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Escaping the rural pay penalty: longitudinal analysis of rural/urban youth earnings in Britain

Abstract

This article analyses the longitudinal effect of rural/urban migration on labour market outcomes for young people in Britain. It assesses how rural/urban origin and residential location affect career prospects by tracking earnings from youth (defined as aged under 25) into adulthood, using data from British Household Panel Survey waves 1-18. Earnings in rural areas are higher overall, although young people in rural areas are paid less than urban counterparts, and have been since 1993. While earnings increase at a quicker rate for those in rural locations, being from rural origin leads to slower wage growth. Respondents who 'stay rural' throughout the full observation period report lower earnings than all other groups.

Key words: earnings, migration, longitudinal, rural, youth

1. Introduction

This article considers the effect of rural/urban location, origin and migration patterns on earnings. The importance of residential location to career aspirations and opportunities is articulated in numerous studies (Cartmel and Furlong, 2000; Mathews et al., 2009; Spielhofer et al., 2011; CRC, 2012, Author, A) but there is a lack of research around the long-term effects on labour market outcomes. This is despite calls for research into young people in the labour market to adopt a longitudinal design (Bynner and Parsons, 2002), and evidence that the outmigration

of young people from rural areas has declined (Bynner et al., 2000:18; Burgess, 2008b:2).

It has been argued elsewhere that a residual rural labour market exists, and that low pay is one of the defining characteristics (Hodge et al., 2002). This claim is supported by the analysis informing this article. Hodge et al. prioritised 'qualitative analysis of individual actors in this type of residual rural labour market' (2002:459). Their study was conducted in two locations at a single point in time. There has been no research into the long-term effects of 'staying rural' on labour market outcomes using quantitative data from a representative, national, longitudinal panel survey. To address this gap in the literature, this article focuses on the following research questions: *Do young people living in rural areas earn less than their urban counterparts? Are earnings for rural residents higher overall? How do rural/urban origin and location affect earnings from youth into adulthood?*

Earnings trends over an 18 year period are examined, as a cohort of young people, aged under-25 in 1991, are tracked into their thirties and early forties to provide a longitudinal perspective on rural/urban pay differences. Rural/urban origin and current location are both taken into account. Following respondents beyond their youth makes it possible to form a fuller understanding of their development. This is particularly important as earnings at age 25 might not accurately reflect an individual's later career success, as young people often take time out for travelling and leisure (Jones, 2004; Heath, 2007:89), changing careers (Furlong and Cartmel, 1997), or pursuing further studies (Boorman and Ramsden, 2009). All of these delay or disrupt labour market participation and are likely to result in slower earnings increases and the postponement of other outcomes. It is therefore illuminating to

take the longer view. The findings show how young people's long term employment prospects can be affected not only by place, but also by movement between places.

The structure of the article is as follows. Section 2 briefly profiles rural Britain and its labour market, and discusses some of the extant literature on the relationship between young people, location and employment. Section 3 covers the data and methods used, and discusses some general issues in analysing longitudinal data. Section 4 provides descriptive statistics. Section 5 analyses earnings and is divided into three parts. Section 5.1 tracks rural/urban earnings from 1991-2008/9. Section 5.2 considers the effect of rural/urban location and origin on earnings, and section 5.3 follows young people aged 15-24 in 1991 to analyse earnings according to rural/urban migration patterns over 18 years. Section 6 concludes.

2. Background

2.1 – Rural Britain

The UK is densely populated, with only one-fifth of its residents living in rural locations (Burgess, 2008a), although official projections forecast that the rural population in Britain will rise by 2.57 million over the 21 years up to 2025 (Champion, 2009:163). In the OECD, only four member states have a lower proportion of their population living in rural areas: Belgium, Luxembourg, the Netherlands and New Zealand (Costa et al., 2006:25). These countries all have far smaller populations. Most other advanced Western nations have lower population density, with geographies characterised by greater distances between settlements. Rural areas in Britain mainly lie in close proximity to urban centres. Thus, it has been argued that

while rural/urban differences are larger elsewhere in Europe, in the UK such differences are 'slight' (Shucksmith et al., 2009:1277).

In Britain, rural areas are generally more affluent, despite rural earnings being slightly lower on average across Western Europe overall. One possible explanation is that rural areas in Britain tend to be closer to urban locations, enabling more rural residents to commute to work, and commuters tend to be better off, as discussed below. Nevertheless, nearly a million people living in the rural areas of Britain are poor, an issue often overlooked as poverty is greater and more visible in urban areas, and as perceptions of rural idyll conceal the complexity of rural disadvantage (Burgess, 2008a:3).

The older age profile of rural Britain is well documented (Lowe and Speakman, 2006; Hardill and Dwyer, 2011). For example, it forms a key part of Cloke's (1977) typology, where the proportion of young people in a locality is deemed a key measure of its rurality, along with commuter flows and distance from sizeable urban centres. The peace and quiet of rural areas, along with a stronger sense of community, lower crime and less pollution, are regarded as attractive features (Hodge et al., 2002:458; Burgess, 2008a:63). These would probably be appreciated more by families or retirees, assuming that younger people prefer the action of towns and cities along with the greater opportunities perceived to be there (Champion and Speakman, 2006:3).

An ageing population places pressure on public services. Providing services in sparsely populated areas is challenging and expensive compared to urban locations (Hardill and Dwyer, 2011; Noble and Wright, 2000; Craig and Manthorpe, 2000). The cost of delivering services to remote areas serves as a disincentive to

businesses (Costa et al., 2006:60). This leads to a vicious circle, with a lack of services leading to low employment opportunities, while the unemployed, the poor, the young and the old are unable to access services locally (Costa et al., 2006:30-1; Rural Coalition, 2010).

Evidence indicates that an urban-to-rural shift in employment and economic activity has occurred over the past 50 years (Keeble and Taylor, 1995; Webber et al., 2009; Rizou and Walsh, 2011). Rural and urban areas today share broadly similar occupational structures (Cherry and Rogers, 1996:110; Taylor, 2008:123). The decline in agricultural work (Breuer, 2012:27, Defra, 2013:83, 117) alongside the contraction of public sector employment, which had driven growth in many rural regions, has affected rural economies (Costa et al., 2006:23). Self-contained rural labour markets, with higher rates of unemployment than more accessible regions and less capacity to capitalise on growth in urban employment, may have been harmed particularly (Henderson and Hoggart, 2003:362). These peripheral labour markets are a central concern of this article.

