

Real Wages and Unemployment in the Big Squeeze

Paul Gregg * and Stephen Machin **

November 2012

* *Department of Social and Policy Sciences, University of Bath and Centre for Markets and Public Organisation, University of Bristol*

** *Department of Economics, University College London and Centre for Economic Performance, London School of Economics*

Abstract

Real wage growth in the UK labour market, since around 2003, has slowed down and stagnated. In this paper, we document the nature of real wage changes across the wage distribution over the last three decades, showing that the recent period of stagnant real wage growth represents a distinct break of trend that pre-dates the onset of recession. We explore whether unemployment has become a stronger moderating influence on real wage growth since the trend break and document, using aggregate economy-wide data and regional panel data, that real wage-unemployment sensitivities have become stronger in the period from 2003 onwards.

JEL Keywords: Real wages; Unemployment.

JEL Classifications: J31; J64.

Acknowledgements

We would like to thank the Resolution Foundation for funding this work and James Plunkett and Matthew Whittaker for useful feedback and for help with the data.

1. Introduction

In the years following the financial crash and economic downturn of 2008-09, the UK labour market has not responded as might have been expected. In contrast to recessions of the 1980s and 1990s, real wages have fallen rather than simply levelling off and, relative to the magnitude of the economic contraction, unemployment has risen by less than predicted. While real wage trends are affected by a number of economic factors, these two surprising outcomes are likely to be connected. Indeed, however painful falling wages may be, it is important to note that they may have been instrumental in preventing a much larger increase in unemployment. However, the factors driving these trends remain unclear and the extent to which they represent a genuine change in the relationship between unemployment and pay has important implications for wage growth during the period of economic recovery.

A general picture of steady real wage growth dominated the UK labour market through the 1980s and 1990s. Though wage inequality rose rapidly in this period – through much faster growth in wages at the top (90th percentile) as compared to the middle (50th percentile), and in turn faster growth at the middle compared to the bottom (10th percentile) – this was (mostly) in the form of differential positive trends in real wage growth rather than through periods of real wage falls in any particular part of the distribution.¹ Since then, however, real wages have stagnated across the majority of the wage distribution, with only those at the very top continuing to experience real pay growth.

With these developments in mind, this paper seeks to do three things. First, we carefully document what has happened to real wage growth over time. Second, we empirically model the way that unemployment holds back real wages, asking whether there has been any change in the real wage-unemployment relationship in the period of poor real wage performance that has recently characterised the UK labour market. Thirdly, we try to determine what this might mean

¹ See Machin (2011) for detail on trends in wage inequality in the UK over the last forty years.

during a period of economic recovery, exploring whether unemployment levels play a more important role in determining wage growth among low to middle earners than among higher earners, and the extent to which future falls in unemployment could therefore promote pay growth for such workers.

To do so we look at changes over time at both the national and regional level. Our analysis uncovers some striking patterns of changes in real wage across the wage distribution over the last three decades. We uncover a recent period of stagnant and falling real wage growth that represents a distinct break of trend that started somewhere in the early 2000s and, importantly, which pre-dates the onset of recession. For example, between 1986 and 2003, real wage growth at the middle (the median) of the distribution rose by 1.6 per cent a year. Since 2003, median real wages fell by 0.3 per cent a year (flat-lining in the first part of this period and falling following the onset of recession).

At the same time, we also find that there has been an increased sensitivity of real wages to unemployment in the period from 2003. The increased correlation between the two is strong: while a doubling of unemployment at any point in the period between 1986 and 2002 would have been expected to drive down median real wages by 7 per cent, it would have pushed typical pay down by 12 per cent between 2003 and 2010.

The real wage-unemployment sensitivity in the period from 2003 to 2010 is such that the increase in unemployment that took place between its low in 2005 (4.6 per cent) and its peak in late-2011 (8.3 per cent) would be associated with a reduction of around £2,100 in the annual earnings of someone working full-time at the median hourly rate of pay.² In the earlier period, however, the same magnitude of increase in unemployment would have reduced median earnings by just £1,300 (in 2011 prices). The increased sensitivity therefore equates to around an

² Median hourly pay among full-time and part-time employees was £11.14 an hour in 2011 (ONS, Annual Survey of Hours and Earnings).

extra £800 a year wage loss in the more recent period compared to what would have occurred in earlier decades.³

The rest of the paper is structured as follows. In Section 2, we first document what has happened to real wages and to labour market performance over time in the UK. In Section 3, we then turn to consider the connection between real wages and unemployment. Section 4 describes the data we use and in Section 5, we report some results that reveal the distinct break of trend that occurred with the move from positive real wage growth to the period of flat or falling real wage growth. In Section 6, we report our findings on the sensitivity of real wages to unemployment and present empirical estimates studying whether there is evidence of changes through time. Finally, in Section 7 we offer some preliminary conclusions.

2. What Has Happened to Real Wages and Labour Market Performance?

Trends in Real Wages

For the first time since the Great Depression, real wages in the UK are experiencing sustained falls in the absence of direct government wage controls. Even in the 1980s and 1990s recessions, real wage growth paused rather than going into reverse and a general picture of a steady real wage growth dominated the UK labour market through the 1980s and 1990s. The recent turnaround in real wage growth and the slowdown that has ensued as compared to the previous two decades is shown in Figure 1. The Figure shows real weekly wage growth since 1979 for all workers aged 16-60 from the most reliable series, the New Earnings Survey (NES)/Annual Survey of Hours and Earnings (ASHE) employer reported data that covers around 1 percent of the population. The Figure shows that at some point in the early 2000s - beginning round about 2003 - the picture of rising real wages, coupled with rising wage inequality through faster real

³ More straightforwardly, a hypothetical doubling of unemployment would reduce median earnings by £1,600 a year in the earlier period and by £2,600 a year in the later one, meaning that the increased sensitivity would produce an additional annual loss of £1,000.

wage growth higher up the wage distribution, ended. It is interesting that it ended well before the onset of the deep recession of 2008/9, when the UK experienced the tightest labour market we have had since the 1970s and with reasonable economic growth. That said, the Figure also makes it clear that falls in real wages occurred across the wage distribution with the onset of recession.

