Abstract

Using the accurate and extensive data available in the UK New Earnings Survey, this paper investigates the extent to which nominal wages are downwardly rigid and whether such rigidity interferes with necessary real wage adjustments when inflation is low. Despite the substantial numbers of individuals whose nominal wages fall from one year to the next, we find that if long-run inflation is one percent higher, the number of individuals with negative real pay growth increases by around 1.4 percent. This is controlling for the median and dispersion of the real wage change distribution.

JEL categories: E24, E31; Key words. Inflation, Wage Rigidity.

This paper was produced as part of the Centre's
Labour Markets Programme

Nominal Wage Rigidity and the Rate of Inflation

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March 2001

Published by
Centre for Economic Performance
London School of Economics and Political Science
Houghton Street
London WC2A 2AE

ISBN 0 7530 1449 1

Individual copy price: £5

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The Centre for Economic Performance is financed by the Economic and Social Research Council.

Acknowledgements

We are most grateful to the ESRC Centre for Economic Performance and the Monetary Policy Committee Unit for their assistance.

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1. Introduction

It is commonplace for economists to assert that nominal wages are downwardly rigid. However, a casual glance at the work of Smith (2000) for the UK or McLaughlin (1994) for the US immediately reveals that substantial numbers of individuals experience falls in nominal wages from one year to the next. So is the downward rigidity of nominal wages simply a myth? Not necessarily. Even if many individuals have negative nominal wage rises, some people may still face a barrier at zero and this type of nominal rigidity could still generate significant real effects.

Our purpose is to analyse the extent to which downward nominal wage rigidity influences actual real wage changes given equilibrium real wage changes, thereby interfering with the workings of the labour market. We investigate this issue by making use of the fact that changes in equilibrium real wages are much less likely to involve negative nominal wage changes when inflation is high. Consequently, the size of the distortion generated by rigidities at zero nominal wage changes will vary systematically with the overall inflation rate.

Following a number of papers which use US panel data[1], mainly the PSID, Smith (2000) studies the extent of downward nominal rigidity in Britain. Using data from the British Household Panel Study for the 1990s, she finds that around 9 per cent of employees who remain in the same job from one year to the next have zero pay growth. Smith puts around half of this down to measurement error (including rounding error). Further, she also has to deal with the fact that her successive annual observations on pay are not necessarily 12 months apart and she finds that a significant proportion of the group with zero pay growth are there because of 12-month contracts. The problem here is that periodic contracting is part of the structure of nominal rigidity. Indeed, the very existence of 12-month contracts is, itself, evidence of nominal rigidity and may interfere significantly with the efficient operation of the labour market, especially if inflation is high.

In this paper, we are able to go considerably further than Smith (2000) and, indeed, the US studies, because we have very accurate pay data for a large panel of individuals over a long period (1975-99). The accuracy of the data is particularly helpful because it enables us to focus on substantive issues rather than devoting our energies to confronting and attempting to resolve measurement error problems. The data we use are taken from the UK New

[1] McLaughlin (1994), Lebow *et al* (1995), Akerlof *et al* (1996), Card and Hyslop (1996), Kahn (1997) and Altonji and Devereux (1999).

Earnings Survey (NES). This is a 1 per cent sample of employees based on all individuals whose National Insurance number ends in the digits 14. Since these numbers are issued prior to starting work and are retained for life, there is a large panel element in the data. Complete data on earnings are provided for every individual and cover a specific week in April for each year. These data are provided by employers who are legally bound to comply and come directly from payroll records, which ensures a high degree of accuracy. The data cover hourly and weekly earnings plus detailed information on hours, overtime hours, age, occupation, industry, region and whether or not the individual was in the same job as in the previous year. Note that she can be in a different job with the same employer. The measure of the nominal hourly wage rate we use throughout is the weekly pay of those whose pay is unaffected by absence excluding overtime pay divided by weekly hours excluding overtime hours. We only consider full-time employees and the wage changes refer to the April to April movements in the hourly rate for each individual.

In Figure 1, we present the distribution of nominal wage changes (in the form of proportional increases) for non-job changers in a period of high inflation, 1975-76 (inflation: 18.8 per cent), medium inflation, 1986-87 (inflation: 4.4 per cent), low inflation, 1992-93 (inflation: 1.3 per cent). In all three periods there is a distinct spike at zero but the spike is far more marked when inflation is low. This immediately suggests that nominal wage rigidity may have real consequences because of the obvious distortion to the nominal (and hence real) wage change distribution. We pursue this issue first by getting a picture of the distribution of nominal wage changes for a variety of different groups. We then investigate the basic question of whether nominal wage rigidity interferes with necessary real wage adjustments. The answer turns out to be yes but not much.

2. A Picture of Nominal Wage Rigidity 1975-99

In Table 1, we present some aspects of the frequency distribution of changes in basic hourly pay for individuals who stay in the same job. The changes refer to a given week in April in every year. Looking first at column 1 (no change in wages) we see that practically no-one has a constant nominal wage from one year to the next in the years of very high inflation (*eg* 1975-77 or 1979-81). By contrast, in the low inflation years of the 1990s, the numbers reach a peak of over 7 per cent. How do the 1990s numbers compare with those

reported by Smith (2000)? In her Table 1, she reports that an average of 9 per cent of individuals had zero annual pay growth over the years 1991-96. This compares with our average of 5.1 per cent over the same years (see Table 1, column 1). Smith argues that around half of her numbers are due to measurement or rounding error, and if we exclude these, then our numbers are roughly comparable.

