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Do low-paid workers benefit from the urban escalator? Evidence from British cities

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Abstract

Cities are characterised as places of increased human capital accumulation, dynamic labour markets and faster wage growth: in short, places where workers can get ahead. Studies suggest that urban workers can benefit from faster learning and from better job matching. This paper assesses the extent to which cities act as escalators for workers in low wage jobs using panel data from Great Britain covering the period 2009-2014. When defining low pay using a standard national wage threshold, workers in London, the largest city, are significantly more likely to make a transition from low to higher-paid employment than workers in non-urban areas. However, the use of a national wage threshold to measure progression from low pay is sensitive to geographic variations in wage levels. When using an alternative, occupation-based definition of low pay there is little to no evidence of faster wage growth in London or other large British cities,

suggesting that low-paid workers do not benefit significantly from faster learning or more efficient job matching in cities. The findings, once adjusted for differences in the wage distribution, fail to identify an urban escalator effect for those in low-paid employment, suggesting that there is a fairly consistent set of underlying factors shaping progression from low pay across geographies.

Keywords

Low pay, progression, cities, agglomeration, wage growth

Introduction

Low-pay and in-work poverty are significant societal issues in many countries (Gautié & Schmitt 2010). In the UK, low-pay is relatively high compared to other similar economies such as France, Italy and the Netherlands (OECD 2017; Vacas-Soriano 2017). Since the economic crisis, although employment creation in Britain has been strong, there is a concern about the quality of jobs growth (Coulter 2016; Taylor 2017). Under the most commonly used definition of low pay - less than two-thirds of national median hourly earnings - the incidence of low pay has been stable since 2008 and has even fallen slightly in recent years (D'Arcy 2017), however this is largely the result of several years of real terms decline in median pay. Using an 'anchored' low pay threshold where the median in 2008 is used as the basis for all years, but adjusted for inflation to take account of price changes, the low pay share in the UK actually increased from 18.9 in 2008 to 27.6 in 2014 (Vacas-Soriano, 2017). Moreover, there is a considerable degree of persistence in low pay: of those who were low paid in 2002, 27 per cent were continuously in low paid work for the next ten years, while a further 46 per cent had cycled in and out of low pay without making a

sustained transition into higher-paid work (Hurrell 2013). This persistence of low-pay, alongside changes in Active Labour Market Policy, mean that in-work progression is increasingly recognized as an important policy issue in the UK (Adam et al. 2017). Gaining a better insight into the factors shaping progression from low pay is therefore critically important.

Existing research offers evidence on the factors associated with transitions from low to higher pay, such as gender, age, education and employer characteristics (Dickens 2000; Knabe & Plum 2013; Mosthaf et al. 2011); however few studies have considered the role of local labour market characteristics and conditions in shaping progression outcomes from low-pay. This is despite research in economic geography and spatial economics pointing to a generally positive impact of labour market size on progression. Building on Fielding's (1992) influential work on escalator regions, Gordon et al. (2015) show that living in a large urban agglomeration is associated with an 'escalator effect': British workers tend to experience faster occupational advancement in big cities. A related body of work suggests that cities are associated with faster wage growth, with workers in cities benefiting from faster human capital accumulation and/or more efficient job matching (Glaeser & Mare 2001; Wheeler 2006; Yankow 2006). There is however little evidence on whether these effects apply to workers at the lower end of the wage distribution and whether agglomeration reduces low pay persistence. This paper investigates the relationship between the city size and earnings progression for low-wage workers in British cities using panel data from the Understanding Society survey covering the years 2009-2014.

In contrast to existing studies relating to cities and low wage progression, which draw a binary distinction between urban and non-urban labour markets (Phimister et al. 2006; Stephani 2013), the analysis in this paper differentiates between cities of different sizes to allow for the effect of agglomeration on progression to increase with the size of the local labour market. The paper also makes a distinction between wage growth among workers staying within the same firm, and wage growth among workers who move between firms. Separating out these two forms of wage growth

provides an indication of the extent to which living in cities enables workers to develop their human capital and the extent to which dense urban labour markets facilitate better matching between workers and firms (Wheeler 2006).

Two approaches to measuring the pay progression of low-paid workers are used in this analysis. The first, following a convention in studies of low pay progression, defines low-paid work using a standard national wage threshold of two-thirds of median hourly pay, and measures transitions from low pay to higher pay. The second defines low-paid work according to occupation, and measures annual rates of wage growth for workers in low-paid occupations. When using the first method, low-paid workers in London, the largest local labour market in Great Britain, are significantly more likely to make a transition into higher-paid employment. This higher progression rate is, however, largely the result of using a pay threshold that is not adjusted for the higher wage levels in London, meaning that the bar that workers need to cross to move out of low pay is set at a lower level in London – relative to the local wage distribution – than in most other local labour markets. When using the alternative, and preferable, definition based on low-paid occupations, there is no evidence that working in London or other large British cities is associated with faster wage growth for low-paid workers, either when staying with the same employer or when moving to a different employer.

