £2.32 and the largest increase for those whose main activity was full-time education was also at the 10th percentile.

Changes at age 16/17 were largely for those individuals in GST. It is possible that changes within GST could be the reason for the identified pay changes rather than the NMW. Modern Apprenticeships (MAs) became a more prominent element of GST over this period and Payne (2001) finds that pay levels at age 16/17 in 1998 were higher in Modern Apprenticeships than for other forms of GST. An expansion of relatively high paying MAs could explain the increase in pay for GST across the

distribution. Examination of the level and distribution of pay in MAs and other forms of GST between 1998 and 2000 found similar changes to the aggregate GST figures reported in Table 3.4b. The changes in pay for other forms of GST suggest a wider impact on pay than an expansion of MAs. Overall the changes in pay remain consistent with the likely impact of the NMW.

Table 3.4a The mean and distribution of real[1] earnings[2] and hours at age 18/19 by main activity

	Weekly Earnings £	Usual Weekly Hours	Hourly Earnings £	Weighted (Unweighted) N	Percentage Increase in Hourly Earnings
		GST 1998			
Mean	105	39	2.75	464	
10th percentile	49	32	1.27	(402)	
Median	100	40	2.57		
90th percentile	163	48	4.26		
		GST 2000			
Mean	122	39	3.10	296	13
10th percentile	60	35	1.65	(275)	30
Median	120	40	3.00		17
90th percentile	182	45	4.50		6
		Full-time Job 1998			
Mean	149	40	3.80	2636	
10th percentile	100	35	2.51	(2538)	
Median	141	40	3.62		
90th percentile	206	48	5.23		
		Full-time Job 2000			
Mean	158	39	4.08	1343	7
10th percentile	114	35	2.87	(1383)	14
Median	150	39	3.85		6
90th percentile	205	45	5.38		3
		Part-time Job 1998			
Mean	87	21	4.21	527	
10th percentile	43	12	2.71	(541)	
Median	84	20	4.00		
90th percentile	130	30	5.80		
		Part-time Job 2000			
Mean	88	21	4.27	312	1
10th percentile	46	12	3.00	(329)	11
Median	87	20	4.02		1
90th percentile	130	30	5.77		-1
		Full-time Education 1998			
Mean	56	13	4.26	1761	
10th percentile	22	6	3.11	(2010)	
Median	49	12	4.07		
90th percentile	95	21	5.43		
		Full-time Education 2000			
Mean	59	14	4.31	1195	1
10th percentile	25	6	3.08	(1371)	-1
Median	50	12	4.00		-2
90th percentile	100	21	5.83		7

1. The earnings figures are adjusted by the average earnings for April to June in each year. This means that the 1998 figures are increased by 8.6 per cent, the equivalent of 4.2 per cent each year.
2. Earnings is usual take-home pay after deductions but including bonuses or overtime.

Table 3.4b The mean and distribution of real[1] earnings[2] and hours at age 16/17 by main activity

	Weekly Earnings £	Usual Weekly Hours	Hourly Earnings £	Weighted (Unweighted) N	Percentage Increase in Hourly Earnings
		GST 1998			
Mean	67	38	1.82	1303	
10th percentile	38	31	1.05	(1111)	
Median	55	39	1.55		
90th percentile	107	45	2.80		
		GST 2000			
Mean	70	36	2.15	833	18
10th percentile	40	24	1.13	(703)	8
Median	64	39	1.74		12
90th percentile	112	45	3.49		25
		Full-time Job 1998			
Mean	123	40	3.14	1260	
10th percentile	65	35	1.74	(1055)	
Median	118	40	3.00		
90th percentile	175	49	4.56		
		Full-time Job 2000			
Mean	122	39	3.15	914	+
10th percentile	67	32	1.76	(725)	1
Median	120	40	3.08		3
90th percentile	175	48	4.56		0
		Part-time Job 1998			
Mean	67	22	3.36	317	
10th percentile	31	10	1.88	(268)	
Median	65	20	3.22		
90th percentile	109	36	5.05		
		Part-time Job 2000			
Mean	71	21	3.58	232	7
10th percentile	32	10	2.32	(191)	23
Median	60	19	3.39		5
90th percentile	126	39	4.94		-2
		Full-time Education 1998			
Mean	38	11	3.48	4111	
10th percentile	16	5	2.20	(4681)	
Median	33	10	3.26		
90th percentile	65	19	4.75		
		Full-time Education 2000			
Mean	39	11	3.51	3755	1
10th percentile	16	5	2.31	(4386)	5
Median	33	10	3.33		2
90th percentile	67	19	4.90		3

1. The earnings figures are adjusted by the average earnings for April to June in each year. This means that the 1998 figures are increased by 8.6 per cent, the equivalent of 4.2 per cent each year.
2. Earnings is usual take-home pay after deductions but including bonuses or overtime.

