City Research Online

City St George's, University of London

Citation: Stokes, L., Bryson, A., Forth, J. & Weale, M.E. (2017). Who Fared Better? The Fortunes of Performance Pay and Fixed Pay Workers through Recession. British Journal of Industrial Relations, 55(4), pp. 778-801. doi: 10.1111/bjir.12245

This is the accepted version of the paper.

This version of the publication may differ from the final published version. To cite this item please consult the publisher's version.

Permanent repository link: https://openaccess.city.ac.uk/id/eprint/20900/

Link to published version: https://doi.org/10.1111/bjir.12245

Copyright and Reuse: Copyright and Moral Rights remain with the author(s) and/or copyright holders. Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge, unless otherwise indicated, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way. For full details of reuse please refer to City Research Online policy.

City Research Online: http://openaccess.city.ac.uk/ publications@citystgeorges.ac.uk

Title: Who fared better? The fortunes of performance pay and fixed pay workers through recession

May 2017

Authors:

Lucy Stokes, Research Fellow, National Institute of Economic and Social Research (NIESR)

Alex Bryson, Professor of Quantitative Social Science, UCL Department of Social Science, NIESR Fellow and Research Fellow at IZA, Rutgers and WISERD.

John Forth, NIESR Fellow

Martin Weale, Professor of Economics, King's College London and Honorary Fellow, NIESR

Corresponding author:

Lucy Stokes

Email: l.stokes@niesr.ac.uk

Address: National Institute of Economic and Social Research

2 Dean Trench Street

Smith Square

London

SW1P 3HE

Word count: 9,533 words (excluding abstract)

Acknowledgements

This work is funded by the Economic and Social Research Council, Grant Reference ES/I035846/1. We thank Professor Andy Dickerson and two anonymous referees for their helpful comments, as well as participants at the 2015 Royal Economic Society Conference, the 18th Colloquium on Personnel Economics and the NIESR Performance Pay workshop. The paper includes analyses based on data from the Annual Survey of Hours and Earnings, the Business Structure Database and the Annual Business Survey, all produced by the Office for National Statistics (ONS) and supplied by the Secure Data Service at the UK Data Archive. The data are Crown Copyright and reproduced with the permission of the controller of HMSO and Queen's Printer for Scotland. The use of the data in this work does not imply the endorsement of ONS or the Secure Data Service at the UK Data Archive in relation to the interpretation or analysis of the data. This work uses research datasets which may not exactly reproduce National Statistics aggregates.

Abstract

Using the Annual Survey of Hours and Earnings we explore whether the fortunes of employees paid for performance differ from those of fixed pay workers during recession. Only in the bottom quintile of the wage distribution were performance pay employees more likely to experience greater falls in real wages than fixed pay employees. Accounting for fixed unobserved worker characteristics suggests this was not due to the wage-setting mechanism itself, but that other factors are likely to be at play. While across most of the earnings distribution there was little evidence of greater wage flexibility among performance pay employees, they did have longer job tenure than fixed pay employees over the recession.

1. Introduction

The period since the financial crisis of 2008 has seen very low rates of growth in nominal earnings, and a decline in real earnings on a scale not experienced for many years. At the same time employment levels have held up much better than past experience would have suggested given the sharp fall in output in 2008/9 and the four years of stagnation which followed. While there have been a number of discussions of these aggregate trends, including some which have sought to map the trajectories for individual workers (e.g. Elsby et al, 2013; Gregg et al., 2014), there has been relatively little in-depth analysis of the role of wage-setting mechanisms in either exposing workers to risk or protecting them from it through this period.[1]

For many employees a share of their total wage is conditional upon their performance, or the performance of some broader unit to which they belong, such as a team, a department or the whole firm. In this paper we examine whether employees in these performance pay jobs fared differently in terms of wage growth and labour market prospects through the recent recession than their counterparts in fixed pay jobs. In theory we might anticipate that, since performance pay workers share the income risks of economic shocks with their employers, their earnings may be more flexible than those of fixed pay employees, at least in the depths of recession. However, for this very reason, they may experience more stable employment patterns than fixed pay workers, whose 'stickier' wages may make them susceptible to job loss. This micro behaviour would, at a macro level translate into bonuses playing the role suggested by Gordon (1982) as a

factor facilitating wage flexibility and thus employment stability in the face of macro-economic fluctuations.

The relationship between profit-sharing, employment and wages was studied by Wadhwani and Wall (1990) using company data. Instead we look at data on individual workers and consider a broader definition of performance pay that goes beyond profit sharing. To our knowledge, ours is the first paper to explore the contribution of performance pay to wage flexibility in the recent recession. We explore how the evolution of wage growth has differed among individuals in performance pay jobs compared with workers in jobs where there is no performance pay component, both for all workers as well as considering differences between workers at different points in the earnings distribution. As well as examining the consequences for wage flexibility we consider the implications for job tenure. Our primary data source is the Annual Survey of Hours and Earnings: it provides very accurate information on earnings and allows us to follow individuals over time; this longitudinal component to the survey enables us to move beyond a simple identifier of the *receipt* of performance pay and to arrive at a more comprehensive identification of employees that are working in performance pay *jobs*. Our analysis is conducted for the private sector only, where performance pay is more prevalent.[2]

The paper is organised as follows. Section Two provides a brief overview of the literature and sets out our key hypotheses. Section Three introduces the data. Section Four presents our results, and Section Five concludes.

2. Existing evidence and hypotheses

In the period before the financial crisis nominal average earnings typically grew by around four to five per cent per annum (Levy, 2013: Figure A4). This growth rate briefly fell below zero in early 2009 and, after a short bounce, settled in the region of one to two per cent over the period 2010-2012. Movements in nominal regular pay (excluding bonuses) were less pronounced over this period, but the growth rate similarly fell by at least half, from around four per cent before 2008 to around one to two per cent in the subsequent years. At the level of the individual worker, instances of zero wage growth and wage cuts also became more common, with Gregg et al. (2014) finding that, among employees working in the same job between 2009 and 2012, around one third received a cut in their nominal hourly base pay in at least one year of the downturn.

In theory, we may expect the wages of performance pay workers to show greater flexibility in a downturn, as employers are perhaps more readily able to adjust labour costs where wages include a performance element. Some past studies provide empirical support for this; Nickell and Quintini (2003), using the New Earnings Survey (NES) for the period 1975-1995, found that workers who received some performance pay were less likely to experience a freeze in nominal pay, and more likely to experience a nominal pay cut, than fixed pay workers. They therefore suggested that performance pay was a key element in wage flexibility, although they noted that even among workers with no performance pay, a considerable proportion still received pay cuts. In contrast, Smith (2000), using the British Household Panel Survey for the period 1991-1996, reported no difference in the proportion of employees receiving a nominal pay cut between those that received bonuses and those that did not. For the US, Devereux (2001) showed greater

wage cyclicality for workers paid by piece rate or commission compared to salaried or hourly paid workers over the period 1970-1991. Devereux also showed that, among salaried workers, a major source of variation in their total earnings was due to variation in performance pay and overtime, rather than the salary component. He hypothesised that if these forms of performance pay were to become more common, greater wage cyclicality would be observed in the economy at large.

An alternative perspective is obtained by considering the impact of regional or industry specific shocks. Lemieux et al. (2012), using the US Panel Study of Income Dynamics, find that while wages of performance pay workers downwardly adjust in response to local labour market shocks (proxied by an increase in the local unemployment rate), those of fixed pay workers do not. Furthermore, such shocks lead to a reduction in hours worked for fixed pay workers while hours worked by performance pay workers are unaffected. Pischke (2016) investigates the response of wages and employment to the housing cycle for three occupations in the housing sector with varying forms of wage contract. The wages of real estate agents (for whom performance pay accounts for a considerable part of their remuneration) are found to be more flexible in response to a labour demand shock than wages of architects and construction workers, while their employment is less affected.

Other evidence does suggest that it is not only performance pay workers who have wages that are sensitive to fluctuations in the fortunes of their employer. The literature on rent-sharing indicates that, after controlling for the characteristics of individual employees, the wage that the average employee receives is sensitive to the profitability of the firm in which they are employed (Blanchflower et al., 1996), although the recent

work of Bell and Van Reenen (2011) does suggest an important role for performance pay in distributing any rents across workers within a given firm.