The findings provide at best weak evidence of a link between city size and wage growth for workers in low wage jobs, indicating that the two suggested mechanisms underlying the urban wage growth premium – learning through worker interactions (Glaeser 1999; Glaeser & Mare 2001), and more efficient worker-firm matching (Wheeler 2006) – are probably of limited applicability to low-paid workers.

The paper contributes to the literature on the role of cities in earnings mobility, specifically addressing the relationship between city size and gains for low-paid workers, using panel data for

Great Britain. The lack of an urban wage growth premium for low-paid workers indicated by the results is consistent with evidence suggesting that the productivity-enhancing effects of agglomeration are weaker for those in jobs requiring lower levels of (cognitive and people) skills (Bacolod et al. 2009; De la Roca & Puga 2017). A second contribution of the paper is to demonstrate the important of the definition of low-paid work used when assessing spatial differences in wage progression for those in low-wage jobs, with the standard national pay threshold-based definition shown to be sensitive to geographical variations in the wage distribution.

The paper is structured as follows. The next two sections discuss factors influencing wage progression among low-paid workers, and the relationship between city size and career advancement. The following two sections describe the data and methods, and present the results. The final section sums up and discusses the key findings, reinforces the contributions, and offers directions for further research.

Low paid employment and wage progression

Early studies of low pay and progression found that substantial proportions of workers in the UK and US remained stuck in low-paid employment for relatively long periods of time (Carrington & Fallick 2001; Gosling et al. 1997; Gregory & Elias 1994). Over half of British workers who were low-paid (defined as in the bottom wage quartile) in 1991 were still low-paid three years later (Gosling et al. 1997). Studies have also provided insights into some of the factors associated with upward wage mobility among low-paid workers. Men, younger workers, and more highly-educated workers have a better chance of progressing out of low pay (Cappellari & Jenkins 2004; Gosling et al. 1997; Knabe & Plum 2013; Stewart & Swaffield 1999).

Job and employer characteristics also influence wage progression. Gürtzgen and Heinze (2016) find that the probability of escaping low pay for men increases in larger establishments; for women collective bargaining appears to be more important. Andersson et al. (2005) similarly demonstrate the importance of firm size as well as the industry in which workers are employed; finding that in the US low-paid workers in the retail industry were far less likely to move into higher pay than those hired into public administration. Lee et al. (2017), using UK data, find high rates of low pay exits to higher pay in public administration, finance and insurance, and in the health sector but much lower exit rates in hospitality and retail. The likelihood of moving from low-paid into higher-paid employment also varies between occupations, with workers in service occupations and in unskilled commercial and administrative occupations being less likely to do so (Mosthaf et al. 2011).

There is less evidence on the role that local labour market characteristics might play in progression from low pay. Bolvig (2004) finds that a higher relative local unemployment rate increases the likelihood that workers will remain in the same low-paid job. Stephani (2013) demonstrates that workers who live in an urbanised rather than a non-urbanised area of Germany experience higher rates of wage growth. Phimister et al. (2006) assess the contrast in progression from low pay between rural and urban labour markets in the UK. They find that the durations of low pay spells are somewhat shorter in urban areas, and that urban workers have a higher probability of transitioning to a higher-paid job. These findings suggest that both the size and the condition of the local labour market are likely to have an impact on progression from low pay. These studies, however, make use of a national wage threshold definition which, as we show, is sensitive to differences in the wage distribution between local labour markets.

Urban labour markets and wage growth

In an influential British study, Fielding (1992) advanced the notion of the South-East of England acting as an ‘escalator’ region promoting upward social mobility; showing that entry into the service class (professional, technical and managerial occupations) is higher in the South-East, particularly for those migrating to this region from other parts of the UK. Subsequent literature, both in the UK and elsewhere, has tended to retain this focus on intra- and international migration as a means to career progression (for example see Andersson 1996; Champion 2012; Newbold & Brown 2012; van Ham et al. 2012). Gordon et al. (2015), on the other hand, make a distinction between the one-off impact of migration on labour market advancement (the elevator effect), and the continuing effects of residence in a particular region (the escalator effect). By analyzing occupational transitions they find that the escalator effect is present not only in London but also in other British cities. The findings emphasize the importance of the sectoral and occupational mix of jobs in the local labour market, but also point to a general agglomeration effect: workers in larger city-regions tend to proceed up the occupational ladder more quickly than in smaller city-regions.

