

Identifying and explaining patterns of NMW receipt in Britain 1999-2004

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Executive Summary

Introduction

In this report we examine patterns of National Minimum Wage (NMW) receipt and labour market trajectories of NMW workers over a six year period from 1999-2004 using data drawn from the British Household Panel Survey (BHPS). In particular we:

1. Examine patterns and sequences of NMW receipt over the six year period;
2. Examine transitions between NMW receipt, higher paying employment and non-employment; and
3. Relate patterns of NMW receipt over the period to a range of individual, household and job-related characteristics.

The aims of this study are to explore the longer term labour market outcomes of NMW workers, and to identify whether or not NMW jobs are stepping stones into higher paying employment, or instead whether NMW workers tend to stay in low wage jobs for several years, perhaps within a low-pay no-pay cycle. In doing so, we distinguish between individuals who were continuously employed over the sample period, and those who experienced spells of non-employment.

Patterns of NMW receipt

- One in five workers experienced the NMW at least once over the six year period 1999-2004. However, most received the NMW at one wave – only one in ten workers received the NMW at multiple waves. Furthermore, only one third of NMW recipients received the NMW for more than one consecutive wave.
- 70% of NMW recipients were occasional recipients, in that they received the NMW at one or two of the six waves. 30% were persistent recipients, receiving the NMW in at least three of the six waves. More than one half of occasional recipients were continuously employed over the period, and therefore were in higher paying employment at other waves.
- 40% of individuals who received the NMW in one year were also receiving it at the next year. Of those leaving the NMW, 76% remained in employment although one half of these remained in relatively low-paying work. This indicates a high degree of mobility out of NMW jobs, particularly into other employment. Job and employer mobility is associated with a greater propensity to leave the NMW.
- Only one in five of those leaving NMW jobs do so into non-work. However these flows into non-employment are relatively high compared with those from **jobs paid more than the NMW**.
- Flows into NMW receipt were highest from other relatively low-paid employment and from unemployment, and were **lowest** from relatively highly paid employment and economic inactivity.
- Workers in receipt of the NMW were more likely than other workers to spend time out of work. This could be because NMW jobs are less stable than other jobs, or because NMW workers are less attached to the labour market.
- There is a core of more persistent NMW recipients who make up about a quarter of all individuals who are likely to stay in relatively low-paid jobs when leaving the NMW and more likely to subsequently return to the NMW. Furthermore, a history of NMW receipt greatly increases the likelihood of receiving it in the future, and also of leaving the labour market.

What characterises persistent NMW recipients?

- Persistent NMW workers were on average four years older than continuously employed non-recipients, with one third of persistent recipients aged over 50. More than 80% were women, while one third had no qualifications (compared to 11% of the sample as a whole).
- The majority of persistent NMW recipients were in part-time employment. Smaller proportions of persistent recipients than other workers were covered by a trades union and worked in the public sector. Three quarters worked in small firms, with fewer than 50 employees.
- One half of persistent recipients were employed in semi-skilled and unskilled manual occupations, and worked in the hotels, catering and distribution industries.
- Multivariate analysis reveals that persistent recipients are generally women (and in particular married women) and tend to be older workers. They are more likely to live in rented accommodation and enjoy higher household income from other sources (including benefits and pensions). They are more likely to have no qualifications.
- In contrast those most likely to escape the NMW tend to be younger than persistent recipients and are more likely to be single men. They change employers less frequently than persistent NMW workers but achieve wage growth through more frequent promotions within employers. They tend to be less concentrated in the traditional NMW jobs and sectors.

1.Introduction

It is now seven years since the UK's first National Minimum Wage (NMW) was introduced (on 1st April 1999). Research over this period has documented the numbers of workers benefiting from the NMW at any given point in time, as well as their personal and household characteristics. NMW workers are disproportionately female, in part-time jobs, and are concentrated in particular industries such as hotels and catering. More than one half of workers affected by the October 2001 uprating of the NMW were women working part-time while one in four jobs in the hotel and restaurant sector were estimated to be affected (LPC 2003). More recent research has indicated that the majority of households containing a NMW worker are couple households, they are more likely to contain multiple earners and that NMW workers generally appear to be secondary workers (Bryan and Taylor 2004).

While these findings tell us about the impact of the NMW in a given year, they do not say anything about the longer term outcomes for NMW workers. Are NMW jobs mainly stepping stones into higher paying employment, or do NMW workers tend to stay in jobs paid at or around the NMW for several years? Alternatively are NMW jobs interspersed with periods of non-activity within a low-pay no-pay cycle? Is there a core of workers who are long-term recipients of the NMW or is the NMW experienced by a large proportion of the workforce at some point in their careers? These distinctions matter for several reasons. First, if there are significant numbers of workers who remain on the NMW for long periods, then the risk of low pay is concentrated on these workers. As a result the NMW is a more important protective mechanism for them than for more occasional or temporary NMW recipients. Policy makers may want to pay special attention to the potential impacts on this group when uprating the NMW. Second, if low paid jobs offer little opportunity for gaining new skills, then it may be a concern if workers stay on the NMW for long periods. For effective policy intervention it will be important to identify the characteristics of these workers. Third, if the NMW is associated with short-term jobs and frequent moves out of the labour market, it could be important to consider how the NMW (combined with in-work benefits) operates as an incentive to work, and on the labour demand side explore the characteristics of these jobs and why they do not last long.

This report is a first step in studying patterns of NMW receipt and the labour market trajectories of NMW workers over a six-year period. Recent research has provided some information on NMW dynamics by looking at the year-on-year transitions of NMW workers in Britain (Jones et al 2004). This has found that about one half of those in receipt of the NMW in any one year have moved into higher wage jobs by the next year. This is consistent with U.S evidence which suggests that minimum wage jobs are generally of short duration, and are often entry-level jobs (Smith and Vavricheck 1992; Evan and McPherson 2003). By contrast, Stewart (2005) using British data from before the introduction of the NMW, found that holding a low-paid job was detrimental to future employment prospects. We use data from the British Household Panel Survey (BHPS) covering the period 1999-2004 to (i) identify NMW workers in each year; (ii) trace patterns of NMW receipt over time; and (iii) relate these patterns to a range of individual, household and job-related characteristics such as age, gender, education level, occupation, household structure and so on.

This report is organised as follows: In the next section we describe the data used in the analysis, while Section 3 documents how NMW workers are identified in the data. Section 4 summarises patterns and sequences of NMW receipt over the six years for which data are available, focussing on individuals who were continuously employed over the period. In this section we examine transitions between NMW receipt and higher paying employment distinguishing between NMW workers, those earning between the NMW and 20% more than the NMW (medium wage workers), and those earning more than 20% over the NMW (higher wage workers). We relate patterns of NMW receipt to a range of individual, household and job-related characteristics. Section 5 performs similar analyses but introduces workers that also experience spells of non-employment and therefore examines the relationships between patterns of NMW receipt and non-employment. The final section summarises the results and draws some conclusions.

2. Data

We use data from waves 9-14 of the BHPS.¹ Wave 14 is the most recent year of data currently available and was collected in the Autumn of 2004. The BHPS is a nationally representative random-sample panel survey of private households in Britain, established in 1991 and originally covering some 5000 households. Every year the survey seeks to interview all adults (defined as individuals aged over 16 years) from the original sample, as well as all other adult members of their current households. The panel is therefore replenished in each wave by original sample members who reach the age of 16, and by adults who join the survey due to the changing composition of original sample members' households.² In addition, the survey was substantially expanded in 1999 and 2001. In 1999, extension samples in Scotland and Wales were added to allow more detailed analysis of these countries. We include these subsamples in our analysis, since they contain considerable numbers of minimum wage recipients. Where appropriate we check the sensitivity of the results to omitting the extension samples, and also include a control to indicate membership of the extension samples in the multivariate analysis.³

The advantage of the BHPS over other potential datasets such as the Labour Force Survey (LFS) is that it contains information on NMW receipt in six consecutive years from 1999-2004. This allows longer-term recipients to be distinguished from those who receive the NMW for just one or two years. The advantage of the BHPS over other panel datasets such as the Annual Survey on Hours and Earnings (ASHE) is that it contains information on a wide range of individual and household characteristics and labour market histories as well as job and employer related information.

¹ The BHPS has been used in previous studies of the NMW. See, for example, recent work by Arulampalam et al (2004), Connolly and Gregory (2002), Stewart (2004), Stewart and Swaffield (2002a, b), Jones et al (2004), and Bryan and Taylor (2004).

² Individuals who move in with original sample members, as well as adults in new households formed or joined by original sample members, become sample members themselves.

³ More details of the BHPS data are available at www.iser.essex.ac.uk/ulsc/bhps.

3. Identifying minimum wage workers

To analyse patterns of NMW receipt over time, it is first necessary to identify workers who are subject to the minimum wage at each interview date. Table 1 shows the hourly rates in force during the period in which the BHPS data used in this study were collected.

Table 1
NMW rates, April 1999 – October 2004

From	Over 22 years of age	Aged 18-21
1 April 1999	£3.60	£3.00
1 October 2000	£3.70	£3.20
1 October 2001	£4.10	£3.50
1 October 2002	£4.20	£3.60
1 October 2003	£4.50	£3.80
1 October 2004	£4.85	£4.10

Our definition of minimum wage workers takes into account their date of interview and their age at the time. We also apply a ‘tolerance band’ of £0.05 per hour to allow for rounding effects in wage calculations and the possibility that employers pay slightly above the NMW to avoid a reputation as a minimum wage employer. So, for example, 18-21 year olds who were interviewed between the period 1st April 1999 and 30th September 2000 and who earned less than £3.05 are defined as being on the development rate of the NMW. Over-21s interviewed within the same period and who earned less than £3.65 per hour are similarly classified as being on the main rate. We make similar classifications for those interviewed in later periods. In accordance with the regulations governing the NMW, the self employed and members of the armed forces are defined as not subject to the NMW. Unfortunately, the BHPS does not contain enough data on training to identify those workers over 21, who are in their first six months with a new employer and receiving particular types of accredited training. Since such workers are subject to the lower rate, we may have wrongly classified some of these workers as in receipt of the NMW when in fact they earn more than the applicable rate. Similarly, we are not able to identify apprentices: they are not covered by the NMW in their first year or if under 19 years old. However,

these potential misclassifications will only bias our results if such workers have very different patterns of NMW receipt than other NMW workers.⁴

As is conventional, we use a measure of the hourly wage derived from reported gross earnings and usual weekly hours of work. Our derived hourly wage rate is calculated from a respondent's reported gross usual monthly pay from their main job and their reported usual weekly hours of work. The usual monthly pay variable is derived from responses to the following questions:

“The last time you were paid, what was your gross pay - that is including any overtime, bonuses, commission, tips or tax refund, but before any deductions for tax, national insurance or pension contributions, union dues and so on?”

“Is this the amount you usually receive (before any statutory sick pay or statutory maternity pay)?”

“If not, how much are you usually paid?”

“And is that (pay) before or after any deductions for tax, national insurance, union dues and so on or are there usually no deductions at all made from your salary?”

The usual weekly hours of work variable is calculated from the respondent's answers to the following set of questions:

“Thinking about your (main) job, how many hours, excluding overtime and meal breaks, are you expected to work in a normal week?”

“And how many hours overtime do you usually work in a normal week?”

“How much of that overtime (usually worked) is usually paid overtime?”

From these questions, it is evident that gross monthly pay includes overtime payments, while the hours of work variable includes hours of paid overtime. Since we

⁴ It should be noted that trainees or apprentices who we may misclassify are likely to have relatively higher wage trajectories in the future, and thus it is possible that they have different patterns of NMW receipt over the medium to long term.

have no information on the rate of pay received for overtime hours, we have assumed an overtime premium of 1.5.⁵ Therefore, our derived hourly wage is defined as:

Derived hourly wage =	Monthly gross pay
	Usual hours + (1.5*overtime hours)

It is known that such a derived hourly wage can suffer from measurement error if the number of hours reported does not correspond correctly to the earnings period (Stewart and Swaffield 2001) and if the overtime premium is wrongly imputed. Measurement error in the wage will lead to spurious transitions in and out of the NMW in the data. This means our estimates for persistent receipt of the NMW are likely to be a lower bound on the true figure, while estimates for occasional or temporary receipt are likely to be an upper bound. We return to the implications of measurement error when discussing our results below.

From Wave 9 of the BHPS, workers are also asked whether or not they are paid by the hour. In particular, workers are asked:

“How is your pay calculated, in particular are you salaried or paid by the hour?”

“If paid by the hour, what is your hourly rate of pay for your basic hours of work?”

This allows NMW workers to be identified on the basis of their reported hourly wage for those that are paid by the hour. The reported hourly wage is likely to be more accurate than the derived wage. However it has the disadvantage of only covering the subset of workers who are hourly paid. As a comparison, Table 2 shows the number of employees identified as receiving the NMW according to the two definitions at Wave 12 of the BHPS.⁶

The measure based on the derived hourly wage indicates that 570 workers were in receipt of the NMW, whilst according to the measure based on the reported hourly

⁵ If the assumed premium is too high, we will mis-classify some workers earning more than the minimum wage as NMW workers. To check sensitivity to this assumption, we re-ran the analysis using an overtime rate of 1.0. However the results from doing so were virtually identical to those presented here.