2.2 – Young people and the residual rural labour market

The notion of the residual rural labour market was put forward by Hodge et al. (2002), in an article reporting on research undertaken in two English rural towns. They argue that most people in rural areas search for work on a regional or national scale, and that the local labour market therefore comprises only a small number of people, who both live and work locally. This residual element faces disadvantages on both the demand and supply side. Human capital mismatches arise from over-qualification and insufficient experience or credentials, and transport difficulties are

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exacerbated by the limited number and narrow range of vacancies, along with the nepotistic recruitment practices prevalent among smaller businesses (Hodge et al., 2002:460-4). While it is only a minority who are confined to the residual rural labour market, conditions for this minority can be very challenging.

One of the principal problems facing those living and working in rural areas is low pay. Phimister et al. (2006) analyse data from the British Household Panel Survey (hereafter BHPS) and argue that it is easier to move from low-paid work to a job with higher earnings in urban areas. This is based on data from BHPS waves 1-8 (1991 to 1999). They find that 'urban low-pay durations are somewhat shorter on average, with a higher probability of movement to a higher paid job' (2006:693). This would suggest that opportunities to secure better returns on labour are reduced by being in a rural location, which follows logically from the point that rural areas have fewer job vacancies and a narrower range of jobs. Lower pay for young people has been highlighted as a feature of the rural labour market elsewhere (Author, A). It is therefore unsurprising that many young people wish to leave rural areas.

While outmigration of rural youth is declining (Bynner et al., 2000:18; Burgess 2008b:2), the general trend remains that young people will move out and that commuters, retirees and second home owners will move in (Jones, 1999:1). The residual labour market is small as rural populations are relatively low, and as increasing geographic mobility and flexible working practices mean that more people are not tied to the local area, at least as far as employment searches are concerned. Of course, this does not apply to everyone. For those unable or unwilling to commute or relocate, the labour market is characterised by a lack of choice, a lack of information, and instability. Along with low wages, jobs tend to be of poor quality: low-skill, part-time, casual or seasonal (Cartmel and Furlong, 2000, Hodge et al.,

2002:459-462, Author A). It is expected that this is reflected in lower earnings in the analysis that follows later in this article. Hypothesis 1 relates to the first of the three research questions stated in the introduction. Evidence of low pay for rural youth has emerged over an extended period, so it is expected that the analysis will show a pay gap that persists over time.

HYPOTHESIS 1: Rural youth earn less than urban counterparts throughout the observation window.

In rural areas, space is the main barrier. Jobs are generally based in towns and cities, so rural residents usually must travel to reach them. People invest in transport or communications to overcome this obstacle (Hodge et al., 2002:460). Older people tend to have greater capacity to make such investments. This applies to employment in particular; prime examples are commuting and remote working. In England, both self-employment and working from home are more common in rural areas. In areas defined as sparse, self-employment and home-working are twice as common as in less sparse areas (Pateman, 2011:26).

Earnings 'flows' are also interesting to consider. In areas with a positive earnings flow, workers living in the area earn more on average, regardless of where they work, than those whose jobs are located in the area, regardless of where they live. A positive earnings flow therefore represents a net gain to residents of the area of income earned in other areas. Rural local authority districts have a positive earnings flow overall, and the most urban districts exhibit the highest rate of earnings outflow (Pateman, 2011:38-9). This illustrates how jobs based in rural areas are poorly remunerated by comparison to others, and also how rural residents are well paid. It seems that being able to commute or work remotely affects pay more than

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where one lives, and it is younger people who are more constrained in this regard, particularly those working in the residual rural labour market.

For those living in remote areas, long journeys to work can be expected. Champion (2009:175) found that average commuting distances were 38% higher in rural districts than in urban locations. People must be able to access and afford cars or decent public transport, both of which can be difficult for rural youth (Cartmel and Furlong, 2000, Milbourne, 2004:569-70; Marshall et al., 2010:31). Moreover, job quality and remuneration must justify the distances covered. For these reasons, young people in rural areas might relocate to urban environs for employment. Those who do not can expect lower returns on their labour. Rural areas are more affluent overall, but this can be attributed to money earned outside of the residual rural labour market (Pateman, 2011:38). Thus, hypothesis 2 pertains to the second research question stated in section 1:

HYPOTHESIS 2: Despite lower youth earnings in rural areas, overall rural earnings are higher.

In a study of youth transitions in Scotland, Pavis et al. (2001) interviewed 60 young people in two rural locations. They found that respondents deemed low wages to be acceptable for the meantime, but also realised that their poorly paid jobs offered little chance of a pay rise or promotion. This in turn limits the possibilities for other transitions into adulthood, such as moving from the family home to live independently. Jones (2001), in a study conducted in Scotland, found that young people in rural regions were by age 19 more likely to have left home, less likely to have returned home, and more likely to have left their home region. Not only are young people keen to move out of the parental home, but outmigration from rural

areas appears to be a priority, probably due to a perceived lack of opportunities for education and work. Jones posits that providing more affordable rural housing is unlikely to stem the flow of young people to urban areas without also improving transport, employment and training opportunities (Jones, 2001:61). Many young people believe that leaving the local area behind could be necessary to progress in education and/or employment.

In an earlier article based on research conducted in the same Scottish study location, Jones (1999) argues that some might be reluctant to leave rural areas due to being deeply engrained within family and community structures. The effect is that some people restrict job searches solely to the local area (Green and White, 2007:64). Attitudes toward employment, such as whether it is regarded as acceptable to claim benefits rather than working, are found to be often shaped by the family or community. These perceptions, gained during formative years, become firmly entrenched (2006:51-2). This kind of 'bonding social capital' (Putnam, 2000) is unlikely to foster the kind of bridging connections or 'weak ties' heralded by Granovetter (1973) as crucial for finding work. The variety or quality of jobs accessible through personal contacts may be limited, and people can also be constrained by demand-side factors. In this sense, location and origin appear to be important influences on both career aspirations and opportunities.

Green and White note that living within proximity to job opportunities lowers the chance of being unemployed (2007:93-4), yet while rural unemployment is lower overall, the 'fallacy of treating all employment as equal' (Pavis et al., 2001:306) obscures the disadvantages of being confined to the residual rural labour market. Jones (2001:48) found that many stayers (those who remained in the rural study area) felt that they were stuck 'in low-paid jobs without transferable skills and no

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prospects of escape to other labour markets'. Young people who did leave the study area tended to have parents who had themselves been in-migrants, whereas those who stayed had parents who were of local origin. Furthermore, incomers tended to be middle class, and thus their children grew up more likely to be able to draw on transferable cultural capital from within the family: this gives a means for migration, as well as a motivation, for advancement through education and work (Jones, 1999:5-6), which would in turn be expected to produce better labour market outcomes for the individuals concerned.