This latter finding echoes studies in spatial economics which show that not only do wages tend to be higher in cities (Combes et al. 2008; Melo & Graham 2014), workers in these cities also tend to see faster wage growth over time (D’Costa & Overman 2014; De la Roca & Puga 2012; Wheeler 2006; Yankow 2006). The literature examining this urban wage growth premium offers two central explanations for why cities seem to offer an advantage in terms of increasing wage growth. The first focuses on human capital accumulation, arguing that larger, denser labour markets encourage learning spillovers and allow workers to experience faster earnings growth (Glaeser, 1999). A second theory argues that thicker urban labour markets make it easier for workers to find new jobs that better match their skills and ambitions, increasing the rate at which they are able to attain higher-paid job matches (Wheeler 2006). Faster learning in cities is more likely to be reflected in higher rates of within-firm wage growth, while more optimal matching of

workers to jobs will tend to produce higher between-firm wage growth (Wheeler 2006). There is evidence that both these mechanisms play a role in explaining the urban wage growth premium (Baum-Snow & Pavan 2012; Wheeler 2006; Yankow 2006).

The studies on city wage growth and the urban escalator tend not to differentiate between workers at different points in the earnings distribution, despite the fact that the effect of living in a large city on progression may differ between lower-paid and higher-paid workers. Bacolod et al. (2009) show that the wage premium associated with living in a larger agglomeration is greater for those whose jobs contain higher levels of social and, especially, cognitive skills. Evidence from Germany (Möller & Haas 2003) and Italy (Matano & Naticchioni 2016), is supportive of this finding, with the wage differential between core cities and rural areas found to be smaller at the bottom of the distribution than at the top. Although this suggests that the wage *growth* premium experienced by low-paid workers will likely also be lower than that enjoyed by higher-skilled workers, Matano and Naticchioni (ibid.) find that, once the sorting of workers between areas is controlled for, the wage growth premium actually appears to be stronger for Italian workers at the bottom of the wage distribution than at the top. But these results rely on fixed effects estimators derived from workers who migrate from rural to urban areas only, and may not be representative of all workers.¹

Of course some workers are better able to take advantage of living in a large urban labour market than others. Gordon (2015) found a strong interaction between ambition and living in England's escalator region – defined as London, the South East, and the East of England – when it came to occupational advancement. Only those with high ambition gained from living in the escalator region, yet highly ambitious workers did not experience faster career advancement in other regions.

Data and methods

The effect of labour market size on progression from low pay is examined using panel data on workers drawn from the first five waves of Understanding Society, covering the period 2009-2014. Understanding Society is a nationally representative household panel survey, funded by the Economic and Social Research Council and managed by the Institute of Economic and Social Research at the University of Essex.² The survey ‘follows’ a sample of individuals from year to year, collecting data on their economic activity, earnings, occupation, and a wide range of other characteristics. The sample used here was restricted to those of approximately working age (aged 16 to 64) living in Great Britain, and contained 10,102 unique respondents who were low-paid during at least one wave. The sample was restricted to workers in Great Britain as comparable data on local labour market size is not available for Northern Ireland.

Local labour market size

Local labour markets are defined using the Travel-To-Work-Area (TTWA) of residence. The boundaries of TTWAs are defined so that at least 75 per cent of all journeys-to-work start and finish in the same TTWA (ONS 2007)³. The 2001 definition of TTWAs are used here as identifiers as 2011 TTWAs were not available in the Understanding Society datasets at the time of analysis. TTWAs are divided into four size categories. The first of these is London, by far the largest local labour market in Great Britain. The second category is labelled ‘Core Cities’. It includes the ten cities that make up the Core Cities group – a partnership of large second-tier cities established for policy purposes: Birmingham, Bristol, Cardiff, Glasgow, Leeds, Liverpool, Manchester, Newcastle, Nottingham, and Sheffield. In addition, it includes the cities of

Edinburgh and Leicester, as these are of a similar size and have similar characteristics. The third category of ‘Smaller Cities’ includes TTWAs with more than 100,000 employees (on average over the period 2009-2014). The fourth category (Non-cities) functions as the reference category and includes all other TTWAs; local labour markets that are predominantly rural in nature, as well as local labour markets centred on small or medium-sized towns.