⁶ The table omits 913 individuals who did not report valid income or hours.

wage, there were only 251 NMW workers. The table shows that the discrepancy is partly due to the absence of a reported hourly wage for 148 workers, who, according to the derived wage, received the NMW or less (most of these workers are salaried). However, there were 280 workers who are categorised as receiving the NMW according to the derived wage but not according to their reported wage, and 109 whose reported hourly wage was equal to the NMW or less, but whose derived wage was higher. Whilst these contradictions are somewhat disquieting, they are to be expected in the light of what is known about measurement error in derived wages, and they affect the majority of studies of NMW workers. We expect the reported hourly rate to be the more accurate measure for hourly paid workers, and so it is reassuring to note that a majority of NMW workers defined by this measure are also classified as receiving the NMW according to the derived wage (142 out of 251).

Table 2

Minimum Wage Workers

	NMW worker based on derived hourly wage		N
	No	Yes	
NMW worker based on reported hourly wage			
No	2075	280	2355
Yes	109	142	251
No reported hourly wage	3952	148	4100
N	6136	570	6706

Source: BHPS wave 12.

In a previous report (Bryan and Taylor 2004), we have compared the number and characteristics of employees identified as receiving the NMW according to the two definitions, and concluded that NMW workers identified using the two wage measures available in the BHPS sample had similar characteristics. These characteristics – women, in part-time work, employment in particular industries and occupations – are consistent with previous research. Because of the partial coverage of the hourly wage measure, and to be consistent with the bulk of previous studies, we retain the derived wage for the subsequent analysis.

4. Patterns of NMW receipt among the continuously employed 1999-2004

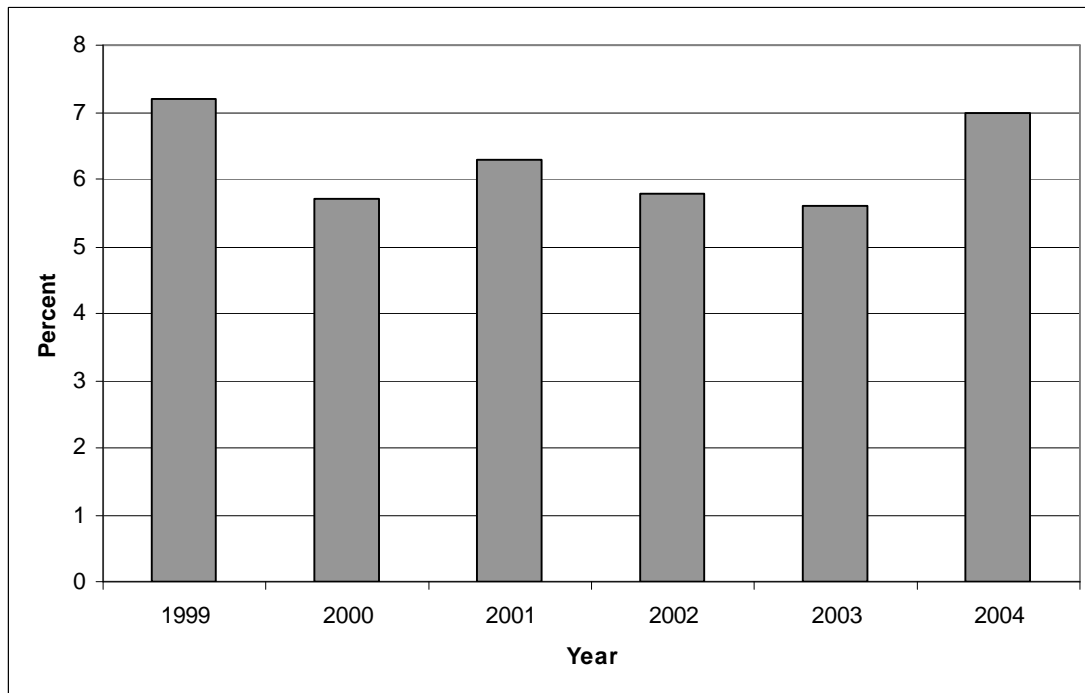
In this section we present some descriptive statistics summarising and describing patterns of NMW receipt over the period 1999-2004. This involves identifying the relative incidence of sequence patterns of NMW receipt over the six waves of available BHPS data, and so addressing issues of how widespread persistent NMW receipt is, and the amount of turnover there is in NMW receipt. To do this we use an estimating sub-sample from the BHPS data consisting of men and women who provided complete interviews and were in paid employment at all six dates of interview covering the period 1999-2004, and who had non-missing information on the key variables used in the analysis. For these analyses, we focus only on those in paid employment at all six dates of interview in order to draw accurate comparisons between employed individuals who are unlikely to receive the NMW and those who are persistent recipients, and avoid comparability problems caused by transitions into and out of work. Imposing these restrictions result in a sample size of 3038 individuals of 16 years of age or above. We will consider movements between NMW receipt and other labour market states later in the report.

Initially we describe the proportions of workers that were receiving the NMW at each date of interview, shown in Figure 1 below. This figure highlights two points worth noting. Firstly, there is no consistent trend in the proportion of workers that were in receipt of the NMW. Between 5.6% and 7.2% of workers were receiving the NMW at any date of interview over the sample period. Table 1 showed that the largest increases in the NMW occurred in 2001 and 2004, and Figure 1 reveals corresponding rises in the percentage of recipients in these years. Between these peaks, the percentage of recipients drops slightly but there does not appear to be a large-scale movement out of NMW jobs among the sample of continuously employed workers. Secondly, the proportion of continuously employed workers in receipt of the NMW is higher than the 4%-5% of all workers reported in LPC (2003).⁷ These variations in NMW receipt could emerge if NMW jobs have different destruction rates than non-NMW jobs, or if NMW workers have different patterns of employment stability than

⁷ Note that the LPC uses data from the Annual Survey on Hours and Earnings (ASHE). If we omit the Scotland and Wales extension samples, the overall percentage falls by 0.6 points but the pattern over time stays broadly the same.

other workers. If either of these arises then NMW recipients will have a different probability of being included in our sample of workers in employment at each date of interview between 1999 and 2004. This is an issue to which we return later in the report.

Figure 1
Patterns of NMW receipt 1999-2004, continuously employed workers



Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves.

However, this figure tells us nothing about the dynamics of NMW receipt over the period. Is it the same individuals receiving the NMW year after year, or instead is a different group of workers receiving the NMW in each year? The first would indicate highly persistent NMW receipt over time, while the latter would suggest high levels of mobility into and out of NMW receipt and a more equal risk of NMW receipt across workers. As a first step in analysing these sorts of issues, Table 3 summarises the number of waves over the period in which each individual was in receipt of the NMW. This indicates that 2485 individuals (or 81.8%) did not receive the NMW at any of the six dates of interview, and therefore 18.2% (553 individuals) received the NMW at least once over the six year period. Approximately 9% received

it at only one date of interview, 4% received it at two dates of interview, while 5% received it in at least three dates of interview. If we focus on those that did receive the NMW over the sample period, 49% received it just once, 22% at two dates of interview and 13% at three dates of interview. Less than 10% of NMW recipients were receiving the minimum wage at 5 or more dates of interview.⁸ Therefore more than one half of NMW recipients were receiving the NMW in at least two dates of interview.

Table 3
Number of waves in NMW receipt, BHPS 1999-2004

Number of waves in NMW receipt	N	%	% conditional on receipt
0	2485	81.8	-
1	271	8.9	49.0
2	119	3.9	21.5
3	72	2.4	13.0
4	50	1.7	9.0
5	28	0.9	5.1
6	13	0.4	2.4
N	3038	100.0	100.0

Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves.

Table 4 presents more detailed patterns of NMW receipt over the six waves of BHPS data, with ‘1’s indicating the waves at which individuals received the NMW, and ‘0’s the waves at which they were earning above the NMW. The patterns are shown in descending order of frequency. This table indicates that the single most common pattern was to receive the NMW at wave 9 (in 1999) and never thereafter – almost 12% of NMW recipients over the period had this pattern of receipt. Although only suggestive, this is consistent with the idea that for these workers the NMW is the first stage of a career or the stepping stone to higher paid employment. It may also indicate that the introduction of the NMW initially affected a relatively large number of people, who were not subsequently in receipt. The next most common pattern was to receive the NMW for the first time at wave 14 (2004), experienced by 11.6% of NMW recipients. (Of course, we do not yet know whether this is the start of a

⁸ However, if there is any measurement error in the construction of the hourly wage, then this percentage will be a lower bound. Similarly the proportion of workers who never receive the NMW could be underestimated if wages are measured with error.

persistent spell of NMW receipt or a one off). The next four most common sequences also involve NMW receipt at just one wave. The most common pattern of multiple-wave NMW receipt was to be receiving the NMW at wave 9 and wave 10 (1999 and 2000) and not again thereafter, experienced by 4% of NMW recipients. A similar proportion received the NMW only at waves 13 and 14. However, the main conclusion to be drawn from this table is that although there are many different patterns of NMW receipt over the period, receipt in just one wave is by far the most common. Later we combine these sequences to create new variables that identify occasional and persistent NMW recipients. We also look at how far workers move in the wage distribution when they make the transition into and out of the NMW.

Table 4
Patterns of sequence of NMW receipt, BHPS 1999-2004

Sequences of NMW receipt	N	%
100000	66	11.9
000001	64	11.6
001000	43	7.8
000010	36	6.5
010000	31	5.6
000100	31	5.6
110000	21	3.8
000011	14	2.5
111111	13	2.4
100011	11	2.0
000101	11	2.0
000110	10	1.8
Other combinations	202	36.5
N	553	100.0

Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves.

Table 5 summarises the maximum number of *consecutive* waves at which individuals received the NMW over the sample period. Given the previous tables, it is not surprising to find that 60% of individuals in receipt of the NMW received it at only one wave, while 23% received it at two consecutive waves. These equate to 11% and 4% of the sample of workers employed at each date of interview across the period. However, 17% of NMW recipients were receiving the NMW for at least three consecutive dates of interview, indicating a reasonable degree of persistence in NMW receipt.

Table 5**The maximum number of consecutive waves at which individuals receive the NMW: BHPS 1999-2004**

Maximum number of consecutive waves in NMW receipt	N	%	% conditional on receipt
0	2485	81.8	-
1	332	10.9	60.0
2	128	4.2	23.1
3	44	1.5	8.0
4	24	0.8	4.3
5	12	0.4	2.2
6	13	0.4	2.4
N	3038	100.0	100.0

Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves.

Table 6**Summarising patterns of NMW receipt, BHPS 1999-2004**

Pattern of NMW receipt	N	%	% conditional on receipt
Never on NMW	2485	81.8	-
Occasional NMW receipt	390	12.8	70.5
Persistent NMW receipt	163	5.4	29.5
N	3038	100.0	100.0

Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves. Occasional NMW receipt defined as receiving the NMW at one or two waves. Persistent NMW receipt defined as receiving the NMW for at least three waves.

To pursue robust and meaningful analyses of the patterns of NMW receipt over the period requires a variable summarising these patterns, as sample sizes are insufficient to allow analysis by, for example, the number of waves in NMW receipt. We therefore separate individuals into three categories – workers who did not receive the NMW at all over the period (‘Never on NMW’), those who received the NMW at one or two waves over the period (‘Occasional NMW receipt’), and those who received the NMW in at least three waves over the period (‘Persistent NMW receipt’). Table 6 summarises this variable, and indicates that based on these definitions 12.8% of workers were occasional NMW recipients, while 5.4% were persistent recipients. If we focus solely on those who received the NMW at least once over the period, then 70% were occasional recipients and 30% were persistent recipients. In subsequent analysis we use this variable to summarise patterns of NMW receipt.

a. Dynamics of NMW receipt 1999-2004

Thus far we have described patterns of NMW receipt over the six waves of available data. We now turn to the dynamics of NMW receipt over the period and identify transitions into and out of NMW receipt from higher up the wage distribution. For these analyses we divide the wage distribution into three categories – NMW recipients, ‘medium wage’ earners who earn between the NMW and 20% more than the NMW, and ‘higher wage’ earners who earn more than 20% over the NMW. This allows us to distinguish between individuals who move from NMW jobs into marginally higher paying jobs (and who therefore remain on relatively low wages), and individuals who move further up the wage distribution. Similarly we can identify whether those who enter the NMW do so from other low wage jobs, or whether they originate from higher up the wage distribution.

Table 7
Summarising dynamics of NMW receipt, BHPS 1999-2004

Wage band t-1	Wage band t			N
	NMW	Medium wage	Higher wage	
NMW	44.4	26.7	28.9	930
Medium wage	20.0	35.3	44.7	1232
Higher wage	2.0	4.0	94.0	13028
N	924	1199	13067	15190

Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves. Medium wage is defined as a wage between the NMW and the NMW+20%. Higher wage is defined as a wage greater than or equal to NMW+20%.