In column 2, we see the percentage receiving nominal pay cuts, the numbers ranging from nine or 10 per cent in periods of high inflation to around 20 per cent in periods of low inflation. These numbers are broadly comparable to those reported for the US (*eg* McLaughlin, 1994; Card and Hyslop, 1996) while being somewhat lower than those presented for the UK in Smith (2000), Table 1. To see how the distribution of nominal wage changes is bunched around zero, we present the proportion of individuals whose wage changes lie in the 1 per cent interval centred on zero and those adjacent to it. Throughout the twenty four years of the sample, the interval centred on zero always contains around two to three times as many people as each of the surrounding intervals. This indicates again that the zero change has a particular status, even in periods of high inflation.

Nominal Rigidity for Different Groups

In Table 2, we present the same information as in Table 1 revealing the differences between men and women. The proportions with zero nominal changes are generally slightly higher for men as are the numbers with falls in nominal pay. This, at least in part, reflects the somewhat lower median wage increases for men. Overall, the differences are not dramatic. Turning to differences by skill, we find in Table 3 that higher skill men tend to have rather higher proportions with zero nominal changes as well as lower numbers with declines in nominal pay. The latter reflects the higher median real wage shifts among the higher skilled whereas the former perhaps reflects a lower level of wage flexibility in this group.

If we consider longer period changes, we would expect a marked decline in the numbers facing zero nominal wage changes and in Table 4 we see this is exactly what happens. In most periods, fewer than 1 per cent of individuals in the same job have no change in nominal wages over two years. These numbers are markedly lower than those reported in Smith (2000). Using her measures, around 4 per cent of non-job changers had zero pay growth over two years in the first half of the 1990s, perhaps reflecting the

importance of measurement error in her data. Finally, in Table 5, we report on the situation for job changers. Perhaps surprisingly, there are still a small number with zero annual nominal pay changes, although it should be recalled that in our data job changers do not have to change firms, they merely have to change jobs within firms.

To summarise, we have seen that year-on-year changes in basic hourly pay exhibit a bunching around zero, even in periods of high inflation. Despite this, we have also seen that between 10 and 20 per cent of job stayers have falling hourly pay from one year to the next. Indeed, even over two-year periods we find over 10 per cent of individuals have falling nominal pay in the low inflation 1990s. While these facts are interesting, they do not reveal the extent to which the bunching of nominal pay rises at zero is symptomatic of a significant distortion of the structure of wages, particularly in periods of low inflation. It is this issue which we pursue in the next section.

3. Does Nominal Wage Rigidity Distort the Wage Structure?

It is often argued that one of the benefits of having a positive rate of inflation is that it can ease necessary adjustments in relative wages in a world where nominal wages are downwardly rigid (see Tobin, 1972 or Yates, 1998 for example). As we have seen, nominal wages are not rigid downwards but there is enough bunching of nominal wage changes at zero to make it worth pursuing the question of whether nominal rigidity is interfering significantly with the operation of the labour market.

To do this we make use of the fact that if nominal rigidities at zero are important, then the distribution of real wage changes across individuals should be influenced by inflation, *ceteris paribus*. By its very nature we would expect these effects to be apparent at the lower end of the distribution, so we focus on the proportion of real wage changes that are negative.

In order to build up an analytical framework, we start by considering the factors that would impact on the proportion of real wage changes which are negative in the absence of nominal rigidity at zero. First, it is obvious that the proportion of real wage changes that are negative would depend on the position of the real wage change distribution, which we capture by the median. Furthermore, it is clear that the relationship between the proportion below zero and the median real wage change is not linear, although

it will generally be negative. Second, since the median real wage change is nearly always positive (see Table 6), it is likely that the proportion of changes below zero will be positively related to the dispersion of the distribution (see Figure 2). Third, even if the distribution of real wage changes is independent of inflation in the long run, if changes in inflation reflect surprises then they will impact on changes in real pay. Typically a positive (negative) inflation surprise will lead to real wages being lower (higher) than planned. This will, of course, operate *via* the median but if surprises influence wage changes differently at different parts of the distribution, because of more or less indexation, for example, then inflation changes could have an impact on the proportion negative.

So if we control for all the above factors which we take to capture the effect of equilibrium real wage changes, what will be the *ceteris paribus* impact of inflation on the proportion of real wage changes which are negative? In Figure 3, we illustrate the potential distortion caused by the existence of some degree of nominal rigidity around zero nominal wage changes. The idea is that the introduction of a barrier around zero nominal wage changes will lead to some individuals being shifted from the area of real wage changes just below –p to the area just above. The distortion involves the area A below -p being moved to the area B above -p. Of course, the areas A and B are equal and it is clear that if inflation is low, so that -p is close to the zero line, then the distortion moves some individuals to the right of this line. This will not happen when inflation is high because -p is far away from the zero line (see Figure 3). This leads to a positive relationship between the inflation rate and the percentage of real wage changes which are negative.

In order to investigate this relationship, we consider a time series regression whose dependent variable is the percentage of real wage changes which are negative. The regressors include the median real wage change and its square, a measure of dispersion which we take to be the 75-35 percentile range and the level and change of the rate of inflation. The use of the rather eccentric measure of dispersion is an attempt to use something which is not much affected by the nominal rigidity distortion which, in the main, all happens to the left of the 35^{th} percentile. In order to utilise more information we also consider pooled regional data since we have all the necessary information available at the level of the standard UK regions. Of course, the regional time series relationships are not independent, so we allow for cross-correlation in the residuals by using the SURE method.

