

Discussion Papers in Economics

PAY SETTLEMENTS AND NOMINAL WAGE
RIGIDITY IN BRITAIN

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DP 08/03

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The financial support of the Leverhulme Trust is gratefully acknowledged. Data used with permission of the Confederation of British Industry, whose views are not necessarily reflected in this paper. The CBI Pay Settlements Survey is available for research users through the ESRC Data Archive.

The authors wish to thank Paul Gregg and David Metcalf for helpful discussions.

Abstract

Following a resurgence of interest in the issue of downward nominal wage rigidity, we use group-level wage contract data to track the evolution of nominal wage settlements in Britain, examine the characteristics of the groups who settle for zero increase in their basic pay and offer some evidence of the influence of inflation on settlement outcomes. We show that the source of apparent nominal wage flexibility observed in earlier studies of individuals does not appear to lie with wage settlements. There are zero nominal wage settlements and they are more common in times of low inflation, but are highest during (low inflation) recessionary periods. Small settlement groups and, above all firms in trouble appear most likely to settle at zero. Real wage settlements are lower when inflation is higher, though it seems that double-digit inflation is needed before discernible effects are apparent. There is less evidence that the overall level of real settlement levels react differently to unemployment when inflation is high.

JEL Classification No. J3, J5

Keywords: Pay, Inflation, Nominal Wage Rigidity

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“Any individual or group of individuals, who consent to a reduction in money wages relatively to others, will suffer a relative reduction in real wages, which is sufficient justification for them to resist it. On the other hand it would be impracticable to resist every reduction in real wages, due to a change in the purchasing-power of money which affects all workers alike; and in fact reductions in real wages arising in this way are not, as a rule, resisted.”(Keynes 1936, p.14.)

Introduction

Is downward nominal wage rigidity a feature of the British labour market? Do the institutions of the British labour market restrict nominal wage cuts as suggested by Keynes? What role do inflation, firm performance, union status and other institutional features play in facilitating real wage adjustment? The answers to these questions have important micro and macro-economic consequences. On the micro-side, the effect of inflation on wage settlements set by employers or negotiated between firms and unions is still not well known. Nor is there much evidence indicating which groups are likely to receive either negative or zero nominal wage settlements. On the macro-side, there is a renewed debate as to whether inflation may facilitate adjustment in real wages and so preclude the need for job cuts, or whether instead stable prices reduce labour market frictions and hence lead to lower unemployment. Britain is currently experiencing the longest period of low inflation for more than thirty years. As such, the need to establish the extent of nominal wage rigidity and the role of inflation in facilitating real wage flexibility has become central to this debate. Any attempts to effect a zero inflation target could increase unemployment and reduce output if nominal wage rigidity were important. This paper attempts to set down some observations on the extent of, and influences on, nominal wage rigidity in pay using the CBI settlement data bank.

A recent spate of empirical evidence from the United States, where inflation is also low and showing little sign of rising, has helped rekindle interest in this issue. The debate is

far from concluded given the somewhat contradictory findings of McLaughlin (1994), Card and Hyslop (1995), Akerlof, Dickens and Perry (1996), Groshen and Schweitzer (1998, 1999) and Altonji and Devereux (1999)¹. These studies produce conclusions, ranging from evidence of substantial nominal and real wage flexibility, to nominal wage rigidity ameliorated by higher inflation, to extensive downward nominal rigidity except when firms are under extreme duress. As yet the debate is unresolved.

In Britain, two notable recent studies suggest the presence of a significant amount of nominal wage flexibility amongst employees. Smith (2000), using longitudinal wage data on individuals, argues that there is little evidence of downward nominal rigidity. Nickell and Quintini (2001), using New Earnings Survey Data, also suggest that nominal wages display a significant degree of downward flexibility. This absence of nominal rigidity, would suggest that there is no need to support a positive inflation target to facilitate real wage adjustment. As yet there is less evidence, however, on the source of this apparent wage flexibility or on the nature of firms who restrict wage rises – a lacuna we seek to fill here.

The literature on settlement influences in general, (for example Ingram, Wadsworth and Brown (1997, 1999)), suggests that employers take account of performance, company wage relativities and the rate of inflation in determining pay. Gregory, Lobban and Thomson, (1987), using an earlier version of the CBI data set, include the rate of inflation in their set of determinants of nominal wage settlements and find a relatively low degree of correlation. On the union side there is scant national evidence of whether unions go for inflation or “inflation plus x” in their wage bids. Halfpenny and Able(1985) examine the role of inflation on actual settlements made by five British trade unions between 1947 and 1970 and find that retrospective rather than prospective inflation appeared dominant in fashioning wage expectations. Robinson (1987), arguing that the institutions of British industrial relations would act to reduce downward nominal wage flexibility, finds that one third of his sample

experienced real wage falls between 1979 and 1984. He too, suggests that bargaining parties fail to take into account future inflation and appear instead to be "backward looking".

This paper provides evidence for the British private sector on the extent of nominal wage rigidities and the role of inflation in real wage adjustment using establishment *wage settlement data* - the major component of pay change from year to year for most workers. In so doing we can help to assess the role of annual wage settlements in explaining the nominal wage flexibility observed by other recent British studies using individual level information. We contrast the nature and characteristics of groups who settle at zero, focussing on union status, size, and the performance level of the settlement groups relative to others. Our results suggest that downward nominal wage rigidity in settlements is a feature that affects up to 11% of the workforce. Group size, union status and firm performance, along with the rate of inflation, all appear to influence the likelihood of a zero increase wage settlement, but comparability issues do not. We find almost no instances of nominal cuts over the twenty-year period. Most firms seem to impose zero nominal pay settlements only under duress, and so zero nominal settlements are at their highest during a recession in a low inflation environment. Real wage settlements are lower when inflation is higher, though it seems that double-digit inflation is needed before discernible effects become apparent. There is less evidence that real wages react differently to an external shock (unemployment) when inflation is high. Whatever the source of nominal wage flexibility observed elsewhere, it does not appear to be present in the annual pay settlement.

Data

We address the issue of nominal wage rigidity for Britain using **settlement data** taken from the CBI's establishment-level longitudinal employment surveys. The CBI Pay Databank began the systematic monitoring of private sector wage settlements from the start of the 1979/80 pay round in August 1979. This is one of the longest continuous sources of disaggregated firm-level wage data available in Britain. The data used here cover the period

from August 1979 to July 2001, providing a continuous series on wage outcomes, inflation rates, regional unemployment rates and pay-setting influences recorded by the month of settlement. Hence the sample period encompasses two episodes of double digit inflation, two recessions - one in a high inflation environment, the other associated with low inflation - and the longest period of continuous low inflation for thirty years. Each firm is asked to give information on up to 3 settlement groups whose wages are determined, in part, at a local (plant) level², along with information on other details of the settlement and some (limited) information on the characteristics of the group itself. The data set contains around 1,500 observations, manual and non-manual, union and non-union, at the level of the individual settlement group in each year. The data cover around 1.5 million employees, some 8% of all private sector employees in Britain. The data were originally collected for the manufacturing sector alone. Since 1987 however, information on the service sector has been recorded. The service sector data comprise around one third of all settlement groups in the sample, but, because service sector groups are typically larger, they cover around two-thirds of all employees in the data sample. We have information on calendar year, month and duration of each settlement. We aggregate this information into periods corresponding to 12 monthly 'pay-rounds', traditionally beginning in August of each year. The longitudinal nature of the data means that we can also follow the same settlement group over time to establish whether nominal rigidity persists. The average (uncompleted) length of time that a settlement group remains in the panel is 8 years.