Labour Market Performance

As with the real wage trends, labour market performance in the recent past in the UK has evolved rather differently to what has happened before. Typically, in periods of recession output falls and employment tends to fall to a similar or slightly greater degree, leaving productivity broadly stable and in turn real wages broadly stable. As unemployment then falls back during recovery, growth feeds into wages to a greater degree than employment. This is the normal pattern that we have got accustomed to. Hence in the UK, as in other developed countries, the cyclical volatility of unemployment has been large relative to that of real wages, which has long puzzled economists (see Pissarides, 2009, or Kudlyak, 2010).

These patterns have looked different in the last decade, however. By historical standards, Britain has been experiencing not just a severe recession, but what some commentators refer to as a second Great Depression. Indeed, the fall in economic output in the recent recession was almost as large as the 1930s, but the recovery has been markedly slower. Figure 2 shows that output still lies some 4 per cent below peak levels four years on from the start of the recession, by the same stage, the 1930s economy was in a sustained recovery.

One possible reason why things may not feel like a Depression to some is that the loss of employment has been relatively modest. Figure 3 shows that just over 2 per cent of jobs have been lost in the current recession compared to around 6 per cent in the previous two recessions. Indeed, a jobs recovery started as soon as the economy showed some growth in late 2009 and

has held up well in the long period of economic stagnation that started in the second half of 2010.

Figure 4 shows the ILO unemployment rate between 1979 and 2011. It shows very clearly how much unemployment came down before the early 2000s, dropping from 10.6 per cent in 1993 to 5 per cent by 2003. The sharp increase in the late 2000s recession, with a rise from around 5 to 8 per cent is also evident.

Putting these patterns of output and employment/unemployment change together makes it clear that productivity growth has stalled since the middle of 2006, which in historical terms is a remarkably sustained period. The UK thus has output about 6 per cent below that recorded in previous recessions and recoveries, but employment is 4 per cent higher – this 10 per cent productivity differential of producing less with more people is huge. Moreover, with cuts in employment resulting in ‘productivity improvements’ in the public sector, the gap appears to be entirely concentrated in the private sector.

3. Real Wages and Unemployment

The recognition that unemployment can act to restrain wages dates back to the classical economists, (for example, Marx’s discussion of the reserve army of labour). In modern economics, the Phillips Curve (Phillips, 1958) suggested a stable relationship existed between unemployment levels and wage growth, with higher unemployment restraining nominal (not adjusted for inflation) wage changes. This empirical relationship lacked any theoretical foundations except the plausible principle that ‘when demand for labour is high and there are very few unemployed we should expect employers to bid wage rates up quite rapidly..’. This relationship broke down in the period of high inflation in the 1970s and the theoretical and empirical evidence suggested that unemployment regulates the rate of real wage growth, the mark up of wage growth over inflation, rather than nominal wage changes, which meant that

low unemployment was associated with not just higher wage growth but a situation where wage growth exceeded productivity and leads to a slow but steadily upward wage-price spiral. In this analysis the level of unemployment that holds wage growth and inflation steady was called the Non-accelerating Inflation Rate of Unemployment (NAIRU), (Layard, Nickell and Jackman, 1991) or the sustainable rate of unemployment by politicians. More recently, this debate has been revisited with Gali (2011) suggesting that the Phillips Curve has re-emerged in the US at least and suggesting that with wage setting rigidities the Phillips Curve relationship, that is unemployment restrains nominal rather than real wage growth does have plausible theoretical underpinning.

Other empirical work has studied the relationship between the level of wages and local unemployment, via the existence of the so-called 'wage curve' (see Blanchflower and Oswald, 1994, 1995; and the meta-study of Nijkamp and Poot, 2005). Sargan (1964) noted that the steady state (long run) solution to the Phillips' curve specifies that the level of wages depends on the level of unemployment. Moreover, in US work, Hines, Hoynes and Krueger (2001) argue that a relationship between the levels of unemployment and (real) wage levels both fits the data better and has a better justified theoretical justification to show how unemployment can restrain wages.

Higher unemployment acts to restrain real wages in three potential ways. First, in times of high unemployment workers have a reduced scope to push for higher wages because of alternative better offers from another firm. Secondly, because workers fear job loss more when there are so many more people to compete against to get a replacement job, they may cede wages to hold on to a job. Finally, new job openings are flooded with applicants and firms can secure well qualified labour at lower wages than in better times.

Evidence suggests, however, that the unemployed and employed workers are not close competitors. Workers losing their jobs are disproportionately drawn from the ranks of the lower

paid (Gregg et al., 2012). Even then on return to work wages are substantially lower than prior to job loss (Nickell, Quintini and Jones, 2002), especially for longer periods of unemployment, and part of these wage losses persist for very long periods. Those suffering from longer periods of unemployment also struggle to maintain stable employment, suffering further periods of unemployment even 15 or more years later (Gregg, 2001). Part of the permanent loss of earnings stems from this instability of later employment or repeat job loss (Gregg and Tominey, 2005). This all suggests that many unemployed struggle on the margins of the labour market rather than acting as close substitutes those in stable work. The more concentrated unemployment is on individuals (long-term unemployment), regions or skill groups is likely to reduce this competition effect and reduce the downward pressure on wages (Nickell and Bell, 1995) and hence the sensitivity of wages for workers already in employment has regular been found to be low.

Of course, the recent evidence of slower real wage growth described in Section 2 does not necessarily mean that wage setting has become more sensitive to unemployment. The pay restraints imposed by government in the 1970s are widely thought to have led to a build of wage pressure that was released after 1979, just as unemployment was rising and the trade union influence was in decline, which is again widely thought to have led to reduced wage pressure, especially among low wage workers. Hence, this period saw quite rapid wage growth among middle to high earners and thus rising wage inequality (Machin, 1996, 2011). Possibly more pertinent to this period is the large scale migration from A8 countries from 2004, which could place extra downward pressure on wages. Note that such migration would be focused on areas of high job demand and hence low unemployment. So this would tend to dampen the sensitivity of wages to local variations in unemployment as labour is arriving into these areas from overseas. So wage pressure in an economy may increase or decrease without any particular

sensitivity to unemployment levels or indeed may involve reduced sensitivity to local unemployment conditions.