Jones concludes that 'migration and staying on are not simple responses to local disadvantage' and that 'some people may lower their aspirations to stay in the area or to return to it, having once left' (Jones, 1999:20). This highlights how some young people actively choose to remain in rural areas, and raises questions as to whether they are different to those who feel 'stuck' (Jones, 2001:48). A further point is whether more housing, transport, and career options should be created for rural youth, so that they have the chance to fully transition into independent adulthood (Jones, 2001:61), or whether it is to be expected that large parts of the country are effectively designated as low opportunity areas with expectations that young people must leave to have any chance of progression.

The relationship between location, migration, cultural capital, social capital and advancement in the labour market is undoubtedly complex. This article presents evidence that migration occurs between rural and urban areas in both directions, as does return migration. People returning to rural areas after spells as urban residents may enjoy returns on human capital acquired while living or working in larger conurbations. They may also be able to commute or work from home, and therefore escape the residual labour market with its predominantly low-pay, low-skill and

insecure work. Hence, it is expected that in the present article, while young people of rural origin who remain in rural areas throughout the study period will earn less than other groups, respondents of rural origin who move to urban areas will enjoy higher earnings, as will those who return to rural areas. Hypothesis 3 is based on the third research question listed in the opening section:

HYPOTHESIS 3: young people remaining in rural areas earn less throughout the observation period, but others in rural locations (who have moved to an urban area at some point) earn more.

Rural locations are home to fewer big businesses, employers are more likely to be smaller enterprises, often family run with limited prospects for progression (OECD, 2008:98; CRC, 2012:40) and informal, word-of-mouth recruitment practices (Pavis et al., 2001:300). This seems likely to restrict earning potential for young people, but the long-term implications of rural/urban location and origin on pay have yet to be studied. While the foregoing discussion outlines labour market differences between urban and rural areas, very little of the literature is based on quantitative data, and none uses longitudinal analysis. This article offers an original perspective on rural/urban variation in earnings by using longitudinal panel data for the first time in the British context.

3. Data and methods

This article uses data from BHPS, a representative panel survey that began in 1991. Wave 1 sampled over 5,500 households and 10,300 individuals drawn from across Great Britain. BHPS continued until 2008/9 and provides the opportunity to follow

participants over 18 years, with annual data points. The sample used for most of this article comprises all respondents from BHPS wave 1 aged 15-24 at the time of first interview. Members of this '1991 youth cohort' remain in the sample until either dropping out of the survey, or reaching the final wave (18), by which stage the oldest are aged 42. No respondents entering the survey for the first time after wave 1 are included in this cohort, as the aim was to create a sample that could be followed for the longest possible time. This approach generates 18,848 person-period observations[i] from 1,594 individuals.

This sample is drawn from England, Wales and Scotland, as BHPS did not start sampling from Northern Ireland until wave 7. These countries use different rural/urban definitions, created by the Office for National Statistics in England and Wales, the Scottish Executive in Scotland, and the Department for the Environment in Northern Ireland[ii]. Each defines rural areas according to settlement size, population density, and distance from larger conurbations, but the measures differ between nations (for full details, see Institute for Social and Economic Research, 2008). In practice when collapsing the various categories into a rural/urban dichotomy, each country uses a population threshold of 10,000 for a settlement to be classed as urban. The data relates to rural/urban location of residence, not employment. Unfortunately BHPS does not contain variables on occupational location.

Rural/urban indicators for BHPS are only available in a conditional access extension file. This was merged with the standard issue individual respondent datasets for each wave in order to perform the analysis presented in this article. Such comparisons of rural and urban locations have not been conducted before in

Britain, so this original use of the data represents a further unique contribution to the literature on youth employment and the rural labour market.

Linear Mixed Models (LMMs) were used to ascertain how earnings have fluctuated, gauging the effect of both rural/urban origin and current location on earnings over time. LMMs estimate the effect of predictors - which can be categorical or continuous, time-varying or time-invariant - on a continuous outcome variable such as earnings (Verbeke and Molenberghs, 2009:1-4). Time, here corresponding to each wave of BHPS, can be included in the model as one such predictor (West et al., 2007:219) enabling the analysis of earnings change in relation to other regressors throughout the observation period. In the analysis, this change was measured at two levels: firstly, within individuals, following earnings growth for each respondent over time; secondly, between individuals, allowing for comparisons of earnings trajectories according to the different combinations of predictors used.

LMMs allow all data for each respondent to be used, even if they do not participate in all 18 waves. Information on rural/urban origin and location, and therefore movement between the two types of area, can be gained from all 18,848 person-period observations. As it has been argued that adding even one extra data collection point can substantially improve the models constructed (Singer and Willett, 2003:42), it is worth making the most of the data in this regard. This approach has merit as tracking respondents for as long as they remain in the survey permits analysts to use more data, which can be beneficial to the research. For example, data collected for only 17, or even three, of the 18 years can still be salient to the research question, so excluding cases with no data for particular waves is ultimately a missed opportunity (Verbeke and Molenberghs, 2009:211).

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The dataset suffers from left-censoring due to the lack of data on residential location before BHPS wave 1. Any migrations occurring prior to 1991 are therefore unobserved, and periods of unemployment or inactivity before wave 1 are also missed. This may overlook a critical part of a respondent's trajectory, for instance someone aged 24 in 1991 could have experienced unemployment by this age. More notably, right-censoring also occurs as only half of the original 1991 youth sample participates as far as wave 18, with the number decreasing in each wave. This unbalanced panel does not prevent analysis using the methods outlined above; it simply means there are missing data. This is almost inevitable with longitudinal designs.

Another potential limitation of the time measure used here should also be acknowledged. As the data points are annual, the onus is on labour market trends over a lengthy period. The ability to monitor respondents over 18 years allows greater scope for elucidating the processes under investigation than would be possible by using more frequent observations spread across a shorter time span. The 'usual net monthly earnings' variable has been chosen to gauge regular income rather than additional or occasional pay, which could misrepresent true earnings. Monthly earnings are used instead of hourly measures as outgoings are often monthly, and this is important in the context of higher living costs in rural areas (Smith et al., 2010:37). Employees on high hourly pay but working fewer hours, whether involuntarily or by choice, might be less well off than those in regular full-time work. To simplify this comparison, monthly pay is used. In all analyses that follow, net monthly earnings (in British pounds) are adjusted for inflation using the retail prices index (RPI) during the month of each survey. This produces more meaningful longitudinal analysis.