The nominal settlement variable that underscores our analysis is the response to the question³:

“Please indicate how much the settlement will increase the earnings of a typical employee in this group over the next 12 months. Please include the effect of bonus payments, merit awards etc, if made as part of the settlement”.

Additional earnings drift should therefore be captured by this question if it occurs at the time of the settlement. The responses extend to two decimal places, though we do not pursue the issue of rounding further here. We use two approaches to calculate the real value of wage settlements. The first method is to deduct the rate of retail price inflation in the month of settlement from the nominal increase. The second method calculates the rate of inflation across the duration of the settlement and deducts this from the nominal settlement. This latter measure differs from the former when the inflation rate is most volatile. Focusing on settlement groups' annual increases means that we look at the rate of change of wages, rather than inferring this from levels at two points in time, as in studies which use individual level data. This should reduce measurement error that affects all individual-level studies of wage changes to a certain extent. This also means that we are not concerned with differences in the pay distributions of individuals who move or who stay at the job and the associated problems of self-selection and measurement error typical of studies using individual wage data, (see Card and Hislop (1998), McLaughlin (1994)). Settlements apply to all workers at the time of imposition, stayers and new entrants. Since the data stem from firm records, they may also be more relevant to firms' wage setting processes than information from a sample of individuals' wages. We weight all settlement data by the number of employees in the settlement group, unless specified.

The Distribution of Wage Settlements

Figures 1 and 2 present histograms of the nominal and real wage settlement distributions for the whole economy from 1987 onward. The appendix gives the equivalent figures for the manufacturing sector over the longer period, 1979 to 2001. The figures outline the fraction of employees who receive a given wage settlement. A vertical line is imposed at the annual mean inflation rate over the pay-round for the nominal data, (Figure 1), whilst a vertical line at zero is imposed on the real data, (Figure 2). Table 1 provides some related information about settlement distributions. Several key findings emerge.

In most years, the nominal distributions cluster at, or just to the right of, the inflation rate, and the real distributions at, or just to the right of, zero. The majority of observations lie to the right of these points. This suggests that either employees seek to secure at least the rate of inflation at the time of the settlement, or that firms are at least willing to concede the rate of inflation. The exceptions to this pattern are the manufacturing sector during high inflation years of 1979-82, (see Figures A1 and A2 in the Appendix). Secondly, in most years the nominal distributions display small spikes at zero away from the main mass of observations and the real distributions display spikes at minus the inflation rate. The incidence of zero increase nominal settlements tend to be higher in during low inflation periods – consistent with the idea that downward constraints on wages do emerge in low inflationary periods. Zero settlements were at their highest during the recession of the early nineties. A zero increase was the modal group outcome in 1992/93, comprising some 11% of all employees, (20% of all groups), in the sample, according to Table 1. Since then, the incidence of zero nominal awards has receded, but not disappeared. At the end of the sample period, (2000/01), zero nominal wage settlements affected around 3% of employees. It seems then that wage settlements are not the source of the sizeable proportion of nominal wage falls observed by Smith (2000) and Nickell and Quintini (2001). This corresponds with the more qualitative analysis of Incomes Data Services (IDS), who examined the phenomenon of nominal wage cuts in some detail in the early 1990s. IDS found that the use of temporary pay pauses far outweighed the imposition of zero settlements, and that nominal pay cuts proved rarer still (IDS: 1990, 1991a, 1991b, 1993). Employers were more likely to disaggregate components of pay and withhold bonuses than to cut nominal wages.

Real settlements are lower when inflation is high. The majority of real wage outcomes when inflation is high lie to the left of those when inflation is low. The manufacturing data suggest that double-digit inflation is associated with real settlement cuts for most employees, (column 4 in Table 1). The proportion of employees experiencing a real wage cut, increased

rapidly to over 90% between 1980 and 1982 when inflation was regularly in double figures. The whole economy data indicate that, since 1987, real settlement cuts can occur for a substantial minority of the workforce even with inflation rate below three percent. Two caveats are needed here. The two periods of high inflation in our data set overlap with two recessions. It is not clear therefore, whether it is the unemployment associated with a recession or high inflation that is responsible for lower real wages. We return to this issue below. Most initial, real cuts, however, are of less than 2 percentage points, (column 5), with the exception of the double-digit inflation years when the extent of real cuts appears much larger.

Note also that Table 1 indicates that there is a large discrepancy between real wages as measured at the date of settlement and real wages measured over the duration of the settlement contract, (column 6). The more volatile the inflation rate the greater the difference between the real wage at the time of the settlement and real wages over the duration of the contract, so that real settlements are lower when inflation is rising. This suggests that the majority of pay setters are relatively backward looking when formulating their pay settlements with respect to inflation, as argued by Halfpenny and Able (1985). During periods of low and relatively stable inflation, the percentage of groups who experience eventual real gains in wages is greater, particularly for the service sector.

Institutional Effects on Zero Settlements

It seems plausible to think that the likelihood of a zero settlement, and wage settlements in general, may differ across settlement groups with different characteristics and in response to the environment in which the firm operates. Table 2 contrasts the union status and number of employees in groups that settle at nominal zero with others. In each period median settlements vary little by union status. However, in periods of recovery, unionised groups appear less likely to accede to nominal zero settlements or initial real wage cuts. In the aftermath of the early nineties recession however, this pattern is reversed. Unionised

groups were more likely to settle at zero. It appears unionised groups may concede on pay when firms are in distress, suggesting that unions need not represent institutionalised opposition to wage flexibility.

The effect of group size is less ambiguous. Those with more than fifty employees obtain higher median deals across all three periods, and are much less likely to experience a zero settlement or an initial real pay cut.

Table 3 outlines the factors that employers cite as “very important” influences on downward pressure on the settlement. Again the sample is divided in to those groups receiving a zero settlement and others. The evidence suggests that declining firm performance is positively correlated with the incidence of zero settlements in whichever time period the data are observed. Zero settlements are statistically more likely in groups experiencing declining profitability, low orders, the risk of employee lay-off and restrictions in their ability to raise prices. The most commonly cited influence affecting those with zero settlements is low profits for both the manufacturing and service sectors.