Defining low pay and progression

The most common way to define low pay is through the use of a wage threshold, typically set at two-thirds of the median hourly pay for all workers (Knabe & Plum 2013; Mosthaf et al. 2011; Stephani 2013, D’Arcy & Finch 2017, OECD 2017). As this definition is widely used in both academic and policy literature, the same threshold is used here for the initial analysis. The value of this threshold is calculated for each year based on earnings data from the Annual Survey of Hours and Earnings. Workers with hourly wages below this threshold are classified as low-paid. The hourly pay of each worker in the sample was calculated using information on respondents’ usual gross monthly pay and the usual number of hours worked per week⁴. Workers are said to have experienced pay progression if they have moved from being in low-paid employment in the initial year ($t-1$) to higher-paid employment in the following year (t). If they remain low-paid at t , or are recorded as unemployed or economically inactive, workers are treated as not having progressed. Initially low-paid workers who make a transition into self-employment are also treated as not having progressed, as earnings information is not available for about half of low-paid workers in the sample who enter self-employment. As less than 2 per cent of year-to-year transitions by initially low-paid workers result in self-employment, the effect of any failure to account for wage progression among these workers is likely to be minimal.

As the sample is constructed by pooling year-to-year transitions, a small proportion of workers who are observed ‘escaping’ low pay subsequently fall back into low pay (4.4 per cent of our sample). This is related to a wider point: the experience of low pay is often characterised by substantial wage volatility as well as movements in and out of work. Observed transitions from low to higher pay will also inevitably include some marginal changes in hourly pay from just below to just above the low pay threshold which may not deserve to be called ‘progression’. The proportion of workers who ‘escape’ low pay by only experiencing a very slight increase in pay (less than 3 per cent in real terms) is very small and is roughly equal in each labour market size category so is unlikely to influence the results.

A substantive problem of the two-thirds of national median pay threshold is that it does not take account of geographic variations in wage levels, making it less suitable for comparing progression across local areas. Great Britain has marked regional wage inequalities with wages substantially higher in London and the South East than in other regions (in 2009 the median hourly wage for full-time employees was £16.39 in London, £12.99 in the South East and only £11.03 in the North East) (ONS 2016). Due to these wage disparities a substantially lower proportion of employees are classified as low-paid in London (16.8 per cent) than in a city such as Bradford in Yorkshire (28.6 per cent). These low pay rates do not take account of the fact that workers across all occupations, including typically low-paid occupations, tend to receive higher wages in London than in Bradford.⁵ When viewed from the perspective of the local labour market, a low pay threshold based on the national median is therefore positioned at an artificially high point in the local wage distribution of Bradford, and a low point in London. The consequences of this issue are discussed in more detail in the results section, and an alternative, occupation-based classification of low-paid employment is developed as a more appropriate way to analyse differences in wage progression across local labour markets.

Estimation strategy

In the first part of the analysis the effect of workers' local labour market size on transitions from low-paid employment at $t-1$ to either higher-paid employment (= 1) or low-paid employment or non-employment (= 0) at t are estimated. Given low pay status at $t-1$, the probability of higher pay at t is given by:

$$(1) \quad P(y_{it} = 1 | y_{it-1}) = \beta x_{it-1} + \gamma c_{jt-1} + \sigma s_{jt-1} + a_i + \varepsilon_{it}$$

where the subscript $i = 1, 2, \dots, N$ indexes individuals, the subscript $t = 2, \dots, T$ indexes time periods, the subscript $j = 1, 2, \dots, J$ indexes local labour market areas, y is the dependent variable identifying pay status, x_{it-1} is a vector of exogenous time-varying and time-constant worker and job characteristics, c_{jt-1} is a measure of local labour market tightness, a_i are unobserved individual-specific random effects and ε_{it} is a standard error term. The coefficient of interest is σ , denoting the estimated effect of the respondent's labour market size category s_{jt-1} . Note that we estimate the effect of the independent variables in the initial year ($t-1$) on whether they have escaped low pay by the following year (t), hence their $t-1$ subscript. We exclude the small number of workers who move between TTWAs to ensure that the variable s_{jt} measures the effect of living in a particular size category for the entire year between $t-1$ and t .

In the second half of the paper we move on to a different approach, estimating wage growth for workers in low-paid occupations, with the dependent variable thus taking a continuous form. The explanatory and control variables are the same as in the models used in the initial analysis (with the addition of a control for the effect of the minimum wage).

