Article:
Valizade, D orcid.org/0000-0003-3005-2277, Cook, H orcid.org/0000-0002-5580-7501, Forde, C orcid.org/0000-0001-9518-7151 et al. (1 more author) (2022) Are bargaining concessions inevitable in recessions? An empirical investigation into union bargaining priorities and trade-offs of pay rises for job security. Employee Relations, 44 (6). pp. 1485-1503. ISSN 0142-5455

https://doi.org/10.1108/ER-12-2021-0550

Are bargaining concessions inevitable in recessions? An empirical investigation into union bargaining priorities and trade-offs of pay rises for job security

Abstract

Purpose

This paper examines the extent of bargaining concessions in recession, through investigating the effects of union bargaining on pay, job security and workforce composition.

Design/methodology/approach

Drawing on an original survey (n=400) of workplace level trade union bargaining units in England, we employed latent class analysis to establish three groups of bargaining units on the basis of pay outcomes achieved. Linear regression analysis with moderation effects investigated whether pay rises at or above inflation in conjunction with shifts in bargaining priorities were associated with decreases in perceived job security and changes in the composition of the workforce.

Findings

Around a quarter of sampled units, concentrated mostly in decentralised bargaining units in the private sector, achieved pay rises at, or above the inflation rate during an economic downturn. Pay rises at or above inflation in workplaces severely affected by recession triggered changes in bargaining priorities requiring some concessions, notably in terms of employees' job security. That said, across the sample, achieving pay rises was associated with improved perception of job security and lesser use of contingent labour.

Originality

The findings uncover a subset of bargaining units able to secure positive outcomes for workers against a hostile economic tide, whilst demonstrating that concession bargaining is not inevitable but rather contingent on the micro-environments in which union bargaining takes place.

Keywords: pay rises, real wages, recession, concession bargaining, job security

Paper type: Research paper

Introduction

What do unions do during recessions? Are unions able to secure pay rises without making concessions in other areas? These questions have resurfaced over the last 20 years; a period of multiple global crises. With economies worldwide facing economic downturns and increasing rates of inflation in the wake of the COVID-19 pandemic, it is important to advance understanding of the effects of bargaining on pay rises and other outcomes during recessions. The literature on concession bargaining recognises that in recessions unions often compromise between pay rises and job security (Beaumont, 1983; Kaufman, 2002). However, relatively little quantitative evidence exists about the specific bargaining arrangements and contexts under which pay gains during recessions are secured by unions. More empirical evidence is needed to examine the extent to which any gains in terms of nominal and real wages involve concession-making in other areas, notably in terms of job security. In this study, we pose three research questions. Firstly, what are the bargaining priorities of unions during recession and do pay rises remain a key priority? Secondly, are unions able to secure nominal pay rises at and above inflation during recession? Thirdly, in a recession, do pay rises come at the cost of job security and changes in the composition of the workforce, in terms of the share of standard and contingent workers?

To answer these questions, we draw on findings from an original survey of trade union bargaining units, with data gathered from 400 workplace representatives or negotiators (whichever was responsible for bargaining) in England. Through retrospective questioning our study explores pay, job security and employment composition outcomes across bargaining units from the height of the last recession in the UK in 2009 through the ongoing downturn of 2010-11, to economic recovery in 2012-2013. We find that significant shifts in bargaining priorities during recession were associated with a negative effect of pay rises at or above inflation on perceived job security. However, in bargaining units where priorities remained stable throughout recession, even if negative consequences were perceived, union negotiators secured pay increases without concession. The key contribution of the study is to highlight the heterogeneity in the ability of bargaining units to orchestrate pay rises in recessions. Real-terms pay rises for workers are achievable without concession during recession, as evidenced in a subset of bargaining units in this study. Whilst there was some evidence of trade-offs to secure wage increases, overall, our study indicates that concessions are not inevitable in recessions, but rather are contingent on institutional and internal collective bargaining environments.

The paper proceeds as follows. The next section reviews debates around union behaviour and outcomes during downturns, which shaped our research questions. The following section explains the survey, measures, and our analytical strategy. Thereafter, we present our results and conclude with a discussion of the implications of our findings.