4. Descriptive statistics

Among the 1991 youth cohort, ages were split fairly uniformly although there were fewer 15 year olds. The proportion of rural respondents (21%) in this sample was roughly consistent with expectations[iii] given that the Rural Advocate placed the rural population of England at 19.1% of the total in 2007 (Burgess, 2008b). Including Wales and Scotland adds more rural cases to the sample[iv]. However, the full UK BHPS dataset contained 27% rural respondents in wave 18 (2008/9). England is the most urban of these nations, with 76% of wave 18 respondents living in urban areas, compared to 64% in Wales, Scotland and Northern Ireland combined. The disparity of rural/urban sampling between wave 1 and wave 18 is partly explained by the booster sample from Northern Ireland, which is again more rural than England.

Rural/urban origin was defined by the respondent's location in wave 1 using the definitions detailed above. The proportion from rural origins remaining in wave 18 increased marginally compared to the original wave 1 youth sample (wave 1 = 17.2%, wave 18 = 18.6%), yet this difference was not large enough to make inferences about relationships between rural/urban origin and the likelihood of attrition. Attrition is unavoidable with panel data collected over 18 years, yet roughly half (50.6%) of the young people interviewed in 1991 (n=1594) remained in the sample by 2008/9 (n=806). This is respectable retention of an often elusive age group, although some respondents were aged 40 and older by wave 18, and therefore no longer young people.

Tables displaying descriptive statistics on the rural/urban location, age and gender profile of respondents for each year and for the number of cases included in analyses of earnings are available in the technical appendix.

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5. Results

Earnings are a credible proxy for job status (European Commission, 2001:79), and are important to consider in the context of higher living costs in rural Britain (Smith et al., 2010:37). This section explores earnings differences by rural/urban location and origin, and is divided into three parts. In section 5.1, RPI-adjusted earnings of all BHPS respondents from waves 1-18 are analysed according to location, before this comparison is repeated for under-25s in order to highlight the effect of location on youth earnings as distinct from adult earnings. Section 5.1 looks at current rural/urban location at each wave, and unlike sections 5.2 and 5.3 it makes no attempt to follow the movements of individual respondents. Instead it simply compares aggregate rural/urban earnings over time. Rural earnings are higher for respondents of all ages but this is not the case for under-25s, suggesting unfavourable labour market returns for young people in rural areas. Section 5.2 uses LMMs to look at the distinct effects of both rural/urban origin and location on earnings, finding that origin has a negative effect over time. Section 5.3 splits the sample into seven categories based on their migration patterns across all waves of data, and finds that those who stay rural throughout earn less than all other groups.

5.1: Rural/urban earnings 1991-2008/9

Figures 1 and 2 show earnings data from all respondents in BHPS waves 1-18, including those who first took part later than wave 1, and any who dropped out before the final data collection point. Rather than following particular participants, these charts simply compare overall median earnings from 1991-2008/9 according to *current* rural/urban location at the time of survey. Median earnings have been used

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to eradicate sensitivity to extreme values, and respondents reporting no earnings have been omitted to avoid distorted findings.

Figure 1 shows that usual net monthly earnings, when adjusted for RPI, have been higher in urban areas since 1993. The gap in median pay was £41 per month in 2008/9 (rural = £1101, urban = £1142). Hourly earnings may more accurately reflect the reward for time spent at work, so concentrating solely on full-time workers ensures robustness. Figure 2 compares rural and urban wages for respondents working 30 or more hours per week at the time of data collection. Here, median rural earnings were found to be higher since 2005, with a £46 difference in 2008/9 (rural = £1400, urban = £1354). This could be seen as surprising given the rural pay penalty discovered by previous research (Author, A), although those findings were based only on earnings for young people. These earnings gaps, for all workers or full-time employees, both amounted to under £50 per month in all waves. Despite this, it is noteworthy that rural earnings were higher for full-time workers of all ages, which confirms hypothesis 2, that rural earnings are higher overall. The focus now turns to whether youth earnings have followed a similar pattern.

Insert figures 1 and 2 around here

Figure 3 shows that urban youth have earned more than rural counterparts since 1993, with the median difference standing at £44 per month in 2008/9, the final year of the survey (rural = £733, urban = £777). The difference became larger when the sample was reduced to only full-time workers, as seen in figure 4. The pay gap grew from 2004 onward, culminating in a median difference of £76 per month in 2008/9

(rural = £875, urban = £951). This supports hypothesis 1, that rural youth are paid less than urban counterparts. The identification of this earnings gap over time is an advance over the static accounts presented in previous research.

It appears that while urban youth have always earned more (although this pattern was not reflected in the figures for respondents of all ages), the gap has widened over recent years. So, while rural unemployment is slightly lower than in urban areas, pay for those living in urban areas is increasing at a sharper rate. This suggests a degree of risk: while migration can be expensive with employment not guaranteed, for those who do find work the rewards are higher than for those who do not relocate.

Insert figures 3 and 4 about here

5.2: Linear Mixed Models: the effect of rural/urban location and origin on earnings

For the analysis reported in this section, individual respondents aged under-25 in wave 1 (the 1991 youth cohort first described in section 3) were tracked across the 18 waves of data. In tables 1 and 2, model A is the null model and simply shows the intercept for the full dataset, while model B includes time as a predictor to measure its effect on earnings before the other variables are entered in model C. In this full model, interaction effects between time and other predictors show the extent to which these additional predictors affected the outcome over time. Model C is specified using the following equation:

Equation 1: Linear Mixed Model

$$YEARNINGS_{ij} = [\gamma_{00} + \gamma_{10}TIME_{ij} + \gamma_{20}ORIGIN_i + \gamma_{30}LOCATION_{ij} + \gamma_{40}GENDER_i + \gamma50(ORIGIN_i \times TIME_{ij}) + \gamma_{60}(LOCATION_{ij} \times TIME_{ij}) + \gamma_{70}(GENDER_i \times TIME_{ij})] + [\zeta_{0i} + \zeta_{1i}TIME_{ij} + \varepsilon_{ij}]$$

The outcome variable Y is RPI-adjusted usual net monthly pay for individual i at observation point j. The predictor variable $TIME$ represents the wave (year) of data, and $LOCATION$ refers to the rural/urban location of respondent i at observation point j. $ORIGIN$ is rural/urban location in wave 1, while $GENDER$ is a dichotomous variable; both of these are treated as time-invariant. Of the residual terms in the second set of brackets, ζ_0 is the time-invariant residual for individual i's intercept and ζ_1 is the residual for individual i's earnings slope. These terms represent the portion of the initial status and rate of change (respectively) still unexplained once the full set of predictors is added to the model. In practice, ζ_1 is multiplied by time before entering the equation, as the variation in each respondent's gradient caused by unobserved predictors differs between observation points. ε is the portion of the outcome for individual i which is unpredicted at point j, independently of the effect of the predictors location, origin and time.