Wage flexibility is not the only reason why firms might offer bonuses however. To the extent that firms employ people who belong to salary-based pension schemes rather than defined contribution pension schemes, wages paid by means of bonuses have the attraction that they are typically not pensionable. Thus, bonuses may simply be a means of offering increased take-home pay at lower cost to the employer than would a seemingly equivalent base salary. If this were an important aspect of bonuses, they might be little more flexible than base pay. Another reason why firms might pay bonuses is because they think that they should: if both parties to the wage contract regard bonuses as a normal part of remuneration (a key conjecture of Wadwhani and Wall, 1990), then any tax surcharge or statutory cap on bonuses would be translated one for one into higher basic pay. Broader research by Green and Heywood (2016) suggests that bonus payments are not divorced from base wages and that there is a degree of substitution between the two.

Finally, bonuses may be a part of a structure of *relative* incentives within the firm; to the extent that bonus arrangements allow firms to reward individuals who perform above average and to penalise those who perform below it, they will play much the same role in bad times as in good.

Given the above, we explore four hypotheses relating to the experiences of performance pay workers in recession:

Hypothesis 1: employees in performance pay jobs have experienced greater flexibility in earnings than fixed pay workers through recession

For the reasons outlined above we expect that, in a longitudinal setting, workers in performance pay jobs will experience greater flexibility in their wages than workers in fixed pay jobs. We focus on wage changes among employees who remain in the same job from one year to the next. We are then able to focus on the degree of wage flexibility that is apparent under different wage-setting mechanisms in continuing jobs.

Hypothesis 2: the extent to which wage flexibility in performance pay jobs exceeds wage flexibility in fixed pay jobs will be greater at higher points in the wage distribution

Our second hypothesis focuses on whether experiences of performance pay workers have differed according to their position in the earnings distribution. For the US, Guvenen et al (2014) show that earnings among the top 1% of earners are more pro-cyclical than for the average. We also know from existing literature that employees at the top end of the earnings distribution are much more likely to be in performance pay jobs and receive a greater proportion of their total pay in the form of bonuses. For the UK, Bell and Van Reenen (2011) find substantial rent-sharing for chief executive officers (CEOs), with smaller effects lower down the corporate hierarchy. Their work suggests that the main mechanism for rent-sharing is through the use of cash bonuses; CEOs receive more of their remuneration as bonuses than do other workers, and base salaries are not very responsive to firm performance. For these reasons, we hypothesise that wages of performance pay workers will show even greater flexibility than the wages of fixed pay workers at higher points in the earnings distribution.

Hypothesis 3: performance pay workers were less likely to experience changes in hours worked in recession than fixed pay workers

Hypothesis 4: employees in performance pay jobs experienced longer job tenure through recession than employees in fixed pay jobs

Employers may of course take other actions than changes to wage rates in response to recession. Where employers have less flexibility over the wage rate paid to their employees, an alternative action when faced with increasing cost pressures may be to reduce labour costs by reducing the size of the labour force. This may occur through reducing the number of people employed, or through retaining employees but reducing their paid hours. We expect that the greater wage flexibility offered by performance pay contracts will protect employees to some extent from these pressures, meaning that they are less likely than fixed-wage workers to experience job loss or hours reductions.

3. Data and earnings measures

Data:

We analyse data from the Annual Survey of Hours and Earnings (ASHE) (ONS, 2013). ASHE is based on a random sample of 1 per cent of all employees in Britain. Their employers are surveyed each April and asked to provide a wide range of information about the employee's earnings during the preceding year, including the amount of bonus or incentive pay received. The survey also asks about the employee's earnings and hours during the current pay period (also described as the reference period).

The survey is carried out by the UK's Office for National Statistics (ONS) and is mandatory.

We augment the ASHE data with information from the ONS Business Structure Database (BSD) which is an annual snapshot of all firms in the economy, taken from the UK's official business register (the Inter-Departmental Business Register or IDBR). The BSD provides richer information on the characteristics of the employing unit, including firm age and foreign ownership (ONS, 2014a).

We also bring in firm-level data from the ONS Annual Business Survey (the ABS, formerly the Annual Respondents Database) (ONS, 2012; ONS 2014b). This is an annual census of firms with 250 or more employees, and a sample survey of smaller firms. It collects data on the firm's income and expenditure over the preceding financial year, thereby allowing us to bring into ASHE an indicator of the financial performance of the firm in those cases where the employee's firm is also surveyed in the ABS.

Measures of earnings:

We focus on the measures of earnings that relate to the preceding year, rather than merely the current pay period, in order not to miss any bonus payments that are not paid in the pay period covered by ASHE's April survey date. Forth et al. (2016) show that bonuses are highly seasonal. A focus on the April pay period alone thus risks understating the importance of bonus payments, and is likely to do so differentially across occupations and industries.

All estimates of pay presented in this paper focus on hourly pay based on total gross annual earnings (to be consistent with our annual measure of total incentive pay) and hours worked from the reference period to convert this to an hourly rate.

Unfortunately, ASHE does not contain information on total annual hours worked, so we are reliant on the hours recorded for the pay period. The clear drawback is that the hours worked in the reference period may not be typical of those for the remainder of the year. However, this approach is adopted in other analyses using ASHE (for example, Bryson et al., 2016) and elsewhere Bryson and Forth (forthcoming) show that hours worked in March or April are a good proxy for annual hours.[3]

The question about annual incentive pay was first introduced into ASHE in 2002. However in this paper we focus on the period from 2005 to 2012 as a change to the design and wording of the question in 2005 indicates that the incidence of incentive pay was understated in the period 2002-2004. In each year from 2005-2012, employers were asked, "For the tax year ending 5 April [year],... how much bonus or incentive payments did the employee receive for the current job?". They are instructed to include "profit sharing, productivity performance and other bonus or incentive pay, piecework and commission", and to exclude "basic, overtime and shift premium pay". Our final analysis sample contains a total of 799,942 observations for the period 2005-2012 (see Table 1). As noted earlier, this sample, and our analysis, relates to the private sector only. While the use of performance pay has been growing in the public sector, it remains far less common than in the private sector; furthermore, evidence suggests there are important differences between the nature of performance pay and its effects in the two sectors (Bryson et al., forthcoming). Our hypotheses relate more clearly to market wage-setting than they do to the public sector where considerations other than firm profitability may affect wage determination following an economic shock.

[TABLE 1 HERE]

Identifying performance pay jobs:

Our basic measure of earnings focuses on receipt of performance pay. Yet in a given year, some individuals will be working in a job where they are eligible to receive performance pay, but do not receive a performance payment at that time. If we focus on receipt of performance pay alone, we are likely to underestimate the prevalence of performance pay jobs, particularly during a downturn. To explore wage flexibility among employees in performance pay and non-performance pay jobs, we therefore make use of information in ASHE that allows us to identify performance pay jobs, following the work of Lemieux et al. (2009) for the US (see Appendix for details).

The resulting estimates of performance pay jobs are presented in Figure 1. On this basis, just over half of jobs in the private sector were performance pay jobs over the period 2005-2012. In contrast, only two-fifths of all private sector jobs entailed the receipt of performance pay, indicating that around one quarter of all performance pay jobs paid no bonus in any given year.

Our measure may overestimate the number of performance pay jobs if some jobs are not covered by a performance pay scheme for the whole of their duration (i.e. if the employer introduces or withdraws a performance pay scheme part-way through the period for which the job is observed). It may also be an overestimate if some jobs have been identified as performance pay jobs but where there are only ever intended to be one-off payments, as for example, in the case of jobs involving signing bonuses. However, receipt of performance pay did not appear to be particularly high in the first year of

performance pay jobs. Furthermore, if we alter our definition of a performance pay job so that we only classify jobs as performance pay jobs if performance pay is received in at least two years of the job, our main results are substantively unchanged.[4] Nevertheless, given the potential for overestimating the number of performance pay jobs, the red line in Figure 1 is perhaps best considered an upper bound of the prevalence of performance pay jobs. It is noticeable from Figure 1 that, whilst receipt dipped in the period 2008-2010, the prevalence of performance pay jobs remained broadly stable.