Theoretical background

Collective bargaining is the process through which employees, organised through trade unions, negotiate pay, terms and conditions of employment with employers. Walton and McKersie's (1965) seminal contribution recognised the underlying economic conditions as key to labour

negotiations, while Kelly's (1998) account of mobilisation theory recognises the importance of policy choices of both the state and employers. The variation of economic conditions during recession which may augment the opposing interests of employer and employee, and resulting actions of both parties in the employment relationship are both key to this paper. A wealth of research points to wage rigidity in recessions whereby nominal wages resist downward pressure (Barrar and Sullivan, 1988; Christofides and Stengos, 2012), with unions perceived as important actors in this process (Blanchflower and Bryson, 2010; Penceval, 2015; Du Caju et al., 2015; Kataria et al., 2020). This is typically explained via efficiency wage arguments, with employers incentivised not to cut wages because of potential effects on productivity, workers' morale and performance (Akerlof and Yellen, 1986; Teague and Roche, 2014; Wang and Seifert, 2017). Much less is known about union capacity to secure real pay rises (adjusted for inflation) and any trade-offs these may involve (Addison et al., 2018; Babecky et al, 2010; Bewley, 2021). Empirical evidence at a macro-economic level points to the association between downward rigidity in real wages and employment losses (Elsby et al., 2016). However, a number of studies have suggested that unions may be able to secure real wage increases in recessions without huge negative effects on employment (Babecky et al., 2010; Bewley, 2021). Which mix of outcomes prevail is ultimately an empirical question, dependent on specific bargaining environments, individual union priorities and a host of contextual factors (Simms et al., 2019; Moore et al, 2019).

Theoretical considerations of concession bargaining in recession should stand with the recognition that union strategies during downturns are not solely focused on pay (Roche et al., 2015). Any analysis of pay rises in unionised workplaces during a downturn should also consider other union priorities, notably job security, minimising layoffs and the composition of employment (Ivlevs and Veliziotis, 2017). Concession bargaining frameworks offer important insights here, as these focus attention on the competing priorities and choices unions face in

downturns (Kaufman, 2002; Teague and Roche, 2014). Securing wage increases are likely to remain the core priority of most unions, even during recessions (Bewley, 2021). However, job security, limiting job losses and involvement in discussions over restructuring are likely to assume much greater priority during economic downturns (Beaumont, 1983; Roche et al, 2015). Teague and Roche (2014) highlight that most concession bargaining models assume that unions will offer at least some 'give backs' to employers on pay (recruitment freezes for example) during recessions, in return for commitments on jobs and security, while Ivlevs and Veliziotis (2017) found concession bargaining emerging during recession assumed improved job security of union members alongside wage reductions.

Wage increases – nominal or real – may come at the cost of other outcomes, such as job security or the mix between usage of standard and contingent labour (Du Caju et al., 2009; Verdugo, 2016). Regarding job security, if unions are able to maintain or increase wages for their members during recessions, and layoffs occur as a result, then this is likely to impact negatively upon perceptions of job security. However alternatively, seeking to maintain or increase real wages may instil confidence in union members and increase perceptions of job security, particularly if they are forged through bargaining strategies which compel management to avoid layoffs by freezing recruitment or postponing expansion (Kaufman, 2002), or if they result in protection of contingent workers (Authors, 2016).

Another possibility is that unions may prioritise directly employed staff during downturns, with any layoffs being borne by contingent workers, as 'outsiders' (Lindbeck and Snower, 2001). Insider-outsider theories suggest that 'outsiders' in secondary labour markets may bear the brunt of economic uncertainty, with employers laying off or reducing their working hours first in a recession to protect insiders (Lee, 2015; Hirsch, 2016). Unionised workers may be seen as 'insiders' (Lindbeck and Snower, 2001), but well documented rises in contingent employment over recent years have meant that many unions have looked to include these traditional

'outsiders' in collective bargaining and ensure that bargaining priorities reflect their interests (Burgess et al., 2013; Heery, 2016; Author, 2009; Nowak and Hodder, 2019). The impact of any wage increases secured by unions on job security and the composition of employment during recessions is therefore difficult to predict (Brandl and Bechter, 2019).

To understand and explain the possibility of real wage increases during downturns, much closer attention needs to be paid to the specific bargaining environments in which unions undertake negotiations and thus the contexts in which unions may be able to secure positive pay, and other, outcomes during a downturn. The distinction between centralised collective bargaining, where negotiations take place at an industry or national level, sometimes involving multiple employers, and decentralised workplace-level bargaining is particularly important (Braakmann and Brandl, 2021). In theory, more centralised bargaining systems may compel management to consider more seriously the reputational damage associated with paying below-market wages (Christofides and Stengos, 2003; Du Caju et al., 2015). However, in the increasingly prevalent decentralised collective bargaining settings found across Europe (Marginson, 2015), bargaining tends to take place at the establishment or organisational level. Some have pointed out that in this decentralised bargaining environment trade unions may lack the collective power and institutional supports to resist downward pressures on wages during downturns (Du Caju et al, 2015; Addison and Vilares, 2017). In contrast, others have argued that the groups benefitting or losing out in decentralised bargaining environment depends on wider contextual factors such as the extent of competition affecting the organisation and sector (Traxler and Brandl, 2012). Comparative literature has considered the diversity of collective bargaining systems across European countries and importantly, has explored whether employers or unions benefit from moves to decentralised approaches to bargaining (Dolvik et al., 2018; Marginson, 2015). Comparing the effects of bargaining on labour productivity across European nations, Braakmann and Brandl (2021), found that the institutional structures and processes within

which bargaining occurs do have an impact upon outcomes, with coordinated sector-level bargaining contexts being associated with higher productivity. These findings further the case to consider the specific bargaining environments under which negotiating pay and other outcomes during recession take place.