Table 1 shows the coefficients for a model of usual net monthly RPI-adjusted earnings. All respondents reporting no earnings were omitted from the analysis to prevent biased results. Rural pay was lower overall (£84 per month, $p<.01$). Monthly real wages rose by £45 year-on-year ($p<.001$) when controlling for location, origin and gender. Rural/urban origin and gender alone did not affect earnings significantly, but the interaction effects were the major finding here. Interestingly, net pay for those residing in rural areas increased faster (£8.66 per year, $p<.01$) than for urban dwellers. This could be accounted for by the lower intercept, as wage increases are likely to be greater if beginning from a lower baseline. Respondents of rural origin

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saw monthly earnings go up by £17 less year-on-year (p<.001) than those of urban origin. This could be construed as bleak, implying that rural location at that age imposes a pay penalty into one's thirties and forties (age of respondents by wave 18), but the picture is slightly more complex when migration is factored in, as discussed below in Section 5.3.

Insert table 1 about here

As including part-time workers can distort analyses of monthly earnings, table 2 replicates the model presented in table 1 but with only those employed for 30 or more hours per week. Again, 'current rural' wages were lower overall, but the gap was reduced by £11 per month to £73 (p<.01) by removing part-time workers. This change probably resulted from the relative lack of regular full-time work in some rural areas. Full-time employees enjoyed a year-on-year increase in monthly earnings of £64 overall, higher than for all workers, as expected. The interaction effects tell a similar story, as earnings in rural locations grew more quickly than in urban areas, and as rural origin still negatively affected pay over time (-£14 per month compared to urban, p<.01), but this effect was slightly weaker than in the previous model. The interaction effect between gender and wave (£16) was lower than for the model presented in table 1 (£34), as women were more likely to work reduced hours, which usually means lower pay. Of course this does not explain the gender pay gap fully, but more detailed discussion of this issue is beyond the scope of this article.

Insert table 2 about here

In summary, while rural wages increased more quickly than urban earnings, simply being of rural origin brought respondents less pay across the whole 18 year observation window, and this difference was only marginally reduced by focussing solely on full-time workers. The next section looks at how different combinations of location and origin affected earnings.

5.3: Earnings according to rural/urban origin and current location: following the 1991 youth cohort

This final section continues the analysis of the same outcome, net monthly RPI-adjusted earnings, over the 18 waves of BHPS data. Again the sample was the original 1991 cohort, as was analysed in section 5.2. The purpose of this was to monitor earnings fluctuations according to rural/urban origin and current location. The previous section used LMMs to show how respondents of rural origin received lower year-on-year pay increases than urban counterparts. This could be interpreted as a rather fatalistic message: that rural/urban origin was a significant predictor of earnings across the observation period, and current location was not, implying that individuals who were proactive and had relocated were unable to improve their prospects, suffering a wage scar into adulthood. Below, the picture is shown to be more complex, as the disadvantage of rural origin appeared to be mitigated by migration to urban areas.

For this analysis, the 1991 youth cohort was divided into seven groups: those who stayed rural or stayed urban throughout the entire study period; those who moved only once, either from rural-to-urban or vice versa; returners, who followed rural-urban-rural or urban-rural-urban migration patterns; and multiple movers, who moved three times or more. This latter category was treated as a single group

regardless of rural/urban origin or number of moves (the maximum number observed was six); this was preferred to creating several additional groups each comprising very few cases. Original sample members aged below 25 in 1991 were tracked for as long as they remained in the survey. Respondents were assigned to one of the seven categories according to their migrations across all available waves of data, so in this analysis the predictor variable effectively retained the same value for all respondents in all waves. In other words, returners were treated as returners from the outset. Descriptive statistics on the number of respondents and person-period observations in each category are provided in the technical appendix.

Insert table 3 about here

The lowest paid group by wave 18 were those respondents originating in rural areas who remain in rural areas throughout. This finding accounts for the wage penalty incurred by respondents of rural origin, as seen above (Tables 1 and 2). The pay gap was largest when all workers were included in the analysis, as figure 6 shows that the difference has decreased, but the 'stay rural' group were still earning the least by wave 18. It is likely that the tighter earnings gap when the analysis was limited to full-time workers reflects the prevalence of part-time and irregular work in rural areas. These charts revealed two other important findings.

Firstly, earnings became higher for individuals of rural origin that moved to urban locations. This indicates that while rural origin was a disadvantage with regard to earnings, as evidenced above, this could be overcome by moving to larger conurbations. Higher pay for younger people in urban areas may partly account for this, but as the dataset tracked respondents well beyond their youth, this cannot be

the sole explanation. More large businesses in urban areas, likelier to offer promotion prospects, are probably another cause. A further possibility is that people taking the initiative to migrate have a better chance of higher remuneration due to attributes unobserved by the dataset.

Secondly, respondents of urban origin relocating to rural settlements also enjoyed higher earnings than those in the 'stay rural' group. During the 18 year observation window, the age of the sample increased correspondingly, so the figures in later waves no longer related to outcomes in *youth* employment. Instead, the analysis tracked the earnings of the 1991 youth cohort well into their adult years, and was therefore a reflection of long-term labour market outcomes. Young people of urban origin who later relocated to rural areas earned more than respondents who stayed rural, suggesting that simply living in a rural area was not associated a wage penalty. The fact that 'current rural' earnings had a significant, positive interaction effect with the time variable in the LMMs presented above attests to this. These results confirm hypothesis 3, that young people remaining in rural areas earn less throughout the observation period, but other respondents residing in rural locations, who have moved at some point during the study period, earn more.

Insert figures 5 and 6 about here

6. Discussion

The analysis presented in the previous section addresses each of the three research questions and hypotheses stated earlier in this article. Remuneration for young workers is lower in rural areas, and has been since 1993. Older respondents living in rural locations and working full-time can command higher pay. Young people who remain in rural locations earn less money than their urban peers, irrespective of the

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geographical origin of the latter, and will also earn less than those who migrate to the larger towns and cities. Rural youth who do not migrate to urban areas face lower earnings even into their thirties and early forties.