The controls in x_{it-1} include standard wage regression variables of sex, age (and age squared), highest qualification, ethnic group, migrant status, long-term health conditions, occupation, industry, working hours, workplace size, employment contract (permanent or temporary), and the presence of a recognised union or staff association at the workplace. Housing tenure was included as a control as this has been shown to be associated with occupational advancement (Van Ham & Manley 2015). Variables indicating whether workers were the sole or a second earner in the household, and whether or not they had any dependent children were included to account for the possible influence of household composition on the desire and opportunity to improve one's earnings. It has been found that workers with children often find it more difficult to access training and get promotions (Lindsay et al. 2012).

A measure of labour market tightness is also included using the proportion of the working-age population in each Travel-To-Work-Area claiming Jobseekers Allowance (the UK's main unemployment benefit). Year dummies are included to control for any year-to-year variation in macro-economic conditions and institutional effects. Lastly, there are a number of worker characteristics that have tended to remain unobserved in previous studies but which may affect progression, such as motivation and ambition. Ambition-related variables similar to those used in Gordon (2015) are not available in Understanding Society, but two alternative attitudinal variables are included. The first is job satisfaction, following Kumar et al. (2014). The second is an indicator of whether respondents felt optimistic about the future at the time of each interview⁶. The link between a positive attitude and the likelihood of progression has been highlighted by D'Arcy & Hurrell (2014). Optimism is moreover considered to be related to individuals' locus of control (Klein & Helweg-Larsen 2002; Ng et al. 2006), which has been shown to have an impact on mobility from low to higher pay (Schnitzlein & Stephani 2016).

A potential issue to take into account is that by selecting only workers who are in low pay at $t-1$, and therefore in work, it is possible the estimated effects are subject to selection bias due to the

unequal probability of being employed in different areas. The likelihood of being employed (controlling for observable characteristics) does not vary significantly across local labour market size categories: of all individuals aged 16-64 not in full-time education, 60.6 per cent in London are in paid employment, 62.0 per cent in Core Cities, 63.0 in Smaller Cities, and 61.7 in Non-cities. As a result any bias related to endogenous selection into employment is unlikely to significantly affect the estimates.

Results and analysis

Table 1 presents the results from the estimation of equation (1) using a random effects probit specification. In the first column, results are reported for the entire sample of workers recorded as low-paid at $t-1$ and observed at t . In the second column the sample is restricted to workers who remain with the same employer. In column three, the sample is restricted to workers who change employer between $t-1$ and t . Results are presented in the form of average marginal effects, representing the average percentage-point difference (calculated over the sample) in the estimated likelihood of escaping low pay associated with living in, respectively, London, a Core City or a Smaller City, relative to living in a Non-city.

Insert table 1 here

Table 1 suggests that the probability of escaping low pay is substantially higher for those living in London than for workers living in a Non-city labour market. Living in a Core City also has a positive average marginal effect, although this is only significant at the 10% level. Local labour

markets with weaker labour demand are generally associated with a lower probability of escaping low pay.

For within-firm progression (column 2), London workers again have a substantially higher likelihood of moving out of low pay, and when restricting the sample to workers who switch employer (column 3), the greatest probability of escaping low pay is again found in London (although due to the reduced sample size this estimate is subject to a relatively wide 95% confidence interval of between 6 and 43 percentage points). The results provide some evidence to suggest living in a Core City boosts worker's chances of finding a higher-paid job with a different employer. Living in a Smaller City, on the other hand, does not appear to offer any advantages over not living in a city when it comes to making a transition to higher pay.

Overall the results in table 1 suggest that living in London (and perhaps, to a smaller degree, in Core Cities) confers an advantage on low-paid workers in terms of moving out of low pay. However, this finding is contingent on the wage threshold used to define workers as low-paid, as we now go on to discuss.

The importance of definitions of low pay

An important concern is whether the above results are influenced by the use of a threshold that is insensitive to differences in wage levels between the local labour market size categories. To provide some initial indication of the potential significance of this issue, Table 2 presents transition rates from low to higher pay estimated using two different thresholds: in column one, the nationally-defined low pay threshold used above, and in column two, a locally-adjusted low pay threshold set at the 25th percentile of the local wage distribution of each Travel-To-Work-Area (i.e. a measure of *relative* local wage mobility). There is a clear contrast between the

observed rates of progression under the two different thresholds. Under the second, local threshold, workers in Non-cities, rather than London, appear most likely to escape low pay. The explanation for the difference between the two sets of results is that the first threshold is positioned at a much lower point in the distribution of wages in London (18th percentile) than in the local wage distributions of the TTWAs belonging to the Core Cities category (24th percentile), Smaller Cities category (24th percentile) and Non-cities category (28th percentile). This lower position of the threshold increases the likelihood of low-paid workers in London crossing the threshold and moving into higher pay.

insert table 2 here

The locally-adjusted low pay threshold used in table 2 appears to help meet the objective of taking account of geographic wage variations. However defining low pay with reference to a fixed percentile of the local wage distribution fails to take into account differences in the industrial and occupational composition of jobs between local labour markets. An important reason why the wage distribution of rural labour markets differs from that of urban labour markets is because of differences in the mix of jobs, with the share of jobs in relatively low-paid occupations tending to be higher in rural labour markets.