4 TRAINING RECEIPT FOR THOSE IN WORK

Introduction

The wage structure for young people has changed significantly between 1998 and 2000, and the changes are broadly consistent with what we would expect as a result of the introduction of the NMW. One of the main concerns about these increases in earnings for young workers is that employers may offset having to pay higher wages by reducing the amount of training available for young workers. It is well known that young people in work receive lower wages whilst they are in training. This may be because they are less productive whilst training, but there is also a risk for employers that trainees may change employers once they are fully trained. In these circumstances employers would not recoup their investment in training, hence they offer lower wages to offset the risk that employees move to a new employer once they are fully trained. Therefore, if employers are paying higher wages to young workers as a result of the NMW, then it is important to assess whether young workers are also less likely to receive training.

Training receipt by main activity

The YCS allows a separate assessment of both on-the-job and off-the-job training. Table 4.1 gives the percentage of young people receiving training in the four weeks prior to the survey in 1998 and 2000 by age group and by main activity.[11] Questions about training receipt are only asked at age 18/19 for those whose main activity was a job or GST so there is no information for those in work whilst in full-time education. Training receipt for these young people is less important than for those in jobs because they can add to their human capital through continued education rather than through work-based training.

[11] The numbers in Table 4.1 differ from those given in Payne (2001) for a number of reasons. First, Payne's analysis is restricted to people whose main activity was GST, a full-time or part-time job. This analysis is restricted in a different way in that it only includes people who reported that they were currently in a job or training. It is further restricted, in line with the rest of the analysis in this paper, to exclude people who gave no information on their earnings or who had hourly pay less than or equal to 75p or greater or equal to £15.

There is also an inconsistency in the questions asked at age 16/17 between 1998 and 2000[12] such that it is not possible to analyse off-the-job training at age 16/17.

Table 4.1 Percentage of young people receiving training in the last four weeks by age and main activity

	16/17 year-olds		18/19 year-olds	
	1998	2000	1998	2000
	On-the-Job Training			
All activities	28	26	23	24
GST	59	54	52	64
Full-time job	32	27	30	30
Part-time job	20	20	24	16
Full-time education[2]	17	20		
	Off-the-Job Training[1]			
All activities	17	5	10	11
GST	68	20	42	51
Full-time job	9	4	10	10
Part-time job	3	3	6	2
Full-time education[2]	4	2		
	Weighted (Unweighted) N			
All activities	7061	5803	5891	3531
	(7179)	(6061)	(5559)	(3391)
GST	1303	833	560	410
	(1111)	(703)	(402)	(275)
Full-time job	1260	914	3010	1686
	(1055)	(725)	(2538)	(1383)
Part-time job	317	232	571	360
	(268)	(191)	(541)	(329)
Full-time education[2]	4111	3755		
	(4681)	(4386)		

+ indicates less than 0.5 per cent but greater than 0.

1. The fall in the percentage receiving off-the-job training at age 16/17 is due to change in the questionnaire between Cohorts 9 and 10, see footnote 2 for details.
2. Questions about training receipt are not asked for people in full-time education at age 18/19.

Roughly a quarter of young people of both ages received some on-the-job training in the last four weeks in both years. There is considerable variation by main activity with those in GST most likely to have received on-the-job training. At age 16/17 the percentage receiving on-the-job training in GST fell from 59 in 1998 to 54 per cent in

[12] In cohort 9 the questions asked are as follows: "Since the end of year 11, have you received any off-the-job training, that is training away from your usual work?" In cohort 10 there is another question about off-the-job training prior to this one which asks: "Since the end of year 11, have you been offered any off-the-job training, that is training away from your usual work?" Only if they answer yes to this question are respondents asked about training receipt. Many fewer respondents answer the question about training receipt in cohort 10, presumably because they have responded that they have not been offered any off-the-job training.

2000, with a similar fall for those in a full-time job from 32 to 27 per cent. Receipt of on-the-job training at age 16/17 rose for those in full-time education.

At age 18/19 there was a large rise in the percentage receiving on-the-job training when in GST from 52 in 1998 to 64 per cent in 2000, whilst for those who were in a part-time job there was a fall in training receipt from 24 to 16 per cent. Training receipt whilst in a full-time job remained stable at 30 per cent. There was a similar pattern for off-the-job training at age 18/19. More young people in GST received off-the-job training in 2000 than in 1998, whilst fewer received off-the-job training whilst in a part-time job in 2000 than 1998. In addition, the percentage receiving off-the-job training was very low whilst in a part-time job at just six per cent in 1998 and two per cent in 2000.

Models of training receipt

Sample sizes are not sufficient to fully investigate changes in training receipt by main activity, however we can consider aggregate training receipt controlling for other determinants of training receipt and consider interactions between this aggregate effect and main activity. Statistical models are estimated for the probability of receiving each of the types of training at each age. The estimated models are broadly similar to those estimated in Payne (2001) which includes a detailed description of these determinants. The results presented in Tables 4.2a, 4.2b and 4.2c are broadly similar to Payne's and will not be discussed here in any detail.

There are two groups of variables to focus on. The first identifies the quintile of the earnings for each individual. Here we find that for on-the-job training at age 16/17 the higher earners were less likely to receive training, whilst at age 18/19 for both types of training the earnings quintile has no effect on training receipt. This effect at age 16/17 may be because these people are either prepared to accept a lower pay in exchange for training or because employers offer lower pay whilst employees are trained because they are less productive.