Thus, it is hard to assess whether this period of constrained wage growth since 2003 reflects an increased sensitivity to unemployment from looking at aggregate data. It may simply reflect an aggregate slowdown in wage pressure for reasons unconnected to prevailing levels of unemployment. So to explore this question of wages have become more sensitive to unemployment, we look both at the macroeconomic picture but we have also developed a data set for the UK regions over time, including wages for low, medium, and higher paid workers separately, together with regional (un-)employment. We wish to assess the sensitivity of wages to local unemployment to study whether this relationship appears to have strengthened and therefore resulted in poor real wage growth and thereby increased the importance of low unemployment for delivering real wage growth. If this is the case, we also wish to consider whether such effects are more or less pronounced in different parts of the wage distribution.

4. Data

We use employer reported wages data from the New Earnings Survey/Annual Survey of Hours and Earnings (NES/ASHE). For most of our analysis, we consider weekly wages (in 2011 prices, deflating by the retail price index) at different decile points of the wage distribution. Our initial analysis considers log real wages at the median, or 50th percentile, of the distribution (i.e. for the worker exactly halfway up - or down - the wage distribution). We also study wages at different points in the overall distribution, looking at workers at intervals for each tenth of the working population (the 10th, 20th..... up to the 90th percentiles of the distribution). We have put together a regional panel of data on wages from the NES/ASHE data and unemployment rates from the Labour Force Survey for the standard regions of Britain: North East; North West; Yorkshire and Humberside; East Midlands; West Midlands; East Anglia; London; South East;

South West; Wales; and Scotland. The sample we use covers these eleven regions for the years 1986 through 2010.⁴

5. Trend Breaks in Real Wages

Figure 1 is highly suggestive that a temporal break in real wage growth across the wage distribution occurred in the early 2000s. Indeed, as is shown in the left hand charts of Figure 5, if a linear trend is fit to the real wage growth trends over the full time period 1979-2010, it under-predicts up to 2003 and over-predicts afterwards. This is the case for the 10th, 50th and 90th percentiles of the wage distribution, but is probably more marked for the 10th percentile.

If, however, a linear trend is fit to the real wage growth data only in the period up to 2003, as shown in the right hand charts of Figure 5, it fits the data much better (certainly in terms of the start and end points, although which side of the line 2002 falls is debatable). This tends to suggest that real wage growth trended up positively, at a faster rate higher up the wage distribution thus raising wage inequality, up to 2003. After this, the labour market moves to a different pattern of real wage growth, where it has recently turned negative. The Figure also suggests far greater cyclical amplitude of real wages among lower wage workers.

This pattern of growing wage inequality and a recent slowdown in wage growth is also shown in Table 1 where the greater magnitudes of the trends in the real wage growth distribution higher up the distribution can be seen. For over the period 1979 to 2002 real wages grew by 0.6 percent per annum for workers at the 10th percentile of the wage distribution, 1.5 percent per annum in the middle and 2 percent per annum at the top. Since 2003, however, a significant break in trend can be seen. The second row of the Table introduces a new trend from 2003 and suggests that this completely offset the previous growth for low paid workers leaving

⁴ In the remainder of the paper, we study the real wage-unemployment relationship from 1986 to 2010. The start year is dictated to us as it is the first year when we can use the ILO definition of unemployment from the Labour Force Survey.

no real wage growth at all and further up the distribution sharper reductions in real wage growth rates leading to very low net increases in real wages, at a quarter of a percent per year for the 50th percentile and 0.8 percent for the 90th percentile.

Thus, the labour market experienced a shift away from positive real wage growth that started around 2003. In the next section, we move on to report some first results from estimating real wage-unemployment sensitivities from economy wide and regional real wage equations between 1986 and 2010 to see if the wage-unemployment relationship also altered because unemployment has again started to play a role in restraining real wage growth.

6. Estimates of Changing Real Wage-Unemployment Sensitivities

Economy Wide Median Real Wage Equations

Table 2 shows real wage-unemployment sensitivities estimated from an equation relating the (log of the median) real wage to the (log) unemployment rate and a linear trend that picks up the underlying growth rate of real wages. In column (1) the trend covers the whole period and in column (2) this is split for periods before and after 2003 (1986-2002 and 2003-2010). In the specifications reported in both columns, the first thing to note is that there is a wage restraining impact of unemployment on median real wages, and we estimate an elasticity for the full time period of -0.12. This means that a doubling in the unemployment rate, say from 4 to 8 percent, reduces real wages by 12 percent. Consideration of the trend coefficient reveals that the growth in real wages, without considering the effects of unemployment, over the first period ran at 1.6 percent per annum, but real wages fell by 0.3 percent per year since.

To consider the magnitudes of these estimates, it is worth noting that in the first year of our sample (1986) unemployment was high and nearly halved by 2002. Of course it has also risen sharply in the recent downturn. The column (2) estimates suggest that wages were growing at an underlying rate of 0.7 percent per annum before 2003, but were also boosted by the halving

of unemployment. From 2003 onwards, they grew at an underlying rate of 0.2 percent (from the difference in the trend coefficients (0.007 - 0.005), but flat or falling real wage growth occurred as a consequence of the powerful wage dampening effects from rising unemployment.

However, these first estimates do not explore whether there is variation in both the unemployment sensitivity for the sub-periods 1986-2002 and 2003-2010. This is shown in the final two columns where we allow differential effects for both trend wage growth and unemployment for each period. The restraining effect of wages rises from a 7 percent fall in wages for a doubling of unemployment to 12 percent in the second period. Hence, the wage dampening unemployment effect is bigger post-2003. The estimates suggest that underlying wage growth was a little bit higher in both periods.