Developing an occupational definition of low pay

An alternative approach is to focus the analysis on a subsample of workers who are employed in the same set of low-paid occupations in different places (at $t-1$). Low-paid occupations were

defined as three-digit SOC2000 occupational groups with a median hourly wage rate below two-thirds of the median hourly wage for all UK employees (calculated over the 2009-2014 period). These occupations are: Elementary sales occupations; Elementary cleaning occupations; Elementary personal services occupations; Sales assistants and retail cashiers; Hairdressers and related occupations; Animal care services; and Food preparation trades. The sample of workers in low-paid occupations is smaller than the sample of workers with earnings below the low pay threshold (approximately 4,300 once non-response on control variables is accounted for), which naturally limits the power of the analysis and the precision with which the coefficients are estimated. Note that the analysis includes all workers in a low-paid occupation at $t-1$, including those who have moved to a different occupation at t .⁸

The median hourly pay rate for all workers in low-paid occupations over the period 2009-2014 was £7.00 (in 2014 prices), but this rate varies between local labour market size categories, being highest in London (£7.72) and lowest in Core Cities (£6.86) followed by Non-cities (£6.94). These figures are indicative of a wage premium for workers in London, which is maintained when worker and job characteristics are controlled for.⁹

The effect of local labour market size on annual rates of (real) wage growth were analysed for the sample of workers in low-paid occupations, using the same models as before but with a continuous rather than binary dependent variable. Given that the focus is now on wage growth, an important additional factor to control for is the impact of increases in the minimum wage. To do this, a variable is added indicating, for each TTWA, what proportion of workers in low-paid occupations at $t-1$ had earnings below the applicable minimum wage rate at t (based on the age of the worker and the year). Following Phimister et al. (2006), year dummies are also adjusted to coincide with upgrades to the minimum wage in October of each year.

Table 3 shows the results of this model. The most striking result is the estimated effect associated with living in London, which is now slightly negative in both model 4 (wage growth among all workers) and model 5 (within-firm wage growth), and no longer statistically significant in any of the models. When considering workers in low-paid occupations, the results therefore provide no evidence that living in London improves workers' real wage growth compared to living in a rural labour market.

insert table 3 here

It is of course possible that, while no overall urban wage growth premium is found for low-paid workers, certain sub-groups of workers experience greater benefits from living in a large city than others. For example, it is plausible that younger workers and more highly educated worker are better able to take potential advantage of the learning opportunities and labour market dynamism offered by large agglomerations even from an initial position of low-pay. The data offer some tentative suggestion that the city size effect is more positive for low-paid younger workers (while being negative for older workers) when an interaction is added between local labour market size categories and age. However, the estimated effects are not statistically significant so it is hard to draw firm conclusions. A similar result is found for qualifications, with higher qualifications yielding a positive but not statistically significant coefficient and low qualifications a negative yet insignificant coefficient. These are important areas for future research.

Conclusions and discussion

The analysis presented in this paper assesses the effect of city size on wage progression among the low-paid drawing on panel data for British local labour markets. This builds on an influential literature on the extent to which regions and cities act as 'escalators' as well as recent work

exploring the existence of a wage growth premium in cities. Both of these literatures have focused largely on the average or aggregate (for exceptions see Bacolod et al. (2009), Matano and Naticchioni (2016), De la Roca and Puga (2017), This paper has found that low-paid workers appear to derive little wage progression benefit from living in a large city on the preferred measure.

The paper demonstrates the importance of measurement issues in spatial studies of wage progression from low pay. When identifying low-paid workers using an established low pay threshold based on the two-thirds of the national median wage, the results appear consistent with existing research identifying an urban wage growth premium, and findings suggesting that London and the South East of England function as a regional escalator (Fielding 1992). The findings indicate that low-paid workers in London, although not in other British cities, are more likely to move into higher-paid employment. Further analysis, however, suggests that these results are driven by the fact that the wage threshold used to identify transitions to higher pay is much lower in relation to the local wage distribution in London than in relation to the wage distribution of other local labour markets. When using an alternative, occupation-based method to identify low-paid workers in each local labour market, the positive effect of living in London on wage growth disappears, indicating that the earlier results do not signify increased relative mobility or a genuine progression premium for workers in London but are largely the product of the way the low pay threshold intersects the local wage distribution.