The other key variables are at the bottom of the Tables. They capture changes occurring between 1998 and 2000. Four different specifications are presented in each

table. In the first column, changes between 1998 and 2000 that are not controlled for by the other determinants are identified by a simple dummy variable indicating the cohort to which the individual belongs. In the three tables the difference between the two cohorts is only significant in the case of on-the-job training at age 16/17. Here the reported odds ratio of 0.8 indicates that, other things being equal, in 2000 young people were less likely to receive training than in 1998. This effect could be a result of the higher wages for these workers identified above or some other effect not identified in the model.

In column two of the tables we interact the aggregate effect by main activity and get some interesting results. For on-the-job training at age 16/17, the drop in training is for those in a full-time job. When we look at these more detailed estimates at age 18/19 we find that for both types of training, training receipt for those in GST has increased, whilst training receipt for those in part-time jobs has fallen.

The next step is to try to identify whether this effect is due to higher wages or something else. The third column presents estimates from a similar equation just for 2000 data. This time a variable is included that identifies how hourly earnings have been affected by changes in the wage structure between 1998 and 2000.

A model of hourly earnings is estimated using 1998 data; see Appendix Two for the full specification. The coefficients from this model are then applied to 2000 data to give a prediction of what wages would be in 2000 if the world were the same as it was in 1998, that is before the NMW. The pay gap is then calculated as the difference between hourly earnings in 2000 and the prediction of hourly earnings. The interpretation of the variable is that it captures the change in pay as a result of the NMW.

The results in the third column of Table 4.2a, 4.2b and 4.2c all indicate that this pay gap variable has no impact on training receipt. From this we can conclude that at the aggregate level, a change in the structure of wages is not the reason for differences in training receipt shown in columns one and two.

Finally in column four we interact this pay gap variable with the indicators of main activity. Again we find that in all cases none of these variables has an impact on training receipt. The impacts previously identified must therefore be as a result of some other mechanism. There is no evidence here that changes in the wage structure as a result of the introduction of the NMW had any effect on training receipt for young people.

INTERPRETING THE COEFFICIENTS OF A LOGISTIC REGRESSION MODEL

The coefficients of a logistic regression model, when exponentiated, represent the multiplicative effect of each predictor variable on the odds of the outcome being modelled - in this case getting on-the-job training (Tables 4.2a and 4.2b) or off-the-job training (Table 4.2c). The 'base' or 'reference' category of each categorical predictor variable is set to 1.00, and the effects of the other categories are assessed relative to this. Estimates less than 1.00 indicate a reduction in the odds of getting training relative to the base category, and estimates greater than 1.00 indicate an increase in the odds, after taking into account the effects of all the other variables included in the model. Thus for example, other things being equal, the odds of women receiving on-the-job training at age 16/17 are estimated to be a little over four-fifths of the odds for men.

For a continuous predictor variable like Year 11 GCSE points score, the estimate represents the multiplicative effect of a unit change in the variable. Thus in Table 4.2a each extra point of Year 11 GCSE score increases the odds of getting training by a factor of 1.02.

Note that we have talked about the *odds* of getting training, not the probability. Odds are an alternative way of expressing probabilities; thus

odds=probability/(1-probability)

and probability=odds/(1+odds).

For example, if 75 out of 100 young people got training, their probability of getting training would be 0.75 or 75%, but their odds of getting training would be three to one on (3/1, or 3.00). If only 25 got training, then their probability of getting training would be 0.25 or 25%, while their odds of getting training would be three to one against (1/3, or 0.33).

It follows that the multiplicative effect of a predictor variable on the *odds* of getting training is not the same as its multiplicative effect on the *percentage probability* of getting training. Consider for example a hypothetical case where 75 out of 100 males and 50 out of 100 females get training. For males the odds of getting training are 75/25=3.00, while for females the odds of getting training are 50/50=1.00 (evens). In this imaginary case, being male increases the *percentage probability* of getting training by a factor of 1.5 (75/50), but increases the *odds* of getting training by a factor of 3.00 (3.00/1.00).

Significance testing in the logistic model is carried out by adding new predictor variables one at a time and testing whether the term as a whole, with all its categories, produces a significant improvement in the fit of the model, given the predictor variables already included. The models presented in this report are parsimonious, in that predictor variables are retained only if they improve model fit. Significance levels for individual categories of the predictor variable are based on the t-test, which approximates to this test. This is useful for exploring which specific categories of the predictor variable are responsible for its overall effect on model fit.

Table 4.2a Logistic regression model for receipt of on-the-job training in the previous four weeks: young people whose main activity at age 16/17 was GST or a job