The CBI data set provides information on changes in working practices, but not disaggregated wage information, so we cannot investigate whether groups who receive bonuses are more or less likely to settle at zero. The evidence in Table 4 suggests that employers offer real wage gains in return for changes in working practices, (see Brown (2003) for more evidence on this). Where groups have experienced the introduction of new technology, an incentive pay scheme or flexible working time, there is a lower likelihood of a zero settlement. One might expect that a zero settlement would help offset the chance of redundancy at the firm. However there is no indication that a zero settlement is less likely to be associated with a reduction in employees at group level, (columns 1 and 5).

Table 5 outlines the influence of comparability on pay settlements. Comparisons for the purpose of pay setting may be made at the national, local, or industry level, or between groups within the same organisation. Industry and local comparisons are the most commonly

cited. However, all forms of comparability are much more important where groups receive a positive pay increase, (columns 5 to 8), though even here, the numbers citing any form of comparability decline during the recession of the early 1990s. This is consistent with the evidence suggested in the previous Tables; low profitability and deteriorating performance mean that comparability becomes increasingly less relevant.

Grease and Sand Effects

Groshen and Schwarzer (1998) have proposed a method of distinguishing between the beneficial macro-economic effect of inflation - facilitating real wage declines - (grease), and its adverse effect (sand), - the uncertainty in wage setting behaviour resulting from a high inflation environment. Grease effects are proxied by any positive correlation between inflation and inter-firm variation in settlements. High inflation makes it easier for firms with differing degrees of performance to adopt different wage settlements. Groshen and Schwarzer proxy sand effects with the extent of the positive correlation between cross-occupation wages and inflation. High inflation makes occupational adjustments more difficult to achieve. Whilst, it is not clear that the distinction between grease and sand effects is likely to fit so readily into a simple cross-firm and cross occupation dichotomy, these authors show that inflation increases the variability of relative wages across firms and across occupations.

Between and within-firm comparisons of zero settlements can be informative. Table 6 examines the extent of variation of zero nominal and negative real wage settlements within firms using the subset of firms who report pay information for 2 or 3 groups. Respondents tend to group workers of a similar skill or occupation together for the purposes of pay bargaining. Any difference in treatment of intra-firm groups could be consistent with the notion of “grease” outlined by Groshen and Schweitzer (1998). There is little sign that employers use the annual settlement process to re-jig differentials between settlement groups, and there is no sign of any trend in intra-firm variation. Most firms who agree or impose zero settlements do so on all groups. Column 1 of Table 5, above, also highlighted the limited

attention paid to within-firm wage comparisons where no nominal wage increase is offered. Table 7 examines between and within firm variation. There is no evidence that the between-firm share of variation in settlements is higher in periods of high inflation. It remains true however that overall settlement dispersion is higher when the incidence of zero settlements is at its highest in the low inflation, recessionary period of 1991-95.

Persistence of Wage Rigidity

It seems useful to determine whether zero settlements and by extension real and nominal rigidities persist among groups over time. The longer the time period, the more we would expect that temporary shocks to wages could be smoothed away. Studies of wage rigidity that use individual data can be influenced by long-term contracts. If individuals do not receive an increase during the interval covered by the contract this would tend to inflate estimates of nominal zero wage change based on individual annual observations. Settlement data do not suffer from this problem, since we observe all settlements of whatever duration⁵. Table 8 presents cumulative real wage experiences, using balanced panel samples of four years taken at different points over the sample period: 1987-1990, 1991-1994, and 1995-2000. The Table gives the cumulative inflation rate over each four year period alongside the percentage of groups with at least one zero nominal settlement, the percentage with more than one zero settlement and the share of groups whose cumulative award over the 4-year period exceeds the inflation rate over the period.

Groups which settle at zero in one period appear much less likely to make real wage gains over the medium term, (column 5), though a zero settlement is rather unlikely to occur more than once, (column 3). Only 5% of groups experience a nominal zero settlement in more than one period, though now there is less to suggest that this long-term nominal rigidity is more prevalent in a recessionary period, though the manufacturing data indicate long-term rigidity is more prevalent in times of low inflation. The proportion of groups with cumulative increases that outpace inflation over the panel duration - subtracting the cumulative inflation

rate from cumulative settlement increase – seems to be negatively correlated with the rate of inflation. In periods of low inflation cumulative real wages, on average, increase over the medium term.

The relative fortunes of groups in manufacturing and services are broadly similar, with the exception of the latter four-year period, when manufacturing groups experience more zero settlements, greater multiple incidence of zeros and, as a consequence, a greater proportion of groups with negative cumulative real settlement increases. Overall, those in unionised groups were less likely to receive repeated zero settlements, though were no more likely to outpace inflation than those in non-union settlement groups. Those settlement groups with more than 50 workers consistently experience a lower chance of zero settlements and better odds of beating inflation over the medium term. This effect is even stronger if we use the numbers of employees rather than the proportion of groups as a comparator measure.

Macroeconomic Effects

The macroeconomic literature on nominal wage rigidity is concerned with establishing whether higher inflation rates ease rigidities by facilitating greater real wage flexibility, particularly if nominal wages are rigid downward. This issue, (eg Nickell and Quintini (2001), Fares and Lemieux (2001)) is often investigated by examining whether pay settlements are more sensitive to unemployment in a low inflation environment. If unemployment subdues real wages then in a low inflation environment there may be more pressure on nominal wage increases to fall below zero if unemployment rises. If there is any nominal rigidity in pay this will not happen and the impact of unemployment on wages will be weaker in periods of low inflation. Figure 3 tracks the movement of the inflation and unemployment rates alongside the incidence of real, nominal and zero settlements over time. Mean real settlements are surprising acyclical. The average real settlement increase does not look very different in the years when zero settlements were highest compared to other years. Nor is the dispersion in the settlement distribution any more compressed when zero

settlements are high. The coefficient of variation in the peak year of zero settlements, 1992/93 is .69, compared with .62 in 2000/01 and .31 in 1987/88.

We investigate whether there is any evidence that settlements are influenced by the aggregate unemployment and inflation rates in the month of the settlement, firstly for groups facing zero settlements, Table 9, and then for all groups, Table 10⁶. We present results with and without controls for the heterogeneity of the settlement group, (size, industry and region). We also add an interaction term of the unemployment rate and a dummy variable for the last seven years of the data set when the inflation rate averaged below 3% as a test of the differential effect of unemployment in a low inflation environment.

Column 1 of Table 9 confirms our earlier findings. Zero wage settlements, in the period after 1987, were more likely when unemployment was high. A 1% point rise in the national unemployment rate is associated with an increase in the incidence of a zero settlement by 0.6% points. There is less evidence that low inflation, over this period, has affected the incidence of zero settlements, once unemployment is accounted for. The addition of the change in unemployment and change in inflation, (column 3), suggests zero settlements are higher in periods of rising unemployment. Over the longer period, columns 4 and 5 highlight that the relative influences of inflation and unemployment are different in manufacturing. Here lower inflation is associated with a higher incidence of zero settlements and the unemployment effect is now negative and significant. Incorporating data from the more severe recession of the early eighties when both unemployment and inflation were higher reverses the effect observed in columns 1 and 2⁷. Rising unemployment, however, is still associated with an increased incidence of zero settlements. For every 1% (positive) change in unemployment, the probability of a zero settlement increases by 2 % points.