[FIGURE 1 HERE]

4. Results

Hypothesis 1: employees in performance pay jobs have experienced greater flexibility in earnings than fixed pay employees through recession

Here we focus on the degree of wage flexibility that is apparent under different wage-setting mechanisms in continuing jobs, with the expectation that, in a longitudinal setting, workers in performance pay jobs will experience greater flexibility in their wages than workers in fixed pay jobs. On average, in our sample, around 60% of employees in a given year are observed in the same job in the following year.

Figure 2 shows the percentage of employees experiencing a cut in their nominal pay, separately for employees in performance pay and fixed pay jobs (note that the sample changes from year to year). We define an employee as having received a nominal pay cut where they experienced a fall of more than one per cent in their nominal wage over a year. Even prior to recession, a substantial proportion of employees – around 30

per cent in any given year - received a cut in their nominal pay, but this figure rose to over 35 per cent in 2009-2010 following the onset of the recession. In most years, pay cuts were actually more common among fixed pay employees than those in performance pay jobs, but the exception is 2009-10, when this pattern was clearly reversed. This was the result of a particularly sharp rise in the percentage of performance pay jobs that delivered nominal pay cuts, from 26 per cent in 2007-8 to 38 per cent in 2009-10.

[FIGURE 2 HERE]

To clarify whether the pattern seen in Figure 2 might be a feature of the wage-setting mechanism or an incidental product of other observable employee or job characteristics, we ran linear estimations of the probability that an employee received a nominal pay cut in which we controlled for a range of employee, job and employer characteristics. The results are presented in Table 2, which also lists the full set of controls. After adding a standard set of controls, the likelihood of experiencing a cut in nominal total pay was no different between performance pay and fixed pay jobs in the years leading up to the recession. But the likelihood was around one percentage point higher in performance pay jobs than in fixed pay jobs in 2008-9 and around 4 percentage points higher in 2009-10 (see second panel of Table 2).

[TABLE 2 HERE]

A similar pattern is apparent if we explore growth in log real hourly wages, defined as the difference in log real total hourly wages between year t and year t+1 (Table

3). Here the coefficient on the performance pay job dummy is either zero or positive from 2005-6 to 2008-9, but then we see slower real wage growth (or effectively, faster real wage decline) for performance pay employees compared with fixed pay employees between 2009 and 2010. This accords with the pattern of nominal wage cuts, although here in the case of total hourly wages, this pattern is reversed in the following year.

[TABLE 3 HERE]

The greater prevalence of nominal pay cuts and slower real wage growth among performance pay workers at the onset of recession suggests that their wages were more flexible than those of fixed pay workers in the face of the downturn. However, in this analysis we are tracking wage changes by reference to changes in macroeconomic conditions, as proxied by annual time periods. In practice, there is a great deal of heterogeneity across firms within a given year, with some performing better than average, and others worse.

For the subset of employees for whom we have information on the performance of the firms in which they work, we can explore the role of firm performance in more detail. To do so we match in information on gross value added from the ABS (and the ARD in years prior to 2008), using this to construct a measure of quasi-rents calculated as gross value added per employee, minus the average industry wage (constructed at the 2 digit industry level). This follows the approach taken by Bell and Van Reenen (2011), who were in turn inspired by Card et al.'s (2011) study of rent-sharing in Italy. Our preferred specification controls for contemporaneous growth in firm performance (measured as log

growth in our quasi-rent measure, deflated using the GDP deflator), as well as growth in the two prior years, and also controls for the level of firm performance in the base year. Our intention is to control for the possibility that the disadvantage experienced by workers in performance pay jobs around the time of the downturn may simply reflect a greater prevalence of such jobs in firms that suffered most in recession, rather than being a function of the wage-setting mechanism *per se*.

We are able to construct our measure of quasi-rents (including lags) for between 30 and 40 per cent of our original sample (varying by year). Repeating the regressions of nominal wage cuts and real wage growth for this subset of employees, but without adding any controls for firm performance, we find there is still a greater likelihood of nominal wage cuts in performance pay jobs in 2009-10 in this sample (third panel of Table 2) and still a lower rate of growth in real hourly wages (third panel of Table 3). Once we include our controls for firm performance, the coefficients are largely unchanged (fourth panels of Tables 2 and 3). Thus workers in performance pay jobs fared worse in terms of wage growth between 2009 and 2010 when compared with fixed pay workers, even after controlling for variations in the performance of their firms. This result is robust to various different specifications of firm performance. It provides further evidence that those employers who made a share of their employees' total wages conditional on output or effort were able to use this flexibility to exert greater downward pressure on wage costs when macroeconomic conditions changed for the worse.

The analysis thus far has focused on total earnings. Our expectation has been that the greater flexibility seen in real wages of performance pay workers, compared to fixed pay workers, has been exerted through changes in the bonus element of pay. We would

therefore expect that if we focus on changes in base pay, that we would not see the same pattern. Table 4 presents results from equivalent regressions of the growth in log real hourly base pay. In fact, we see that performance pay workers were also more likely to have experienced slower growth in real base pay between 2009 and 2010. Hence greater flexibility has not been exerted through bonuses alone. Indeed the coefficient is of a similar size to that seen in Table 3, suggesting that bonuses and base pay in performance pay jobs were restrained to a similar extent.

[TABLE 4 HERE]

The fact that those in performance pay jobs were more flexible on base pay than their fixed pay counterparts could reflect unobserved heterogeneity with respect to job characteristics. To test for this we replaced our single-digit occupational classification with a more detailed occupational classification at the three-digit level: the results were essentially unchanged. Alternatively, the finding could reflect unobserved differences between performance pay and fixed pay employees. To examine this possibility we introduced worker fixed effects in a pooled years regression (Table 5). We divide our sample into two periods, with the first capturing the years prior to recession (2005/6 to 2007/8) and the second corresponding to the period including and following recession (2008/9 to 2011/12).[5] In line with the yearly results presented in Table 4, for the period prior to recession, growth in base pay for performance pay employees is not significantly different to that for employees in fixed pay jobs. This remains the case when including worker fixed effects. For the period including and post-recession, while we see a negative

coefficient on our performance pay job dummy in the pooled model, this becomes insignificant with the inclusion of worker fixed effects. If we repeat this for growth in total pay and nominal wage cuts, the same results are evident. This suggests that the apparent greater wage flexibility is not a result of the wage setting mechanism itself, but that other factors are at play. It suggests there may be a degree of negative selection into performance pay jobs, and points to the possibility that the greater downward wage pressure experienced by workers in performance pay jobs at the onset of recession may actually have come about because they had lower bargaining power than equivalent workers in fixed pay jobs.

[TABLE 5 HERE]

Hypothesis 2: the extent to which wage flexibility in performance pay jobs exceeds wage flexibility in fixed pay jobs will be greater at higher points in the wage distribution

Table 6 reports results from separate regressions of log real wage growth for each quintile of the earnings distribution, after dividing workers into quintiles through reference to their base pay at the start of the year. Here we see that in the top two quintiles, log real wage growth was actually higher for performance pay workers than fixed pay workers in all years of our analysis period. It is only in the bottom quintile that we see lower growth in real total wages in performance pay jobs compared to fixed pay jobs in recession years. The findings are similar when controlling for firm performance.[6]

[TABLE 6 HERE]

What happens to base pay by quintile? In aggregate we saw slightly lower growth in base pay for performance pay workers in 2009/10 compared to fixed pay workers. Again it is performance pay workers in the bottom quintile of the earnings distribution who see lower growth in base wages than fixed pay workers in recession (2009-10, as well as 2011-12 in this sample), while in the top quintile, the pattern is reversed (Table 7). In pooled years regressions by quintile, for the period prior to recession, we find a significant positive coefficient on the performance pay job dummy in all quintiles, which becomes insignificant when worker fixed effects are included (Table 8). In the period including and post-recession, the coefficient on the performance pay job dummy is negative and significant for employees in the bottom quintile, but becomes insignificant with the inclusion of worker fixed effects. These findings suggest that the apparent differences in wage growth between performance pay and fixed pay workers are not a result of the wage-setting mechanism itself. The one perhaps somewhat puzzling exception is the second from top quintile, where a significant and positive coefficient on the performance pay job dummy remains even after the inclusion of worker fixed effects. This is apparent for both growth in base pay and growth in total pay.