In Table 7, we report the regression results for men and women separately. As we can see the overall impression is that the proportion of job stayers whose real wage change is negative is well explained by the position and dispersion of the real wage change distribution. However, in addition, there is a strong positive inflation effect which is consistent with the distortion generated by having some degree of rigidity in the area of zero nominal wage changes. Taking the average inflation coefficient from the four equations in Table 7, we find that a 1 per cent rise in the long-run rate of inflation will induce, in the long run, a ½ percentage point rise in the number of job stayers with a negative real wage increase. On average, this reflects a 1.4 per cent increase. So while this effect is statistically significant, it is hardly a very large one. As an argument for raising the UK inflation target from 2.5 per cent to 3.5 per cent, say, it does not appear to be very strong.

In Table 8, we see the same kind of inflation effect on the percentage of job stayers whose two-year real wage change is negative. Furthermore, if we look at the percentage of job stayers whose annual real wage change is less than –5 per cent (as opposed to less than zero), we find exactly the same results with much the same inflation effect. The question now arises as to whether the inflation effects are actually generated by a rigidity located at zero as opposed to some more generalised form of money illusion. Looking again at Figure 3, we see that if we consider the percentage of real wage changes below -x per cent where x is above the range of inflation rates, then we should observe a negative relationship between this percentage and inflation. Thus in the lower half of Figure 3, we see that when inflation is high, the distortion removes individuals from the left of -x. When inflation is low in the top half of Figure 3, the distortion is too far away from -x to have any impact. This suggests that the type of distortion generated by the particular form of nominal rigidity based on zero nominal wage changes illustrated in Figure 3 will lead to the following particular structure of relationships.

If we take the percentage of job stayers whose annual real wage changes are below –Y per cent where Y is towards the lower end of the sample range of inflation rates, this percentage will be positively related to inflation, *ceteris paribus*. If Y is towards the upper end of the sample range, the percentage of job stayers whose annual real wage changes are below –Y per cent will be negatively related to inflation. So what happens in practice? The answer is presented in Table 9. We see that we have precisely the pattern suggested above. As Y moves from the lower end of the sample range of inflation to the upper end, the coefficient on inflation moves systematically from positive to negative. This suggests

that the nominal rigidity is indeed focused on zero nominal wage changes and induces a distortion in real wage changes of the type illustrated in Figure 3.

4. Conclusions

Using the accurate and extensive data available in the UK New Earnings Survey, we have undertaken an investigation of the extent to which nominal wages are downwardly rigid. Despite the substantial numbers of individuals whose nominal wages fall from one year to the next, we find that if long-run inflation is 1 per cent higher, the percentage of individuals with negative real pay growth increases by ½ percentage point (*ie* around 1.4 per cent). This is a statistically significant increase in flexibility which is *ceteris paribus* on the median and overall dispersion of the real wage change distribution. However, despite its statistical significance, the overall effect is clearly modest and would not be a strong argument for raising the long-run inflation target.

Table 1
Nominal Wage Rigidity, 1976-99

Percentage of job stayers whose annual change in hourly pay falls in the given categories

	0	< 0	(-1.5%;-0.5%]	(–0.5%;0.5%]	(0.5%;1.5%]	Inflation	Median real wage change
1976-75	0.29	5.11	0.43	1.03	0.49	18.84	4.20
1977-76	0.57	10.04	0.87	2.33	1.41	20.49	-5.59
1978-77	1.14	9.50	0.97	3.08	1.32	5.47	2.92
1979-78	0.88	9.35	0.79	2.95	1.09	9.98	-0.15
1980-79	0.20	5.06	0.35	0.80	0.46	21.82	4.47
1981-80	0.99	10.14	0.76	3.41	1.07	12.03	3.48
1982-81	1.20	9.90	0.90	3.92	1.29	9.34	1.34
1983-82	2.05	10.63	0.91	3.27	1.38	5.73	4.16
1984-83	4.59	12.75	1.15	6.21	1.75	3.43	1.78
1985-84	1.64	11.60	1.06	2.96	1.48	6.95	1.11
1986-85	1.36	12.30	1.08	3.36	1.39	3.10	4.39
1987-86	2.50	12.05	1.16	3.91	1.62	4.36	3.09
1988-87	1.55	11.43	1.01	2.64	1.39	4.00	3.57
1989-88	1.98	10.86	0.96	3.13	1.28	7.95	1.42
1990-89	2.28	10.59	0.94	3.47	1.35	9.52	0.51
1991-90	2.77	11.09	0.93	3.87	1.24	6.50	4.07
1992-91	5.03	13.13	1.21	6.63	1.84	4.19	3.41
1993-92	7.13	16.25	1.73	9.42	3.30	1.29	2.90
1994-93	6.48	19.38	2.19	9.44	6.40	2.56	0.50
1995-94	5.48	19.47	1.78	8.03	2.98	3.28	0.08
1996-95	1.32	18.20	1.61	6.44	2.41	3.11	0.09
1997-96	1.49	22.38	1.92	7.71	2.85	1.79	2.37
1998-97	3.92	18.66	1.49	6.10	2.22	3.90	-0.57
1999-98	4.51	16.85	1.44	6.56	2.10	1.62	2.83

Notes: i) The first five columns refer to the percentage of individuals whose nominal wage changes fall in the categories described at the head of the column. ii) The workers are full-time individuals who remain in the same job.