This must be considered alongside the evidence presented above that rural earnings are higher overall for those who are working full-time. Rural origin alone does not lead to lower earnings, as people migrating to urban areas eventually earn more. Equally, rural location alone does not lead to lower earnings for older respondents, as those migrating from urban to rural areas receive the highest pay. Instead, it is the combination of rural origin and rural location that exerts a negative effect on earnings, with those who 'stay rural' and work full-time being paid less throughout the observation period. This supports the argument made by Hodge et al. (2002) that a residual rural labour market exists, with low pay an identifying feature. While Hodge et al. were primarily concerned with establishing a sociological framework in which the experiences of those working in such a labour market could be understood qualitatively, the findings offered here show the long-term effects of 'staying rural' on labour market outcomes using numerical data gathered from a broader geographical area over an extended time period, thus illuminating a different facet of the same phenomenon.

In terms of explaining this pattern, the relative absence of big business in rural areas might contribute to the lack of opportunity, as larger firms are more likely to offer progression prospects to employees (OECD, 2008:98; CRC, 2012:40). Young people in rural areas feel they are less likely to have the possibility of promotion in their job (Jones, 2001:48, Hodge et al., 2002, Author, B). The limited range of jobs available locally may mean people are unable to leave positions they feel are paid inadequately for more lucrative work (Phimister et al., 2006). It has been suggested

by politicians that jobseekers living in areas with scarce work opportunities should travel or relocate in order to find employment (Duncan Smith, 2010). Of course, this prescription ignores the difficulties some people may confront in attempting to commute or move house.

Similarly, limited local options for education may also deter people from gaining the qualifications which might be necessary to secure better paid work, as they may be reluctant to travel or move house to facilitate study or training. The importance of qualifications to earnings is well documented and the prevalence of manual class occupations in rural areas is probably another factor. As noted by Jones (2001:48), some people may be more likely to leave their local area in pursuit of education and employment, with parents' migration history, familial cultural capital and community norms all potentially powerful determinants. The data used here did not permit this specific line of enquiry to be followed, but it would prove an interesting extension for future research.

The findings presented in this article pose two challenges to policy makers. If living costs in rural Britain are higher, and youth earnings are lower, what can be done to address this? If young people remaining in rural areas face greater living costs while their earnings increase at a slower pace than other groups, what can be done to ensure that they do not suffer? Less disposable income in rural locations surely acts to the detriment of local services such as shops and pubs, which also perform important social functions in the communities they serve, and are most important to those less able to make use of more distant amenities: the poor, the disabled, the elderly and the young. If young people are disadvantaged in the rural labour market, the consequences for rural communities more broadly could be severe, and the disadvantage faced by these marginal groups will be compounded.

[i] A person-period observation is a data point from one individual case at one stage of data collection. Individuals here are often represented in the data by multiple person-period observations, as they are present in more than one wave of the survey.

[ii] Cases from Northern Ireland enter the analysis in some parts of the article, hence mentioning them here.

[iii] These frequencies have been calculated using the cross-sectional 'AXRWGHT' weight.

[iv] These frequencies have been calculated using the cross-sectional 'RXRWTUK1' weight.

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Tables and figures

Figure 1: Rural/urban median RPI adjusted net monthly earnings 1991-2008/9. BHPS respondents of all ages with monthly earnings >0.
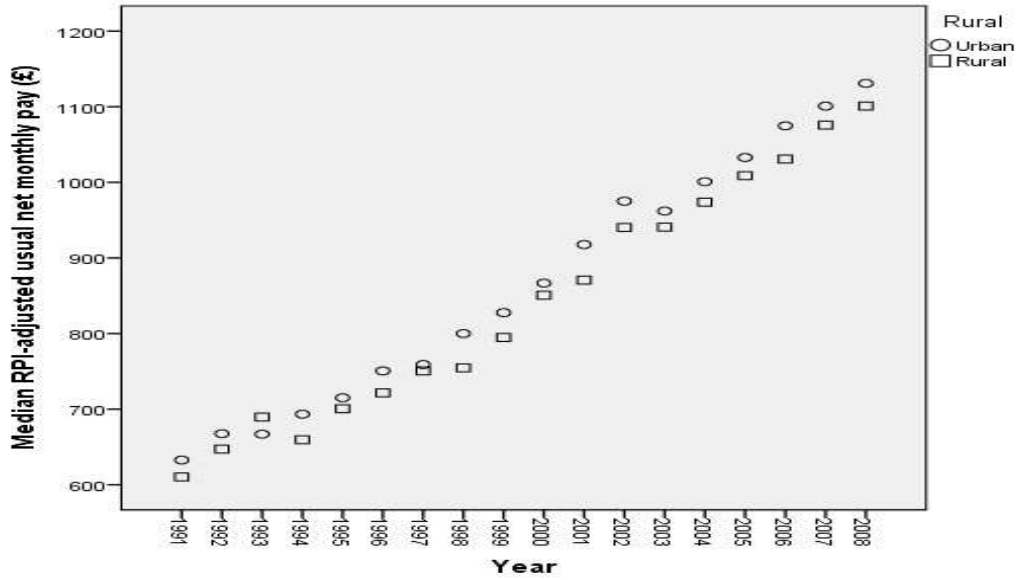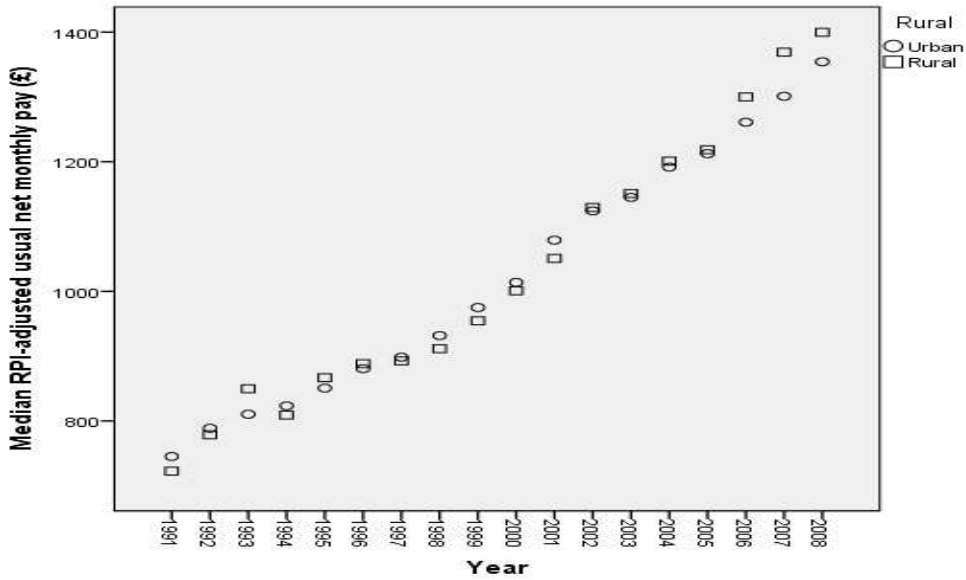

Figure 2: Rural/urban median RPI adjusted net monthly earnings 1991-2008/9. BHPS respondents of all ages in full time work.