[TABLE 7 HERE]

[TABLE 8 HERE]

We had hypothesised that the separate regressions by earnings quintile might provide further evidence that greater wage flexibility occurred through the wage-setting

mechanism of performance pay. Instead we find evidence consistent with differential selection into performance pay jobs across the wage distribution. This may be indicative of differences in the relative bargaining power of performance pay and fixed pay workers at different points in the earnings distribution, with performance pay jobs at the top of the earnings distribution going to those with the highest bargaining power, who are then able to extract a disproportionate share of any available rents, and performance pay jobs at the bottom of the earnings distribution going to those with the lowest bargaining power, who are then very limited in their ability to resist employer demands for wage restraint.

Hypothesis 3: performance pay workers were less likely to experience changes in hours worked in recession than fixed pay workers

Our analysis now moves on to look at changes in hours. Our hypothesis was that performance pay workers may be less likely to experience reductions in the number of paid hours, because of the apparent flexibility present in their wage.

We look at the percentage change in hours from one year to the next for employees who remained in the same job. Here we present pooled results for the periods prior to and including/post-recession (Table 9). In aggregate, the hours of performance pay workers rose more (or fell less) than did the hours of workers in fixed wage jobs in both periods. But again, when exploring differences by quintile, more variation is apparent. In the top two quintiles, there is no difference in changes in hours worked between performance pay and fixed pay workers. In the middle quintile, hours worked grew by less for performance pay workers than fixed pay workers. It is only for those employees in the bottom quintile of the earnings distribution where hours worked of

performance pay employees increased by more (or fell by less) than those of fixed pay workers. These mixed patterns across quintiles mean it is difficult to draw general conclusions as to whether performance pay employees fared better or worse in terms of changes in hours worked in recession. Once we introduce worker fixed effects, we generally find no significant difference in changes in hours worked between performance pay and fixed pay workers. The exception is for employees in the bottom quintile of the earnings distribution, in the period prior to recession, where once fixed unobserved worker characteristics are accounted for, the coefficient on the performance pay job dummy became negative and significant, suggesting performance pay workers saw lower growth in hours worked than fixed pay workers. However, in the period including and following the recession, there was no discernible impact of being in a performance pay job once worker fixed effects were included.

[TABLE 9 HERE]

Hypothesis 4: employees in performance pay jobs experienced longer job tenure through recession than employees in non-performance pay jobs

Where employers are able to adjust labour costs more readily by adjusting bonus payments, it may be that employees in performance pay jobs are more likely to hold on to their jobs when firms hit hard times. To explore this issue we apply survival analysis to explore job tenure among performance pay and fixed pay workers.

We begin the analysis in 2007, the year prior to recession. We follow individuals from 2007 until their job match comes to an end. This may come about because the

employee moves to another job, which may itself be the choice of either the employer or the employee. It may also come about because the employee leaves employment entirely, or their employer may simply have not responded to the survey in that year. We are unable to tell with any certainty which of these scenarios applies. Our choice of 2007 as the starting year is also helpful because the sample size for ASHE was cut in this year; if we had chosen an earlier year as our starting point we would inadvertently have lost some individuals from the sample at the point when this reduction was made.

Figure 3 presents Kaplan-Meier survival plots for the time until the job match comes to an end, split according to whether the individual is employed in a performance pay job or not. After one year (i.e. in 2008), around 30 per cent of those in performance pay jobs in 2007 were no longer in the same job, while for fixed pay jobs, this proportion stood at around half. On average, performance pay jobs lasted longer over this period. There is a greater hazard of job exit for those in fixed pay jobs.

Figure 4 extends this to consider differences between those earning above and below the median. Those most at hazard of job loss are those in fixed pay jobs earning below the median.

[FIGURES 3 AND 4 HERE]

The top panel of Table 10 then reports results from Cox proportional hazard regressions, after controlling for differences in worker and job characteristics. Performance pay workers were less likely to end their job match; their hazard rate was 30% lower than for equivalent workers in non-performance pay jobs. This finding applied in all quintiles of the earnings distribution and was also robust to controlling for differences in firm performance. We had hypothesised that performance pay jobs would last longer due to their greater wage flexibility, but the limited evidence we find in support of wage flexibility suggests that other explanations are warranted instead. One possibility is that performance pay workers are keener to remain in their jobs. We know from existing evidence that performance pay jobs pay more (Bryson et al., 2016); this could potentially explain the longer observed job tenure among performance pay employees.

[TABLE 10 HERE]

6. Conclusions

There is a long-standing macro-economic literature that points to the potential employment benefits of pay flexibility induced by pay for performance (Weitzman, 1984). Although the notion has been challenged due to potential unintended consequences of sharing profits with workers (Gordon, 1982), the basic micro-economic intuition is that, if performance pay workers share the income risks of economic shocks with their employers, their earnings will be more sensitive to firm performance than their

fixed pay counterparts, helping employers to manage labour costs which, in turn, may result in longer job tenure and lower base wages. Performance pay employees may experience more stable employment patterns than fixed pay workers whose 'stickier' wages may make them susceptible to job loss. Ours is the first paper to exploit the exogenous shock to firm performance in the Great Recession to test these propositions for Britain.

For employees who remained in the same job from one year to the next, we find that performance pay employees were more likely to experience nominal wage cuts than fixed pay employees during the recession. This 'wage gap' was apparent for hourly wages and was not driven by differential hours flexibility. Performance pay workers also experienced a slightly greater fall in real wages than non-performance pay workers. This finding remained even controlling for variation in firm performance. However, this fall in earnings was not purely a result of declines in the performance element of pay – it was also apparent in base pay. We speculate that this may reflect differences in bargaining power among workers. Once we account for fixed unobserved worker characteristics there is little evidence to indicate that wages were more flexible in performance pay jobs.

Employees' experiences differed substantially depending on their position in the earnings distribution – wages of high earning performance pay workers continued to grow faster than those of fixed pay workers. It was only among employees in the bottom quintile where earnings growth was significantly lower among performance pay workers. These workers experienced cuts in real hourly base pay in 2009-10 and seem to have responded with an increase in hours worked. Again, this may be linked to the differential bargaining power of workers in different parts of the earnings distribution: it may be that

workers paid for performance towards the bottom of the earnings distribution are least able to resist downward wage pressures during recession. It is conceivable that positive worker selection into performance pay jobs, as proposed by Lazear (1986), for example, operates higher up the earnings distribution, but that those entering performance pay jobs at the lower end of the earnings distribution are those workers with lower potential earnings who have limited outside options. This would accord with Green and Heywood's (2016) finding that workers at the lower end of the earnings distribution sacrifice a substantial part of their fixed wage when in receipt of bonuses, whereas the degree of substitution is virtually zero among high earners.

Finally we find performance pay employees had longer job tenure than fixed pay employees during and after the recession. This alone suggests that performance-related pay is no longer, as Wadhwani and Wall (1990) suggested, much ado about nothing. However, unlike the findings in relation to wage growth, performance pay jobs were more likely to last than fixed pay jobs among workers across the whole earnings distribution, suggesting mechanisms other than a direct link between earnings restraint and job stability are likely to be at play.

References

Bell, B. and van Reenen, J. (2011). “Firm Performance and Wages: Evidence from across the Corporate Hierarchy”. CEP Discussion Paper No 1088.

Blanchflower, D., Oswald, A. and Sanfey, P. (1996). “Wages, Profits and Rent Sharing”. *Quarterly Journal of Economics*, 111: 227-52.

Bryan, M. and Bryson, A. (2016). "Has Performance Pay Increased Wage Inequality in Britain?", *Labour Economics*, 41: 149-161.

Bryson, A. and Forth, J. (forthcoming). “Wage Growth in Pay Review Body Occupations”, Report to the Office for Manpower Economics.