When the real settlement level is regressed on the same aggregate variables, for all settlement groups, the results are more ambiguous. Across the whole economy, unemployment has only a weak negative influence on real settlement levels and there is no

evidence that this effect is any different in periods of low inflation. For the longer period covered by the manufacturing sector, the unemployment effect is positive and this positive impact is even stronger in low inflation periods. This apparently contradictory result is driven by the events during the first half of the sample period. As Figure 3 shows, real settlements and unemployment were at their highest during the period between 1984 and 1987 and inflation was low. If unemployment had any mitigating influence on wages, the effect on settlements is not apparent. If the estimation for manufacturing data is done over the period after 1987, the coefficients are small and insignificantly different from zero. On this basis there is little evidence that inflation exerts a differential effect on a variable thought to influence wages.

Conclusions

The data examined here suggest that the source of nominal wage flexibility observed in recent studies of individual pay in Britain is not the annual settlement change. The evidence on wage settlements indicates that downward nominal wage rigidity in settlements is a small, but pervasive feature. Spikes at zero in the nominal wage distribution appear to be negatively correlated with the rate of inflation, but are highest of all in a (low inflation) recession. Up to 10%, but typically around 1-2% of employees appear to settle at zero each year. There is very little suggestion from the data here that British firms will cut nominal settlements when in trouble. For most firms, nominal zero is the lower bound on this element of labour costs. Group size, union status and, significantly, deteriorating firm performance all appear to influence the likelihood of a zero settlement, but comparability issues do not. Real wage settlements are lower when inflation is higher, though it seems that double-digit inflation is needed before discernible effects are apparent. We find no evidence that a low inflationary environment prevents real wage adjustment, thereby endangering jobs. However, there is less evidence that real wages react differently to a given (unemployment) shock when inflation is higher.

Footnotes

¹ There is also an earlier literature in the USA, see Perry (1980) and Mitchell (1985), for example.

² Settlement groups are only included in the CBI's survey if at least part of the settlement is determined at local level.

³ The question remains the same following the detail sought in the form 'Notification of pay settlements', as required under the Government's counter inflation policy, set out in the White Paper, 'Attack on Inflation' (Cmnd 6151, 1975). We do not know whether individuals within groups received awards that differ from this average.

⁴ Union status asked of respondents. Instead we determine status by whether the settlement group submitted a pay claim before the settlement was finalised. Union coverage is currently around 35% in the sample, having followed the same pattern of decline over the last twenty years as in the wider economy.

⁵ In practice more than 95% of settlements in the data set are of 12 month duration.

⁶ We are unable to use regional unemployment rates, as the monthly time series is inconsistent over the sample period because of regional boundary changes.

⁷ If we confine the manufacturing data to the period 1987 onward, the results are similar to those observed in columns 1 and 2, though the positive unemployment effect is weaker.

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Figure 1. Nominal Wage Settlement Distribution, Whole Economy, 1988/89-2000/01