Table 2

Nominal Wage Rigidity by Sex, 1976-99

Percentage of job stayers whose annual change in hourly pay falls in the given categories

ALL workers							
	0	**< 0**	**(-1.5%;0.5%]**	**(-0.5%;0.5%]**	**(0.5%;1.5%]**	**Inflation**	**Median real wage change**
1975-80	0.62	7.85	0.69	2.05	0.96	15.31	1.32
1980-85	2.11	11.01	0.96	3.97	1.40	7.50	2.33
1985-91	2.08	11.38	1.01	3.40	1.38	5.91	3.12
1991-95	6.02	17.01	1.72	8.36	3.60	2.85	1.97
1995-99	2.83	18.95	1.61	6.68	2.39	2.77	1.78
Average se	*0.05*	*0.11*	*0.04*	*0.07*	*0.05*		
Men							
	0	**< 0**	**(-1.5%;-0.5%]**	**(-0.5%;0.5%]**	**(0.5%;1.5%]**	**Inflation**	**Median real wage change**
1975-80	0.59	8.82	0.74	2.07	1.02	15.31	0.97
1980-85	2.19	12.16	1.04	4.05	1.45	7.50	2.12
1985-91	2.27	12.72	1.09	3.70	1.49	5.91	2.70
1991-95	6.51	18.40	1.77	8.94	3.60	2.85	1.64
1995-99	3.26	19.97	1.62	7.25	2.34	2.77	1.72
Average se	*0.07*	*0.15*	*0.05*	*0.09*	*0.06*		
Women							
	0	**< 0**	**(-1.5%;-0.5%]**	**(-0.5%;0.5%]**	**(0.5%;1.5%]**	**Inflation**	**Median real wage change**
1975-80	0.70	5.35	0.53	1.99	0.82	15.31	2.04
1980-85	1.94	8.40	0.77	3.78	1.27	7.50	2.71
1985-91	1.67	8.54	0.85	2.77	1.13	5.91	3.99
1991-95	5.09	14.41	1.62	7.26	3.60	2.85	1.54
1995-99	2.06	17.10	1.58	5.65	2.46	2.77	1.89
Average se	*0.09*	*0.19*	*0.06*	*0.12*	*0.08*		

Notes: i) These tables have the same form as in Table 1 but with averages taken over groups of years.

Table 3

Male Nominal Wage Rigidity by Skill, 1976-99

Percentage of job stayers whose annual change in hourly pay falls in the given categories

Men Low skill level							
	0	**< 0**	**(-1.5%;-0.5%]**	**(-0.5%;0.5%]**	**(0.5%;1.5%]**	**Inflation**	**Median real wage change**
1975-80	0.41	12.43	1.12	2.07	1.45	15.31	-0.02
1980-85	1.99	16.65	1.42	4.15	1.84	7.50	1.37
1985-91	1.70	17.22	1.45	3.39	1.84	5.91	2.36
1991-95	3.91	24.51	1.86	6.78	4.74	2.85	1.03
1995-99	2.48	25.28	2.18	6.02	2.89	2.77	1.43
Average se	*0.21*	*0.62*	*0.20*	*0.32*	*0.24*		
Men Low intermediate skill level							
	0	**< 0**	**(-1.5%;-0.5%]**	**(-0.5%;0.5%]**	**(0.5%;1.5%]**	**Inflation**	**Median real wage change**
1975-80	0.50	9.38	0.77	1.90	1.20	15.31	1.65
1980-85	1.82	12.90	1.09	3.48	1.52	7.50	2.43
1985-91	2.06	12.91	1.14	3.51	1.57	5.91	3.08
1991-95	5.52	18.76	1.92	7.90	3.45	2.85	1.70
1995-99	2.57	19.95	1.73	6.33	2.38	2.77	1.68
Average se	*0.10*	*0.24*	*0.08*	*0.15*	*0.10*		
Men High intermediate skill level							
	0	**< 0**	**(-1.5%;-0.5%]**	**(-0.5%;0.5%]**	**(0.5%;1.5%]**	**Inflation**	**Median real wage change**
1975-80	0.50	8.32	0.70	1.85	0.95	15.31	1.27
1980-85	2.64	12.05	1.06	4.32	1.50	7.50	2.24
1985-91	2.38	12.76	1.10	3.84	1.52	5.91	3.03
1991-95	7.26	18.47	1.75	9.78	3.37	2.85	1.60
1995-99	3.69	20.25	1.58	7.85	2.39	2.77	1.79
Average se	*0.12*	*0.25*	*0.08*	*0.16*	*0.10*		
Men High skill level							
	0	**< 0**	**(-1.5%;-0.5%]**	**(-0.5%;0.5%]**	**(0.5%;1.5%]**	**Inflation**	**Median real wage change**
1975-80	0.80	6.98	0.58	2.34	0.89	15.31	0.89
1980-85	2.37	8.99	0.75	3.67	1.06	7.50	2.45
1985-91	2.73	10.18	0.79	4.03	1.16	5.91	3.69
1991-95	7.71	15.59	1.54	9.99	3.92	2.85	1.87
1995-99	3.51	18.18	1.39	8.05	2.08	2.77	2.00
Average se	*0.07*	*0.32*	*0.10*	*0.22*	*0.13*		

Notes: i) These tables have the same form as in Table 1 but with averages taken over groups of years.