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Figure 3: Rural/urban median RPI adjusted net monthly earnings 1991-2008/9 BHPS respondents aged under 25 with monthly earnings >0.
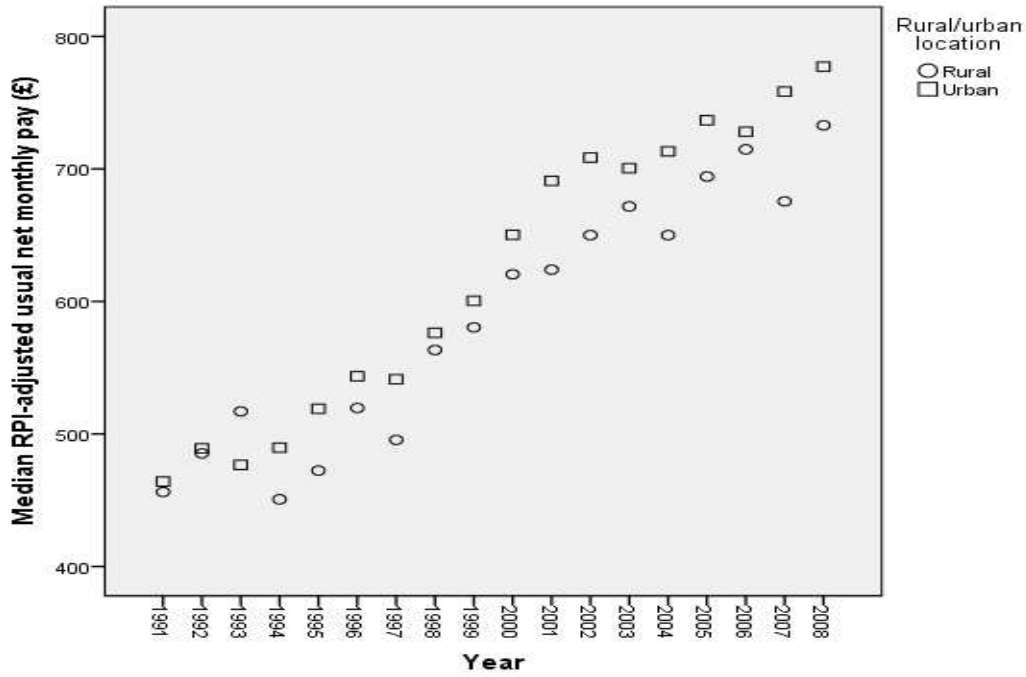

Figure 4: Rural/urban median RPI adjusted net monthly earnings 1991-2008/9 BHPS respondents aged under 25 in full-time work.
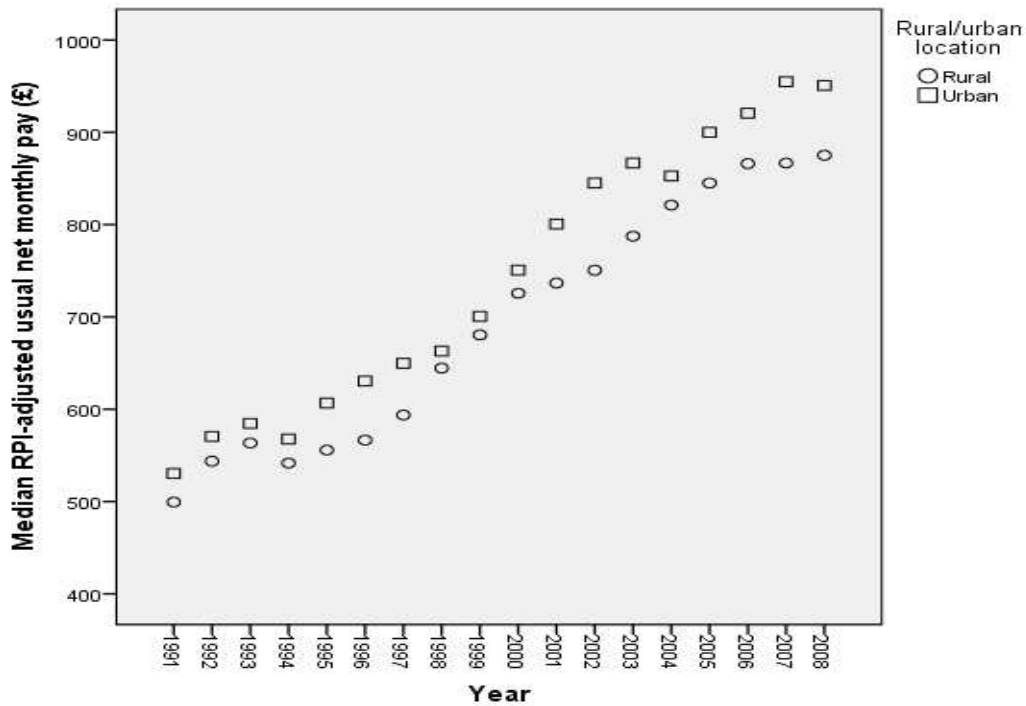