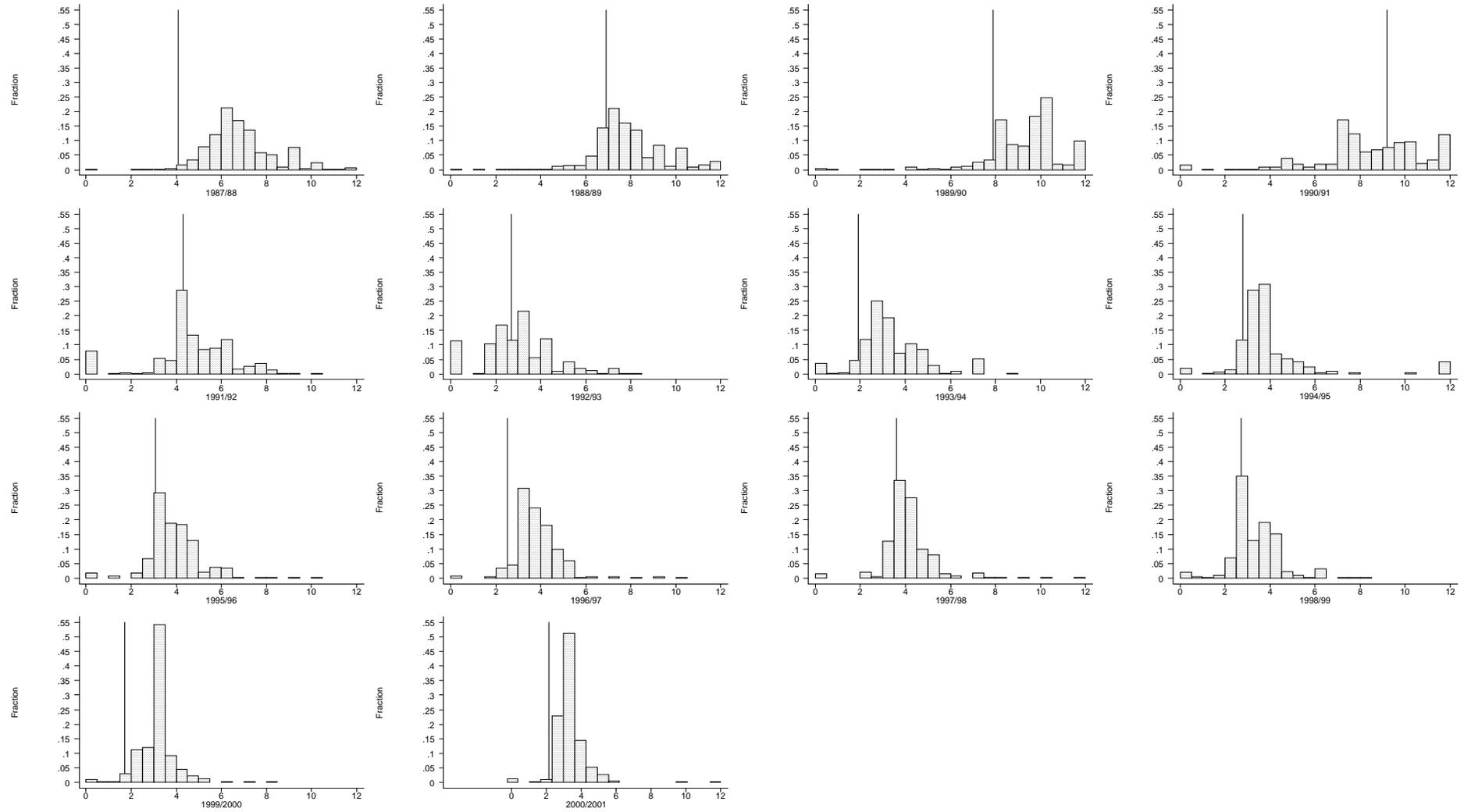


Figure 2. Real Wage Settlements, Whole Economy, 1988/89-1999/2000

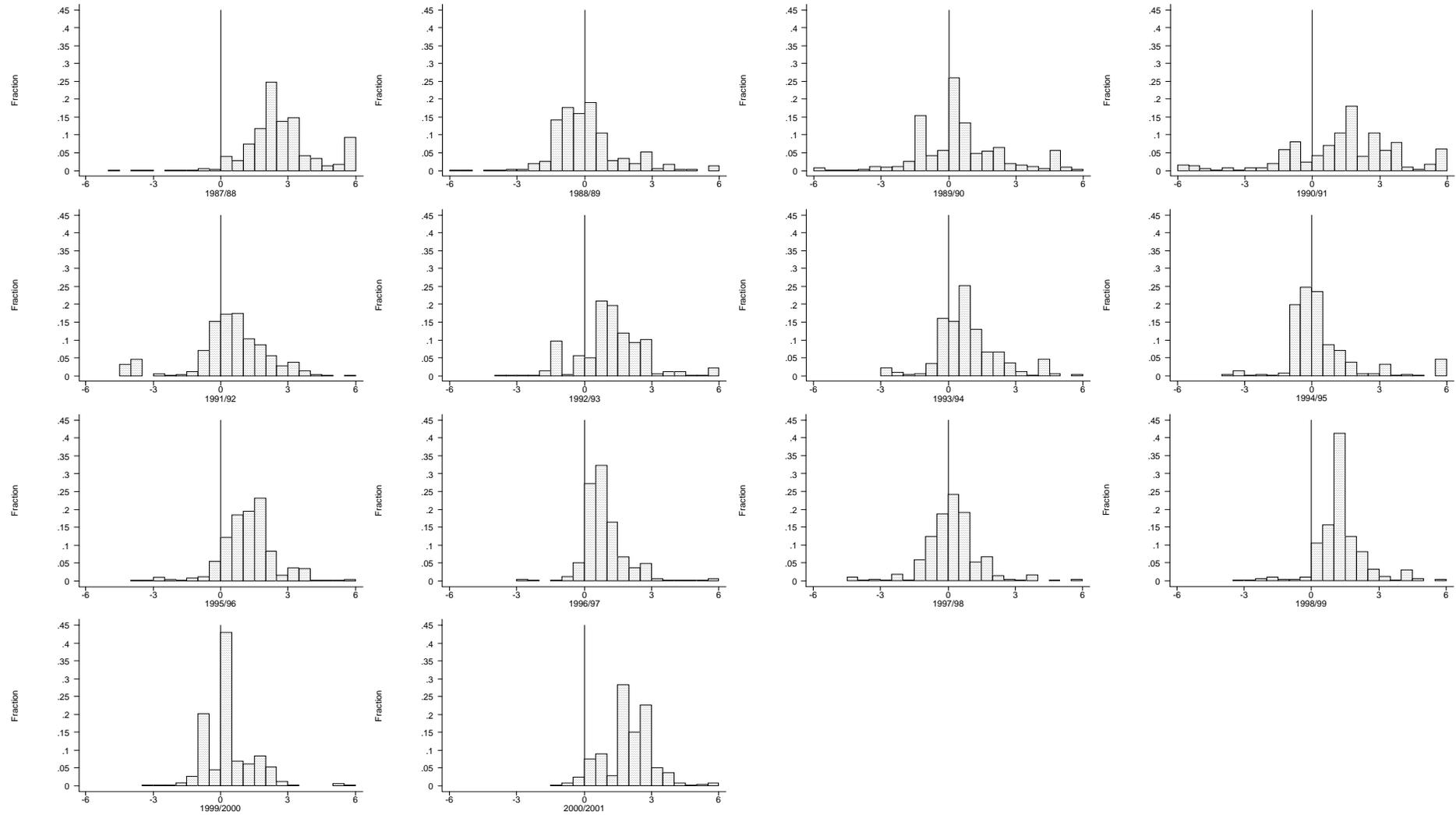


Figure 3. Settlements, Unemployment and Inflation

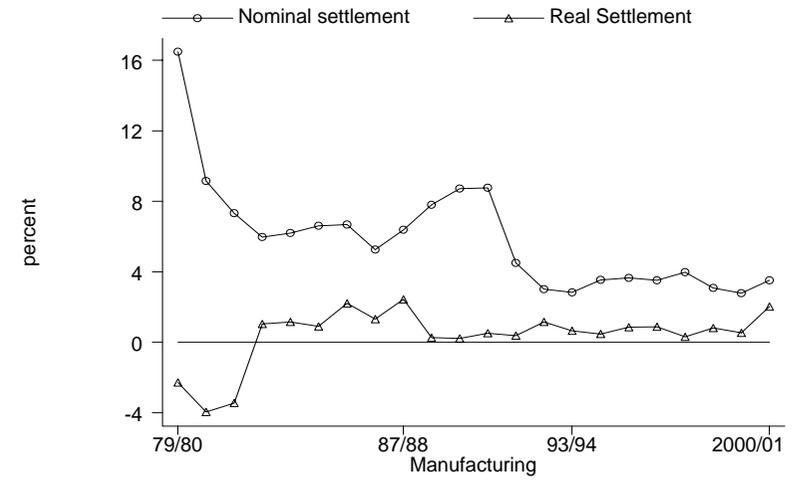
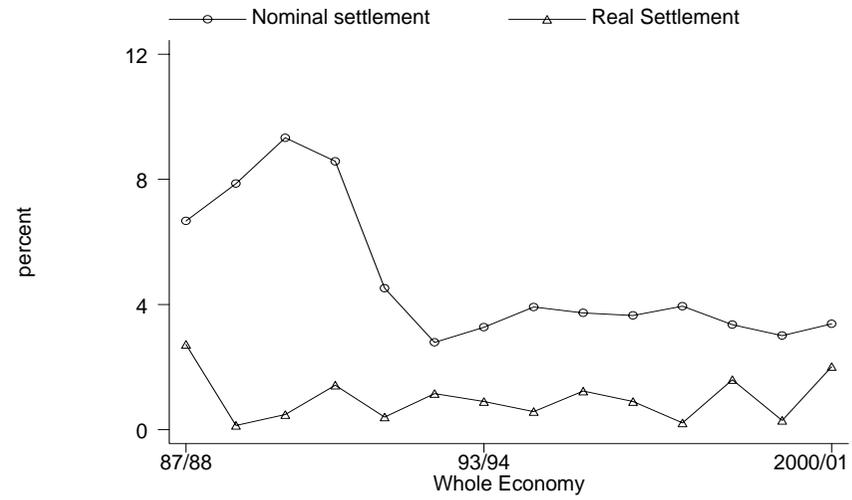
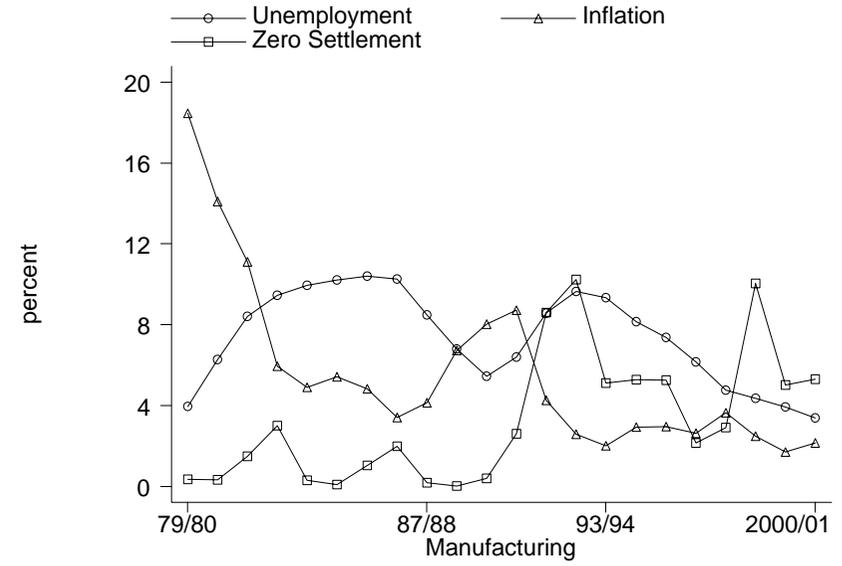
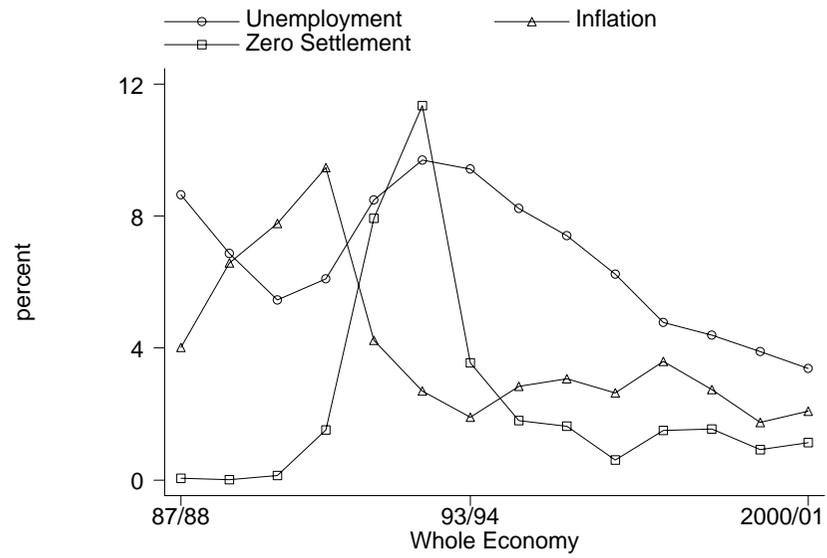