Table 4

Nominal Wage Rigidity over a Two Year Period, 1976-99

Percentage of job stayers whose bi-annual change in hourly pay falls in the given categories

ALL workers

	0	< 0	(-1.5%;-0.5%]	(-0.5%;0.5%]	(0.5%;1.5%]	Inflation	Median real wage change
1975-80	0.09	3.79	0.31	0.48	0.37	30.06	1.11
1980-85	0.17	4.91	0.36	0.62	0.48	18.91	5.27
1985-91	0.26	6.07	0.46	0.80	0.57	12.26	5.59
1991-95	1.38	11.33	0.95	2.53	1.34	6.59	5.10
1995-99	0.84	13.65	1.02	2.58	1.36	6.06	2.25
Average se	*0.03*	*0.11*	*0.03*	*0.05*	*0.04*		

Men

	0	< 0	(-1.5%;-0.5%]	(-0.5%;0.5%]	(0.5%;1.5%]	Inflation	Median real wage change
1975-80	0.09	4.35	0.34	0.54	0.43	30.06	2.56
1980-85	0.19	5.60	0.40	0.69	0.53	18.91	6.09
1985-91	0.31	6.99	0.53	0.93	0.65	12.26	6.63
1991-95	1.63	12.59	1.03	2.85	1.44	6.59	4.57
1995-99	1.03	14.48	1.05	2.87	1.35	6.06	2.13
Average se	*0.04*	*0.14*	*0.04*	*0.06*	*0.05*		

Women

	0	< 0	(-1.5%;-0.5%]	(-0.5%;0.5%]	(0.5%;1.5%]	Inflation	Median real wage change
1975-80	0.06	2.26	0.20	0.31	0.22	30.06	0.55
1980-85	0.12	3.23	0.28	0.44	0.28	18.91	4.93
1985-91	0.15	3.87	0.28	0.49	0.38	12.26	4.95
1991-95	0.87	8.82	0.79	1.90	1.14	6.59	6.00
1995-99	0.48	12.07	0.98	2.03	1.40	6.06	2.51
Average se	*0.04*	*0.17*	*0.05*	*0.07*	*0.06*		

Notes: i) These tables differ from the previous tables simply because all changes refer to two year periods.

Table 5

Nominal Wage Rigidity Among those who Change Jobs, 1976-99

Percentage of job stayers whose annual change in hourly pay falls in the given categories

ALL workers							
	0	**< 0**	**(-1.5%;-0.5%]**	**(-0.5%;0.5%]**	**(0.5%;1.5%]**	**Inflation**	**Median real wage change**
1975-80	0.25	12.71	0.67	1.26	0.83	15.31	5.21
1980-85	1.27	17.53	0.97	2.59	1.17	7.50	6.33
1985-91	0.62	16.89	0.85	1.67	1.04	5.91	8.28
1991-95	1.65	22.59	1.30	3.37	2.26	2.85	5.32
1995-99	0.62	23.89	1.34	2.61	1.64	2.77	6.84
Average se	*0.09*	*0.40*	*0.10*	*0.15*	*0.12*		
Men							
	0	**< 0**	**(-1.5%;-0.5%]**	**(-0.5%;0.5%]**	**(0.5%;1.5%]**	**Inflation**	**Median real wage change**
1975-80	0.24	13.76	0.68	1.33	0.89	15.31	4.70
1980-85	1.57	18.83	0.97	2.81	1.21	7.50	5.91
1985-91	0.71	18.65	0.83	1.83	1.07	5.91	9.32
1991-95	1.80	24.65	1.39	3.67	2.32	2.85	4.71
1995-99	0.72	25.15	1.30	2.63	1.63	2.77	6.75
Average se	*0.12*	*0.52*	*0.13*	*0.20*	*0.15*		
Women							
	0	**< 0**	**(-1.5%;-0.5%]**	**(-0.5%;0.5%]**	**(0.5%;1.5%]**	**Inflation**	**Median real wage change**
1975-80	0.27	10.35	0.66	1.11	0.67	15.31	6.29
1980-85	0.69	15.09	0.96	2.16	1.10	7.50	7.05
1985-91	0.51	14.01	1.05	1.23	0.95	5.91	7.53
1991-95	1.85	19.38	1.16	2.91	1.72	2.85	6.09
1995-99	0.48	21.94	1.39	2.59	1.64	2.77	6.99
Average se	*0.14*	*0.62*	*0.17*	*0.23*	*0.18*		

Table 6

Annual Real Wage Changes for Job Stayers, 1976-99

	Percentage with negative real wage change	Median real wage change	35^{th} percentile	75^{th} percentile	(75^{th}-35^{th})	Real change at zero nominal change
1976-75	33.17	4.20	0.53	12.69	12.17	-18.84
1977-76	72.95	-5.59	-7.95	0.73	8.67	-20.49
1978-77	72.95	2.92	0.26	10.31	10.06	-5.47
1979-78	50.72	-0.15	-3.01	7.30	10.30	-9.98
1980-79	32.52	4.47	0.69	13.95	13.13	-21.82
1981-80	37.40	3.48	-0.80	12.33	13.13	-12.03
1982-81	41.34	1.34	-0.94	7.61	8.55	-9.34
1983-82	21.17	4.16	1.94	10.05	8.10	-5.73
1984-83	36.16	1.78	-0.03	7.55	7.57	-3.43
1985-84	42.92	1.11	-0.90	6.69	7.59	-6.95
1986-85	19.14	4.39	2.39	10.51	8.11	-3.10
1987-86	24.11	3.09	1.34	9.14	7.80	-4.36
1988-87	25.33	3.57	1.03	10.90	9.87	-4.00
1989-88	40.90	1.42	-1.04	9.31	10.35	-7.95
1990-89	47.17	0.51	-1.39	7.36	8.75	-9.52
1991-90	24.04	4.07	2.45	10.45	8.00	-6.50
1992-91	26.68	3.41	1.25	8.72	7.48	-4.19
1993-92	28.19	2.90	1.41	7.85	6.44	-1.29
1994-93	44.25	0.50	-0.96	5.13	6.09	-2.56
1995-94	49.22	0.08	-1.08	5.40	6.48	-3.28
1996-95	49.49	0.08	-1.28	6.08	7.36	-3.11
1997-96	28.06	2.37	1.30	8.42	7.13	-1.79
1998-97	52.11	-0.57	-1.73	5.54	7.27	-3.90
1999-98	24.91	2.83	1.36	8.84	7.47	-1.62