		Exponentiated coefficient		
Main activity at 16/17	**Model 1**	**Model 2**	**Model 3**	**Model 4**
GST	1.00	1.00	1.00	1.00
Full-time job	0.39***	0.41***	0.35***	0.34***
Part-time job	0.34***	0.32***	0.36***	0.34***
Sex				
Male	1.00	1.00	1.00	1.00
Female	0.82**	0.82**	0.88	0.88
Year 11 GCSE points score	1.02***	1.02***	1.02***	1.02***
Permanent/temporary position				
Permanent/no information	1.00	1.00	1.00	1.00
Temporary	0.68***	0.68***	0.65**	0.65**
Usually weekly hours worked				
Under 15	1.00	1.00	1.00	1.00
15-24	1.30	1.30	1.45	1.45
25-34	1.59*	1.60**	1.82	1.82
35-39	2.21***	2.23***	2.47**	2.45**
40-44	1.89***	1.90***	2.64***	2.62**
45 or more	1.79**	1.79**	1.75	1.74
Hourly pay quintile				
Bottom quintile	1.00	1.00	1.00	1.00
Second quintile	1.12	1.12	0.99	1.01
Third quintile	0.84	0.84	0.78	0.81
Fourth quintile	0.62***	0.61***	0.55**	0.58**
Top quintile	0.74**	0.74***	0.77	0.83
Date started in current position				
2 years before survey	1.00	1.00	1.00	1.00
Jan-Jun year before survey	1.16	1.16	1.04	1.03
Jul-Dec year before survey	0.94	0.94	0.89	0.88
Jan/Feb of survey year	1.10	1.09	1.32	1.32
March-May of survey year	1.54***	1.53***	1.91**	1.91**
No information	1.20	1.20	1.08	1.07
Industry (SIC)				
Agriculture/Fishing/Mining etc..	1.84**	1.84**	2.39*	2.41**
Manufacturing	0.93	0.94	0.83	0.83
Construction	1.15	1.16	0.89	0.89
Wholesale & Retail	1.00	1.00	1.00	1.00
Finance	0.94	0.94	0.80	0.80
Public Admin., Education, Health	1.18	1.18	1.21	1.22
Other Service	0.66***	0.66***	0.75	0.74
No Info.	0.64*	0.63**	0.62**	0.61**
1998 Data	1.00	1.00		
2000 Data	0.80***			
Interacted with GST		0.84		
Interacted with full-time job		0.74***		
Interacted with part-time job		1.00		
Pay Gap			1.04	
Interacted with GST				1.02
Interacted with full-time job				1.02
Interacted with part-time job				1.11
Weighted N	4077	4077	1643	1643
F-statistic	F[27,4050]= 15.1	F[29,4048]= 14.1	F[27,1616] =6.0	F[29,1614] =5.6

Significance levels * 10%, ** 5%, *** 1%

Table 4.2b Logistic regression model for receipt of on-the-job training in the previous four weeks: young people whose main activity at age 18/19 was GST or a job

		Exponentiated coefficient		
Main activity at 18/19	**Model 5**	**Model 6**	**Model 7**	**Model 8**
GST	1.00	1.00	1.00	1.00
Full-time job	0.27***	0.33***	0.22***	0.22***
Part-time job	0.20***	0.28***	0.14***	0.14***
Sex				
Male	1.00	1.00	1.00	1.00
Female	0.94	0.95	0.90	0.90
Exam points score	1.01***	1.01***	1.01***	1.01***
Usually weekly hours worked				
Under 15	1.00	1.00	1.00	1.00
15-24	1.41	1.40	1.22	1.22
25-34	1.71*	1.71*	2.52*	2.52*
35-39	2.16**	2.11**	2.56	2.56
40-44	1.74	1.69	2.00	2.00
45 or more	1.86*	1.81*	2.24	2.24
Hourly pay quintile				
Bottom quintile	1.00	1.00	1.00	1.00
Second quintile	0.85	0.84	0.73	0.73
Third quintile	0.90	0.90	0.78	0.78
Fourth quintile	1.08	1.07	1.06	1.06
Top quintile	1.07	1.07	1.03	1.03
Date started in current position				
2 years before survey	1.00	1.00	1.00	1.00
Jan-Jun year before survey	0.83	0.83	0.79	0.79
Jul-Dec year before survey	1.25**	1.26**	1.00	1.00
Jan-May of survey year	2.47***	2.46***	1.93***	1.93***
No information	0.82	0.81	0.48	0.48
Industry (SIC)				
Agriculture/Fishing/Mining etc..	0.54**	0.55**	0.40	0.40
Manufacturing	0.73***	0.73***	0.67*	0.67*
Construction	1.19	1.22	1.48	1.48
Wholesale & Retail	1.00	1.00	1.00	1.00
Finance	0.97	0.97	0.96	0.96
Public Admin., Education, Health	0.92	0.91	0.99	0.99
Other Service	0.85	0.84	0.87	0.87
No Info.	0.64***	0.63***	0.69	0.69
1998 Data	1.00	1.00		
2000 Data	1.05			
Interacted with GST		1.72***		
Interacted with full-time job		1.00		
Interacted with part-time job		0.66*		
Pay Gap			1.04	
Interacted with GST				1.02
Interacted with full-time job				1.02
Interacted with part-time job				1.11
Weighted N	5468	5468	1987	1987
F-statistic	F[25,5443]= 13.6	F[27,5441]= 12.6	F[25,1962] =6.2	F[27,1960] =5.8

Significance levels * 10%, ** 5%, *** 1%

Table 4.2c Logistic regression model for receipt of off-the-job training in the previous four weeks: young people whose main activity at age 18/19 was GST or a job