Table 7 summarises movements between these three wage categories between two consecutive waves. It shows, for example, the proportion of individuals receiving the NMW at wave t-1 that were also receiving the NMW at t, that had moved onto medium wages, and that had moved into higher wage employment. Note that the unit of observation in this table is the person-year and not the individual – each individual contributes five observations to this table.

The table illustrates a large degree of wage mobility over a one year period. For example, 44% of individuals who received the NMW at t-1 were also receiving

the NMW at t (and therefore 56% had moved off the NMW into higher paying jobs).⁹ Furthermore, the table indicates that almost equal proportions of those leaving the NMW moved into medium wage jobs and into higher wage jobs. About 27% of NMW workers at t-1 were in medium wage jobs at t, while 29% were in higher wage jobs. Therefore almost one half of those leaving the NMW remain in low wage employment. We find that 20% of medium wage earners at t-1 were receiving the NMW at t, although we do not observe how much of this inflow is caused by increases in the NMW that bring new workers into NMW coverage and how much is due to falls in wages. A much smaller proportion of higher wage workers at t-1 were in receipt of the NMW at t (2%). Therefore medium wage workers were ten times more likely than higher wage earners to enter NMW receipt.

Table 8
Destination of NMW workers by patterns of NMW receipt, BHPS 1999-2004

Duration of NMW receipt	Wage band t		N
	Medium wage	Higher wage	
Occasional NMW receipt	41.1	58.9	338
Persistent NMW receipt	60.9	39.1	179
N	248	269	517

Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves. Row percentages. Occasional NMW receipt defined as receiving the NMW at one or two waves. Persistent NMW receipt defined as receiving the NMW for at least three waves. Medium wage is defined as a wage between the NMW and the NMW+20%. Higher wage is defined as a wage greater than or equal to NMW+20%.

Table 8 focuses on individuals who left NMW receipt into higher paying employment between two consecutive waves. It shows that 41% of occasional NMW recipients (who received the NMW at just one or two waves) who moved off the NMW did so to medium wage jobs while 59% moved to higher wage jobs. These proportions are almost reversed for persistent NMW recipients. 61% of persistent NMW recipients who moved off the NMW did so to medium wage jobs (and therefore remain on low wages) while 39% moved into higher wage jobs. Therefore we find that the extent to which NMW workers move up the wage distribution is associated with patterns of NMW receipt, and in particular that more persistent NMW recipients are less likely than occasional recipients to move up the wage distribution substantially.

⁹ Recall that, for the time being, we are only considering individuals in employment at all six waves, and therefore movements from the NMW into non-employment are excluded from these analyses.

Table 9 instead focuses on workers who enter NMW receipt from other employment between t-1 and t. In particular, it indicates the proportion of those entering occasional and persistent NMW receipt by their wage category at t-1. This shows that 40% of occasional NMW recipients enter from medium wage jobs while 60% enter from higher wage jobs. In contrast, 65% of persistent NMW recipients originate from medium wage jobs while 35% originate from higher wage jobs. Therefore a larger proportion of persistent NMW recipients than occasional NMW recipients originate from jobs that were relatively low paid. From these tables, it appears that there is a core of more persistent NMW recipients that both originate from and leave to other low paying jobs. Although such workers form the minority of NMW recipients at any one point in time, they have a high risk of re-entering the NMW and are unlikely to move up the wage distribution substantially. Occasional NMW workers, which form the majority of NMW recipients at any point in time, exhibit much greater wage mobility (both upwards and downwards).

Table 9
Origin of NMW workers by patterns of NMW receipt, BHPS 1999-2004

Wage band at t-1	Duration of NMW receipt		N
	Occasional	Persistent	
Medium wage	39.7	64.9	246
Higher wage	60.3	35.1	265
N	340	171	511

Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves. Column percentages. Occasional NMW receipt defined as receiving the NMW at one or two waves. Persistent NMW receipt defined as receiving the NMW for at least three waves. Medium wage is defined as a wage between the NMW and the NMW+20%. Higher wage is defined as a wage greater than or equal to NMW+20%.

Wage mobility is very strongly related to job and employer mobility. Wage growth is highly correlated with (within-employer) promotions and with changes of employer. Table 10 examines the impact of job and employer mobility on movements off the NMW. It shows the wage category at t of workers who were receiving the NMW at t-1 by whether or not they changed employer or changed job between t-1 and t. As expected, such mobility is associated with a greater propensity to leave the NMW. Focussing initially on employer mobility, the table indicates that 33% of NMW recipients at t-1 who changed employer remained on the NMW at t, while 24%

moved onto medium wages and 43% moved into higher wage jobs. In contrast, 47% of those who did not change employer remained on the NMW, while 26% moved into higher wage employment. Therefore NMW recipients that changed employer were more likely to leave the NMW, and in particular were more likely to move into higher wage jobs.

The second panel of Table 10 examines the impact of changing job within the same employer on transitions out of NMW receipt, and shows a similar pattern. NMW recipients who changed job with the same employer between t-1 and t were much less likely than other recipients to remain on the NMW, and were twice more likely to move into higher wage jobs. 28% of NMW recipients at t-1 who changed job between t-1 and t remained on the NMW, while 55% moved into higher wage jobs. In contrast, 46% of NMW recipients who did not change job remained on the NMW while 27% moved into higher wage jobs. From this we conclude that job and employer mobility reduces persistence in NMW receipt and contributes to upward wage mobility.

Table 10
Transitions of NMW workers by employer and job changes, BHPS 1999-2004

Status change t-1 to t	Changed employer t-1, t		Changed job t-1, t		N
	No	Yes	No	Yes	
Remained NMW	46.6	32.9	45.6	28.1	413
Medium wage	27.2	24.0	27.4	17.2	248
High wage	26.3	43.2	27.0	54.7	269
N	784	146	866	64	930

Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves. Column percentages. Medium wage is defined as a wage between the NMW and the NMW+20%. Higher wage is defined as a wage greater than or equal to NMW+20%.

b. The characteristics of occasional and persistent NMW recipients

In this section we describe the characteristics of occasional and persistent NMW recipients to examine whether occasional NMW recipients differ in some systematic way from more persistent NMW recipients. Describing the characteristics of long-term beneficiaries of the NMW in terms of their household position, education level, gender, occupation, and so on, and identifying how these differ than for short-term

NMW beneficiaries, is important for policy purposes. Can persistent NMW recipients be identified by the characteristics on entry into the NMW?

As a first step in this process, we summarise some key individual, household and job-related characteristics of individuals according to their experiences of NMW receipt over the sample period. We distinguish between individuals who did not receive the NMW at all over the period, those who were occasional recipients (and received the NMW only once or twice), and those who were persistent recipients (and received the NMW at least three times). The characteristics are measured at the beginning of the sample period in 1999.

Table 11
Demographic characteristics of occasional and persistent NMW recipients, BHPS 1999-2004
(variable means)

Characteristics measured in 1999	Never NMW	Occasional NMW	Persistent NMW	Total
Age (years)	38.2	37.0	42.8	38.3
Under 25 years of age	0.10	0.18	0.09	0.11
Over 50 years of age	0.13	0.17	0.33	0.15
Female	0.47	0.67	0.83	0.52
Married	0.78	0.75	0.82	0.78
Has degree or equivalent	0.19	0.04	0.01	0.16
Has no qualifications	0.08	0.17	0.33	0.11
N	2485	390	163	3038

Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves. Occasional NMW receipt defined as receiving the NMW at one or two waves. Persistent NMW receipt defined as receiving the NMW for at least three waves.

Table 11 shows little difference in the mean age of workers who did not benefit from the NMW and those who were occasional recipients – both had a mean age of about 38 years. However, persistent NMW recipients were on average 5 years older at 43 years of age. This is further reflected in the proportion within each NMW category that were aged below 25 years of age and aged over 50 years of age. In particular, persistent recipients were less likely than other groups to be aged below 25, and were twice more likely to be aged over 50. 9% of persistent recipients were aged below 25, compared with 10% of those never receiving the NMW and 18% of occasional recipients, while 33% were aged over 50, compared with 13% of those never in receipt and 17% of occasional recipients.

Consistent with previous studies, we find NMW receipt is more likely among women. A larger proportion of both occasional recipients (67%) and especially persistent recipients (83%) than non-recipients (47%) are women. Differences emerge between occasional and persistent recipients in terms of their marital status. More than 80% of persistent recipients of the NMW were married in 1999, compared with 75% of occasional recipients and 78% of non-recipients. We also find that more persistent NMW recipients were less likely to be highly qualified and considerably more likely to have no qualifications. Less than 1% were educated to degree level, compared with 19% of non-recipients and 4% of occasional recipients, while 33% had no qualifications compared with 17% of occasional recipients and 8% of non-recipients. Therefore those who are least successful in the formal education system have a significantly higher propensity to persistently receive the NMW.

Table 12

Job characteristics of occasional and persistent NMW recipients, BHPS 1999-2004
(Variable means)

Characteristics measured in 1999	Never NMW	Occasional NMW	Persistent NMW	Total
In part-time employment	0.14	0.43	0.56	0.20
In temporary employment	0.01	0.05	0.03	0.02
Has fixed-term contract	0.02	0.02	0.00	0.02
Covered by trades union	0.57	0.36	0.25	0.53
Public sector worker	0.33	0.21	0.14	0.31
Job tenure (years)	5.21	4.32	5.34	5.10
Number of employer changes 1999-2004	0.51	0.73	0.85	0.58
Number of job changes 1999-2004	0.68	0.43	0.26	0.62

Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves. Occasional NMW receipt defined as receiving the NMW at one or two waves. Persistent NMW receipt defined as receiving the NMW for at least three waves.

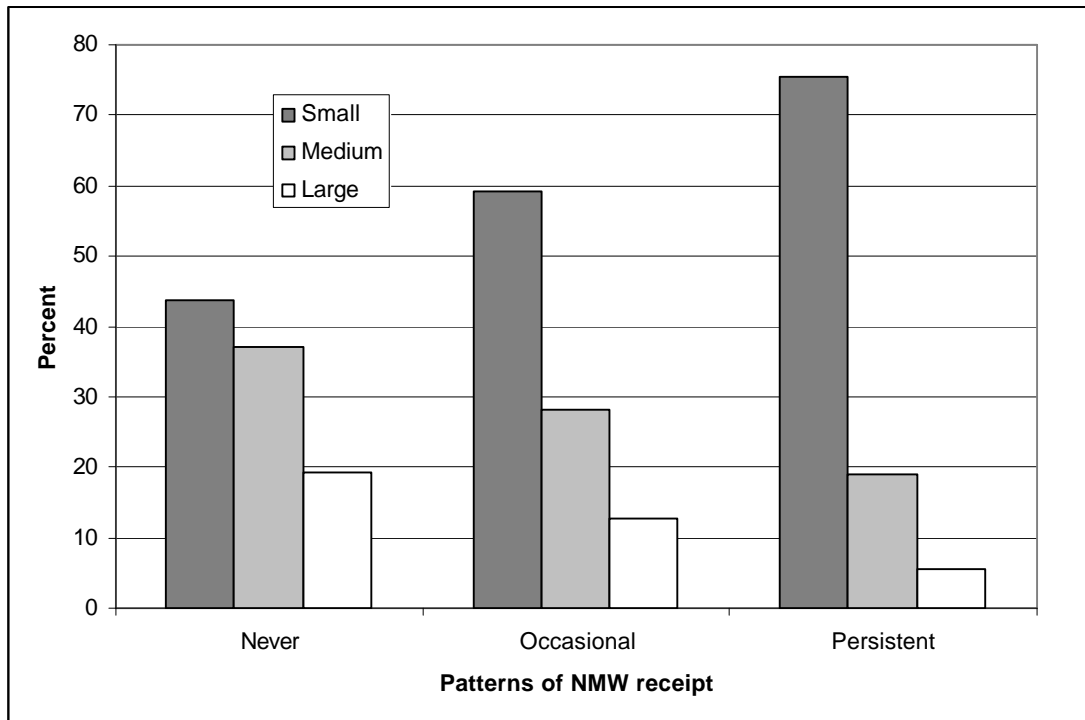
Turning to the job characteristics of each group (shown in Table 12), it is evident that persistent NMW receipt is more common among workers in part-time employment. More than one half of workers who persistently received the NMW over the period were on part-time employment in 1999, compared with 43% of occasional recipients and just 14% of non-recipients. Thus, consistent with previous studies we find NMW recipients (particularly persistent recipients) were much more likely to be in part-time work. There is also some evidence that both occasional and persistent

NMW recipients were more likely than non-recipients to be in temporary rather than permanent employment in 1999, although these differences are not statistically significant and the vast majority within each category were in permanent jobs.