The findings suggest that neither of the two theoretical mechanisms discussed in relation to the urban wage growth premium – knowledge spillovers leading to faster human capital accumulation (Glaeser 1999; De la Roca & Puga 2012), and more efficient job matching in urban labour markets (Wheeler 2006; Yankow 2006) – are significantly evident for workers in low-paid jobs in Britain. Furthermore the results fail to find evidence that, when adjusting for differences in the wage distribution, cities acted as ‘escalators’ for those in low-paid employment. It is

possible that the overall absence of a city size effect masks differences between sub-groups of workers. Although the analysis presented here was inconclusive on this point it is an important area for further study.

The findings may be taken to suggest that the range of underlying barriers which structure progression from low pay are quite consistent across geographies. These may include sector-related issues in large low-paid sectors such as the often limited internal progression opportunities available in retail and hospitality firms (Lloyd et al. 2008), as well as supply-side factors such as the skills, ambitions and preferences of workers (Lloyd & Payne 2012; Gordon 2015). The finding that even in London –the largest and most economically successful cities in the UK – low wage workers do not appear noticeably more likely to experience earnings improvements emphasises the fact that economic growth does not necessarily translate into better outcomes for those at the lower end of the income distribution (Lee & Sissons 2016; OECD 2016). The lack of evidence of an urban progression premium for low-paid workers therefore adds further weight to the need for effective support services targeted at in-work progression (Adam et al. 2017; Sissons et al. 2017), as even in thick urban labour markets which in theory should provide the best conditions for career advancement, it cannot be assumed that moving individuals into work will lead to upward wage mobility over time.

The findings also provide insights in relation to the current policy focus on agglomeration as a driver of economic development, and particularly the question of ‘who benefits?’ (Florida, 2017). In recent decades local and regional development strategies have increasingly revolved around enhancing agglomeration economies (Pike et al. 2017), which in the UK has found expression in recent years in the notion of the Northern Powerhouse (an agglomeration of northern cities), as well as being one of the themes underpinning recently signed devolution agreements with several city regions (City Growth Commission 2014). While increasing the concentration of economic activity in major cities may lead to higher productivity and economic growth (Rosenthal &

Strange 2004; Melo et al. 2009), the results presented here suggest it offers limited benefits when it comes to improving wage progression for low earners.

There are a number of gaps identified by the study and ways the analysis might be built on. This analysis is focused on a particular time-period, one associated with recovery from recession and wage stagnation. Analysis over different time periods would allow assessment of the extent to which the findings are sensitive to different macroeconomic conditions. It would also be instructive to explore the risk of falling into low pay from higher-paid employment across different local labour markets, to test whether workers in more dynamic, competitive urban labour markets are more susceptible to wage and/or occupational regression. Finally, this study has focused on Great Britain and studies in other countries with differing forms of labour market regulation and institutions may find contrasting results.

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Notes

¹ Moreover, fixed effects estimates derived from mobile workers may be inconsistent if a worker's decision to relocate is influenced by a time-varying unobserved factor that is correlated with earnings (for example, if workers move between areas with the express purpose of acquiring a job with better progression prospects) (Baum-Snow & Pavan 2012).

² Understanding Society is the successor of a previous longitudinal household survey, the British Household Panel Survey, which ran from 1991 until 2008.

³ Although for larger TTWAs this self-containment level is relaxed to 67 per cent.

⁴ A drawback of the Understanding Society dataset is that earnings information is self-reported, which tends to be less reliable than using employer-provided wage data. To mitigate some of the potential consequences of inaccurately reported earnings, hourly wages were winsorized at the 1st and 99th percentile (for each year) to reduce the effect of the most extreme values.

⁵ Workers in the two occupational groups most often associated with low pay - sales and customer service occupations and elementary occupations – had an average hourly pay rate of £12.80 in London and £8.25 in Bradford during the period 2009-2014 (author's calculations based on Understanding Society data, amounts in 2014 prices).

⁶ There is a possibility that the inclusion of optimism as an independent variable will lead to endogeneity in the first part of the analysis which focuses on estimating the probability of making a transition to higher pay (table 2). Optimism may be determined by wages, and those with higher initial wages are more likely to cross the low pay threshold. The same issue may apply to the housing tenure variable as tenure is likely to be affected by wages. However, running the regressions without the optimism and tenure variables produces broadly comparable to those shown in table 2 (the marginal effects for London are slightly diminished but still significant, while the Core City effect is both reduced and now insignificant, rather than only marginally significant). Moreover, this potential endogeneity issue is unlikely to be a problem in the second part of the analysis where the dependent variable is a wage growth measure which is unlikely to have an effect on optimism or tenure at $t-1$.