		Exponentiated coefficient		
Main activity at 18/19	**Model 9**	**Model 10**	**Model 11**	**Model 12**
GST	1.00	1.00	1.00	1.00
Full-time job	0.14***	0.17***	0.08***	0.10***
Part-time job	0.03***	0.05***	0.01***	0.01***
Sex				
Male	1.00	1.00	1.00	1.00
Female	0.81**	0.81**	0.72*	0.72*
Exam points score	1.02***	1.02***	1.02***	1.02***
Usually weekly hours worked				
Under 15	1.00	1.00	1.00	1.00
15-24	1.72	1.68	0.76	0.63
25-34	0.77	0.76	0.43	0.34
35-39	0.75	0.73	0.28	0.23*
40-44	0.71	0.68	0.28	0.22*
45 or more	0.71	0.69	0.20*	0.15**
Hourly pay quintile				
Bottom quintile	1.00	1.00	1.00	1.00
Second quintile	1.12	1.11	1.51	1.30
Third quintile	0.89	0.89	1.57	1.29
Fourth quintile	1.02	1.00	1.21	0.93
Top quintile	1.10	1.10	1.90	1.55
Date started in current position				
2 years before survey	1.00	1.00	1.00	1.00
Jan-Jun year before survey	0.64***	0.63***	0.82	0.81
Jul-Dec year before survey	0.72***	0.72***	0.89	0.90
Jan-May of survey year	0.60***	0.60***	0.66	0.68
No information	0.33**	0.32**	0.40	0.32
Industry (SIC)				
Agriculture/Fishing/Mining etc..	0.68	0.70	0.90	0.89
Manufacturing	0.88	0.88	0.92	0.92
Construction	1.29	1.31	1.25	1.31
Wholesale & Retail	1.00	1.00	1.00	1.00
Finance	1.13	1.12	1.15	1.19
Public Admin., Education, Health	1.22	1.21	1.18	1.15
Other Service	0.72	0.70	0.61	0.61
No Info.	0.97	0.96	0.75	0.78
1998 Data	1.00	1.00		
2000 Data	1.08			
Interacted with GST		1.54**		
Interacted with full-time job		0.95		
Interacted with part-time job		0.41**		
Pay Gap			0.89	
Interacted with GST				1.25
Interacted with full-time job				0.82
Interacted with part-time job				0.64
Weighted N	5468	5468	1987	1987
F-statistic	F[25,5443]= 19.0	F[27,5441]= 17.8	F[25,1962] =10.0	F[27,1960] =9.2

Significance levels * 10%, ** 5%, *** 1%

5 PAY EXPECTATIONS AND RESERVATION PAY

Introduction

Another concern about the introduction of the NMW was that an increase in wages would make work more attractive to young people as opposed to staying on in full-time education. It is very difficult to determine whether there has been any change in participation rates as a result of the introduction of the NMW just from studying aggregate time trends because many other factors have influenced changes in participation in full-time education.

However, the YCS data does allow some investigation of two measures that are related to the choice about whether to take up a full-time job. Young people who were not currently in a full-time job and who were looking for a full-time job were asked the following:

"If you were to start a full-time job in the next few months, how much weekly take home pay would you expect to earn?"

and

"What is the lowest weekly take-home pay you would consider for a full-time job?"

Responses to the first question on expected pay may be affected by the introduction of the NMW for levels of expected pay close to the level of the NMW. Actual pay levels for young people have been shown to rise in Chapter 3 in line with changes related to the NMW and an awareness of the availability of higher pay may also increase the expectations of young people about pay. The second question can be interpreted as measuring young people's reservation pay. Again as actual pay has increased as a result of the NMW, then awareness of the availability of higher pay may also increase reservation pay in a similar way. However, if actual pay levels increased as a result of the NMW and reservation pay was unchanged then full-time jobs will have become

more attractive to young people and more young people are likely to leave full-time education and take up full-time jobs.

Interpretation issues

There is some evidence however, that these concepts are very unclear in the minds of respondents. Dawes (1993) found that when asked these types of questions, a quarter of respondents spontaneously replied that "it depends on the job". Such a response is against the intended interpretation of the questions, which is to identify generic expectations and minimum standards. Dawes also found that 17.5 per cent of respondents reported the same expected pay as reservation pay, implying that they could see no difference between what they expected and the minimum they would accept.

Further analysis by Dawes showed that four out of five people set their reservation wage by reference to their household out goings, whilst factors related to the labour market were considered by only a few people. Dawes concludes that "the concept of the reservation wage is of limited utility in considering the behaviour of participants in the labour market". The question as used in his survey is interpreted by most people to mean "what is the minimum income that you/your household could exist on without recourse to benefits".

Similar questions are included in the YCS as to those analysed by Dawes, hence we must be aware of the possible limitations of these measures. First we attempt to validate whether changes in expected pay and reservation pay respond in a coherent way to the introduction of the NMW, that is whether changes in the measures appear to have a realistic labour market response to the introduction of the NMW. If we fail to establish this relationship then we will not be able to make any inferences about the impact of the NMW on the choice between staying in full-time education and taking up a full-time job. To pre-empt the results of this validation exercise, we are unable to conclude that expected pay and reservation pay changed in a manner consistent with a likely impact of the NMW. We are therefore limited here to a brief description of changes between 1998 and 2000 in the two measures.