NMW receipt, and persistent receipt in particular, is less common among workers covered by a trades union. One in four persistent NMW recipients were covered by a trades union in 1999, compared with 36% of occasional recipients and 57% of non-recipients. Similarly, NMW receipt is less common among public sector workers, 14% of which were persistent recipients while 21% were occasional recipients and 33% were non-recipients between 1999 and 2004. Again, these associations between NMW receipt and trades union coverage and public sector employment have been identified in the literature. We also find that generally workers in receipt of the NMW had a larger number of employers than non-recipients over the sample period, but experienced a smaller number of within-employer job changes. This may indicate that NMW workers are in more unstable employment or jobs (and therefore change employer more frequently) and that within these jobs there is little scope for career advancement (thus there are fewer promotions). In particular, persistent NMW recipients experienced very few within-employer job changes (0.26 compared to 0.43 for occasional NMW recipients and 0.68 for non-recipients).

Figure 2 plots patterns of NMW receipt by firm size in 1999. This shows that NMW recipients were much more likely than non-recipients to work in small firms with less than 50 employees. We find that 75% of persistent recipients were employed in small firms in 1999, compared with 44% of non-recipients. In contrast only 6% of persistent recipients were employed in large firms (with 500 or more employees) compared with 19% of non-recipients. Large firms are more able than small firms to implement well defined career paths for their employees, to offer incentives in terms of wage increments, and generally tend to pay higher wages. Therefore workers in large firms are less likely to receive the NMW and, if they do, are likely to move off it very quickly.

Figure 2
Patterns of NMW receipt by firm size, BHPS 1999-2004



In Table 13 we describe patterns of NMW receipt by the occupation and industry of employment in 1999. To look at occupation we have classified workers into four broad categories based on their socio-economic group. Occasional and persistent NMW recipients were much more likely than non-recipients to be in junior non-manual, skilled manual and semi and unskilled manual occupations, and less likely to be in managerial, professional and intermediate non-manual occupations. For example, 49% of non-recipients were employed in higher level non-manual occupations, while 14% were in semi and unskilled manual occupations. In contrast 15% of occasional NMW recipients and 10% of persistent recipients were in higher level non-manual occupations, and one third of occasional and one half of persistent recipients were in semi and unskilled occupations. Differences in the industry of employment between non-recipients, occasional recipients and persistent recipients also emerge. These differences are consistent with previous research, indicating that occasional recipients were three times more likely and persistent recipients four times more likely than non-recipients to be employed in the hotels, catering and distribution industry. One half of persistent recipients and one third of occasional recipients were

working in this sector in 1999, compared with 12% of non-recipients. NMW recipients were less likely than non-recipients to be employed in the finance sector.

Table 13
Employer characteristics of occasional and persistent NMW recipients, BHPS 1999-2004
 (Variable means)

Characteristics measured in 1999	Never NMW	Occasional NMW	Persistent NMW	All
Socio-economic group				
Manager/professional	0.27	0.06	0.01	0.23
Intermediate non-manual	0.22	0.09	0.09	0.20
Junior non-manual and skilled manual	0.37	0.49	0.41	0.39
Semi and unskilled manual	0.14	0.36	0.49	0.18
Industry				
Agriculture/utilities/mining	0.06	0.03	0.01	0.06
Metal working	0.10	0.08	0.01	0.09
Other manufacturing	0.08	0.08	0.07	0.08
Construction	0.04	0.03	0.01	0.04
Hotels, catering and distribution	0.12	0.34	0.51	0.17
Communications	0.06	0.07	0.04	0.06
Finance	0.14	0.06	0.04	0.13
Other	0.39	0.31	0.29	0.37
N	2485	390	163	3038

Source: BHPS waves 1999-2004. Individuals in employment at all 6 waves. Occasional NMW receipt defined as receiving the NMW at one or two waves. Persistent NMW receipt defined as receiving the NMW for at least three waves.

c. Multivariate analysis

Thus far our analysis has described patterns of NMW receipt over the period 1999-2004 and movements between NMW receipt and the rest of the wage distribution. We now turn to multivariate analysis of patterns of receipt in order to help quantify the impact of various characteristics on the probability of an individual being an occasional NMW recipient or a persistent NMW recipient relative to not receiving the NMW at all over the period. We estimate two models, a multinomial logit model and an ordered probit model, in which the dependent variables take the value 0 if the individual did not receive the NMW at all over the period, the value 1 if they were an occasional NMW recipient (and received the NMW at one or two waves), and the value 2 if they were a persistent NMW recipient (and received the NMW at three or

more waves). For the multinomial logit model, we present relative risk ratios rather than coefficients and so figures greater than (less than) one indicate a higher (lower) risk of NMW receipt relative to non-receipt. This model has the advantage of yielding estimates that are easily interpretable, but does not account for the fact that the dependent variable is ordered. The ordered probit coefficients have no straightforward interpretation, but this model has the advantage of taking the ordered nature of the dependent variable into account. In this specification, a positive (negative) coefficient indicates a higher (lower) risk of more persistent NMW receipt. In general, the results from both models are similar.

The multinomial logit results indicate that younger workers aged less than 25 were twice more likely than prime aged workers to be occasional recipients, but are not significantly more likely to be persistent recipients. In contrast, older workers aged over 50 were more than twice as likely as prime aged workers to be persistent recipients, but no more likely to be occasional recipients. Therefore occasional NMW receipt is more common among younger workers, while persistent NMW receipt is more common among older workers. Results from the ordered probit model indicate that the persistence of NMW receipt was greater for both younger and older workers than prime-aged workers.

Marriage reduces the likelihood of persistent NMW receipt among men – the probability of married men being a persistent receipt was 68% lower than for single men. However, married women were significantly more likely to receive the NMW. They were six times more likely than single men to be persistent recipients relative to non-recipients. Similar results also emerge from the ordered probit model. Living in rented accommodation approximately doubles the probability of being an occasional and persistent NMW recipient, and this is also reflected in the positive and highly significant coefficient in the ordered probit model. (It is possible that housing tenure is endogenous here, in that low wage workers may have more difficulty in securing a mortgage, and therefore be less likely than higher wage workers to be a homeowner.)

Education level has a very large and statistically significant impact on patterns of NMW receipt. There is a monotonic relationship between education level and the probability of occasional and persistent NMW receipt that emerges in both model

specifications. Individuals educated to GCSE standard were two thirds as likely as those with no qualifications to be occasional recipients relative to a non-recipient, and one third as likely to be a persistent recipient. These relative probabilities fall to one tenth and one fiftieth among those with a university degree or the equivalent.

Table 14
Factors associated with patterns of NMW receipt, BHPS 1999-2004

Characteristic measured at 1999	Multinomial logit		Ordered probit
	Occasional NMW	Persistent NMW	
Aged under 25	2.136***	1.297	0.307**
Aged over 50	1.292	2.411***	0.310***
Female	1.226	1.296	0.080
Married	0.760	0.319**	-0.290*
Married female	1.633	6.540***	0.545***
Lives in rented accommodation	2.009***	2.280***	0.381***
Other household income*10	0.999	0.998	-0.001*
Child aged under 5 in family	1.088	0.789	-0.011
Number employed in household	1.116	1.345*	0.099*
Qualified to below GCSE standard	0.838	0.560	-0.219
GCSEs or equivalent	0.698	0.419***	-0.324***
'A-Levels' or equivalent	0.561**	0.252***	-0.509***
Further education qualifications	0.530***	0.247***	-0.533***
Degree or equivalent	0.139***	0.020***	-1.236***
Part-time job	3.187**	4.212*	0.633**
Female and part-time job	1.199	0.952	0.081
Temporary job	2.835**	2.490	0.414*
Employed in public sector	0.553***	0.297***	-0.428***
Covered by a trades union	0.645**	0.509**	-0.274***
Employed in medium sized firm	0.814	0.491**	-0.196**
Employed in large firm	0.87	0.457*	-0.172
Pseudo R ²	0.21		0.20
N	3038		

Notes: Dependent variable equals 0 if individual did not receive the NMW over the period, equals 1 if (s)he was an occasional NMW recipient and equals 2 if (s)he was a persistent NMW recipient. In multinomial logit, the numbers presented are relative risk ratios expressing the probability of being in each category relative to the probability of not receiving the NMW over the period. A dummy variable is included to control for membership of the Scotland and Wales extension samples.

***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Those in part-time employment in 1999 were three times more likely than those in full time work to be an occasional recipient and four times more likely to be a persistent recipient. The positive and statistically significant coefficient in the ordered

probit specification is consistent with this. There is evidence that those in temporary employment in 1999 were also more likely to be an occasional recipient. The effect is large (increasing the risk by a factor of three in the multinomial logit). Public sector employment reduced the risk of being an occasional recipient by 45%, and that of being a persistent recipient by 70% relative to non-receipt. Similar sized effects emerged for those covered by a trades union, reducing the risk of occasional and persistent receipt by about 35-50%. Finally, we find that employment in medium and large firms had little statistically significant impact on the risk of occasional NMW receipt relative to non-receipt. However, the risk of persistent receipt was halved through employment at a medium or large firm relative to a small firm, a pattern that also emerges in the ordered probit specification.

d. Summary

In this section we have summarised in detail the patterns and dynamics of NMW receipt over a six year window covering the period 1999-2004. Data from waves 9 to 14 of the British Household Panel Survey were used. We have exploited the panel nature of these data to follow the same individuals over time, and to identify the number of times over the period they were receiving the NMW. This analysis has focused only on those individuals in employment at each of the six waves over the period, to abstract from problems arising from differential labour market participation rates between NMW recipients and non-recipients. The general aim has been to explore the extent to which the NMW is a stepping stone to higher wages or whether NMW receipt is a reflection of a prolonged period of low pay.

Overall we find that that moves into and out of the NMW are frequent but are often associated with small movements along the wage scale. We have documented the characteristics of a core of persistent NMW recipients who represent about 30% of those ever receiving the NMW. They are more likely than occasional recipients to move between the NMW and a medium pay band (defined as extending up to 20% higher than the NMW level). Occasional recipients are more likely to exit the NMW to much higher pay. We find that employer changes and promotions are associated with exits from the NMW and that persistent recipients tend to experience more

employer changes (indicating unstable jobs) but fewer within employer job changes (indicating a lower chance of promotion). Compared to occasional recipients, persistent NMW workers are older, more likely to be married women, have low qualifications and work part-time. They are concentrated in small employers often in the hospitality sector, and they tend to be low skilled manual workers. Occasional NMW recipients are more evenly spread amongst employers and industry sectors.

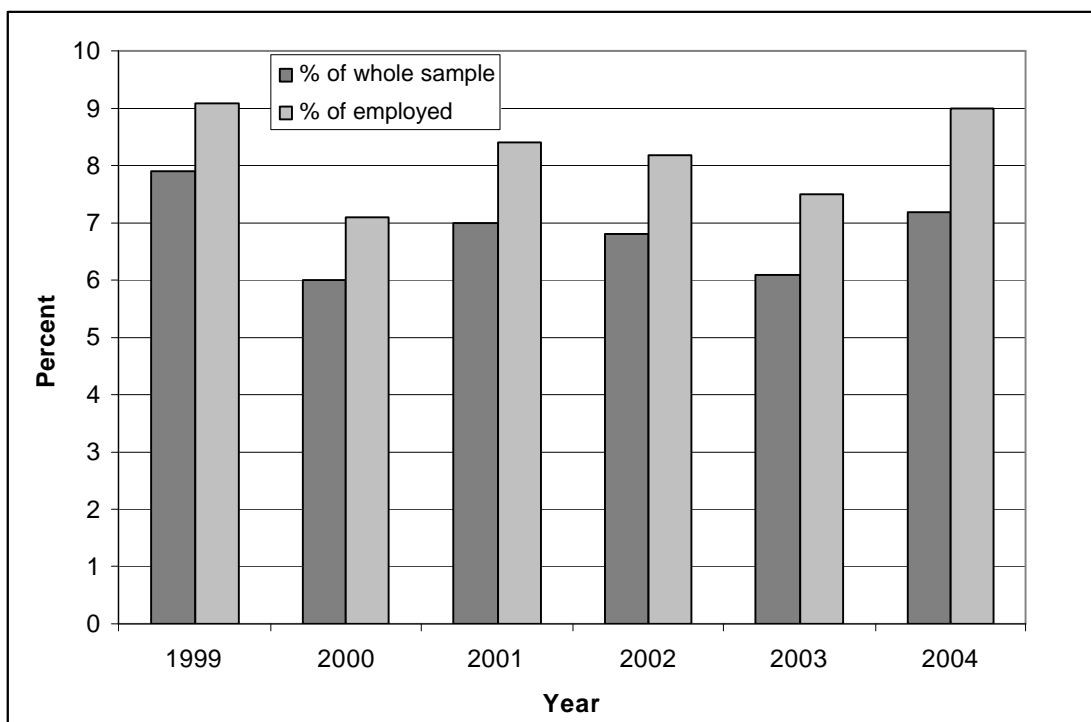
5. Patterns of NMW receipt among the ever employed 1999-2004

The remainder of this report completes the picture of patterns of NMW receipt over time by incorporating into the analysis movements into and out of non-work states. We examine whether short-run, occasional NMW recipients are more or less likely than longer-term persistent NMW recipients to remain in employment. In this section we provide descriptive statistics summarising patterns of labour market exit over the period and relate these to previous patterns of NMW receipt. We then relate movements from NMW receipt into higher paying employment and non-employment to a range of individual, household and job-related characteristics. Again we use data from the six waves of available BHPS data covering the period since the introduction of the NMW. We use an estimating sub-sample consisting of men and women who provided complete interviews and were in paid employment in at least one date of interview over the period 1999-2004, and who had non-missing information on the key variables used in the analysis. Although we introduce into these analysis workers who have experienced non-employment over the sample period, we restrict analysis to those in employment at least once in order to exclude individuals who were never employed and who therefore were never at risk of receiving the NMW.