Economy Wide Real Wage Equations Across the Distribution

The statistical model in Table 2 was estimated for median real wages. We have also estimated real wage-unemployment sensitivities and real wage trend differences at different decile points. The results are reported in Table 3. With the exception of the 10th percentile, which was no doubt affected by the introduction of the minimum wage in 1999 and large increases after 2002, we see a stronger impact of unemployment on real wages in the 2003-2010 period of benign real wage growth. Also of note is that real wages are far more sensitive to unemployment in the lowest paid three deciles than for higher paid workers. This reflects that the unemployed are more often drawn from the less skilled and hence it is among the lowest paid they are more effective in bidding down wages as they are closer substitutes. Thus it does seem from the macroeconomic time series estimates, that wages are sensitive to unemployment levels and in the period when real wages ceased their trend growth, they have become more sensitive to unemployment. Note that we do not include the latest data when an increase in VAT and a surge in oil prices saw extremely rapid falls in real wages in 2011 that are continuing into 2012.

Regional Median Real Wage Equations

The aggregate economy wide data we have used so far has two potential drawbacks. First, the second post-2003 time period we consider constitutes only eight annual data points which is very short to precisely isolate an increase in the effects of unemployment on real wages. Second, the only measure of the economic cycle we have modelled is unemployment and anything else that is happening at the same time, such as changes in firm profitability or shifts in aggregate demand, will show up as an unemployment effect. To address these issues, we therefore also estimated results from the regional panel on real wages and unemployment.

Table 4 reports estimated elasticities of the regional median real weekly wage with respect to the regional unemployment rate from the previous year. The upper panel reports results from the same model specification as for Tables 2 and 3 (i.e. including $\log(\text{unemployment})$ and a linear trend) but here the sensitivity of real wages to unemployment in each region is considered, greatly increasing the amount of information available. The estimated sensitivity of wages to local unemployment is a little smaller than we saw before which probably reflects that survey based estimates of regional unemployment are measured with more error, especially for smaller regions. Also, it suggests that there are aggregate cyclical effects, not just local ones. But the key point is that the slowdown in underlying wage growth and the increased sensitivity of regional wages to local unemployment are marked. The wage equations include regional fixed effects and so the estimated elasticities can be interpreted in terms of changes.

The specifications in the second panel include a full set of year effects in place of the trend. This is a more general specification where any year to year movements in wages arising from any other source than unemployment will be captured, including the aggregate economic cycle. Thus, the estimated effect of regional unemployment only reflects the year to year movements in regional unemployment that differ from the national picture. This is a tough ask of the data as the general rise and fall in unemployment with the economic cycle is discounted.

Interestingly, however, in terms of changes through time, we see the same pattern of results as for the economy wide analysis. The estimated regional real wage-unemployment sensitivities show no significant relationship in the 1986-2002 time period, which says that there was no independent regional effect above the economy wide cycle but a significant negative relationship (i.e. of a 5 percent fall in wages when unemployment doubles) in the recent 2003-10 time period. Thus, real wages became more sensitive to unemployment at the regional level in this latter period. The change is strongly significant in statistical terms and is close in magnitude to the change in the aggregate median real wage specification reported in Table 2. Overall, the regional results are suggestive of a general slowdown in real wage growth combined with growing sensitivity to local unemployment conditions.

Table 5 shows a number of robustness tests of the regional median real wage findings. Panel A uses full-time weekly earnings and so excludes part-time workers, Panel B considers hourly earnings and Panel C looks at the regional employment-population ratio rather than the regional unemployment rate. The estimates reported are comparable to the Table 4 models that include a full set of year effects. The results in the three Panels of the Table confirm and strongly corroborate the Table 4 findings. The 2003-10 time period of stagnant real wage growth is one where unemployment/employment is more strongly correlated with median real wages than the period of positive real wage growth that preceded it.

Regional Real Wage Equations Across the Distribution

The final empirical exercise we consider looks at different percentiles of the wage distribution in the regional panel. Estimates of decile specific real wage-unemployment elasticities for 1986-2002 and 2003-10 are reported in Table 6, along with the change in these elasticities across the two sub-periods. As we saw before, wages are far more sensitive to unemployment for the lower paid and at almost all deciles – the 10th percentile being the exception – the real wage-unemployment elasticities became larger (in absolute magnitude) in

the second time period. The different behavior at the 10th percentile is most likely because the minimum wage propped up wages in the 2000s after its introduction in 1999. In the regional context, this will be likely to have boosted wages most in low wage and mostly high unemployment areas, thus lowering the relationship between wages and local unemployment. However, for the rest of the distribution, one sees unemployment restraining real wages by more in the 2003-10 time period. For higher wage workers the picture that is important for wage setting is more the national than the regional one and hence when we take out the economy wide cycle the sensitivity to just local conditions is low.

7. Conclusions

In this exploratory paper, we document and study the fact that real wage growth has stagnated in the UK from around 2003 and ask whether this can be related to a return of unemployment holding back real wages that was either not present or was less marked in the period of real wage growth that came before. We highlight the period of slow real wage growth that has characterised the UK since 2003, showing that there have been recent real wage falls across the distribution. We also explore whether unemployment levels are more important for low and middle earners and the extent to which falls in unemployment could promote earnings growth for these workers.

From analysis of economy-wide data and of regional panel on real wages and unemployment, we find the same pattern of results. We document the nature of real wage changes across the wage distribution over the last three decades, showing that the recent period of stagnant real wage growth represents a distinct break of trend that pre-dates the onset of recession.

Our statistical analysis that shows that an increased sensitivity of real wages to unemployment appears to have been an important factor in this slowdown of real wage growth,

with real wage-unemployment sensitivities becoming more marked in the period of poor real wage growth. This is strongly the case, with a doubling of unemployment driving down real wages by 5 per cent more than would have been the case in the 1980s and 1990s recessions.

Thinking about what this means in monetary terms, we find that the increase in unemployment that took place between its low in 2005 (4.6 per cent) and its peak in late-2011 (8.3 per cent) would be associated with a reduction of around £2,100 in the annual earnings of someone working full-time at the median hourly rate of pay⁵ in the period from 2003 to 2010, compared with a reduction of just £1,300 in the earlier period. The increased sensitivity therefore equates to around an extra £800 a year wage loss in the more recent period compared to what would have occurred in earlier decades.