Table 7

Explaining the Percentage of Job Stayers

whose Annual Real Wage Change is Negative, 1976-99

Dep Var: Percentage with Negative Annual Real Wage Change

	Men		**Women**	
	Annual Data	Annual/ Regional Data	Annual Data	Annual/ Regional Data
	OLS	**SURE**	**OLS**	**SURE**
Median Real Wage Change (%)	-05.12 (13.8)	-5.24 (32.6)	-4.37 (5.9)	-5.44 (21.0)
75^{th}-35^{th} Percentile Difference (%)	0.071 (0.1)	0.485 (3.6)	1.19 (1.5)	0.921 (6.2)
Inflation Rate (%)	0.857 (2.8)	0.449 (5.6)	0.618 (1.7)	0.252 (3.0)
?inflation Rate	-0.248 (1.7)	-0.089 (1.6)	0.016 (0.1)	-0.019 (0.3)
Region Dummies		v		v
Observations	23	230	23	230
R^2	0.97	0.93 (average)	0.94	0.91 (average)

Notes:

(i) t ratios in parentheses.

(ii) The real wage is the nominal basic hourly rate normalised on the retail price index. The median real wage change is measured as a percentage. The 75^{th}-35^{th} percentile difference refers to the difference between the percentage real wage change at the 75^{th} percentile less the percentage real wage change at the 35^{th} percentile. It is a measure of dispersion. The inflation rate is the percentage rate and refers to the retail price index. All changes are annual, April to April. In the regional equations, the data are all region specific.

(iii) The use of SURE for the regional panel takes account of the high cross-region correlations in the equation errors when computing the standard errors. These correlations are generally in the range 0.5 to 0.8. The R^2 refers to the average over the ten regional regressions.

Table 8

Explaining the Percentage of Job Stayers Bi-Annual

Real Wage Change is Negative, 1976-99

Dep Var: Percentage with Negative Bi-Annual Real Wage Change

Annual/Regional Data: SURE

	Men	**Women**
Median Real Wage Change (%) (2 year)	-4.98 (29.3)	-5.21 (24.4)
(Median)^2	0.169 (10.3)	0.164 (10.0)
75^{th}-35^{th} Percentile Difference (%)	0.915 (10.0)	0.870 (8.2)
Inflation Rate (%) (2 year)	0.104 (2.7)	0.185 (4.3)
?Inflation Rate	0.023 (0.6)	-0.029 (0.6)
Region Dummies	v	v
Observations	220	220
R^2 (average)	0.91	0.93

Notes: As in Table 7, except the changes are over 2 years.

Table 9

The Impact of Inflation on the Percentage of Job Stayers whose

Annual Real Wage Changes are less than –Y%

Inflation Coefficients in the Standard Regression (as in Table 7)

-Y	**0%**	**-5%**	**-10%**	**-15%**	**-20%**
Men	0.449 (5.6)	0.453 (8.4)	0.074 (1.6)	-0.026 (0.9)	-0.036 (2.0)
Women	0.252 (3.0)	0.400 (7.4)	-0.038 (0.7)	-0.050 (1.8)	-0.073 (4.3)

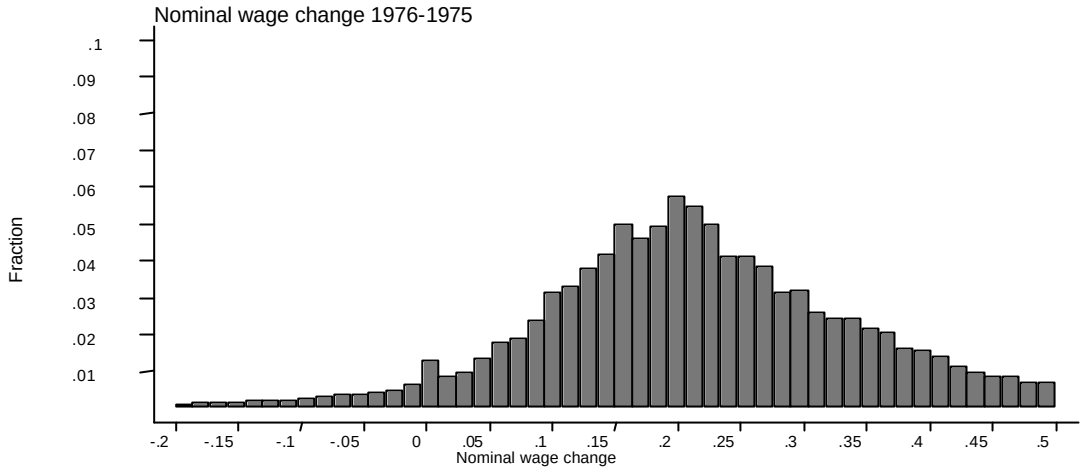
Notes:

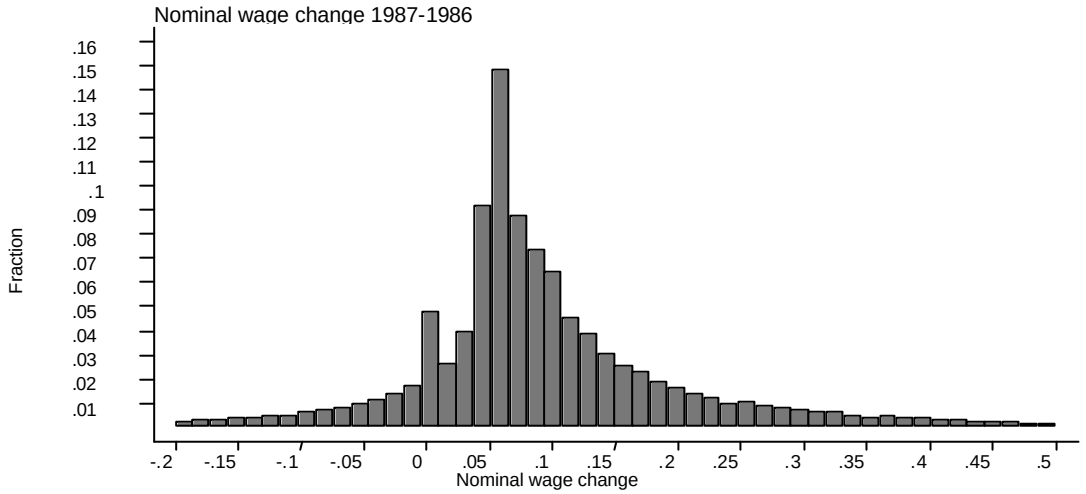
(i) These inflation coefficients are taken from SURE regressions whose independent variables are those in Table 7 and whose dependent variables are the percentage of job stayers whose annual real wage changes are less than –Y%. Thus the first column presents the inflation coefficients reported in Table 7.

(ii) t ratios in parentheses.