Bryson, A., Forth, J. and Stokes, L. (2016). "The Performance Pay Premium and Wage Dispersion in Britain", *The Manchester School*, doi: 10.1111/manc.12174

Card, D., Devicienti, F. and Maida, A. (2011). “Rent-sharing, hold-up and wages: evidence from matched panel data”, IZA Discussion Paper No. 6086.

Devereux, P. (2001). “The Cyclicality of Real Wages within Employer-Employee Matches”, *Industrial and Labor Relations Review*, 54 (4): 835-850.

Elsby, M, Shin, D. and Solon, G. (2013). “Wage adjustment in the Great Recession”, NBER Working Paper No. 19478.

Forth, J., Bryson, A. and Stokes, L. (2016). “Are firms paying more for performance?”, *International Journal of Manpower*, 37(2): 323-343.

Gordon, R.J. (1982). “Why US Wage and Employment behaviour different from that in Britain and Japan”. *The Economic Journal*. Vol 92. pp. 205-244.

Green, C. and Heywood, J. (2016). "Don't forget the gravy! Are bonuses and time rates complements?", *Industrial Relations*, 55(3): 490-513.

Gregg, P., Machin, S. and Fernandez-Salgado, M. (2014). “The squeeze on real wages – and what it might take to end it”, *National Institute Economic Review*, R3-R16.

Guvenen, F., Kaplan, G. and Song, J. (2014). “How risky are recessions for top earners?”, NBER Working Paper 19864.

Lazear, E. (1986). “Salaries and piece rates” *Journal of Business* 59: 405-31.

Lemieux, T., MacLeod, W. B., Parent, D. (2009). "Performance Pay and Wage Inequality", *Quarterly Journal of Economics*, 124 (1): 1–49.

Lemieux, T., MacLeod, W.B., Parent, D. (2012). "Contract Form, Wage Flexibility, and Employment." *American Economic Review*, 102(3): 526-31.

Levy, S. (2013). *Changes in Real Earnings in the UK and London, 2002 to 2012*, London: Office for National Statistics.

Nickell, S. and Quintini, G. (2003). "Nominal wage rigidity and the rate of inflation," *The Economic Journal*, 113(490): 762-781.

Office for National Statistics (2012). Annual Respondents Database, 1973-2008: Secure Access [computer file]. 3rd Edition. Colchester, Essex: UK Data Archive [distributor], June 2012. SN: 6644.

Office for National Statistics (2013). Annual Survey of Hours and Earnings, 1997-2012: Secure Access [computer file]. 4th Edition. Colchester, Essex: UK Data Archive [distributor], June 2013. SN: 6689 , http://dx.doi.org/10.5255/UKDA-SN-6689-4

Office for National Statistics (2014a). Business Structure Database, 1997-2013: Secure Access [computer file]. 4th Edition. Colchester, Essex: UK Data Archive [distributor], January 2014. SN: 6697.

Office for National Statistics (2014b). Annual Business Survey, 2008-2012: Secure Access [computer file]. 2nd Edition. Colchester, Essex: UK Data Archive [distributor], September 2014. SN: 7451 , http://dx.doi.org/10.5255/UKDA-SN-7451-2.

Pischke, J.-S. (2016). Wage Flexibility and Employment Fluctuations: Evidence from the Housing Sector, NBER Working Paper No. 22496.

Smith, J. C. (2000). "Nominal Wage Rigidity in the United Kingdom," *The Economic Journal*, 110(462): C176-95.

Wadhwani, S. and Wall, M. (1990). "The Effects of Profit-Sharing on Employment, Wages, Stock Returns and Productivity: Evidence from UK Micro-Data". *The Economic Journal*, 100(399): 1-17.

Weitzman, M.L. (1984). *The Share Economy*, Harvard University Press, Cambridge.

[1] The exceptions are perhaps Elsby et al. (2013: 21-22) and Van Wanrooy et al. (2013: 93), both of which briefly consider the role of unions.
[2] Using data from the 2011 Workplace Employment Relations Study, Bryson et al. (2014) find the incidence of performance pay is four times higher in the private sector than the public sector (28 per cent of employees compared with 7 per cent).
[3] We might also be concerned whether hours worked are reported for all workers, or more specifically, whether hours were less likely to be reported for certain types of performance pay workers, such as those on piece rates. In fact, hours worked are available for the vast majority of employees in the dataset (indeed basic hours are imputed in the ASHE data provided unless an employee's pay has been affected by absence). Among those employees for whom hours worked were missing or zero, the proportion receiving any performance pay was lower than for all other employees (pooled across all years of our sample), which would suggest we should not be overly concerned that our approach has excluded a substantial proportion of PRP workers.
[4] Results available from the authors on request.
[5] It is not possible to add worker fixed-effects to the models for individual years as each worker contributes only one observation to each model
[6] Results available from the authors on request.

Table 1: Analysis sample

	Observations		People		Firms		Job matches	
	N	%	N	%	N	%	N	%
Full dataset 2002-12:	1,829,087	100.0	334,163	100.0	153,678	100.0	.	.
Job match identifiable:	1,743,246	95.3	326,660	97.8	146,468	95.3%	709,977	100.0
Private sector only:	1,109,134	60.6	250,056	74.8	127,230	82.8	488,803	68.8
Private sector, 2005-12 only:	**799,942**	**43.7**	**219,538**	**65.7**	**103,482**	**67.3**	**378,567**	**53.3**

Source: ASHE.
Excludes small number of individuals with multiple jobs in any given year, and job matches which switch between the public and private sectors over time. Public admin and defence, private households and extra-territorial organisations are excluded.

Table 2: Any cut in nominal total pay, for employees in same job

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Full sample:							
PRP job (without controls)	-0.020***	-0.012**	-0.029***	-0.001	0.024***	-0.027***	-0.008*
	[-4.76]	[-2.83]	[-6.39]	[-0.17]	[5.62]	[-6.81]	[-2.20]
N	*54165*	*48827*	*48063*	*49836*	*60210*	*61504*	*61332*
adj. R-sq	*0.000*	*0.000*	*0.001*	*0.000*	*0.001*	*0.001*	*0.000*
Full sample:							
PRP job (with standard controls)	0.000	0.009	-0.005	0.012*	0.037***	-0.005	0.005
	[-0.01]	[1.83]	[-1.11]	[2.43]	[8.19]	[-1.28]	[1.13]
N	*54165*	*48827*	*48063*	*49836*	*60210*	*61504*	*61332*
adj. R-sq	*0.026*	*0.030*	*0.028*	*0.024*	*0.029*	*0.025*	*0.023*
Sub-sample with data on firm performance:							
PRP job (without controls)	0.001	-0.003	-0.016	0.016	0.048***	-0.022***	0.014*
	[0.07]	[-0.34]	[-1.76]	[1.74]	[6.61]	[-3.40]	[2.20]
N	*16275*	*15402*	*14991*	*16320*	*24716*	*27205*	*26096*
adj. R-sq	*0.034*	*0.024*	*0.034*	*0.035*	*0.029*	*0.029*	*0.029*
Sub-sample with data on firm performance: PRP job (with standard controls, plus firm performance)	0.002	-0.005	-0.016	0.012	0.047***	-0.021**	0.014*
	[0.26]	[-0.50]	[-1.68]	[1.33]	[6.35]	[-3.19]	[2.20]
N	*16275*	*15402*	*14991*	*16320*	*24716*	*27205*	*26096*
adj. R-sq	*0.035*	*0.025*	*0.035*	*0.036*	*0.030*	*0.030*	*0.031*

Source: ASHE.