Whether looking for a full-time job

Table 5.1 gives the proportion at each age that was in a full-time job. For those who were not in a full-time job, the proportion looking for a full-time job is also given. A little over one-fifth of both ages reported that they were looking for a full-time job in 1998 and 2000. At age 16/17, roughly one-fifth reported they were already in a full-time job and three-fifths were not looking for a full-time job, and at age 18/19 roughly two-fifths reported they were in a full-time job and a further two-fifths reported they were not looking for a full-time job.

Table 5.1 Percentage in or looking for full-time work by age group

	Age 16/17		Age 18/19	
	1998	2000	1998	2000
	%	%	%	%
In full-time work	19	16	39	40
Not in full-time work	81	84	61	60
Of which:				
Not looking for full-time work	*60*	*60*	*39*	*39*
Looking for full-time work	*21*	*24*	*22*	*21*
Total	100	100	100	100
Unweighted N	14046	12954	9872	6131
Weighted N	13955	12811	9801	6011

Whether looking for a full-time job by main activity

We are primarily interested here in whether young people in full-time education were looking for a full-time job, so Table 5.2 gives the percentage of young people looking for a full-time job by their main activity. For both ages and in both years roughly one-fifth of young people in full-time education were looking for a full-time job. However, given the number of young people in full-time education, these young job seekers in full-time education represented a large proportion of all young people looking for a full-time job.

Looking at the other main activities, Table 5.2 shows that the majority of young people out of work or in a part-time job were looking for a full-time job. At age 16/17, roughly 40 per cent of those reporting they were doing something else were

looking for a full-time job in both 1998 and 2000, whilst at age 18/19, 35 per cent in 1998 and 26 per cent in 2000 of those reporting they were doing something else were looking for a full-time job. A small percentage of young people whose main activity was GST also reported that they were looking for a full-time job.

Table 5.2 Percentage looking for a full-time job by age and main activity

	Age 16/17			
	1998		2000	
	%	Weighted (Unweighted) N	%	Weighted (Unweighted) N
Main Activity				
Out of work/unemployed	82	725 (568)	80	645
GST	10	1481 (1268)	17	1187
Part-time job	68	368 (310)	67	304
Full-time education	18	9683 (10481)	21	9213
Something else	39	202 (168)	42	219
	Age 18/19			
	1998		2000	
Main Activity				
Out of work/unemployed	88	503 (431)	81	247 (230)
GST	9	503 (439)	6	382 (350)
Part-time job	60	584 (588)	55	362 (378)
Full-time education	19	4356 (5186)	19	2960 (3423)
Something else	35	322 (348)	26	214 (224)

It should be noted that some of these figures are based on a relatively low unweighted number of responses, hence they are subject to relatively high sampling variability. This is particularly true for people who reported they were doing something else, those who were in a part-time job at age 16/17 and those in GST at age 18/19. Furthermore, the low percentage of people doing something else or in GST who were looking for a full-time job means there were very few people in this category on which to base any further analysis. No separate analysis of pay expectations and reservation pay is considered for these people, although they are included in the aggregate analysis.

Pay Expectations

In the same way that we considered actual earnings and hours in Chapter 3, in Table 5.3 we look at the mean and distribution of weekly expected pay for a full-time job at age 16/17 and age 18/19 in 1998 and in 2000 for all activities and by main activity. The measure is a weekly earnings measure, so to assess the relationship between this

and the NMW we multiply the NMW hourly rate of £3.00 per hour by a full-time job of 40 hours to get a weekly minimum of £120. Again our expected pay measure is a take home measure so to relate it to the NMW we would expect bigger changes in expected pay between 1998 and 2000 at or below around £100 per week.

The top panel of Table 5.3 gives data for both ages in both years together with the percentage change between 1998 and 2000 for all activities. At age 18/19 median expected pay in 1998 was well in excess of the weekly NMW equivalent. Weekly pay of £163 for a 40-hour week translates to hourly earnings in excess of £4.00 per hour. At the 10th percentile expected pay was close to the NMW equivalent at £109 per week. Both increased by ten per cent by 2000 to £180 and £120 respectively, as did expected pay at the 90th percentile. Mean expected pay at age18/19 increased by 20 per cent. There is no relationship here between changes in expected pay and the level of pay.

Looking at expected pay at age 18/19 by main activity we find that expectations were highest for those in full-time education, reflecting the higher levels of qualifications achieved by those in full-time education. On average expected pay was lowest for young people out of work. For each main activity the pattern at the 10th percentile was similar to the aggregate figures. However, higher up the expected pay distribution, there were also large rises for most activities, again suggesting that any changes were not related to the NMW. Even at the 90th percentile of the distributions expected pay increased by 15 per cent for young people out of work and young people in a part-time job and by 29 per cent for young people in full-time education.

At age 16/17 median expected pay for all activities in 1998 was also well in excess of the weekly NMW equivalent. Weekly expected pay of £152 for a 40-hour week translates to expected hourly earnings of £3.80 per hour. At the 10th percentile expected pay was below NMW rates at £87 per week in 1998. The increase in the 10th percentile between 1998 and 2000 was just three per cent to £90 per week in 2000, still below the NMW rate, whilst the median showed a fall of one per cent and expected pay at the 90th percentile fell by eight per cent. The changes in expected pay were small, especially in comparison to the changes in actual pay identified in

Chapter 3. The falls higher up the distribution are difficult to interpret, but the increase for those with low expectations were in line with NMW effects.