Table 1. Settlements and Inflation

Year	Annual Inflation	Median Settlement	Zero wage Settlement	% employees with		Eventual real cut
				Initial real wage cut	% initial real cut > 2 % points	
Whole economy						
87/88	4.1	6.5	0.1	0.9	0.1	87.4
88/89	6.9	7.5	0.1	53.2	1.4	82.8
89/90	7.9	9.6	0.1	32.1	4.4	21.3
90/91	9.2	8.7	1.5	23.8	5.5	3.4
91/92	4.3	4.5	7.9	32.2	8.6	8.3
92/93	2.7	2.9	11.3	17.8	0.6	40.8
93/94	1.9	2.7	3.5	23.3	3.1	64.5
94/95	2.8	3.5	1.8	47.6	2.0	15.0
95/96	3.1	3.7	1.6	9.1	1.6	23.8
96/97	2.5	3.5	0.6	6.9	0.6	54.7
97/98	3.6	4.0	1.5	40.7	3.3	6.4
98/99	2.7	3.5	1.9	3.5	0.7	38.7
99/2000	1.7	3.0	0.9	28.3	0.4	12.4
2000/01	2.1	3.0	1.1	3.7	0.1	1.2
Manufacturing						
79/80	18.4	16.0	0.3	76.4	55.7	27.1
80/81	14.1	8.8	0.3	90.8	76.0	72.5
81/82	11.1	7.4	1.5	92.6	63.7	17.1
82/83	5.8	6.0	3.0	21.9	8.3	33.8
83/84	4.9	6.0	0.3	28.7	2.6	46.1
84/85	5.5	6.3	0.1	32.7	1.1	17.1
85/86	5.0	6.5	1.0	14.8	1.6	14.9
86/87	3.5	5.0	2.0	17.1	2.1	24.1
87/88	4.1	6.5	0.2	3.4	0.3	85.2
88/89	6.9	7.5	0.1	50.9	3.4	74.7
89/90	7.9	9.0	0.4	43.8	9.1	43.4
90/91	9.2	9.0	2.6	35.5	12.3	5.5
91/92	4.3	4.7	8.6	32.4	9.5	10.1
92/93	2.7	3.0	10.2	12.7	1.1	27.9
93/94	1.9	2.8	5.1	26.4	3.6	72.8
94/95	2.8	3.5	5.3	39.9	5.4	39.7
95/96	3.1	3.9	5.3	12.0	5.3	26.6
96/97	2.5	3.5	2.1	8.9	2.2	67.7
97/98	3.6	4.0	2.9	36.8	3.2	21.5
98/99	2.7	3.5	10.0	14.9	4.9	43.4
99/2000	1.7	3.0	5.0	31.1	1.9	42.3
2000/01	2.1	3.0	5.3	7.5	0.6	5.5

Note. Figures are weighted by number of workers in each settlement group. Inflation rate is average observed over pay-round weighted by number of settlements at each month.

Table 2. Nominal Settlement Rigidity by Union Status and Group Size

	Median Settlement		% zero settlements		% initial real cut	
	Union	Non-union	Union	Non-union	Union	Non-union
Union status						
1987-91	8.0	8.0	0.3	0.8*	25.9	28.1*
1991-95	3.0	3.0	7.6	5.2*	36.8	25.2*
1997-2001	3.6	3.0	0.5	1.9*	13.1	19.7*
Group Size	<50 emp	50+ emp	<50 emp	50+ emp	<50 emp	50+ emp
1987-91	7.0	8.0	4.6	0.4*	48.0	26.5*
1991-95	3.0	3.5	14.4	6.2*	40.1	30.3*
1997-2001	3.0	3.5	9.5	1.3*	32.8	16.8*

Note. Figures are weighted by number of workers in each settlement group. * denotes significantly different on basis of 2-tailed t test.