Figure 1

The Distribution of Nominal Wage Changes





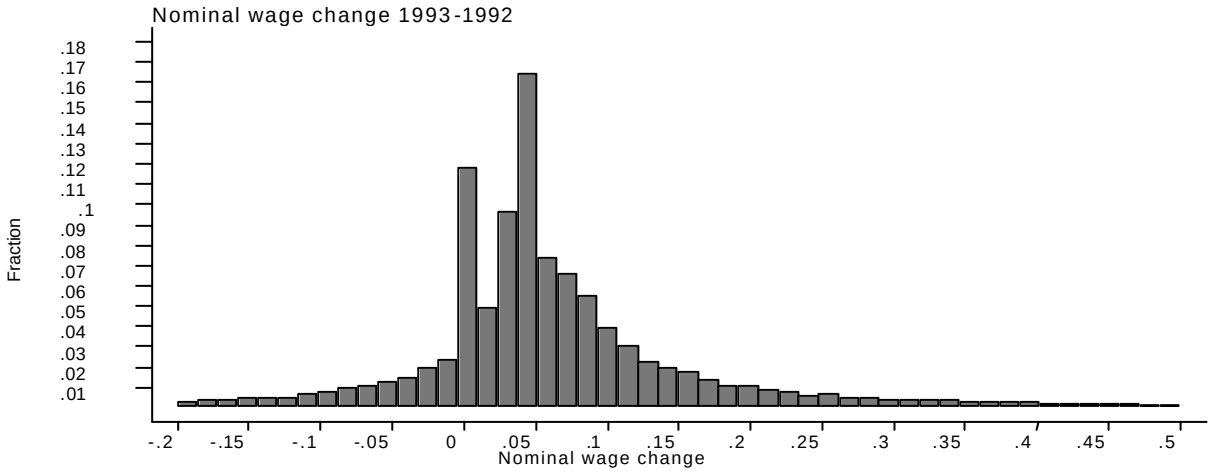


Fig 2. Real Wage Changes: Increase in Dispersion

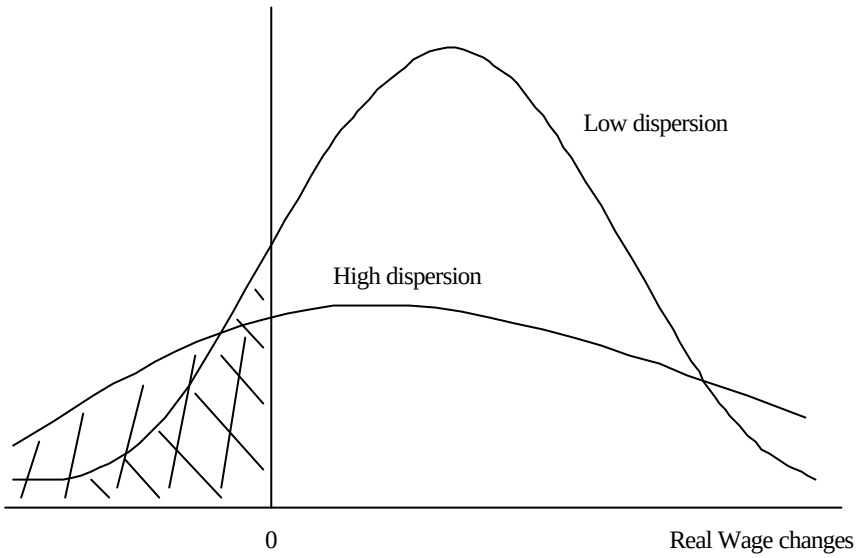


Fig 3A. Real Wage Changes. Distortions due to nominal rigidities: Low Inflation

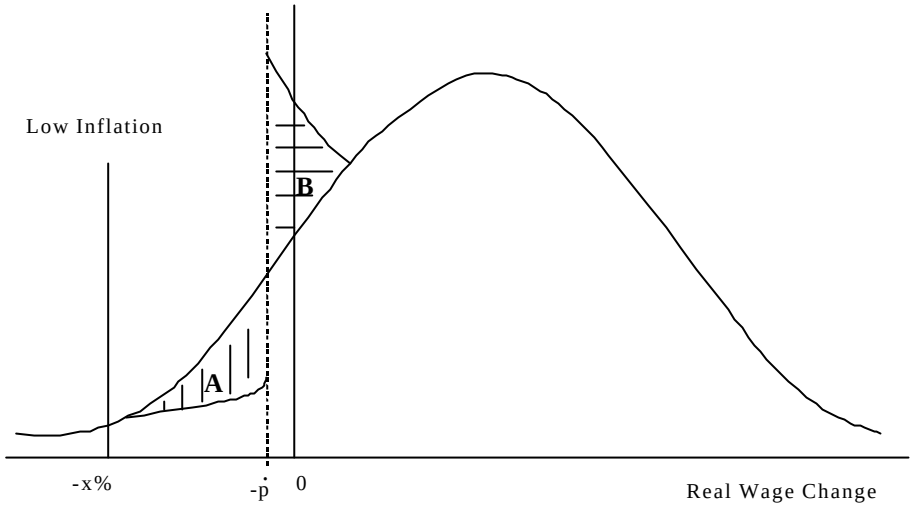
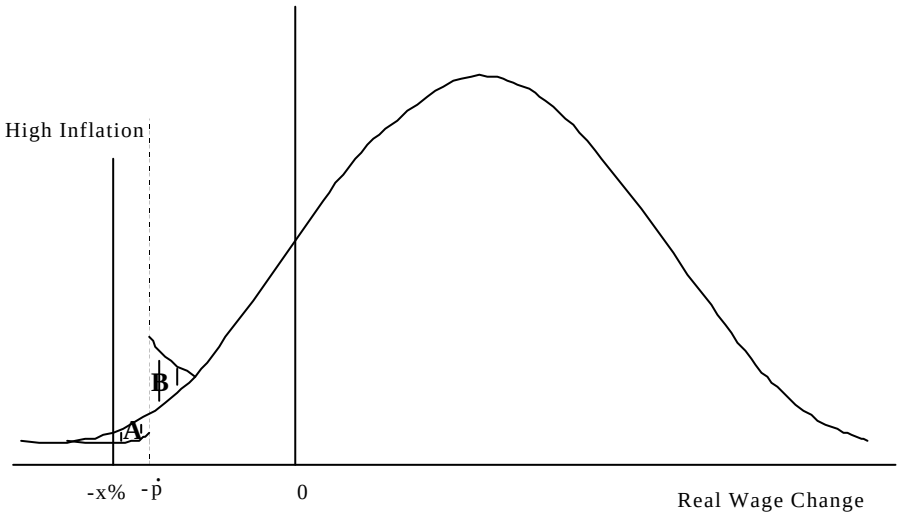


Fig 3B. Real Wage Changes. Distortions due to nominal rigidities: High Inflation



Data Appendix

Nominal Wages: Weekly pay of those whose pay is unaffected by absence excluding overtime pay divided by weekly hours excluding overtime hours. For a given week in April, annually. UK New Earnings Survey.

Prices: Retail price index. Available monthly in UK. Labour Market Trends.

Skill Levels: The four skill levels reported in Table 3 are based on the individual occupation. Details may be found in Nickell *et al.* (1999).

Prices (regional): A Regional Price index for the UK is collected annually by the Regional Rewards Survey Ltd. The company samples prices in approximately 100 British Towns and then produces a percentage comparison of prices in each region against the national average. We use the national CPI to create regional CPI indices from these data.

References

Akerlof, G.A., Dickens, W.T. and Perry, G.L. (1996), "The Macroeconomics of Low Inflation", Brookings Papers on Economic Activity, 1, pp. 1-76.

Altonji, J.G. and Devereux, P.J. (1999), "The Extent and Consequences of Downward Nominal Wage Rigidity", NBER Working Paper No 7236, July, Cambridge, MA.

Card, D. and Hyslop, D. (1996), "Does Inflation 'Grease the Wheels of the Labour Market'?", NBER Working Paper 5538, April, Cambridge, MA.

Kahn, S. (1997), "Evidence of Nominal Wage Stickiness from Microdata" American Economic Review, 87 (5), pp. 993-1008.

Lebow, D.E., Stockton, D.J. and Wascher, W.L. (1995), "Inflation, Nominal Wage Rigidity and the Efficiency of Labour Markets", Federal Reserve Board of Governors Finance and Economics Discussion Series No 95-45.

McLaughlin, K.J. (1994), "Rigid Wages?", Journal of Monetary Economics, 34(3), pp. 383-414.

Nickell, S.J., Jones, T. and Quintini, G. (1999), "A Picture of Job Insecurity Facing British Men", Discussion Paper No.479, Centre for Economic Performance, London School of Economics.

Smith, J.C. (2000), "Nominal Wage Rigidity in the United Kingdom", Economic Journal (Conference Papers), 110, C176-C195.

Tobin, J. (1972), "Inflation and Unemployment", American Economic Review, 62(1), pp. 1-18.

Yates, A. (1998), "Downward Nominal Rigidity and Monetary Policy", Bank of England Working Paper No 82.

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