On the one hand, this increased sensitivity has moderated real wage growth and reduced real wage levels compared to what would otherwise have been the case. On the other, this may well have limited the extent of job losses in the recent deep recession. Of course, while we show that unemployment has been a factor, it is not the only variable driving real wage stagnation and reduction. Moreover, we remain less clear on why the unemployment sensitivity has increased. This paper has not looked at potential drivers, but it may, at least in part, be a consequence of the weakening of labour market institutions such as the coverage of trade unions. It may also reflect the impact of active welfare policies that have made the unemployed a closer substitute for those in work.

Moreover, the sensitivity of wages to unemployment is also larger for low to middle wage workers (in the 20th to 50th percentiles) than for higher wage workers, although the recent *increase* in sensitivity is broadly the same across most of the distribution. In the most recent period, this means that the reduction in real wages associated with a doubling of unemployment

⁵ Median hourly pay among full-time and part-time employees was £11.14 an hour in 2011.

would be 3 to 5 per cent bigger for low and middle earners compared to workers higher up the wage distribution.

Several implications follow from our analysis:

i) If the same real wage-unemployment relationship remain in place, higher paid workers are likely to continue to see a modest upward trend in real wage growth with flat unemployment, but real wage growth for low and middle earners will not return to significant positive territory until unemployment starts to fall significantly – probably below the levels (of between 4 and 6 per cent) recorded in the period from 1999 to 2007.

ii) In contrast to the view that there has been a large degree of labour hoarding that can generate a productivity boost when growth returns, any economic recovery is more likely to boost jobs in the first instance, rather than wages. Higher pay will only be generated when and if unemployment falls significantly.

iii) While pay will respond if and when unemployment falls significantly, especially for low to middle paid workers, the kind of sustained real wage growth recorded through the 1980s and 1990s will not return if unemployment simply falls back to its pre-recession norm. This is likely to allow policy makers to keep interest rates lower than in the past for similar levels of unemployment without fear of an inflationary wage-price spiral.

iv) If government wishes to boost the earnings of low and middle earners it must focus not just on policies that influence pay directly, but also on driving down levels of unemployment. The increased sensitivity of real wages to unemployment means that such a focus becomes even more important than it has been in previous years.

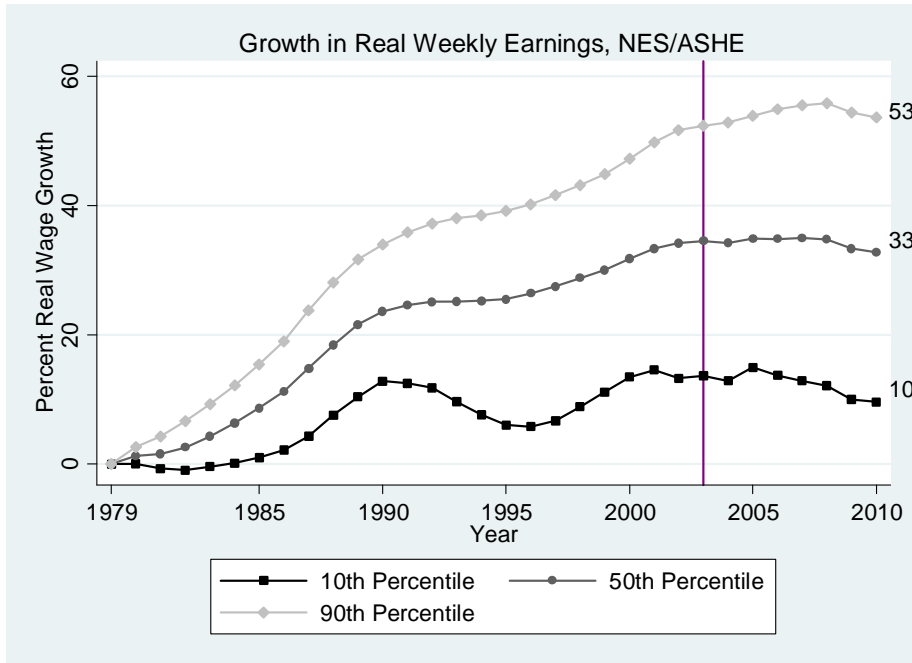
Finally, the subject matter of this paper, focusing on the real wage slowdown and connections to patterns of changing unemployment, remains relatively unexplored to date. There are a number of relevant research questions that need to be studied in more detail. The first is to compare changing patterns of real wage growth with other data sources. The second is to start to

try and understand what have been the proximate causes of the real wage slowdown, and why the level of unemployment is more strongly related to real wages in this recent period of poor real wage growth performance than it was before. A third is to consider the potential importance of differences across regions. Hopefully, research in these areas will enable us to gain a better understanding of why real wage stagnation has occurred and the extent to which the consequent nominal and real wage moderation have played a role in employment falls being relatively modest over the recession.