Standard controls: industry (1 digit), occupation (1 digit), gender, age, full-time/part-time status, job tenure, whether permanent/temporary job, whether covered by a collective agreement, region (9 regions), firm size, whether firm foreign-owned, firm age.

t-statistics in parentheses (* $p<0.05$; ** $p<0.01$; *** $p<0.001$)

Table 3: Average annual growth in the log of total real hourly pay, for employees in same job

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Full sample:							
PRP job (without controls)	0.011*	0.002	0.013**	-0.011*	-0.012**	0.013***	-0.014***
	[2.30]	[0.34]	[2.60]	[-2.41]	[-2.97]	[3.44]	[-3.88]
N	*54,165*	*48,827*	*48,063*	*49,836*	*60,210*	*61,504*	*61,332*
adj. R-sq	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Full sample:							
PRP job (with standard controls)	0.007	-0.001	0.013*	-0.005	-0.009*	0.009*	-0.003
	[1.44]	[-0.16]	[2.41]	[-1.19]	[-2.47]	[2.31]	[-0.80]
N	*54,165*	*48,827*	*48,063*	*49,836*	*60,210*	*61,504*	*61,332*
adj. R-sq	*0.013*	*0.017*	*0.015*	*0.016*	*0.02*	*0.013*	*0.018*
Sub-sample with data on firm performance:							
PRP job (without controls)	-0.007	0.009	0.012	-0.012	-0.019**	0.006	-0.009
	[-0.70]	[1.01]	[1.06]	[-1.32]	[-3.04]	[1.04]	[-1.60]
N	*16,275*	*15,402*	*14,991*	*16,320*	*24,716*	*27,205*	*26,096*
adj. R-sq	*0.014*	*0.021*	*0.02*	*0.019*	*0.024*	*0.017*	*0.026*
Sub-sample with data on firm performance: PRP job (with standard controls, plus firm performance)	-0.008	0.011	0.012	-0.009	-0.017**	0.006	-0.009
	[-0.71]	[1.21]	[1.06]	[-1.03]	[-2.71]	[0.96]	[-1.64]
N	*16,275*	*15,402*	*14,991*	*16,320*	*24,716*	*27,205*	*26,096*
adj. R-sq	*0.014*	*0.022*	*0.021*	*0.02*	*0.025*	*0.017*	*0.026*

Source: ASHE.
Standard controls: see Table 2.
t-statistics in parentheses (* p<0.05; ** p<0.01; *** p<0.001)

Table 4: Average annual growth in the log of real hourly base pay, for employees in same job

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Full sample:							
PRP job (without controls)	0.008	-0.009	0.005	-0.007	-0.015***	0.006	-0.016***
	[1.67]	[-1.86]	[1.03]	[-1.46]	[-3.82]	[1.52]	[-4.17]
N	*54097*	*48781*	*48004*	*49765*	*60131*	*61432*	*61254*
adj. R-sq	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Full sample:							
PRP job (with standard controls)	0.005	-0.007	0.006	-0.004	-0.011**	0.003	-0.006
	[1.00]	[-1.53]	[1.17]	[-0.92]	[-2.98]	[0.66]	[-1.67]
N	*54097*	*48781*	*48004*	*49765*	*60131*	*61432*	*61254*
adj. R-sq	*0.011*	*0.015*	*0.012*	*0.013*	*0.018*	*0.013*	*0.016*
Sub-sample with data on firm performance:							
PRP job (without controls)	-0.005	0.001	0.007	-0.014	-0.022***	-0.002	-0.011
	[-0.50]	[0.08]	[0.59]	[-1.54]	[-3.51]	[-0.27]	[-1.93]
N	*16262*	*15395*	*14981*	*16307*	*24702*	*27195*	*26083*
adj. R-sq	*0.012*	*0.019*	*0.018*	*0.014*	*0.023*	*0.016*	*0.026*
Sub-sample with data on firm performance: PRP job (with standard controls, plus firm performance)	-0.005	0.003	0.007	-0.012	-0.019**	-0.002	-0.012*
	[-0.48]	[0.33]	[0.62]	[-1.35]	[-3.06]	[-0.32]	[-2.02]
N	*16262*	*15395*	*14981*	*16307*	*24702*	*27195*	*26083*
adj. R-sq	*0.012*	*0.019*	*0.019*	*0.014*	*0.023*	*0.016*	*0.026*

Source: ASHE.
Standard Controls: see Table 2.
t-statistics in parentheses (p<0.05; ** p<0.01; *** p<0.001)

Table 5: Average annual growth in the log of real hourly base pay, for employees in same job, pre and post-recession

	Pre-recession (2005/6-2007/8)		Post-recession (2008/9-2011/12)	
	Pooled	**Pooled with fixed effects**	**Pooled**	**Pooled with fixed effects**
Full sample:				
PRP job (without controls)	0.002	0.046	-0.008***	0.005
	[0.78]	[1.36]	[-4.49]	[0.34]
N	150882	49557	232582	78475
adj. R-sq	0.000	0.03	0.003	-0.012
Full sample:				
PRP job (with standard controls)	0.002	0.03	-0.005**	-0.008
	[0.67]	[0.91]	[-2.64]	[-0.47]
N	150882	49557	232582	78475
adj. R-sq	0.011	0.062	0.016	0.017
Sub-sample with data on firm performance: PRP job (with standard controls, but not firm performance)	0.001	0.092	-0.011***	-0.019
	[0.22]	[0.90]	[-3.72]	[-0.54]
N	46638	15378	94287	32888
adj. R-sq	0.014	0.109	0.016	0.029
Sub-sample with data on firm performance: PRP job (with standard controls, plus firm performance)	0.001	0.093	-0.010***	-0.017
	[0.18]	[0.91]	[-3.55]	[-0.50]
N	46638	15378	94287	32888
adj. R-sq	0.014	0.109	0.016	0.029

Source: ASHE.
Standard Controls: see Table 2.
t-statistics in parentheses (p<0.05; ** p<0.01; *** p<0.001)

Table 6: Average annual growth in log of total real hourly wages, for employees in same job, by earnings quintile (full sample)

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Top quintile	0.084***	0.063***	0.103***	0.076***	0.072***	0.075***	0.091***
	[5.78]	[5.87]	[7.23]	[6.40]	[8.21]	[8.72]	[11.17]
N	11679	11060	10440	10798	12887	13190	13354
adj. R-sq	0.218	0.205	0.252	0.202	0.231	0.256	0.21
2nd quintile	0.030***	0.014	0.033***	0.026***	0.021***	0.024***	0.017***
	[4.69]	[1.86]	[5.26]	[4.08]	[4.20]	[4.89]	[3.44]
N	11816	10642	10619	10853	12917	13215	13268
adj. R-sq	0.112	0.081	0.12	0.118	0.119	0.151	0.12
Middle quintile	0.026***	0.024***	0.038***	0.013*	0.009	0.025***	0.021***
	[3.92]	[3.51]	[5.45]	[2.12]	[1.62]	[4.30]	[4.17]
N	11051	9923	10034	10404	12525	12709	12745
adj. R-sq	0.082	0.068	0.074	0.071	0.078	0.064	0.08
4th quintile	0.014*	0.008	0.015*	0.002	0.003	0.028***	0.007
	[1.97]	[1.13]	[2.11]	[0.28]	[0.51]	[4.52]	[1.39]
N	10758	9563	9461	9745	11885	12168	12002
adj. R-sq	0.052	0.049	0.044	0.052	0.036	0.038	0.042
Bottom quintile	-0.008	-0.004	-0.006	-0.041*	-0.046***	-0.025	-0.053***
	[-0.52]	[-0.23]	[-0.31]	[-2.54]	[-3.31]	[-1.79]	[-3.73]
N	8861	7639	7509	8036	9996	10222	9963
adj. R-sq	0.046	0.044	0.05	0.047	0.053	0.039	0.05

Source: ASHE.
Quintiles are defined with respect to the base wage.
Models show the coefficient on the dummy variable identifying performance pay jobs.
Controls: industry (1 digit), occupation (1 digit), gender, age, full-time/part-time status, job tenure, whether permanent/temporary job, whether covered by a collective agreement, region (9 regions), firm size, whether firm foreign-owned, firm age.
t-statistics in parentheses ($p<0.05$; ** $p<0.01$; *** $p<0.001$)

Table 7: Average annual growth in log of real hourly base pay, for employees in same job, by earnings quintile (full sample)