In line with findings at age 18/19, expected pay at age 16/17 was highest for those in full-time education. The increase in mean expected pay was similar for each activity, but there were some differences across the distribution. For people in full-time education at age 16/17 expected pay increased by 11 per cent at the 10th percentile and ten per cent at the 90th percentile, but fell by eight per cent at the median. For young people out of work or in a part-time job at age 16/17 the only substantial increases in expected pay, 17 and 15 per cent respectively, were at the 90th percentile. This pattern of change is not consistent with changes as a result of the NMW even though the aggregate pattern was not inconsistent. However, given the changes identified at age 18/19, it is hard to believe that the NMW affected pay expectations at age 16/17 and not at age 18/19.

Reservation Pay

The same information for reservation pay, the lowest weekly take-home pay that a young person would consider for a full-time job is presented in Table 5.4. In general the changes in reservation pay are similar to changes in pay expectations. At age 18/19, reservation pay increased significantly between 1998 and 2000, with a 25 per cent increase in the mean and smaller increases across the distribution. Mean reservation pay increased by a substantial amount for each main activity: 32 per cent for young people in full-time education, 21 per cent if in a part-time job and eight per cent for the unemployed.

For those in full-time education at age 18/19, however, the change was almost exclusively at the top of the distribution. The 90th percentile increased by 38 per cent compared with a four per cent increase in the 10th percentile and one per cent increase in the median. This is not consistent with the changes being as a result of the introduction of the NMW.

At age 16/17, mean reservation pay for young people looking for a full-time job was unchanged between 1998 and 2000. There was a large increase at the 10th percentile

by ten per cent, but an eight per cent fall in the median. Again the fall is difficult to interpret, although the larger rise at the 10th percentile is consistent with a NMW effect. For those in full-time education at age 16/17 there was a fall in reservation pay across the distribution. Overall it is hard to conclude that the changes in reservation pay are related to the introduction of the NMW.

One of the main aims of this report was to identify whether the introduction of the NMW had an impact on participation in full-time education. Pay levels have been shown to rise, particularly at the bottom of the distribution and this will have made full-time jobs more attractive than full-time education. The evidence concerning changes in expected pay and reservation pay suggests that these changes were not related to the introduction of the NMW. Given this conclusion it is not possible to infer anything from this type of analysis about the impact the introduction of the NMW had on participation in full-time education. Analysis of pay expectations and reservation pay is still illuminating. However, the failure to identify a coherent behavioural response in the two measures to the introduction of the NMW adds weight to the assertion by Dawes that responses to questions about reservation pay and expected pay do not have a labour market interpretation.

Table 5.3 The mean and distribution of real[1] weekly earnings expectations[2] by age and main activity.

	Weekly Earnings					
	Age 16/17			Age 18/19		
	1998 £	2000 £	Percentage Change	1998 £	2000 £	Percentage Change
	All activities					
Mean	165	171	4	181	217	20
10th percentile	87	90	3	109	120	10
Median	152	150	-1	163	180	10
90th percentile	272	250	-8	272	300	10
Weighted N	2870	3042		1914	1096	
Unweighted N	2575	2688		1886	1135	
	Out of work unemployed					
Mean	132	138	4	160	171	7
10th percentile	82	80	-2	109	120	10
Median	130	130	+	163	150	-8
90th percentile	171	200	17	217	250	15
Weighted N	597	515		442	201	
Unweighted N	466	360		373	186	
	Part-time Job					
Mean	159	162	2	173	188	9
10th percentile	99	100	1	109	124	14
Median	141	150	6	163	175	7
90th percentile	217	250	15	217	250	15
Weighted N	252	202		352	199	
Unweighted N	206	166		341	204	
	Full-time Education					
Mean	179	185	3	199	250	25
10th percentile	87	97	11	109	120	10
Median	163	150	-8	192	200	4
90th percentile	272	300	10	272	350	29
Weighted N	1710	1907		836	575	
Unweighted N	1649	1855		883	627	

1. The earnings figures are adjusted by the average earnings for April to June in each year. This means that the 1998 figures are increased by 8.6 per cent, the equivalent of 4.2 per cent each year.
2. The question asks "If you were to start a full-time job in the next few months, how much weekly take home pay would you expect to earn?

Table 5.4 The mean and distribution of real[1] weekly reservation[2] earnings by age and main activity.