References

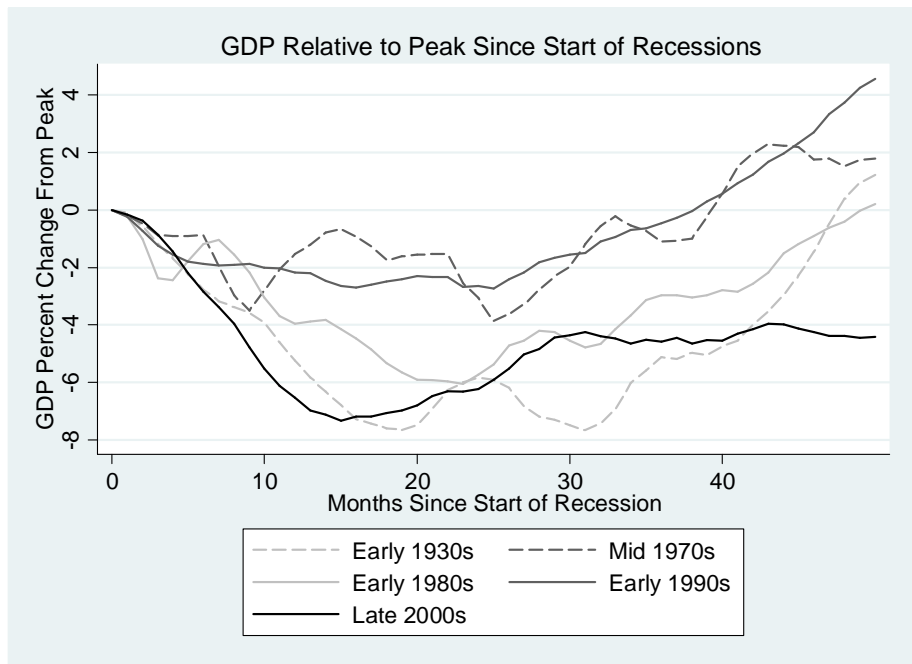
- Blanchflower, D. and A. Oswald (1994) The Wage Curve, MIT Press.
- Blanchflower, D. and A. Oswald (1995) An Introduction to the Wage Curve, Journal of Economic Perspectives, 9, 153-67.
- Gali, J. (2011) The Return of the Wage Phillips Curve, Journal of the European Economic Association, 9, 436-61.
- Gregg, P. (2001) The Impact of Youth Unemployment on Adult Unemployment in the NCDS, Economic Journal, 111, F626-53.
- Gregg, P. and E. Tominey (2005) The Wage Scar From Male Youth Unemployment, Labour Economics, 12, 487-509.
- Gregg, P., R. Scutella and C. Vittori (2012) Earnings Mobility and Inequality: An Integrated Framework, Centre for Market and Public Organisation, mimeo, July
- Hines, J. H. Hoynes and A. Krueger (2001) Another Look at Whether a Rising Tide Lifts all boats, in Krueger, A. and R. Solow (eds.) The Roaring Nineties: Can Full Employment be Sustained, Russell Sage Foundation.
- Kudlyak, M. (2010) Are Wages Rigid over the Business Cycle?, Economic Quarterly, Federal Reserve Bank of Richmond, issue 2Q, pages 179-199.
- Layard, R., S. Nickell and R. Jackman (1991) Unemployment, Oxford University Press.
- Machin, S. (1996) Wage Inequality in the UK, Oxford Review of Economic Policy, 12(1), 47-64.
- Machin, S. (2011) Changes in UK Wage Inequality Over the Last Forty Years, in P. Gregg and J. Wadsworth (eds.) The Labour Market in Winter, Oxford University Press.
- Nickell, S. and Bell, D. (1995) The Collapse in Demand For the Unskilled and Unemployment Across the OECD, Oxford Review of Economic Policy, 11, 40-62.
- Nickell, S., G. Quintini and P. Jones (2002) A Picture of Job Insecurity Facing British Men, Economic Journal, 112, 1-27.
- Phillips, A. (1958) The Relation Between Unemployment and the Rate of Change of Money Wages in the United Kingdom, 1861-1957, Economica, 25, 283-99.
- Pissarides, C. (2009) The Unemployment Volatility Puzzle: Is Wage Stickiness the Answer?, Econometrica, 77, 1339-69.
- Sargan, D. (1964) Wages and Prices in the United Kingdom: A Study in Econometric Methodology, in Hendry, D. and K. Wallis (eds.) Econometrics and Quantitative Economics, Basil Blackwell.

Figure 1:
Growth at the 10th, 50th and 90th Percentiles
of the Weekly Real Wage Distribution, 1979-2010



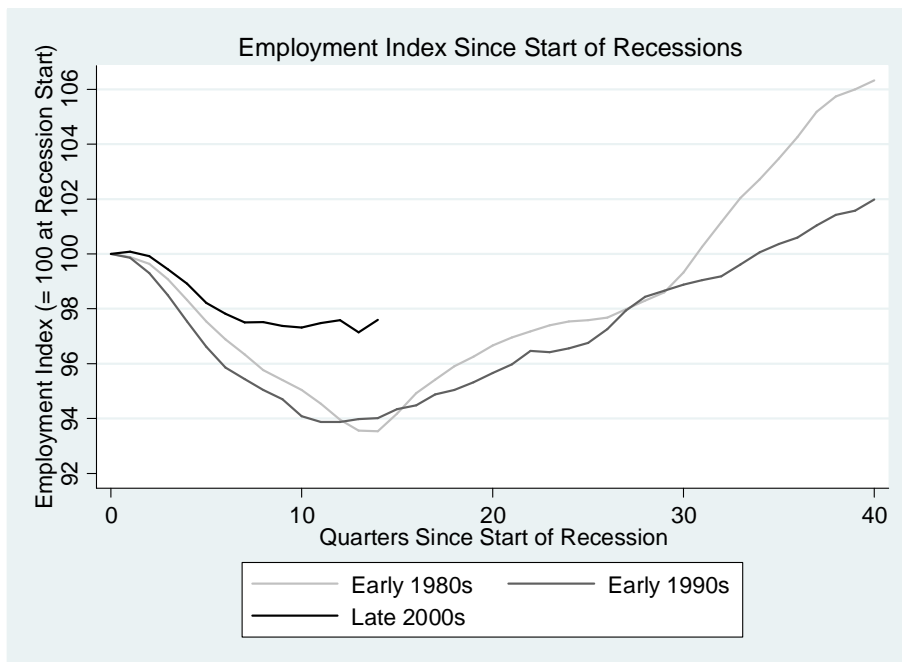
Source: ONS, New Earnings Survey & Annual Survey of Hours and Earnings

Figure 2:
GDP Relative to Peak Across Recessions



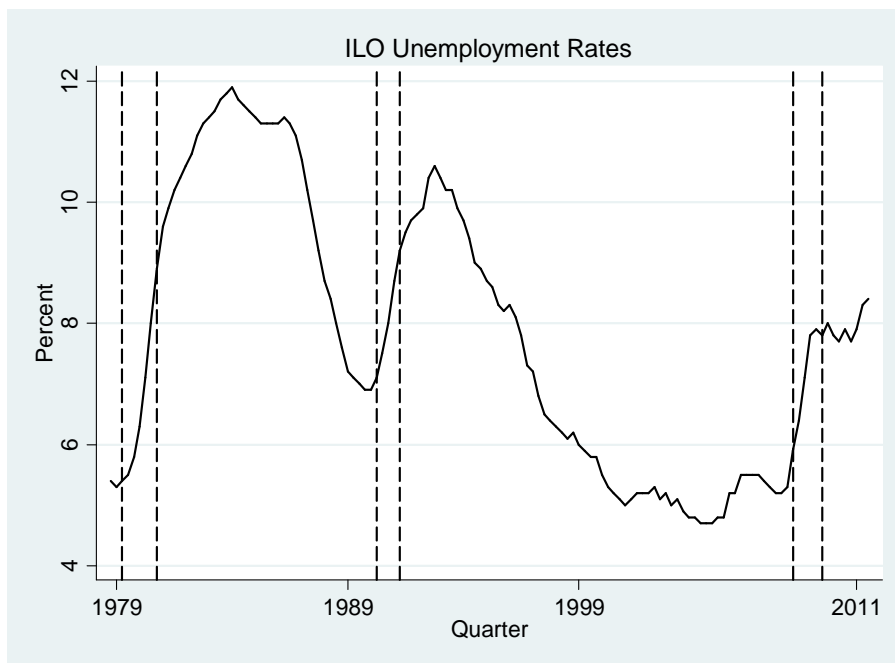
Notes: Source - National Institute of Economic and Social Research.