Imposing these restrictions result in a sample size of 4728 individuals of 16 years of age or above. The enlarged sample comprises the 3038 individuals of the continuously employed sample, 1379 individuals who were not working in at least one wave and a further 311 individuals who switched between employment and self-employment but who were never out of work. These were excluded from the continuously employed sample as the self-employed are not covered by the NMW. Although the self employed make up less than 5% of the sample, we include them here since self-employment is one possible alternative to a minimum wage job in addition to non-employment. In some of the analysis below we combine the self-employed with employees, but where appropriate – for example in studying the detail of transitions to and from the NMW – we separate them.

Initially we describe the proportions of workers that were receiving the NMW at each date of interview, shown in Figure 3 below. This shows the number of workers within this new sample receiving the NMW at each date of interview, both as a proportion of the whole sample of individuals experiencing employment at least once over the period (n=4728), and also as a proportion of those in employment at each date of interview (where n varies at each date of interview).

Figure 3
Proportion receiving NMW at each date of interview



This figure highlights two points worth noting. Firstly, as for the sample of continuously employed workers, there is no consistent trend in the proportion of workers that were in receipt of the NMW, although again there are peaks corresponding to years when the NMW increases were large. Between 6% and 8% of the sample were receiving the NMW at any date of interview over the sample period, corresponding to between 7% and 9% of those in work at each date of interview.¹⁰ Secondly, the proportion of workers in this sample that are in receipt of the NMW is

¹⁰ If we omit the Scotland and Wales extension samples, the overall percentage of NMW workers falls by about one point but the pattern over time stays broadly the same.

higher than that in the continuously employed sample (see Figure 1). Between 5.6% and 7% of the continuously employed sample were in receipt of the NMW at any date of interview. Therefore, we find that workers who experienced non-employment over the sample period had a higher propensity to receive the NMW than those in continuous employment. This may be caused by NMW jobs being less stable than higher paying jobs, which increases the likelihood of NMW recipients to leave work, or because NMW jobs are filled by more marginal workers who are less attached to the labour market. Information on reasons for leaving a job are required to disentangle these two explanations.

Table 15 summarises the number of waves over the period 1999-2004 that individuals in this sample received the NMW. This indicates that more than three-quarters of those employed at least once did not receive the NMW at all over the period, while 12% received it at just one wave and a further 5% at two waves. Only 5% received the NMW at three or more of the six dates of interview. Focusing on those who received the NMW at least once, the table shows that 55% received it exactly once while a further 22% received it twice. Almost one in four NMW recipients received the NMW for at least half of the six dates of interview.

Table 15
Number of waves received NMW

Number of waves in NMW receipt	N	%	% conditional on receipt
0	3681	77.9	-
1	574	12.1	54.8
2	226	4.8	21.6
3	132	2.8	12.6
4	70	1.5	6.7
5	32	0.7	3.1
6	13	0.3	1.2
N	4728	100.0	100.0

Source: BHPS waves 1999-2004. Individuals in employment at least once over the 6 waves.

A comparison with the continuously employed sample (Table 3) again indicates that those experiencing spells of non-employment had a higher propensity to receive the NMW (22.1% received it at least once, compared with 18.2% of the continuously employed sample). However, conditional on receipt, they received it at fewer waves

than those in the continuously employed sample. Individuals experiencing non-employment who received the NMW on average received the NMW at 1.85 waves, compared with 2.07 waves for the continuously employed who received the NMW. This is partly explained by periods spent out of employment altogether, which we look at in more detail below.

Table 16

The maximum number of consecutive waves at which individuals receive the NMW: BHPS 1999-2004

Maximum number of consecutive waves in NMW receipt	N	%	% conditional on receipt
0	3681	77.9	-
1	683	14.5	65.2
2	225	4.8	21.5
3	77	1.6	7.4
4	34	0.7	3.2
5	15	0.3	1.4
6	13	0.3	1.2
N	4728	100.0	100.0

Source: BHPS waves 1999-2004. Individuals in employment at least once over the 6 waves.

Table 16 summarises the maximum number of *consecutive* waves at which individuals received the NMW over the sample period. Two thirds of individuals in receipt of the NMW received it at only one wave, while 22% received it at two consecutive waves. These equate to 15% and 5% of the sample of workers employed in at least one date of interview across the period. 13% of NMW recipients were receiving the NMW for at least three consecutive dates of interview. Again, the maximum number of consecutive waves on the NMW tends to be lower than for continuously employed workers (Table 5), 17% of whom received the NMW for at least three consecutive waves.

In Table 17 we examine whether there are differences by NMW receipt in the number of waves in which individuals were out of work over the period. If NMW recipients are in more unstable employment or are more marginal workers then we might expect them to be out of work at more waves than those who did not experience

the NMW. There is some evidence that this is the case. More than 70% of the sample was in some form of work at all six waves, while less than 15% were not working in at least three dates of interview. Among individuals who did not receive the NMW over the period, three quarters were in some form of work at all six waves, while 12% were not working in at least three dates of interview. In contrast only 58% of individuals who received the NMW over the period were in employment at all six waves, while almost 20% were out of work in at least three dates of interview. Therefore we find evidence that workers in receipt of the NMW were more likely than other workers to spend time out of work. However, we are unable to judge whether this is due to NMW jobs being less stable than other jobs, or NMW workers being less attached to the labour market, or both.

Table 17
Number of waves spent out of work by ever received NMW

Number of waves	Out of work		Out of work no NMW receipt		Out of work NMW receipt	
	N	%	N	%	N	%
0	3349	70.8	2738	74.4	611	58.4
1	450	9.5	309	8.4	141	13.5
2	287	6.1	189	5.1	98	9.4
3	238	5.0	157	4.3	81	7.7
4	193	4.1	138	3.8	55	5.3
5	211	4.5	150	4.1	61	5.8
N	4728	100.0	3681	100.0	1047	100.0

Source: BHPS waves 1999-2004. Individuals in employment at least once between 1999 and 2004.

Summarising sequences of NMW receipt

Sequences of labour market status over six waves are potentially very complex: using the most detailed categorisation there are six possible states in each wave (NMW, medium wage, higher wage, self-employed, non-participating and unemployed), resulting in over 45,000 possible sequences. It is not feasible to show these sequences directly but in Table 18, we provide a little more detail about the patterns of NMW receipt over the period among individuals who received the NMW at least once. The patterns are categorised according to the number of waves of NMW receipt and whether or not the respondent was working in the other waves (employees and the self-employed are combined).

As for the continuously employed sample, we find that the dominant pattern was to receive the NMW at only one wave, and to be in employment at all other waves. This was experienced by 309 of the 1047 individuals receiving the NMW at least once (corresponding to 30%). The second most common pattern was to receive the NMW only once but also experience some non-employment over the period – 204 individuals (20% of NMW recipients) had this pattern of receipt. The next most common pattern was to receive the NMW twice with the remaining waves spent in work (12%) or a combination of work and non-work (8%). The remaining 30% of NMW recipients had patterns involving some other combination of NMW receipt, work and non-work.

Table 18
Patterns of sequence of NMW receipt, BHPS 1999-2004

Sequences of employment patterns	N	%
Received NMW once, employed all other waves	309	29.5%
Received NMW once, employed / not working other waves	204	19.5%
Received NMW twice, employed all other waves	126	12.0%
Received NMW twice, employed / not working other waves	86	8.2%
Received NMW three times, employed all other waves	81	7.7%
Received NMW once, not working other waves	61	5.8%
Received NMW four times, employed all other waves	53	5.1%
Received NMW three times, employed / not working other waves	41	3.9%
Received NMW five times, employed all other waves	29	2.8%
Received NMW more than once, and not working all other waves	17	1.6%
Received NMW twice, not working other waves	14	1.3%
Received NMW four times, employed / not working other waves	13	1.2%
Received NMW at all six waves	13	1.2%
N	1047	100.0%

Source: BHPS waves 1999-2004. Individuals in employment at least once between 1999 and 2004 and who received the NMW at least once over the period.

As for the analysis of the continuously employed, to summarise these complex labour market patterns over the six waves, we have constructed a categorical variable. In this case the variable separates individuals into five categories – workers who did not receive the NMW at all over the period but were in work at all dates of interview (‘No NMW, always in work’), those who did not receive the NMW at all over the period but were sometimes out of work (‘No NMW, not always in work’), those who

received the NMW at one or two waves over the period and were in work at all dates of interview ('Occasional NMW always in work'), those who received the NMW at one or two waves over the period but were not in work at all dates of interview ('Occasional NMW not always in work'), and those who received the NMW in at least three waves over the period ('Persistent NMW').¹¹ Table 19 indicates that based on these definitions 58% of workers did not receive the NMW, but were always in work while a further 20% did not receive the NMW but were not working in at least one date of interview. Almost 10% of individuals received the NMW once or twice and were in work at each date of interview while 8% received the NMW once or twice but were not always working. Some 5% of this sample were persistent recipients. Focussing on individuals who received the NMW at least once over the period indicates that 40% were occasional recipients and were always in work, while one in three were occasional recipients who were sometimes out of work. Almost one in four were persistent NMW recipients. Compared to the continuously employed sample, a higher proportion (over three quarters) were occasional recipients and in over half of these cases NMW receipt was associated with periods out of work.

Table 19
Patterns of status, wave 9-14: Those employed at least once

Patterns	N	%	% conditional on NMW receipt
No NMW, always in work	2738	57.9	-
No NMW, not always in work	943	20.0	-
Occasional NMW always in work	435	9.2	41.5
Occasional NMW not always in work	365	7.7	34.9
Persistent NMW	247	5.2	23.6
Total	4728	100.0	100.0

Source: BHPS waves 1999-2004. Individuals in employment at least once. See text for variable definitions

¹¹ Note that separating persistent NMW recipients into those who did and did not experience spells of non-employment results in sample sizes too small for robust analysis. 'In work' includes self-employment.

a. Dynamics of NMW receipt among the ever employed 1999-2004

Thus far we have described patterns of NMW receipt among workers who were employed at least once over the six waves of available data. We now turn to the dynamics of NMW receipt and identify transitions into and out of NMW receipt from higher up the wage distribution and from non-employment. As in the previous analysis we divide the wage distribution into three categories – NMW recipients, ‘medium wage’ earners who earn between the NMW and 20% more than the NMW, and ‘higher wage’ earners who earn more than 20% over the NMW. This allows us to distinguish between individuals who move from NMW jobs into marginally higher paying jobs (and who therefore remain on relatively low wages), and individuals who move further up the wage distribution. Similarly we can identify whether those who enter the NMW do so from other low wage jobs, or whether they originate from higher up the wage distribution.

Table 20
Summarising labour market dynamics, BHPS 1999-2004

Status at t-1	Employment status at t						N
	NMW	Medium wage	Higher wage	Self-employment	Non-participating	Unemployed	
NMW	38.9	22.2	24.3	2.2	10.0	2.5	1598
Medium wage	19.1	32.7	38.6	1.6	6.9	1.2	1825
Higher wage	2.4	4.1	87.6	1.6	3.3	1.0	16395
Self-employment	3.8	2.5	21.0	65.0	5.6	2.0	944
Non-participating	5.5	4.1	13.0	2.4	69.7	5.3	2379
Unemployed	8.2	10.6	38.9	6.4	17.4	18.4	499
N	1567	1793	16162	1024	2625	469	23640

Source: BHPS waves 1999-2004. Individuals in employment at least once. Medium wage is defined as a wage between the NMW and the NMW+20%. Higher wage is defined as a wage greater than or equal to NMW+20%.

Table 20 summarises movements between the various labour market statuses between two consecutive waves. It shows, for example, the proportion of individuals receiving the NMW at wave t-1 that were also receiving the NMW at t, that had moved onto medium wages, into higher wage employment, into self-employment, into non-participation and into unemployment. Note that the unit of observation in this table is the person-year and not the individual – each individual contributes five observations to this table.