⁷ Restricting the sample to within-firm transitions is also a useful way to control for differences in inter-firm mobility between local labour market size categories, as moving to a different employer tends to be associated with wage gains (Andersson et al. 2005).

⁸ In practice, however, few workers change occupation between $t-1$ and t : only 9 per cent of the sample.

⁹ Regression analysis controlling for worker and job characteristics suggests that workers in low-paid occupations receive a wage premium of approximately 10 per cent in London. The equivalent premium for workers in other (higher-paid) occupations is 18 per cent. Of course these wage premia are likely to be substantially smaller once higher housing costs in London are taken into account.

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Table 1: Average marginal effects derived from random-effects probit estimator on probability of escaping low pay from $t-1$ to t under national low pay threshold

	Model 1 (All transitions)	Model 2 (Within-Firm)	Model 3 (Between-firm)
Labour market size _{$t-1$} reference category: Non-cities			
London	0.159*** (0.030)	0.149*** (0.030)	0.239** (0.096)
Core Cities	0.035* (0.020)	0.027 (0.020)	0.131* (0.074)
Smaller cities	-0.009 (0.015)	-0.004 (0.016)	-0.055 (0.059)
Labour market weakness _{$t-1$} (JSA claimant proportion)	-0.011* (0.006)	-0.005 (0.006)	-0.053** (0.021)
Controls	YES	YES	YES
Log pseudolikelihood	-4302.03	-3960.23	-240.90
Observations	7,795	7,285	411

*** = significant at 1% level; ** = significant at 5% level; * = significant at 10%. Control variables are: sex, age, age squared, ethnic group, illness/health conditions, highest qualification, migrant status, dependent children in household, sole earner, housing tenure, optimism, job satisfaction, whether had break in employment between $t-1$ and t , full/part-time hours, temporary/permanent contract, occupation, industry, public/private sector, workplace size, union presence at workplace, and year dummies. Cluster robust standard errors in parentheses (clustered on workers). Robust standard errors could not be computed for Model 3 due to small sample size, so reported standard errors for this model are non-robust. Note that number of observations do not add up across models as for 99 observations it could not be determined whether a transition involved a change of employer.

Table 2: Transitions from low pay at $t-1$ to higher pay at t under national and local low pay thresholds (%)

TTWA size	Threshold 1 (2/3rds of median hourly pay for UK employees)	Threshold 2 (25th percentile of local wage distribution)
London	33.1	27.7
Core cities	26.1	26.4
Smaller cities	27.2	28.0
Non-cities	25.3	33.8
N	11,950	11,877

Source: Understanding Society, waves 1-5. Table shows per cent of low paid at $t-1$ who leave low pay at t . Weighted estimates.

Table 3: Regression coefficients random-effects estimator on growth in real hourly pay from $t-1$ to t for workers in low-paid occupations at t , controlling for effect of minimum wage increases

	Model 4 (All transitions)	Model 5 (Within- Firm)	Model 6† (Between- firm)
Labour market size $_{t-1}$ reference category: Non-cities			
London	-0.082 (2.541)	-0.091 (2.259)	0.341 (13.603)
Core Cities	0.098 (1.849)	1.123 (1.768)	-5.000 (11.839)
Smaller cities	-0.730 (1.489)	0.149 (1.371)	-2.252 (8.787)
Labour market weakness $_{t-1}$ (JSA claimant proportion)	-0.530 (0.522)	-0.199 (0.497)	-4.658 (3.581)
% local workers earning < min. wage $_{t-1}$	0.135* (0.076)	0.136** (0.069)	-0.065 (0.516)
Controls	YES	YES	YES
R ² (overall)	0.029	0.026	0.096
Observations	4,293	4,021	467

*** = significant at 1% level; ** = significant at 5% level; * = significant at 10%. Control variables are: sex, age, age squared, ethnic group, illness/health conditions, highest qualification, migrant status, dependent children in household, sole earner, housing tenure, optimism, job satisfaction, whether had break in employment between $t-1$ and t , full/part-time hours, temporary/permanent contract, occupation, industry, public/private sector, workplace size, union presence at workplace, and year dummies. Robust standard errors in parentheses. Robust standard errors could not be computed for Model 6 due to small sample size, so reported standard errors for this model are non-robust. Wage growth winsorized at 1st and 99th percentile. †Union variable and optimism variable left out of controls as low response rates on these variables would result in insufficient observations for model to be estimated.