Table 3. Factors Influencing Downward Pressure on Pay

	Zero Settlement				Other Settlement			
	Low Profits	Low Orders	Lay-off Risk	Inability to Raise Prices	Low Profits	Low Orders	Lay-off Risk	Inability to Raise Prices
Manuf.								
79-83	62.1 (4.2)	n/a	37.1 (4.2)	45.5 (4.4)	55.8* (0.7)	n/a	32.5 (0.7)	50.0* (0.7)
87-91	83.5 (3.5)	71.3 (4.2)	57.4 (4.6)	63.5 (4.5)	28.9* (0.7)	18.6* (0.5)	15.7* (0.6)	40.8* (0.8)
91-95	77.7 (1.8)	59.5 (2.2)	33.7 (2.1)	69.1 (2.0)	38.5* (0.7)	25.9* (0.7)	20.0* (0.6)	49.3* (0.7)
97-01	82.0 (2.1)	54.8 (2.7)	38.0 (2.6)	79.7 (2.2)	33.3* (0.8)	19.0* (0.7)	14.1* (0.6)	44.4* (0.8)
Services								
87-91	94.3 (3.9)	62.6 (8.3)	65.7 (8.1)	54.3 (8.5)	22.1* (1.2)	11.7* (1.0)	11.0* (0.9)	19.3* (1.2)
91-95	69.6 (2.9)	50.0 (3.1)	43.1 (3.1)	51.2 (3.1)	28.3* (1.0)	15.3* (0.8)	18.5* (0.8)	29.4* (1.0)
97-01	73.4 (5.0)	27.8 (5.1)	22.8 (4.7)	40.5 (5.5)	17.4* (0.8)	6.9* (0.6)	6.6* (0.6)	20.0* (0.9)

Note: Figures show % of groups citing factor as "very important" influence on the settlement. Standard errors in brackets. * denotes zero settlement group significantly different on basis of 2 tailed t test.

Table 4. Zero Settlements and Changes in Working Practices

	Percentage of groups with change in working conditions							
	Zero Settlement				Other			
	Fall in jobs	Introduce new technology	Incentive pay scheme	Flexible working time	Fall in jobs	Introduce new technology	Incentive pay scheme	Flexible working time
87-91	3.3 (1.5)	0.7* (0.7)	2.0* (1.0)	0.7* (0.7)	4.1 (0.3)	5.4 (0.3)	5.8 (0.3)	8.5 (0.4)
91-95	3.9 (0.7)	0.8* (0.3)	2.2* (0.5)	1.4* (0.4)	3.5 (0.2)	3.0 (0.2)	4.8 (0.3)	5.6 (0.3)
97-01	1.9 (0.7)	0.5* (0.3)	2.0* (1.0)	0.9* (0.5)	1.4 (0.2)	1.8 (0.2)	5.8 (0.3)	3.2 (0.2)

Note: Standard errors in brackets. * denotes zero settlement group significantly different on basis of 2 tailed t test.

Table 5. Zero Settlements and Pay Comparability

	Percentage of groups citing comparability as "very important"							
	Zero Settlement				Other			
	Within firm	Within industry	Within locality	National	Within firm	Within industry	Within locality	National
87-91	6.7* (2.0)	10.0* (2.5)	8.7* (2.3)	4.7* (1.7)	17.3 (0.5)	24.5 (0.6)	27.3 (0.6)	23.0 (0.6)
91-95	8.0* (1.0)	9.3* (1.0)	8.4* (1.0)	5.1* (0.8)	14.7 (0.5)	20.5 (0.5)	18.3 (0.5)	18.6 (0.5)
97-01	5.2* (1.1)	6.8* (1.2)	6.8* (1.2)	5.9* (1.1)	13.9 (0.5)	25.3 (0.6)	21.6 (0.6)	18.3 (0.5)

Note: Standard errors in brackets. * denotes zero settlement group significantly different on basis of 2 tailed t test.

Table 6. Zero Settlements Within Firms

Year	% firms with 2 groups all zero	% firms with 3 groups all zero
1987-91	71.4	100.0
1991-95	77.3	63.3
1997-01	78.3	60.0

Table 7. Analysis of Variance of Settlements

	Inflation		Manufacturing		Whole Economy	
		Between-Firm Share		Coefficient of variation	Between-Firm Share	Coefficient of variation
1979-83	11.9	0.45		0.53		
1987-91	7.1	0.44		0.34	0.46	0.35
1991-95	2.9	0.43		0.57	0.47	0.61
1997-01	2.6	0.48		0.48	0.52	0.54

Note: sample restricted to firms with at least 2 settlement groups. Inflation rate is the average over period.

Table 8. Cumulative Real and Nominal Wage Changes, (4 Year Panels)

Year	Inflation Rate (4-year) (1)	% Nominal award (2)	Zero (0.7)	% > 1 zero Nominal award (3)	% beating Inflation (a) (4)	% beating inflation given a zero settlement (5)
Total						
87/88-90/91	27.9	8.1	(0.7)	0.4	(0.1)	66.7 (74.1) 5.3 (6.5)
91/92-94/95	11.5	27.8	(31.4)	5.3	(0.7)	82.8 (87.8) 51.6 (91.0)
97/98-2000/01	9.5	21.9	(3.1)	6.6	(0.7)	91.0 (94.9) 68.1 (74.7)
Manufacturing						
79/80-82/83	33.4	8.2	(3.0)	1.2	(0.2)	64.9 (70.3) 9.8 (10.9)
87/88-90/91	27.9	9.1	(3.3)	0.5	(0.1)	63.5 (72.1) 5.4 (6.8)
91/92-94/95	11.5	25.9	(13.7)	4.7	(2.3)	82.7 (82.5) 50.8 (40.6)
97/98-2000/01	9.5	27.0	(13.7)	9.0	(4.9)	87.5 (65.2) 63.6 (60.4)
Services						
87/88-90/91		1.6	(0.1)	0.0	(0.0)	88.5 (74.6) 0.0 (0.0)
91/92-94/95		33.1	(37.2)	6.9	(0.2)	82.9 (89.5) 53.4 (96.7)
97/98-2000/01		10.4	(1.3)	1.2	(0.1)	98.8 (99.9) 94.1 (99.9)
Union						
87/88-90/91		6.0	(0.6)	0.0	(0.0)	67.1 (72.2) 5.3 (7.2)
91/92-94/95		18.2	(24.3)	2.2	(0.3)	84.8 (94.4) 53.1 (93.7)
97/98-2000/01		23.7	(1.2)	8.1	(0.3)	87.4 (93.8) 53.1 (65.3)
Non-union						
87/88-90/91		11.8	(2.2)	1.2	(0.1)	65.8 (90.1) 5.3 (4.7)
91/92-94/95		34.3	(40.3)	7.4	(1.1)	81.2 (79.5) 51.1 (88.9)
97/98-2000/01		20.6	(4.5)	5.7	(1.0)	92.5 (95.9) 73.8 (76.8)
<50 employees						
87/88-90/91		8.7	(8.6)	1.9	(1.3)	55.8 (58.7) 100 (100)
91/92-94/95		35.4	(35.0)	8.6	(9.1)	78.2 (77.1) 44.9 (42.3)
97/98-2000/01		21.9	(23.3)	5.5	(7.6)	91.3 (88.9) 72.5 (62.7)
50+ employees						
87/88-90/91		6.1	(0.7)	0.0	(0.0)	65.3 (74.1) 8.7 (7.3)
91/92-94/95		22.6	(31.4)	2.7	(0.6)	84.4 (87.9) 53.0 (91.5)
97/98-2000/01		18.3	(2.9)	5.6	(0.7)	91.1 (95.0) 62.9 (75.2)

Notes: a) based on real settlement over duration of contract. Panel sample sizes are 481, 664, 531, 598, 410, 486, 367, 64, 177, 164, 481, 664, 531, 319, 269, 135, 161, 394, 388, 104, 220, 183, 375, 443 and 339 respectively. Figures in brackets are percentages of employees.