Figure 3: Employment Since the Start of Recessions



Notes: As for Figure 2.

Figure 4: ILO Unemployment Rates, 1979-2011



Notes: Quarterly data. Vertical dashed lines show recession quarters.

Figure 5: Trend Predictions by Percentile, Real Wages, 1979-2010 and 1979-2003

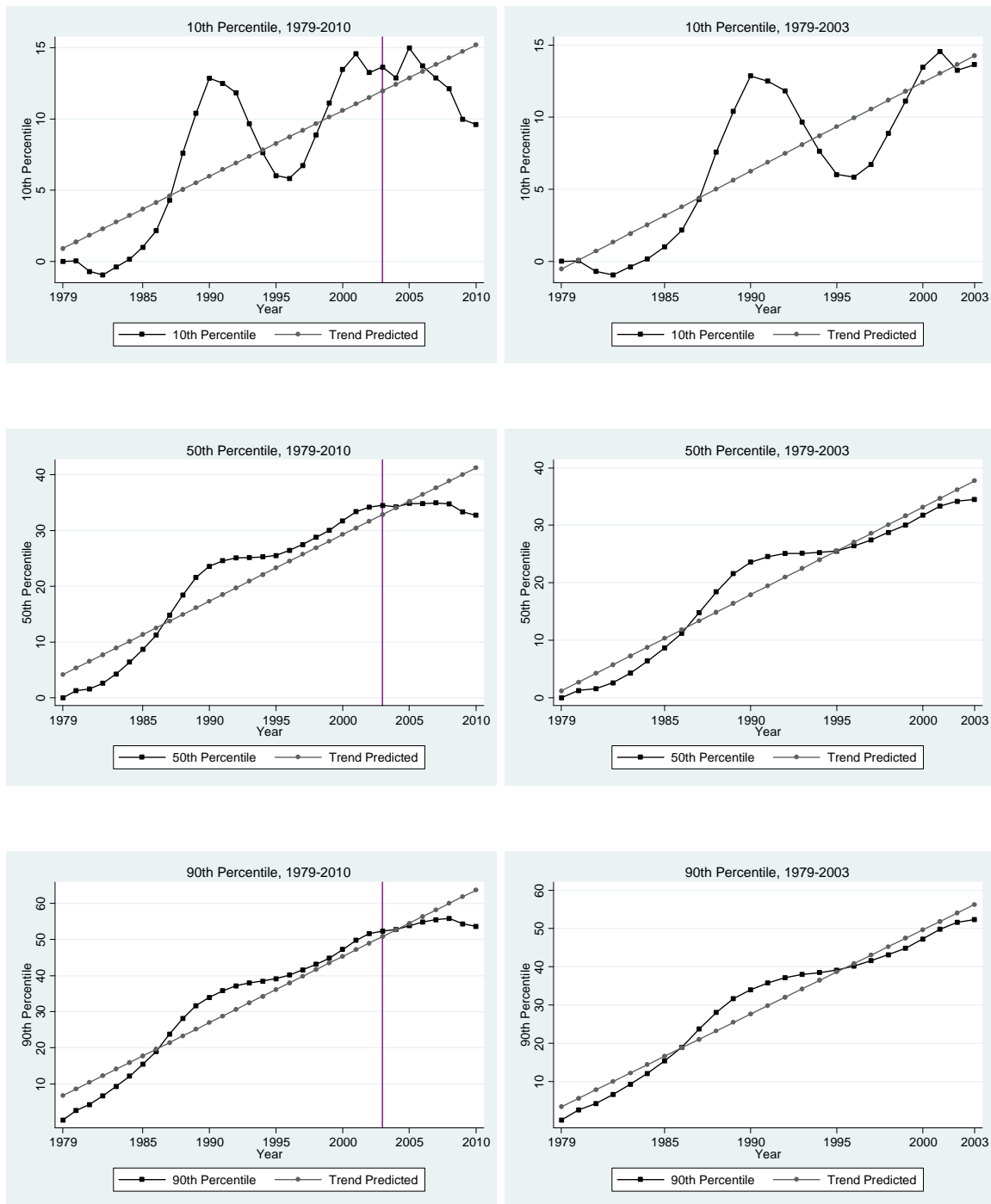


Table 1: Annualised Percent Real Wage Growth Trends, 1979-2010

	Real Wages					
	10 th Percentile		50 th Percentile		90 th Percentile	
Trend	0.450 (0.073)	0.597 (0.106)	1.191 (0.081)	1.497 (0.100)	1.829 (0.094)	2.172 (0.118)
Year >=2003		-0.597 (0.321)		-1.245 (0.303)		-1.392 (0.359)
Sample Size	32	32	32	32	32	32

Notes: Robust standard errors in parentheses.

Table 2: Median Real Weekly Wages and Unemployment, 1986-2010

	Dependent Variable: Log(Median Real Weekly Wage)				Change Between 1986-2002 and 2003- 2010
	1986-2010	1986- 2010	1986-2002	2003-2010	
Log(Unemployment Rate[t-1])	-0.116 (0.024)	-0.116 (0.022)	-0.074 (0.024)	-0.119 (0.012)	-0.045 (0.027)
Trend	0.005 (0.001)	0.007 (0.001)	0.009 (0.001)	0.003 (0.001)	-0.006 (0.002)
Year>=2003		-0.005 (0.002)			
R-Squared	0.94	0.94	0.92	0.90	
Sample Size	24	24	16	8	

Notes: Robust standard errors in parentheses.