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Figure 5: Median RPI adjusted earnings by rural/urban origin/location by year. All respondents aged under 25 in wave 1 and remaining in wave 18, with monthly earnings >0.
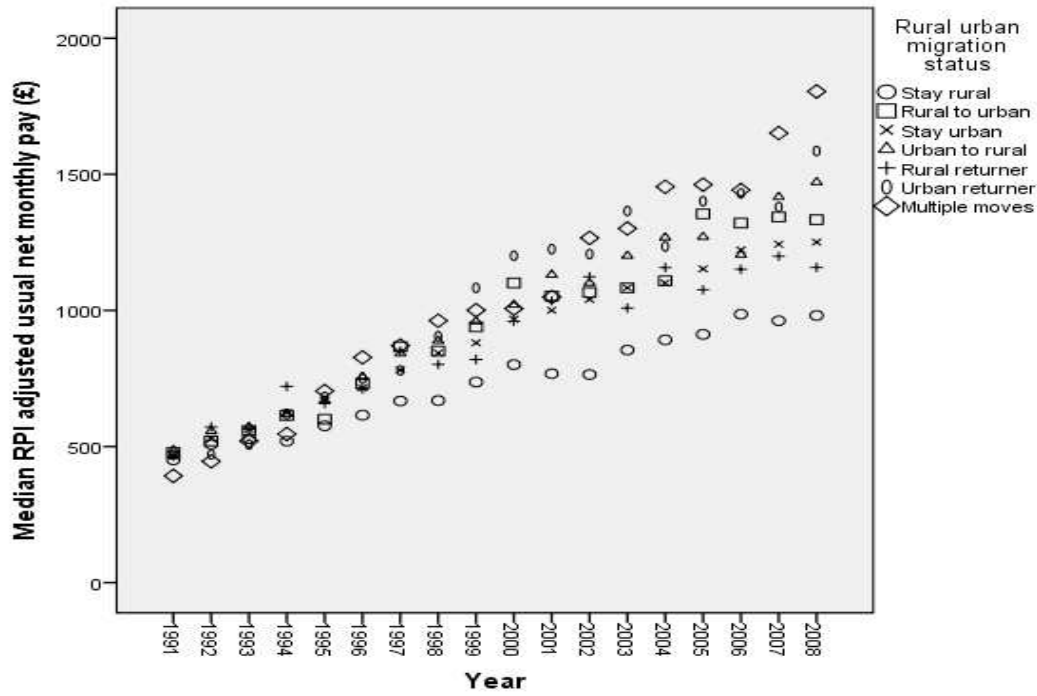

Figure 6: Median RPI adjusted earnings by rural/urban origin/location by year. All respondents aged under 25 in wave 1 and remaining in wave 18, in fulltime employment with monthly earnings >0.
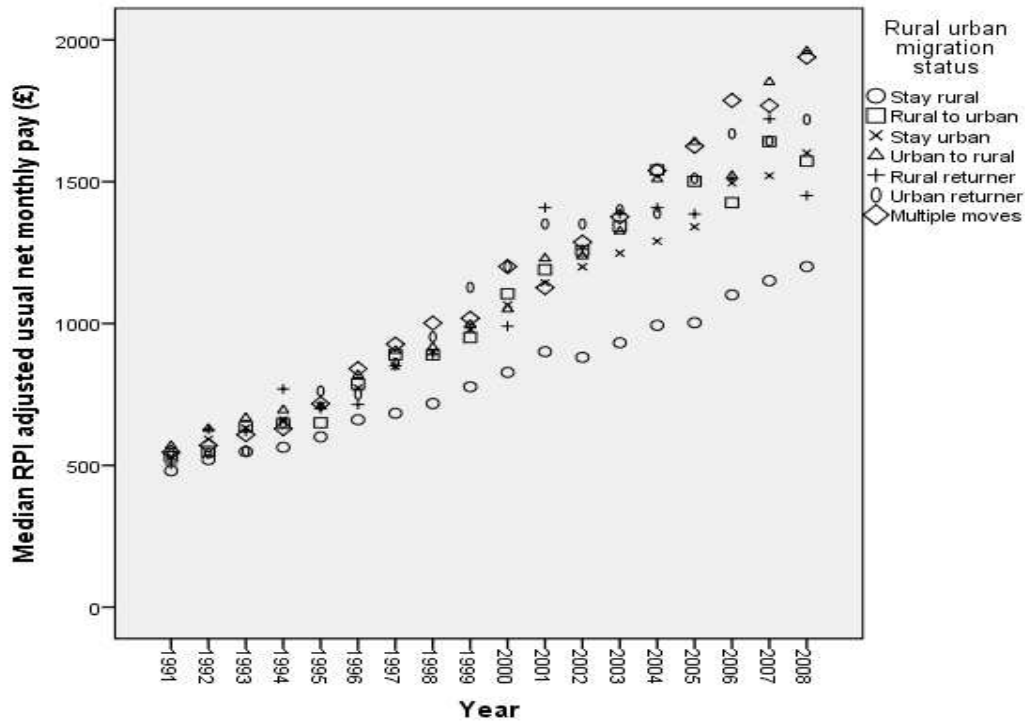

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Table 1: Linear Mixed Model with RPI adjusted net monthly earnings (£) as outcome variable.

Parameter	Model A	Model B	Model C
Main effects			
Intercept	861.88 (12.45)***	360.67 (15.45)***	376.60 (15.07)***
Wave		61.88 (1.27)***	44.52 (2.66)***
Current rural (reference urban)			-83.71 (30.83)**
From rural (reference urban)			50.38 (35.51)
Male (reference female)			13.25 (19.79)
Interaction effects			
Current rural * wave (reference urban)			8.66 (3.08)**
From rural* wave (reference urban)			-16.77 (5.03)**
Male* wave (reference female)			34.00 (3.54)***
AIC	215310.289	206061.339	203839.987
BIC	215325.360	206083.945	203877.662

Source: 1991-2008/9 BHPS data. Respondents aged under 25 in 1991 with pay>0.

***= p<.001, **= p < .01, * = p<.05

Table 2: Linear Mixed Model with RPI adjusted net monthly earnings (£) as outcome variable.

Parameter	Model A	Model B	Model C
Main effects			
Intercept	977.81 (12.99)***	397.13 (15.73)***	415.79 (15.58)***
Wave		74.96 (1.40)***	64.07 (2.91)***
Current rural (reference urban)			-72.85 (30.68)**
From rural (reference urban)			23.02 (35.54)
Male (reference female)			14.27 (19.78)
Interaction effects			
Current rural * wave (reference urban)			8.79 (3.06)**
From rural* wave (reference urban)			-14.34 (5.23)**
Male* wave (reference female)			15.84 (3.68)***
AIC	151860.648	142139.857	140679.879
BIC	151875.033	142161.435	140715.838

Source: 1991-2008/9 BHPS data. Respondents aged under-25 in 1991, fulltime workers only.

***= p<.001, **= p < .01, * = p<.05