Table 9. Inflation, Unemployment and Zero Settlements

	Marginal effect on probability of zero settlement					
	Whole Economy 1987-2001			Manufacturing 1979-2001		
Inflation	-0.008 (0.005)	-0.007 (0.004)	-0.007** (0.002)	-0.007** (0.001)	-0.006** (0.001)	-0.009** (0.002)
Unemployment	0.006** (0.003)	0.006** (0.003)	-0.001 (0.015)	-0.004** (0.001)	-0.004** (0.001)	-0.007** (0.001)
Unemp*LowInflation	-0.003 (0.016)	-0.001 (0.003)		0.001 (0.001)	0.001 (0.002)	
Δ Unemployment			0.025** (0.004)			0.019** (0.003)
Δ Inflation			-0.007 (0.011)			-0.006 (0.008)
Group controls	No	Yes	Yes	No	Yes	Yes
Region	No	Yes	Yes	No	Yes	Yes
Pseudo R ²	0.001	0.042	0.074	0.033	0.063	0.086
Mean of dep. Var.	0.074	0.074	0.074	0.054	0.054	0.054
N	20695	20695	20695	24635	24635	24635

Notes: results are marginal effects from probit estimation. Standard errors adjusted for clustering in brackets. Group controls are quadratic in group size and 14 sector dummy variables. Low inflation is any month in which inflation rate falls below 3%. ** significant at 5% level

Table 10. Inflation, Unemployment and All Settlements

	Effect on real settlement			
	Whole Economy 1987-2001		Manufacturing 1979-2001	
Unemployment	-0.031 (0.056)	-0.029 (0.057)	0.202** (0.061)	0.202** (0.062)
Unemp*LowInflation	0.009 (0.022)	0.004 (0.023)	0.074** (0.027)	0.073** (0.026)
Constant	0.804** (0.369)	0.944** (0.449)	-1.647** (0.512)	-.1.614** (0.536)
Group controls	No	Yes	No	Yes
Region	No	Yes	No	Yes
R ²	0.001	0.026	0.038	0.057
N	20695	20695	24635	24635

Notes: Standard errors adjusted for in brackets. Group controls are quadratic in group size and 14 sector dummy variables. Low inflation is any month in which inflation rate falls below 3%. ** significant at 5% level

Figure A1. Nominal Wage Settlements in Manufacturing 1979/80-1999/2000

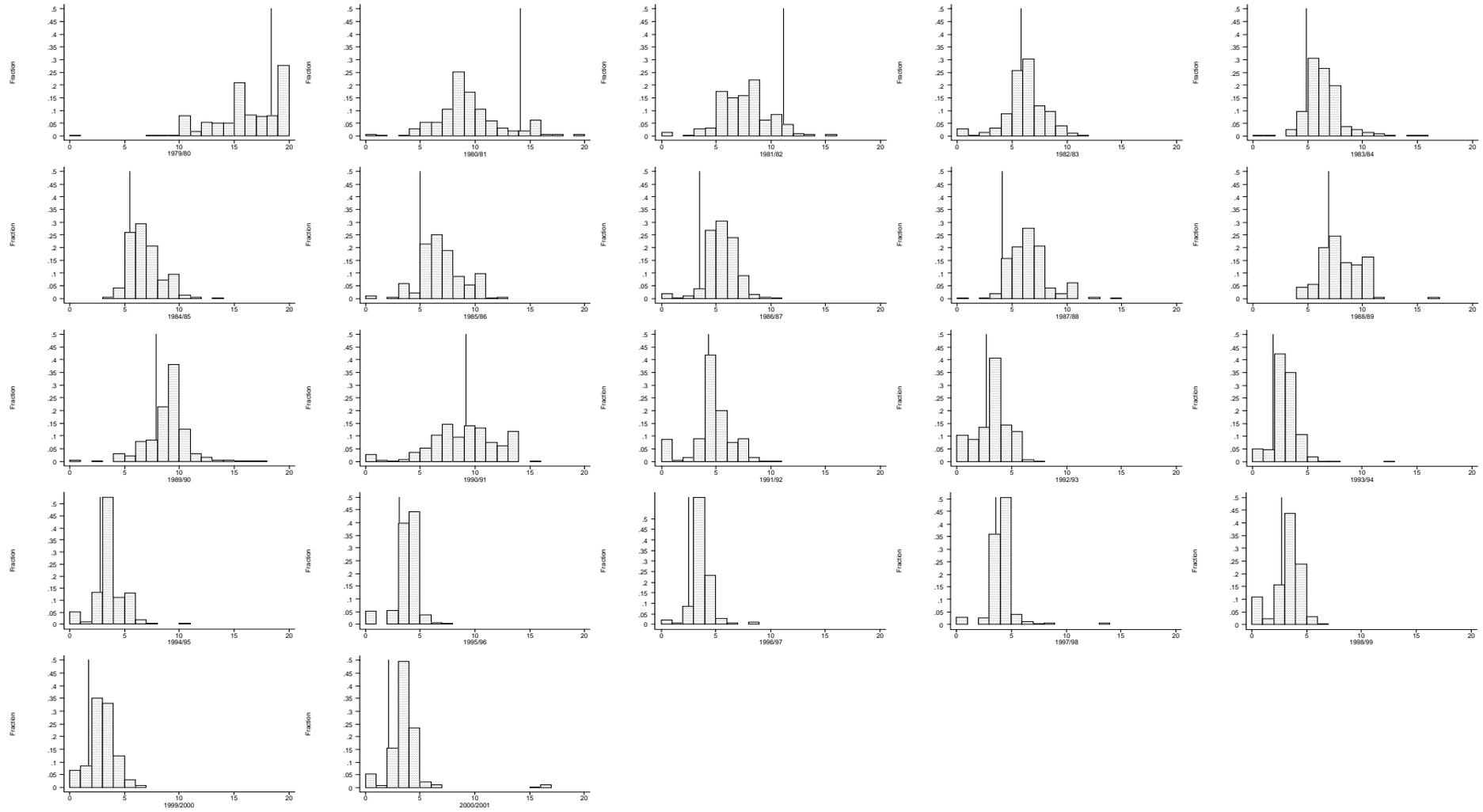


Figure A2. Real Wage Settlements, Manufacturing 1979/80-1999/2000