Table 3: Real Weekly Wages and Unemployment, 1986-2010

		Dependent Variable: Log(i th Percentile Real Weekly Wage)		
		1986-2002	2003-2010	Change Between 1986-2002 and 2003-2010
10 th Percentile	Log(Unemployment Rate[t-1])	-0.202 (0.030)	-0.224 (0.041)	-0.022 (0.049)
	Trend	-0.004 (0.002)	0.004 (0.003)	0.008 (0.005)
20 th Percentile	Log(Unemployment Rate[t-1])	-0.123 (0.028)	-0.174 (0.012)	-0.051 (0.031)
	Trend	0.003 (0.002)	0.003 (0.001)	0.000 (0.002)
30 th Percentile	Log(Unemployment Rate[t-1])	-0.087 (0.026)	-0.140 (0.010)	-0.053 (0.028)
	Trend	0.007 (0.002)	0.002 (0.001)	-0.005 (0.002)
40 th Percentile	Log(Unemployment Rate[t-1])	-0.073 (0.022)	-0.124 (0.010)	-0.051 (0.025)
	Trend	0.008 (0.001)	0.002 (0.001)	-0.006 (0.002)
50 th Percentile	Log(Unemployment Rate[t-1])	-0.074 (0.024)	-0.119 (0.012)	-0.045 (0.027)
	Trend	0.009 (0.002)	0.003 (0.001)	-0.006 (0.002)
60 th Percentile	Log(Unemployment Rate[t-1])	-0.058 (0.026)	-0.114 (0.012)	-0.056 (0.029)
	Trend	0.010 (0.002)	0.003 (0.001)	-0.007 (0.002)
70 th Percentile	Log(Unemployment Rate[t-1])	-0.061 (0.027)	-0.114 (0.015)	-0.053 (0.031)
	Trend	0.011 (0.002)	0.004 (0.001)	-0.007 (0.002)
80 th Percentile	Log(Unemployment Rate[t-1])	-0.060 (0.029)	-0.114 (0.016)	-0.054 (0.034)
	Trend	0.013 (0.002)	0.005 (0.001)	-0.008 (0.002)
90 th Percentile	Log(Unemployment Rate[t-1])	-0.066 (0.026)	-0.144 (0.021)	-0.078 (0.033)
	Trend	0.014 (0.002)	0.009 (0.001)	-0.005 (0.002)

Notes: Robust standard errors in parentheses.

Table 4: Regional Median Real Weekly Wages and Unemployment, 1986-2010

	Dependent Variable: Log(Regional Median Real Weekly Wage), 11 Regions, 1986-2010				
	1986-2010	1986- 2010	1986-2002	2003-2010	Change Between 1986-2002 and 2003- 2010
A. Trend Specification					
Log(Regional Unemployment Rate[t-1])	-0.079 (0.009)	-0.070 (0.008)	-0.046 (0.009)	-0.087 (0.007)	-0.041 (0.011)
Trend	0.006 (0.001)	0.009 (0.001)	0.009 (0.001)	0.001 (0.001)	-0.009 (0.001)
Year>=2003		-0.004 (0.001)			
R-Squared	0.97	0.94	0.97	0.99	
Sample Size	264	264	176	88	
B. Year Dummies Specification					
Log(Regional Unemployment Rate[t-1])	0.010 (0.013)		0.010 (0.012)	-0.049 (0.009)	-0.059 (0.015)
Region Dummies	Yes		Yes	Yes	
Year Dummies	Yes		Yes	Yes	
R-Squared	0.98		0.99	0.99	
Sample Size	264		176	88	

Notes: Robust standard errors in parentheses.

Table 5: Robustness

Dependent Variable: Log(Regional Median Real Wage), 11 Regions, 1986-2010			
	1986-2002	2003-2010	Change Between 1986-2002 and 2003-2010
A. Full-Time Weekly Wage			
Log(Regional Unemployment Rate[t-1])	0.023 (0.011)	-0.030 (0.011)	-0.053 (0.016)
Region Dummies	Yes	Yes	
Year Dummies	Yes	Yes	
Sample Size	176	88	
B. Hourly Wage			
Log(Regional Unemployment Rate[t-1])	0.016 (0.011)	-0.059 (0.030)	-0.074 (0.032)
Region Dummies	Yes	Yes	
Year Dummies	Yes	Yes	
Sample Size	176	88	
C. Weekly Wage, Employment/Population Ratio			
Log(Regional Employment/Population Ratio[t-1])	-0.191 (0.090)	0.286 (0.107)	0.478 (0.138)
Region Dummies	Yes	Yes	
Year Dummies	Yes	Yes	
Sample Size	176	88	

Notes: Robust standard errors in parentheses.

Table 6:
Regional Real Wages and Unemployment Across the Wage Distribution, 1986-2010

	Real Wage-Unemployment Sensitivity, 1986-2002	Real Wage-Unemployment Sensitivity, 2003-10	Change
10 th Percentile	-0.154 (0.034)	-0.058 (0.027)	0.096 (0.043)
20 th Percentile	-0.041 (0.017)	-0.060 (0.018)	-0.019 (0.025)
30 th Percentile	-0.012 (0.011)	-0.057 (0.013)	-0.045 (0.017)
40 th Percentile	0.004 (0.011)	-0.052 (0.011)	-0.056 (0.015)
50 th Percentile	0.010 (0.012)	-0.049 (0.009)	-0.059 (0.015)
60 th Percentile	0.019 (0.012)	-0.033 (0.011)	-0.052 (0.016)
70 th Percentile	0.017 (0.011)	-0.027 (0.010)	-0.045 (0.015)
80 th Percentile	0.008 (0.011)	-0.020 (0.011)	-0.028 (0.015)
90 th Percentile	0.020 (0.015)	-0.024 (0.012)	-0.044 (0.019)

Notes: Estimates comparable to Table 4. Robust standard errors in parentheses.