	Weekly Earnings					
	Age 16/17			Age 18/19		
	1998 £	2000 £	Percentage Change	1998 £	2000 £	Percentage Change
			All activities			
Mean	123	122	+	139	174	25
10th percentile	54	60	10	87	90	4
Median	109	100	-8	130	150	15
90th percentile	193	200	4	217	226	4
Weighted N	2870	3042		1914	1096	
Unweighted N	2575	2688		1886	1135	
			Out of work unemployed			
Mean	100	101	1	125	135	8
10th percentile	54	60	10	81	81	+
Median	98	100	2	109	124	15
90th percentile	141	150	6	174	199	15
Weighted N	597	515		442	201	
Unweighted N	466	360		373	186	
			Part-time Job			
Mean	119	124	4	132	160	21
10th percentile	65	70	7	87	97	12
Median	109	102	-6	130	147	13
90th percentile	163	198	21	174	200	15
Weighted N	252	202		352	199	
Unweighted N	206	166		341	204	
			Full-time Education			
Mean	133	130	-2	151	199	32
10th percentile	54	50	-8	87	90	4
Median	109	100	-8	149	150	1
90th percentile	217	200	-8	217	300	38
Weighted N	1710	1907		836	575	
Unweighted N	1649	1855		883	627	

1. The earnings figures are adjusted by the average earnings for April to June in each year. This means that the 1998 figures are increased by 8.6 per cent, the equivalent of 4.2 per cent each year.
2. The question asks "What is the lowest weekly take-home pay you would consider for a full-time job?"

6 Conclusions

This paper has shown that there was a significant change in the wage structure both at age 18/19 and at age 16/17 between 1998 and 2000. These changes coincide with the introduction of the NMW in April 1999, which directly affected the earnings of workers aged 18 and over. The analysis shows that wage increases were greatest at the bottom of the earnings distribution in particular for jobs where hourly earnings in 1998 were below £3.00 per hour, the minimum rate that applied to workers aged 18-21 from April 1999. The findings for workers aged 18/19 were expected given that the NMW directly affected workers of this age and large numbers of young people earned below the minimum rate in 1998. However, changes of a similar magnitude for workers aged 16/17 was less expected as these workers are not covered by the NMW. It seems that the introduction of the NMW has affected the pay of young people aged below 18.

The increases in pay identified in this report may have an effect on participation in education and training. We investigated whether training receipt was affected. It is possible that employers would respond to an increase in their wage bill with a cut in training provision for young workers. We find that for workers aged 16/17 there was a fall in the probability of receiving on-the-job training between 1998 and 2000, which was concentrated on people in full-time jobs. We found no evidence, however, that this was related to changes in pay over this period.

At age 18/19, there was no change in the overall probability of receiving training between 1998 and 2000. However, there was an increase in the probability of receiving training for people who were in GST and a fall in the probability of receiving training for people who were in a part-time job. Again, we find no evidence that these shifts were related to changes in pay over this period.

Increases in pay make jobs more attractive so a further consequence of the introduction of the NMW may be a fall in participation in full-time education. To examine this issue changes in expected pay and reservation pay for a full-time job

were considered. First to see if any changes in these measures were related to the introduction of the NMW. Second if such changes were identified to be as a result of the NMW, whether in combination with the identified changes in actual pay, they could be used to draw inferences about participation in full-time education.

This analysis found that changes in both measures did not appear to be in line with a coherent labour market response to the introduction of the NMW. The validity of similar measures has previously been called in to question and we conclude, in line with previous research, these measures probably do not have a coherent labour market interpretation. Given this disappointing conclusion, it is not possible to draw any further conclusions from our analysis about how decisions about participation in full-time education were affected by the introduction of the NMW.

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APPENDIX 1

Regression model for log usual take home hourly earnings

	Age 16/17 Coefficient (Standard Error)	Age 18/19 Coefficient (Standard Error)
Main activity[1]: (GST)		
Full-time job	0.46***	0.36***
Part-time job	0.58***	0.49***
Female	-0.02	-0.08***
Exam Points score		
Year 11 GCSE	0.003***	
Year 11 + A level		0.002***
Permanent or Temporary Position: (Permanent)		
Temporary position	-0.12***	
No information	-0.16***	
Number of Employees at Workplace: (1-9)		
10-24	0.10***	0.07***
25-49	0.14***	0.12***
50-99	0.16***	0.14***
100 or more	0.27***	0.26***
No information	0.11*	-0.06
Truancy: (Never/No Info.)		
Odd/Particular Days	0.07***	0.03**
Days at a time	0.09*	0.04
Weeks at a time	0.15***	0.11**
Region: (London/South East)		
North East and Yorks and Humber	-0.16***	-0.10***
Others	-0.23***	-0.11***
Industry (SIC): (Wholesale & Retail)		
Agriculture, Energy	-0.04	-0.11*
Manufacturing	0.07***	0.06***
Construction	0.02	0.10***
Finance	0.03	0.05***
Public Admin., Education, Health	-0.12***	-0.10***
Other Service	0.02	0.06
No Information		0.00
Date started in current position (2 years before survey)		
Jan-Jun year before survey	0.01	
Jul-Dec year before survey	-0.00	
Jan/Feb of survey year	0.01	
March-May of survey year	0.08***	
No information	-0.07	
Year 11 School type (comprehensive to 16)		
Comprehensive to 18	-0.01	
Modern	-0.09**	
Grammar	0.14	
Independent	0.00	
Weighted N	2434	3481
F-statistics	F[31,2403]=69.9	F[22,3459]=32.0
R-squared	0.452	0.267

1. People with full-time education as main activity are excluded.
Base categories are given in brackets.
Significance levels * 10%, ** 5%, *** 1%

APPENDIX 2

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