Exits from the NMW

This indicates that 39% of NMW recipients in year t-1 were also receiving the NMW at year t, while 22% had moved into medium wage jobs and 24% had moved into higher paying jobs. 10% had left the labour market completely, 2.5% had become unemployed while 2.2% had entered self-employment. Therefore 60% of those on the NMW at any point in time had left the NMW within the following 12 months, and of these the majority (76%) remained in work. However nearly half of these remained in low paying (medium wage) work. 16% of those leaving the NMW left the labour market and 4% had entered unemployment. This indicates a high degree of mobility out of NMW jobs, and particularly into other employment – only one in five of those leaving NMW jobs do so into non-work states.

Nevertheless, flows into economic inactivity and unemployment from NMW jobs are relatively high compared with those from medium and higher paid employment. For example, 6.9% and 3.3% of those in medium and higher wage jobs at t-1 had left the labour market by t, representing 10% and 24% of those leaving each state. Flows into unemployment from medium and higher wage jobs are about one half of those from NMW jobs.

Entry to the NMW

The probability of entering NMW jobs between two consecutive dates of interview was highest for those in medium wage jobs at t-1 – 19% of workers in such jobs had entered NMW jobs by the next date of interview (we do not distinguish between those who suffered a wage loss bringing them onto the NMW and those who entered NMW jobs as a result of an increase in the NMW). This is some eight times higher than the proportion of those in higher wage jobs who enter the NMW (2.4%), three times higher than the proportion entering from economic inactivity, and more than double the proportion entering from unemployment (8.2%). Therefore the probability of entering a NMW job was greatest among those already on low wages and those who were looking for work.

This table also indicates that a larger proportion of unemployed individuals entered medium and higher wage jobs than NMW jobs by the next date of interview, indicating that NMW jobs are not used as a primary route back into work among the unemployed. There is more evidence that NMW jobs are used as a route back into the labour market among the economically inactive. About 6% of the economically inactive at t-1 had started to work in a NMW job by t, while 4% had started to work in a medium wage job. However, as for the unemployed, higher wage employment was the most likely destination for labour market entrants.

Longer-term patterns of NMW recipients

To examine the longer term experiences of workers who receive the NMW, we focus on the cohort of individuals who were NMW recipients in 1999 (wave 9) and trace their subsequent labour market experiences.^{12 13} Table 21 summarises labour market patterns of individuals who were in receipt of the NMW in wave 9. This indicates that 28% of NMW recipients at wave 9 experienced more than one episode on the NMW interspersed with periods of employment in jobs paying more than the NMW. Therefore the most common pattern of subsequent employment for NMW recipients at wave 9 was to be continuously employed, sometimes in NMW jobs and sometimes in higher paying jobs. (It is possible that some of these individuals are staying in the same job over the period, but that the wage changes they experience and changes to the NMW sometimes bring them onto the NMW while at other times they are paid more than the NMW.) The next most frequent pattern was for NMW workers at wave 9 to remain in continuous employment subsequently and to not receive the NMW again. For such workers, representing 19% of NMW recipients at wave 9, NMW receipt was temporary and short term and was followed by continuous employment.

¹² Our relatively small sample size of 373 NMW workers in wave 9 precludes more detailed analysis by gender, age etc (for example there are only 73 men).

¹³ We have also investigated the subsequent patterns of NMW receipt of individuals in other labour market states. We find, for example, that of 116 students at wave 9, 32% received the NMW in at least one subsequent wave while 14% received it in at least two subsequent waves. Similar proportions of those unemployed at wave 9 (of which there were 113) received the NMW in at least one wave (31%) and in at least two subsequent waves (10%). Therefore there is some evidence that students and the unemployed have a higher than average propensity to be in receipt of the NMW although sample sizes are too small for more detailed analysis.

Table 21
Labour market patterns of NMW recipients at wave 9

Patterns – in order of frequency:	N	%
Multiple episodes of NMW receipt, continuous employment	106	28.4
Received NMW at wave 9, continuously employed subsequently	72	19.3
Received NMW at wave 9, employed and not working subsequently	49	13.1
Multiple episodes of NMW receipt interspersed with employment and non-work	43	11.5
Received NMW at wave 9, then continuous non-work	28	7.5
Received NMW at two waves, then continuously employed	22	5.9
Received NMW at all six waves	13	3.5
Received NMW at five waves, then in employment	9	2.4
Other patterns	31	8.3
Total	373	100.0

Source: BHPS waves 1999-2004. Individuals in employment at least once. Employment refers to either medium or higher wage jobs, or self-employment.

For a further 13% of NMW recipients at wave 9, receiving the NMW was temporary and short-term, but was followed by spells of both employment and non-work (either non-participation or unemployment). Such workers had more disrupted and unstable employment experiences on leaving the NMW. Similarly, 12% had spells of employment and non-work on leaving the NMW, but also re-entered NMW receipt over the period. A small proportion (7.5%) of NMW recipients at wave 9 were in receipt of the NMW at just the one wave, and then left employment for the remainder of the sample period.

Outcomes at wave 14 for NMW recipients at wave 9

A different way to analyse the long term experiences of NMW recipients at wave 9 is summarise their employment status at wave 14. Are labour market outcomes at wave 14 different for NMW recipients at wave 9 than for other workers? Table 22 indicates that 85 (or 23%) were again on the NMW, suggesting a high degree of concentration of NMW receipt on a relatively small proportion of individuals. About one half were in jobs paying more than the NMW (and one third were in jobs paying at least 20% more than the NMW). About 40% of NMW recipients at wave 9 were

either again receiving the NMW at wave 14 or remained in low wage jobs. About one in four were not in work (of these, 10% of these were unemployed and the remainder non-participating). However, compared to those in medium wage jobs, NMW recipients in wave 9 were more likely to be in NMW jobs at wave 14, less likely to be in higher wage jobs and more likely to have left work. These differences are substantial. Differences are even more pronounced when comparing NMW recipients in wave 9 with those in higher wage jobs. Those in NMW jobs were seven times more likely to be on the NMW in wave 14, three times more likely to be in medium wage jobs, half as likely to be in higher wage jobs and twice as likely to be out of work. Therefore NMW workers exhibit less earnings mobility out of low wage jobs than other workers and higher mobility rates into non-employment.

Table 22
Status in wave 14 by status in wave 9

Status in wave 14	Status in wave 9					
	NMW recipient		Medium wage		Higher wage	
	N	%	N	%	N	%
NMW	85	22.8	75	18.0	96	2.9
Medium wage job	67	18.0	81	19.4	161	4.9
Higher wage job	117	31.4	179	42.9	2490	75.2
Self-employed	15	4.0	19	4.6	144	4.4
Not working	89	23.9	63	15.1	422	12.7
Total	373	100.0	417	100.0	3313	100.0

Source: BHPS waves 1999-2004. Individuals in employment at least once. Medium wage is defined as a wage between the NMW and the NMW+20%. Higher wage is defined as a wage greater than or equal to NMW+20%.

Number of waves of NMW receipt for recipients at wave 9

But, conditional on NMW receipt in wave 9, at how many waves do individuals receive the NMW over the sample period?

Table 23 summarises NMW receipt over the six dates of interview for NMW recipients at wave 9, and also the maximum number of consecutive dates of interview at which the NMW was received. This indicates that two fifths of NMW recipients at wave 9 were not in NMW jobs again over the period, while one fifth were found in NMW employment in one more wave and further fifth in two more waves. About 10% were in NMW jobs in at least five of the six waves. In terms of consecutive

waves of NMW receipt, over one half of NMW recipients at wave 9 received the NMW at most at one wave at a time, while 27% received it at two consecutive waves. Therefore, conditional on NMW receipt at wave 9, one in five received the NMW for at least three consecutive waves.

Table 23
Number of waves in NMW receipt 1999-2004: NMW recipients in wave 9

Number of waves	NMW receipt		Consecutive NMW receipt	
	N	%	N	%
1	143	38.3	193	51.7
2	76	20.4	101	27.1
3	70	18.8	34	9.1
4	43	11.5	21	5.6
5	28	7.5	11	3.0
6	13	3.5	13	3.5
Total	373	100.0	373	100.0

Source: BHPS waves 1999-2004. Individuals in employment at least once.

Employment history for NMW recipients at wave 14

An alternative way of looking at longer term experiences of NMW workers is to examine the previous employment patterns of those in NMW receipt at wave 14. How does the recent employment history of current NMW recipients compare with that of individuals employed in higher wage jobs? Below we estimate a multivariate model to assess the influence of employment history on labour market status in wave 14, but as a first step Table 24 examines the labour market status at wave 9 of NMW recipients in wave 14. Consistent with Table 22, this indicates that 85 individuals in receipt of the NMW in wave 14 (or 25%) were also receiving the NMW at wave 9, again indicating high levels of persistence in NMW receipt. One half were in employment, and the majority of these were in higher paying jobs. Some 46% of NMW recipients at wave 14 were in low wage jobs (either receiving the NMW or a medium wage) at wave 9. One in five NMW recipients in wave 14 were not in work at wave 9 (of whom 16% were unemployed). This table indicates that those in receipt of the NMW at wave 14 were 7 percentage points more likely than those in medium wage jobs, and six times more likely than those in higher wage jobs to have been on the NMW in

wave 9. They were also much less likely to have been in higher wage jobs than those in medium and higher wage jobs at wave 14, and more likely to have been out of work.

Table 24
Status in wave 9 by status in wave 14

Status in wave 9	Status in wave 14					
	NMW recipient		Medium wage		Higher wage	
	N	%	N	%	N	%
NMW	85	24.9	67	17.4	117	3.8
Medium wage job	75	21.9	81	21.0	179	9.6
Higher wage job	96	28.1	161	41.8	2490	80.8
Self-employed	13	3.8	9	2.3	76	2.5
Not working	73	21.4	67	17.4	218	7.1
Total	342	100.0	385	100.0	3080	100.0

Source: BHPS waves 1999-2004. Individuals in employment at least once. Medium wage is defined as a wage between the NMW and the NMW+20%. Higher wage is defined as a wage greater than or equal to NMW+20%.

Finally, in Table 25 we summarise patterns of NMW receipt over the six waves for individuals who were in receipt of the NMW at wave 14. This indicates that for 37% wave 14 was the first wave at which they had received the NMW. This is consistent with the 38% of NMW recipients at wave 9 for whom that was the only wave spent in NMW receipt (see Table 23), and suggests that, for more than one in three NMW recipients, the receipt of the NMW is temporary and short-term.

Table 25
NMW recipients in wave 14

Number of waves	NMW receipt		Consecutive NMW receipt	
	N	%	N	%
1	128	37.4	182	53.2
2	74	21.6	82	24.0
3	62	18.1	42	12.3
4	44	12.9	19	5.6
5	21	6.1	4	1.2
6	13	3.8	13	3.8
Total	342	100.0	342	100.0

Source: BHPS waves 1999-2004. Individuals in employment at least once.

Some 40% of NMW recipients at wave 14 received the NMW at two or three waves, while about one in four received the NMW for four more dates of interview. Again,

these are similar to the NMW experiences of individuals who were in receipt of the NMW at wave 9 and indicate that there is a small core of workers for whom NMW receipt is a more persistent, long-term event while for the majority it is a transitory phenomenon.

Transitions of NMW recipients and their labour market history

In the remainder of this section, and as background to the multivariate analysis in the next section, we focus on the one-year transitions of individuals who were in receipt of the NMW in wave 13 – in what status are these workers one year later? Analysis reveals that 289 individuals employed at least once in the six waves between 1999 and 2004 were in receipt of the NMW at wave 13. In Table 26 we summarise their status at wave 14, and also how their status at wave 14 relates to their employment history between waves 9 and 12.

Consistent with the labour market transitions already presented in Table 20, the table shows that about two fifths of NMW workers at wave 13 were still receiving the NMW at wave 14 – again indicating a high degree of persistence. Of the 60% that had left the NMW, the most likely destination was medium wage employment (24%) followed by higher wage jobs (21%). Therefore although 45% of NMW recipients at wave 13 had moved into higher paying employment by wave 14, the majority of these remained in low wage work (less than 20% above the NMW). One in ten NMW recipients at wave 13 were no longer working at wave 14.

Table 26
Transitions from NMW wave 13-14

	N	%	Number of waves on NMW 9-12	Number of waves SE 9-12	Number of waves not working 9-12
Remains NMW	120	41.5	1.59	0.03	0.52
Into medium wage	70	24.2	1.34	0.06	0.47
Into higher wage	60	20.8	0.75	0.20	0.65
Into SE	9	3.1	1.78	0.44	0.22
Into non-work	30	10.4	1.33	0.13	1.70
Total	289	100.0	289	289	289

Source: BHPS waves 1999-2004. Individuals in employment at least once.