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Top quintile	0.066***	0.043***	0.081***	0.071***	0.064***	0.057***	0.079***
	[4.48]	[4.01]	[5.62]	[5.99]	[7.28]	[6.47]	[9.50]
N	11668	11058	10427	10789	12880	13186	13345
adj. R-sq	0.212	0.193	0.226	0.203	0.223	0.232	0.205
2nd quintile	0.021**	0.002	0.023***	0.022***	0.018***	0.017***	0.012*
	[3.16]	[0.30]	[3.59]	[3.41]	[3.38]	[3.30]	[2.45]
N	11809	10640	10613	10847	12913	13209	13262
adj. R-sq	0.098	0.067	0.111	0.104	0.118	0.147	0.118
Middle quintile	0.022***	0.015*	0.029***	0.011	0.008	0.017**	0.017***
	[3.30]	[2.04]	[4.12]	[1.69]	[1.60]	[2.89]	[3.31]
N	11046	9922	10025	10397	12520	12704	12735
adj. R-sq	0.082	0.065	0.066	0.072	0.082	0.058	0.079
4th quintile	0.012	0.005	0.011	0.005	0.001	0.026***	0.007
	[1.64]	[0.76]	[1.53]	[0.69]	[0.15]	[4.30]	[1.32]
N	10751	9561	9457	9742	11881	12165	11999
adj. R-sq	0.053	0.048	0.043	0.051	0.035	0.04	0.042
Bottom quintile	0.031	0.022	0.02	-0.012	-0.031*	-0.005	-0.034*
	[1.82]	[1.31]	[1.05]	[-0.73]	[-2.08]	[-0.34]	[-2.31]
N	8823	7600	7482	7990	9937	10168	9913
adj. R-sq	0.06	0.051	0.06	0.063	0.059	0.046	0.057

Source: ASHE.
Quintiles are defined with respect to the base wage.
Models show the coefficient on the dummy variable identifying performance pay jobs.
Controls: see Table 6.
t-statistics in parentheses (p<0.05; ** p<0.01; *** p<0.001)

Table 8: Average annual growth in log of real hourly base pay, for employees in same job, by earnings quintile (full sample), pre and post- recession

	Pre-recession (2005/6-2007/8)		Post-recession (2008/9-2011/12)	
	Pooled	Pooled with fixed effects	Pooled	Pooled with fixed effects
Top quintile	0.066***	0.124	0.067***	0.068
	[7.90]	[1.65]	[13.73]	[1.74]
N	33153	10771	50200	17541
adj. R-sq	0.209	0.701	0.212	0.619
2nd quintile	0.016***	0.009	0.018***	0.056*
	[4.11]	[0.29]	[6.53]	[2.09]
N	33062	11036	50231	18096
adj. R-sq	0.087	0.458	0.122	0.517
Middle quintile	0.022***	0.06	0.013***	0.016
	[5.53]	[0.47]	[4.55]	[0.60]
N	30993	10667	48356	17416
adj. R-sq	0.071	0.516	0.075	0.498
4th quintile	0.010*	0.07	0.010**	0.011
	[2.28]	[1.06]	[3.19]	[0.25]
N	29769	9645	45787	15005
adj. R-sq	0.045	0.567	0.042	0.402
Bottom quintile	0.023*	0.033	-0.019*	-0.136
	[2.28]	[0.22]	[-2.46]	[-1.28]
N	23905	7438	38008	10417
adj. R-sq	0.053	0.353	0.054	0.452

Source: ASHE.
Quintiles are defined with respect to the base wage.
Models show the coefficient on the dummy variable identifying performance pay jobs.
Controls: see Table 6.
t-statistics in parentheses (p<0.05; ** p<0.01; *** p<0.001)

Table 9: Percentage growth in hours worked, for employees in same job, for all employees and by earnings quintile (full sample), pre and post-recession

	Pre-recession (2005/6-2007/8)		Post-recession (2008/9-2011/12)	
	Pooled	Pooled with fixed effects	Pooled	Pooled with fixed effects
All employees	0.002**	-0.005	0.001***	0.002
	[2.67]	[-0.74]	[3.45]	[0.61]
N	144304	47342	226915	77562
adj. R-sq	0.009	-0.022	0.013	-0.035
Top quintile	0.000	-0.002	-0.001	0.01
	[-0.39]	[-0.12]	[-1.68]	[1.60]
N	31883	10346	48923	17246
adj. R-sq	0.028	0.159	0.03	0.147
2nd quintile	0.000	0.003	0.001	-0.001
	[0.40]	[0.13]	[1.31]	[-0.10]
N	31732	10629	48776	17761
adj. R-sq	0.022	0.14	0.023	0.091
Middle quintile	-0.005***	-0.014	-0.002*	-0.008
	[-3.91]	[-0.45]	[-2.35]	[-0.73]
N	29427	10159	46473	16949
adj. R-sq	0.022	0.157	0.031	0.16
4th quintile	0.000	-0.01	-0.001	-0.002
	[0.01]	[-0.32]	[-1.20]	[-0.13]
N	27741	8965	43259	14349
adj. R-sq	0.032	0.281	0.03	0.219
Bottom quintile	0.005*	-0.084*	0.005***	0.025
	[2.49]	[-2.03]	[3.48]	[0.96]
N	20243	6359	32713	9273
adj. R-sq	0.015	0.22	0.018	0.173

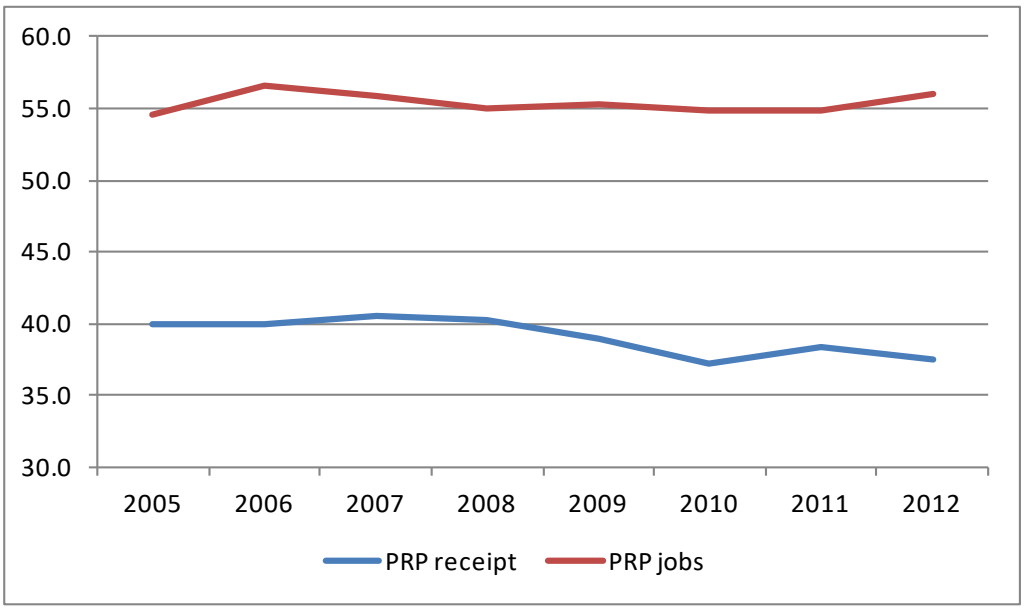
Source: ASHE.
Quintiles are defined with respect to the base wage.
Models show the coefficient on the dummy variable identifying performance pay jobs.
Controls: see Table 6.
t-statistics in parentheses (p<0.05; ** p<0.01; *** p<0.001)

Table 10: Hazard ratios for job exit, PRP jobs versus non-PRP jobs

	Hazard ratio	Robust Std. Err.	t-statistic	N
Full sample	0.709	0.005	-47.64	207441
Top quintile	0.670	0.012	-22.78	44588
2nd quintile	0.707	0.012	-20.81	44792
Middle quintile	0.708	0.012	-20.58	42067
4th quintile	0.710	0.012	-20.81	39255
Bottom quintile	0.732	0.012	-19.7	30169
Controlling for performance:				
Full sample	0.711	0.009	-25.64	72570
Top quintile	0.726	0.024	-9.63	16853
2nd quintile	0.686	0.021	-12.55	16332
Middle quintile	0.722	0.023	-10.17	13464
4th quintile	0.677	0.020	-13.32	13768
Bottom quintile	0.729	0.019	-12.05	11018