The remainder of the table summarises labour market experiences between waves 9 and 12 of those on the NMW at wave 13, by their status at wave 14. This indicates that those exiting the NMW and entering self-employment were most exposed to the NMW between waves 9 and 12 (although note there are only 9 such cases), followed by those remaining on the NMW. Therefore there is some evidence of a relationship between previous NMW receipt and the probability of remaining on the NMW. Individuals moving from the NMW onto higher wage jobs had the least previous exposure to the NMW. In contrast, individuals moving off the NMW but into non-work had on average spent the highest number of waves out of work between waves 9 and 12. At an average of 1.7 waves, this was three times higher than the average number spent out of work for those remaining on the NMW, and those moving from the NMW into medium and higher wage jobs.

b. The characteristics of occasional and persistent NMW recipients

In this section we describe the characteristics of occasional and persistent NMW recipients to examine whether they differ in some systematic way, and whether NMW recipients who experienced non-employment differ from those that were always observed in work. As already noted, describing the characteristics of long-term beneficiaries of the NMW in terms of their household position, education level, gender, and so on, and identifying how these differ than for short-term NMW beneficiaries, is important for policy purposes.

Table 27 summarises a range of individual, demographic and household characteristics measured at the beginning of the sample period in 1999 by individuals' labour market trajectories between wave 9 and wave 14. Note that we cannot summarise job- or employer-related characteristics because some of these individuals will have been out of work at wave 9. The table indicates that more persistent NMW recipients and non-recipients who also experience non-employment tend to be older, with an average age of 41 in 1999. (This is consistent with the patterns observed among the continuously employed, shown in Table 11). This compares to an average sample age of 39 years, while occasional NMW recipients who were always in work had the youngest average age at 37 years. This is further reflected in the proportion

within each category that were aged below 25 years of age and aged over 50 years of age. In particular, persistent NMW recipients and non-recipients who were out of work at least once were most likely to be aged over 50 (30% and 33% were, compared to 19% of the total sample), while 18% of occasional NMW recipients (whether or not always in work) were aged under 25 compared with 12% of the sample.

Consistent with previous studies, and with the continuously employed sample, we find that NMW receipt is more likely among women. Some 55% of the sample was women. However more than 80% of persistent NMW recipients and of occasional NMW recipients who were not always in work were women. This compares to less than 50% of non-recipients that were always in work. Less dramatic differences emerge between the groups in terms of marital status. Occasional NMW recipients who were not always in work were the least likely to be married (70% were married), while larger proportions (78%) of those always in work and who never received the NMW, and of persistent NMW recipients were married. Occasional NMW recipients who were not always in work were most likely to have a pre-school aged child. 21% of this group did so, compared to 14% of persistent NMW recipients.

Table 27
Summarising individual characteristics by patterns of employment
(variable means)

Characteristics in 1999	No NMW, always in work	No NMW, not always in work	Occasional NMW always in work	Occasional NMW not always in work	Persistent NMW	Total
Age (years)	38.3	41.2	36.8	38.8	41.5	38.9
Under 25 years of age	0.09	0.14	0.18	0.18	0.11	0.12
Over 50 years of age	0.14	0.33	0.17	0.24	0.30	0.19
Female	0.46	0.60	0.65	0.81	0.83	0.55
Married	0.78	0.72	0.75	0.70	0.77	0.76
Pre-school aged child	0.16	0.17	0.17	0.21	0.14	0.16
Rented accommodation	0.14	0.26	0.28	0.42	0.34	0.21
Other household income (£)	1470.90	1650.88	1520.64	1590.88	1760.84	1540.36
Number other adults in work	0.99	0.58	1.05	0.40	0.98	0.87
Has degree or equivalent	0.20	0.14	0.05	0.04	0.01	0.15
Has no qualifications	0.08	0.15	0.17	0.27	0.33	0.13
Full-time student	0.00	0.07	0.02	0.07	0.01	0.02
N	2738	943	435	365	247	4728

Source: BHPS waves 1999-2004. Individuals in employment at least once. See text for how employment patterns are defined. Other household income is total household income in the last month less the respondent's labour income (if any).

Large differences emerge between the groups in the proportions living in rented accommodation. The summary statistics indicate that 14% of continuously employed non-recipients lived in such accommodation. However continuously employed occasional NMW recipients were twice as likely to live in rented accommodation, while occasional recipients who were not always working were three times more likely. One in three persistent NMW recipients lived in rented accommodation. Of course, this does not imply that living in rented accommodation necessarily affects future labour market outcomes as it is likely that individuals with less stable employment histories or in low wage jobs are less likely to have access to the finance necessary to purchase a home.

The table also includes a measure of total household income in the month before the interview, excluding the earnings of the respondent – this measure consists of the earnings of any other workers in the household together with non-labour income. Persistent NMW recipients had the highest levels of other household income (£1761) and those in continuous employment who were never on the NMW had the lowest levels (£1471). In previous work (Bryan and Taylor 2004), we showed that NMW workers tend to be secondary earners (so that other earners make a relatively higher contribution to household income), and also that NMW households are more likely to receive pension and benefit income. Further analysis of the data (not reported) shows these factors can account for the difference in other household income between the two groups of individuals. Both categories of occasional NMW recipients had lower levels of other household income (by around £200) than persistent recipients, so earnings from the NMW potentially make a more important contribution to household income than for persistent recipients.

Individuals who spent time out of work had the fewest number of other adults in employment in their household, irrespective of whether or not they received the NMW. On average such individuals lived in households with 0.5 other employed workers compared to a sample average of 0.9. Occasional NMW recipients who were always in work lived in households with the most other employed workers (1.05 on average). We also find that more persistent NMW recipients were much less likely to

be highly qualified and considerably more likely to have no qualifications. Only 1% were educated to degree level, compared with 20% of continuously employed non-recipients, 14% of non-recipients who were sometimes out of work, and about 5% of occasional recipients. 33% of persistent NMW recipients had no qualifications compared with 8% of continuously employed non-recipients and 15% of non-recipients who experienced non-work. Occasional recipients who also experienced non-employment were also more likely than average to have no qualifications – 27% had no qualifications compared with 13% of the sample. Therefore those who are least successful in the formal education system have a significantly higher propensity to persistently receive the NMW.

c. Multivariate analysis

Thus far our analysis has described patterns of NMW receipt among individuals who were in employment at least once over the period 1999-2004, and movements between NMW receipt, the rest of the wage distribution, and into and out of work. We now turn to multivariate analysis of patterns of receipt in order to help quantify the impact of the various characteristics discussed above (controlling for other relevant variables) on the probability of an individual being an occasional NMW recipient or a persistent NMW recipient relative to not receiving the NMW at all over the period. We also introduce non-work states into the picture. We estimate a number of different, but complementary models in an attempt to investigate factors associated with various labour market patterns surrounding NMW receipt and movements onto and off the NMW. These include models summarising patterns of NMW receipt over the six dates of interview, models summarising labour market transitions between 2003 and 2004 as functions of employment patterns in the preceding four years, and models estimating the impact of previous employment patterns on labour market status in 2004 (the most recently available wave of data). We describe the results from these models below.

Persistent and occasional NMW receipt

We first estimate a model similar to the previous multinomial model of persistent versus occasional NMW receipt among continuously employed workers (Table 14). The difference here is that we use the more detailed summary variable

which allows for waves spent out of work (for workers never on the NMW and also for occasional NMW recipients). Because there is no longer any obvious ordering of the states, we only estimate a multinomial logit and not an ordered probit model. As previously, we present relative risk ratios rather than coefficients and so figures greater than (less than) one indicate a higher (lower) risk of NMW receipt relative to non-receipt. Estimates are shown in Table 28.

The estimates indicate that workers aged less than 25 and those aged over 50 were least likely to be continuously employed non-recipients. Instead, young people aged less than 25 were more than twice as likely to be non-recipients who were not always in work and occasional recipients (whether continuously employed or not) relative to continuously employed non-recipients. There is some evidence that they were more likely to be persistent recipients (by about 70%) but this coefficient is not statistically significant at the 5% level. By contrast, individuals aged over 50 were well over twice as likely to be persistent recipients as to be in the base category of continuously employed non-recipients. They were also four times more likely to be non-recipients who experienced non-work and more than twice as likely to be occasional recipients (particularly when receipt was interspersed with non-work). This confirms the picture in the raw data that occasional NMW receipt is more common among younger workers, while older workers are especially likely to be persistent recipients.

We also find that women were twice as likely as men to be occasional NMW recipients and experience work interruptions than men. Marriage reduces the likelihood of men experiencing employment interruptions, especially interspersed with occasional NMW receipt. Married men were also 70% less likely to be a persistent NMW recipient. However married women were significantly more likely to be in all of the four categories relative to the omitted 'non-recipient in continuous employment'. In particular, being married makes it particularly likely that a woman will be either an occasional recipient (combined with periods out of work) or a persistent recipient. The presence of young children in the household increases the likelihood of experiencing an employment interruption by about 50% – presumably reflecting child-care responsibilities – but otherwise appears to have no effect on NMW status.

Table 28
Factors associated with patterns of NMW receipt, BHPS 1999-2004

Characteristic measured at 1999	No NMW, not always in work	Occasional NMW always in work	Occasional NMW not always in work	Persistent NMW
Aged under 25	2.374***	2.415***	2.828***	1.708*
Aged over 50	4.195***	1.440*	2.549***	2.658***
Female	1.124	1.464	2.038**	1.803*
Married	0.733*	0.732	0.402***	0.302***
Married female	1.702**	1.929*	3.706***	5.060***
Lives in rented accommodation	1.906***	2.150***	3.100***	3.110***
Other household income*10	1.003***	1.000	1.003***	1.002***
Child aged under 5 in family	1.398**	1.237	1.541*	1.312
Number employed in household	0.388***	1.054	0.327***	0.808*
Qualified to below GCSE standard	0.917	0.888	0.598*	0.540*
GCSEs or equivalent	0.776	0.668*	0.383***	0.406***
'A-Levels' or equivalent	0.981	0.559**	0.355***	0.284***
Further education qualifications	0.636**	0.466***	0.267***	0.175***
Degree or equivalent	0.528***	0.139***	0.065***	0.021***
Full-time student	1.13	1.506***	1.271	1.658***
Pseudo R ²	0.137			
N	4728			

Notes: Multinomial logit model. Dependent variable equals 0 if individual did not receive the NMW over the period and was continuously employed, equals 1 if (s)he did not receive the NMW over the period but was not employed at all waves, equals 2 if (s)he was an occasional NMW recipient and continuously employed, equals 3 if (s)he was an occasional NMW recipient but was not employed at all waves, and equals 4 if (s)he was a persistent NMW recipient. In multinomial logit, the numbers presented are relative risk ratios expressing the probability of being in each category relative to the probability of not receiving the NMW and being continuously employed over the period. A dummy variable is included to control for membership of the Scotland and Wales extension samples.

***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Individuals in rented accommodation in 1999 were approximately twice as likely as homeowners to be non-recipients who experience an employment interruption, and to be a continuously employed NMW recipient. They were three times more likely to be an occasional recipient who experienced employment interruptions and to be a persistent recipient. Distinguishing between employment and non-employment highlights the impact of other household income. Individuals in households with higher levels of other income were more likely to experience an employment interruption (perhaps indicating less attachment to the labour market) – irrespective of whether or not they also received the NMW. They were also more likely to be a persistent NMW recipient, which is again consistent with such recipients being secondary earners. The marginal effects are relatively small however: an extra £100 per month is associated with a 2% increase in the relative risk of being a persistent recipient. Also, each additional individual employed in the household approximately

halves the probability of having an employment interruption, reflecting the inter-relationships between the employment decisions of household members.

A clear monotonic education affect emerges, with the more highly qualified being most likely to be in the reference group of continuously employed non-recipients. The estimates indicate that individuals educated to degree level are almost 50% less likely to be a non-recipient and experience employment interruptions relative to being a continuously employed non-recipient. They were some 90% less likely to be an occasional recipient and 98% less likely to be a persistent recipient.

Transitions from the NMW

We next examine the determinants of individuals' labour market status in wave 14, conditional on receiving the NMW at wave 13. Again we estimate a multinomial logit model, where the dependent variable takes the value 0 if the individual remained on the NMW, 1 if they entered a medium wage job, 2 if they entered a higher wage job and 3 if they left work. Again we report relative risk ratios rather than coefficients. In this model, the explanatory variables are all measured at wave 13 and the results are presented in Table 29. In general, few variables are statistically significant in this model, which can partly be explained by the relatively small sample sizes which makes it difficult to obtain precise estimates.

In particular, none of the explanatory variables have a statistically significant impact on the probability of leaving the NMW into a medium wage job. However the sizes of the effects of some variables are large. For example, young people under the age of 25 were 60% less likely to enter a medium wage job relative to remaining on the NMW, while married individuals were 80% more likely. Those with young children were almost twice as likely to leave the NMW into a medium wage job.

Young people under the age of 25 and older people over the age of 50 were significantly less likely to leave the NMW to higher wage jobs. Therefore it is prime-aged workers (between the ages of 25-50) who were most likely to leave the NMW into higher paying work. There is also evidence that married men and single women were more likely to leave NMW receipt into higher paying employment, but although

the size of the effects are large (increasing the likelihood by factors of two and three respectively), they are not statistically significant. Having a young child also increases (by a factor of three) the probability of exiting the NMW to higher paying employment.