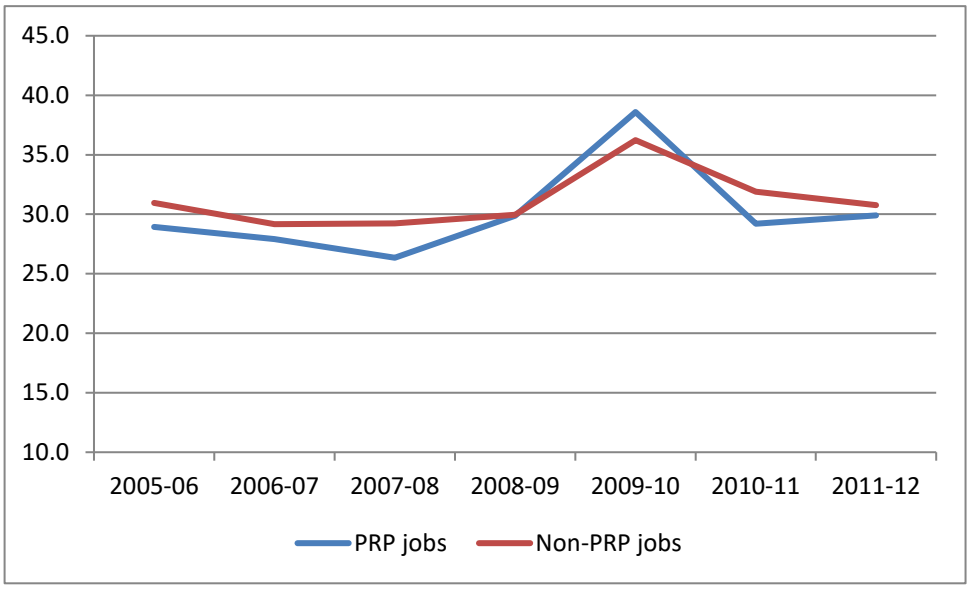
Source: ASHE.
Quintiles are defined with respect to the base wage.
Models show the coefficient on the dummy variable identifying performance pay jobs.
Controls: see Table 6.

Figure 1: Performance Pay receipt and Performance Pay jobs, 2005-2012, private sector



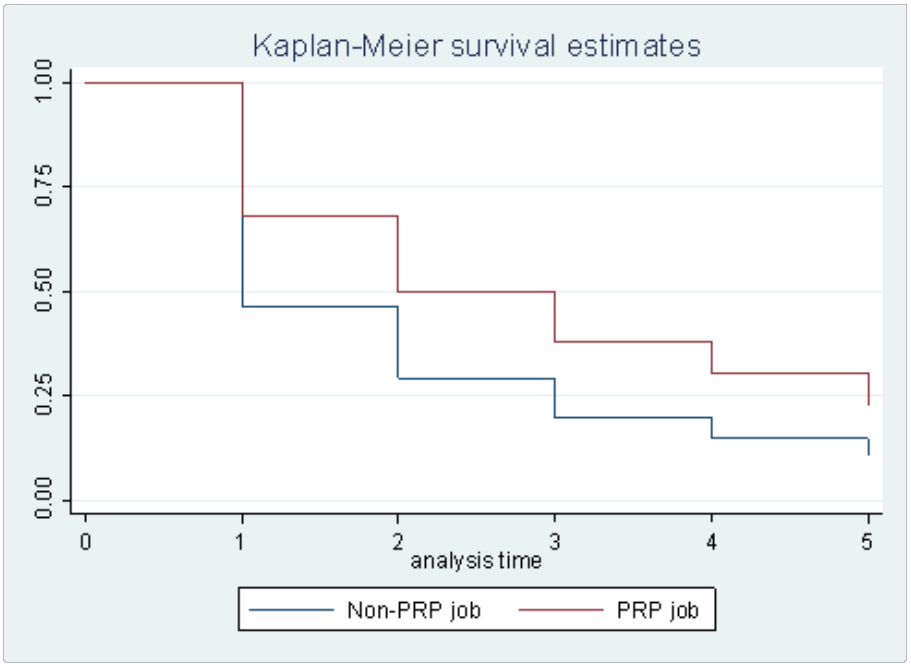
Source: ASHE.

Figure 2: Employees receiving a cut in total nominal pay



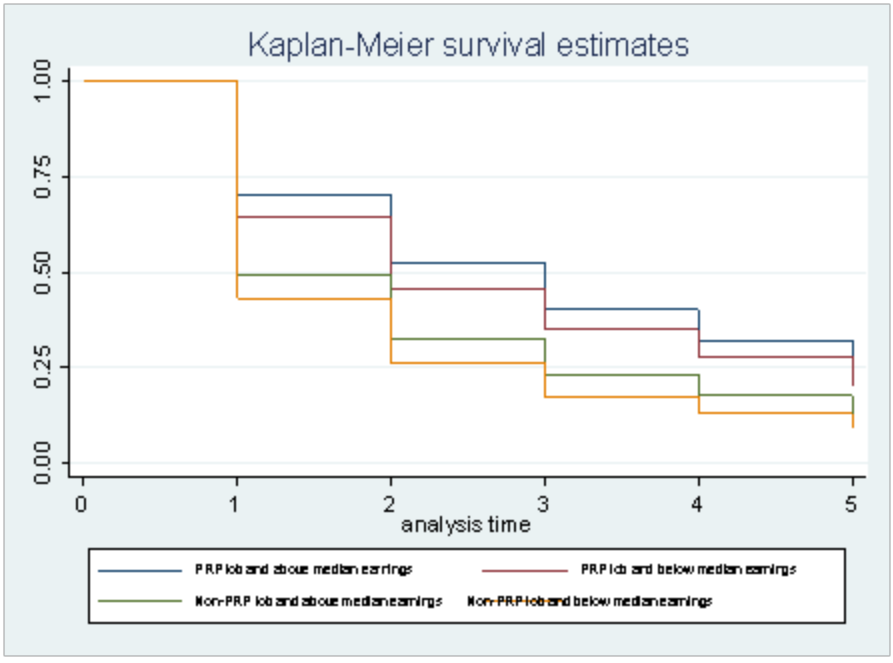
Source: ASHE.

Figure 3: Survival plots for job exit



Source: ASHE

Figure 4: Survival plots for job exit, by earnings



Source: ASHE

Appendix

Identifying performance pay jobs:

We are able to follow employees in ASHE from one year to the next using the unique person identifier. We then define an employee as remaining in the same job from one year to the next where that employee: (i) works for the same employer (identified using the IDBR enterprise reference number); (ii) has remained in the same job according to the employer's response in the survey; and (iii) has remained within the same four digit occupation (using the Standard Occupational Classification).[i]

Following the work of Lemieux et al. (2009) for the US, we then identify performance pay jobs as those in which performance pay has been paid in any of the years in which we observe that job. Our definition of a job match differs from that used by Lemieux et al. (2009), in that their job match is effectively an "employer match", i.e. the spell an individual spends with a particular employer. This is likely to cause an upward bias in our estimates of the prevalence of performance pay in cases where employees move between performance pay and non-performance pay jobs during their tenure within a given firm, as may occur if an employee is promoted to a managerial position. Our approach addresses this issue by beginning a new job match if the employer indicates that the employee has transferred to a new job in the organisation, or if the employee moves to a different four-digit occupation.

Identifying performance pay jobs in this way suffers from the problem that jobs observed near the beginning and end of our time period are less likely to be identified as performance pay jobs, simply because we observe them for fewer years. Following Lemieux's approach we apply an 'endpoint adjustment' which constructs an adjusted measure of the prevalence of performance pay jobs. We estimate probit models based on the

[i] One might be concerned about minor variations in the SOC code from year to year caused by respondent or coding errors. However, among employees who remain with the same employer across two years, and for whom the employer states that the employee is working in the same job as last year, the SOC code typically matches at the four-digit level (this applies in 95 per cent of cases). We are therefore confident that our use of a four-digit SOC code does not artificially inflate the number of job matches.

number of times a job match is observed and use the resulting predicted probabilities to construct a weight which then effectively holds the distribution of the number of times a job match is observed to that observed in the middle of our sample. Our endpoint adjustment has been calculated on the basis of data for the period 2002 to 2012, so our midpoint here is 2007.