Table 29
Transitions by NMW workers at wave 13

Characteristic measured at 2003	Medium wage job	Higher wage job	Out of work
Aged under 25	0.405	0.194	0.533
Aged over 50	0.698	0.303**	0.682
Female	1.424	2.096	2.069
Married	1.778	3.401	3.092
Married female	0.639	0.192	0.619
Lives in rented accommodation	1.148	0.584	1.082
Other household income*10	0.999	1.001	1.001
Child aged under 5 in family	2.023	2.779	3.417
Number employed in household	1.448	0.786	0.657
GCSEs or equivalent, or below 'A-Levels' or equivalent	0.571	0.956	0.303
Further education qualifications	0.896	0.478	0.445
Further education qualifications	0.869	0.845	0.416
<i>Labour market history wave 9 – wave 12</i>			
Number of waves on NMW	0.819	0.515***	1.426
Number of waves self-employed	1.193	1.883	2.987
Number of waves out of work	0.897	0.963	2.442***
Pseudo R ²	0.146		
N	280		

Notes: Dependent variable equals 0 if individual remained on the NMW in wave 14, equals 1 if (s)he was in a medium wage job, equals 2 if (s)he was in a higher wage job, and equals 3 if (s)he was out of work. The numbers presented are relative risk ratios expressing the probability of being in each category relative to the probability of remaining on the NMW. A dummy variable is included to control for membership of the Scotland and Wales extension samples.

***, **, * indicate statistical significance at the 1%, 5% and 10% level.

The impacts of the recent labour market history variables indicate that the probability of leaving the NMW for higher paying work is significantly reduced by each wave previously spent in NMW receipt. Each wave between 1999 and 2002 that the individual spent in NMW receipt reduces the probability of leaving the NMW between 2003 and 2004 for higher paying work by 50%. Such a relationship could be caused by duration dependence, state dependence or unobserved heterogeneity. That is, the probability of leaving the NMW for higher paying employment could fall with the length of time spent in NMW receipt (duration dependence). Alternatively, there could be a causal relationship between current NMW receipt and future NMW receipt

which reduces the probability of a NMW worker being observed in a higher paying job in the future (state dependence). The final possibility is that workers who receive the NMW at a particular point in time have particular characteristics that we do not observe that make them less likely to enter a higher paying job (unobserved heterogeneity). The nature of the BHPS data on wages does not allow us to distinguish accurately between these three possibilities.

The effect of previous labour market experience on status at wave 14

The final model we estimate examines the associations between labour market status in 2004 and employment patterns between 1999 and 2003 (measured in terms of the number of dates of interview in which the respondent was receiving the NMW, was in self-employment and was out of work, with being in non-NMW employment as the reference category). This provides information on the impact of previous patterns of NMW receipt and employment more generally on labour market outcomes. As controls, we also include a range of individual and household characteristics. The dependent variable identifies individuals receiving the NMW, in medium wage jobs, in self-employment, economically inactive and who were unemployed, with being in a higher wage job as the reference category. Again, this is estimated using a multinomial logit model with the coefficients expressed in terms of relative risk ratios.

The estimates associated with the control variables show that several key demographic variables are still related to NMW receipt even after controlling for recent labour market experiences. For example, age has a statistically significant impact on labour market status. In particular, individuals aged less than 25 were 2.7 times more likely to be a NMW recipient relative to being in higher wage employment. Individuals aged over 50 were 96% more likely to be a NMW recipient (and three times more likely to be economically inactive). Living in rented as opposed to owner-occupied housing increased by 50% the risk of receiving the NMW and of being in medium wage employment relative to higher wage employment, and increased the risk of unemployment by 82%. Other household income generally has a positive impact on being in states other than higher paid employment, although has no

significant effect on being an NMW recipient. The effects are anyway quantitatively small, for example a £100 increase in other household income increases the probability of being inactive by 7%. We find the usual strong relationships between education and the probability of being a NMW recipient, a medium wage worker and economically inactive. In particular, the probability of being in each of these states relative to a higher wage job falls with the level of education. These effects are substantial, indicating that holding a university degree or the equivalent reduces the probability of being a NMW recipient by 90%, of being in a medium wage job by 94%, and of being economically inactive by 70% relative to being in a higher wage job. This is consistent with human capital theory, indicating that those that invest in education receive a return in terms of more stable and higher paying subsequent employment.

The variables of most interest however are the previous labour market experience variables, which take the form of the number of waves between waves 9 and 13 (i.e. a maximum of five) that each individual was observed to be a NMW recipient, in self-employment and out of work, where the reference category is the number of waves spent in employment at above the NMW. The results show that previous history has a large impact on current status. In particular, previous NMW receipt has large and statistically significant impacts on the probability of current NMW receipt, each previous wave on the NMW increases the probability of current receipt by a factor of three. Furthermore, each wave spent in NMW receipt also doubles the propensity to be in a medium wage job, in self-employment, in economic inactivity, and in unemployment relative to higher wage employment. Therefore receipt of the NMW is detrimental to an individual's future labour market prospects, increasing the probability of being in all other states relative to higher paying employment. As previously, this could be caused by duration dependence, state dependence or unobserved heterogeneity – separating these different effects is difficult with available data.

Previous experience of self-employment also has an impact on current status, and in particular increases the probability of NMW receipt by 45% relative to higher wage employment. Since previous NMW receipt also raises the likelihood of being self-employed, there is some evidence of cycling between self-employment and NMW

employment. There is also evidence of state dependence in self-employment, with previous exposure to self-employment increasing the probability of current self-employment by a factor of three. Again, this could be caused by unobserved factors that make particular individuals more likely to be in self-employment, or to have less stable employment patterns.

The number of waves spent out of work also increases the probability of being in all five states relative to being in higher paid employment. This effect is particularly large on the probability of being inactive or unemployed, with each wave spent out of work approximately doubling these probabilities. Each wave spent out of work also increases the probability of NMW receipt, medium wage receipt and self-employment by about 50%. Once again, although these hint at some scarring impact of non-employment, the effects could be caused by unobserved heterogeneity.

Table 30
Labour market status at wave 14

Characteristic measured in 2004	NMW	Medium wage	Self-emp	Inactive	Unemployed
Aged under 25	2.654**	1.256	0.981	1.321	1.998
Aged over 50	1.962***	1.251	0.726	3.136***	0.664
Female	1.697	1.444	1.036	1.589	0.744
Married	1.307	0.655	1.214	3.091***	2.067
Married female	1.429	2.069*	0.434*	1.391	1.655
Lives in rented accommodation	1.413*	1.461*	0.96	0.998	2.107*
Other household income*10	0.999	0.999*	1.000	1.007***	1.006***
Child aged under 5 in family	0.894	0.990	1.176	2.768***	1.758
Number employed in household	0.893	1.202	0.894	0.033***	0.035***
Qualified below GCSE level	0.689	0.619*	1.062	0.516	1.954
GCSEs or equivalent	0.634*	0.481***	0.948	0.609	1.181
'A-Levels' or equivalent	0.711	0.504**	1.056	0.858	1.624
Further education qualifications	0.525***	0.329***	0.796	0.334***	1.343
Degree	0.120***	0.063***	1.057	0.240***	0.54
<i>Labour market history wave 9 – wave 13</i>					
Number of waves on NMW	3.383***	2.407***	2.058***	2.061***	1.950***
Number of waves self-employed	1.455***	1.059	3.383***	1.091	1.236
Number of waves out of work	1.777***	1.509***	1.573***	2.434***	1.865***
Pseudo R ²	0.386				
N	4728				

Notes: Relative risk ratios from a multinomial logit model. Dependent variable equals 1 if the individual received the the NMW in wave 14, equals 2 if (s)he was in a medium wage job, equals 4 if (s)he was economically inactive and equals 5 if (s)he was unemployed. The omitted category is being in higher wage employment. The numbers presented are relative risk ratios expressing the probability of being in each category relative to the probability of remaining on the NMW. A dummy variable is included to control for membership of the Scotland and Wales extension samples.

***, **, * indicate statistical significance at the 1%, 5% and 10% level.

d. Summary

In this section we have summarised the patterns and dynamics of NMW receipt over a six year window covering the period 1999-2004, introducing workers who spent time out of work over the period. This builds on our earlier analysis by relating NMW receipt to transitions into and out of work. The general aim has been to explore the extent to which NMW receipt is interspersed with periods in higher paying employment or instead is associated with transitions into and out of non-employment.

Overall we find that moves into and out of NMW receipt are frequent, but most are associated either with only small movements up the wage distribution or into non-employment. Only one in four NMW recipients moved substantially up the wage distribution within a year while a similar proportion were persistent NMW recipients. We find that individuals who had received the NMW were more likely than other workers to spend time out of work which may be caused by NMW jobs being less stable or by NMW workers being less attached to the labour market. In general, they exhibit less earnings mobility into higher paying jobs than other workers and higher rates of mobility into non-work.

Multivariate analysis indicates that older workers, women (and in particular married women) and those in rented accommodation were most likely to be NMW recipients (and persistent NMW recipients), and to experience periods of NMW receipt interspersed with time out of work. Furthermore, the likelihood of experiencing the NMW persistently and interspersed with periods out of employment increases with the level of other household income and falls with the level of education. Strong associations emerge between previous NMW receipt and subsequent transitions. Workers with a recent history of NMW receipt were less likely to move substantially up the wage distribution, and more likely to be observed in NMW receipt, in low wage employment and to be out of work.

6. Summary and conclusions

Using the BHPS, this report has analysed patterns of NMW receipt in the six years following its introduction in 1999. We have examined the extent of NMW receipt and what subsequently happens to NMW workers. We have also described the origin states of those entering the NMW, and the effect of past labour market experiences on the likelihood of NMW receipt.

Using a balanced sample of individuals who worked at least once during the six year period, we estimate that 6-8% (depending on the current level of the NMW) received the NMW in any one year. There was no strong downward trend in aggregate NMW receipt, so there did not appear to be widespread movement off the NMW among the sample. As many as one in five individuals experienced the NMW at least once but most of these only received it at one wave. Most individuals moving off the NMW stayed in employment but about half only moved a short way up the wage distribution and they were likely to return to the NMW. NMW workers were also more likely than higher paid workers to leave employment altogether. Nearly one half of occasional recipients (those on the NMW at only one or two years) also experienced periods out of work (compared to a quarter of individuals never receiving the NMW). It is not possible to say whether the short duration of these NMW jobs is because they are inherently unstable or because workers choose to leave labour market.

As well as frequent transition into and out of the NMW, we find that there is a core of more persistent NMW recipients (experiencing the NMW in three or more waves) who make up about a quarter of individuals (and 30% of the continuously employed). They are more likely to stay in relatively low-paid jobs when leaving the NMW and more likely to return to the NMW subsequently. Around a quarter of workers on the NMW at wave 9 were again NMW recipients five years later, and a history of NMW receipt greatly raises the likelihood of receiving it in the future, and also of exiting the labour market (we cannot say whether this persistence reflects the inherent characteristics of these NMW workers or a true 'scarring' effect of being on the NMW).

Persistent recipients are generally women (and in particular married women) and also tend to be older workers. They are more likely to be in rented accommodation and there is some evidence that household income from other sources (including benefits and pensions) is slightly higher. They are more likely to be unqualified. By contrast, occasional NMW recipients in continuous employment (those most likely to escape the NMW) tend to be younger (than persistent recipients) and are more likely to be single men. They change employers less frequently than persistent NMW workers but instead achieve wage growth by more frequent promotions within employers. They also tend to be less concentrated in the ‘traditional’ NMW jobs and sectors.

In conclusion, many more workers experience the NMW at some point in their careers than is suggested by the percentage of NMW workers in any one year. The NMW also appears to be a stepping stone to higher pay for some workers – around a quarter moves off the NMW to significantly higher paid jobs every year. But a large share of the remainder either seems to experience the NMW repeatedly, or to combine NMW jobs with periods of non-work. A natural, and policy-relevant, question is the extent to which these occasional recipients choose to leave the labour market to devote time to family care, for example, or whether they stop work because NMW jobs tend to be unstable. Another question for policy makers relates to the training (if any) received by persistent recipients and whether more training could raise their wages.

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Appendix: Tables used to create figures

Figure 1

Patterns of NMW receipt 1999-2004, continuously employed workers

Year	NMW receipt (%)
1999	7.2
2000	5.7
2001	6.3
2002	5.8
2003	5.6
2004	7.0
Average	6.3
N	18228

Figure 2

Employer characteristics of occasional and persistent NMW beneficiaries, BHPS 1999-2004

Characteristics measured in 1999	Never NMW	Occasional NMW	Persistent NMW
Firm size			
Small (1-49 employees)	0.436	0.591	0.753
Medium (50-499 employees)	0.371	0.282	0.190
Large (500+ employees)	0.193	0.126	0.057

Figure 3

Patterns of NMW receipt 1999-2004, all workers in employment in at least one wave

Year	% of sample	% of employed
1999	7.89	9.09
2000	5.99	7.07
2001	7.02	8.37
2002	6.79	8.22
2003	6.11	7.53
2004	7.23	8.98
Average	6.84	8.21
N	28368	23625