The UK, characterised as a mixed or hybrid collective bargaining environment, (Brandl and Bechter, 2019; Brown et al., 2008), provides an interesting example in this context. In the private sector, collective bargaining only occurs in one-in-seven private sector firms, and in those private sector establishments where collective bargaining does exist, it typically takes place at the workplace level (Van Wanrooy et al, 2013; Brandl and Bechter, 2019). In contrast to the private sector, public sector trade unions in the UK typically negotiate wages more centrally. Industry-wide collective agreements can be seen in some parts of the public sector, whilst in other areas pay review bodies, or employer representative bodies negotiate pay alongside trade unions. Whilst the proportion of workplaces in the public sector covered by centralised bargaining has certainly fallen over recent decades, such bargaining still covers four in ten workplaces (Van Wanrooy et al, 2013), and is therefore much more prevalent than in the private sector.

In consideration of these theoretical perspectives and empirical insights, we return to our three key questions. Firstly, what are the bargaining priorities of unions during recession and do pay rises remain a key priority? Secondly, are unions able to secure nominal pay rises at or above inflation during recession? Thirdly, in a recession, do pay rises impact upon job security and the composition of the workforce, in terms of the share of standard and contingent workers?

Data and methods

Sample

Data for this study were drawn from an original survey of trade union bargaining units at unionised workplaces in England in 2014, using retrospective questioning to examine their bargaining behaviour and outcomes over 2009-2013, covering much of the 'Great Recession' and its immediate aftermath. This is the most recent recession in the UK for which data on collective bargaining and outcomes were accessible, thus providing an ideal lens through which to advance understanding on bargaining during a downturn. The period of contraction lasted from the middle of 2008 to the end of 2009, but the downturn continued beyond this, with at least one quarter in each of the years 2010, 2011 and 2012 seeing GDP declining, amidst a tight regime of public sector austerity. The concepts of interest were only accessible through retrospective data gathering. While there are clear advantages to this method in terms of opening a window into historical data, the limitations of the approach are also recognised in terms of challenges to the accuracy and reliability of data, under and over-reporting, and thus we developed the methodological approach and research instrument with due caution (Bernard et al., 1984). Where we asked for retrospective data, for example, on pay rises secured in individual years, we gave contextual information, notably the annual rate of Consumer Price Inflation (CPI) to give respondents a comparator figure. We also limited retrospective questions to the issues that would have been pertinent to union negotiators – around their strategies and priorities, and key features of the workplaces in which they were bargaining (Henry et al., 1994). The survey was completed online or on paper, in participants' own time, with time to carefully consider responses, thus not pressuring participants to recall a value immediately. These considerations allowed us to minimise the risks to reliability and limit the methodological disadvantages of using retrospective data gathering.

Centralised bargaining units employ union negotiators, while de-centralised bargaining units typically rely on workplace representatives (shop stewards), so we targeted our survey towards the person with responsibility for bargaining at each workplace in our sample. The sample

spanned all regional branches in England of the Trades Union Congress (TUC), the principal umbrella institution for trade unions in England, with an online questionnaire disseminated among all six regions: North, North West, Midlands, Yorkshire and Humber, South West, London and South East. Overall, 400 complete responses were returned covering 19 national trade unions, with the largest number of responses coming from Unite (largest UK multi-sector union), Unison (public sector), GMB (General, Municipal and Boilermakers – multi-sector), PCS (Public and Commercial Services), NUT (National Union of Teachers), UCU (University and College Union) and USDAW (Union of Shop, Distributive and Allied Workers - retail and transport). Reflecting the sectoral profile of trade unions in the UK, respondents' bargaining units were concentrated in the public sector (64 per cent of respondents), whilst private sector responses covered manufacturing (12.8%); private services (8.9%); retail and transport (8.2%); and energy and construction (8.1%). See figure 1 for a full breakdown of responses by sector at the lower and specific level. Membership density had increased over the five-year period in question at 40.2% of workplaces, decreased at 28.5% and stayed the same at 30.3%. Workplaces counting all or nearly all employees as members accounted for 12.9% of the sample; 23.7% counted most as members; while 39.9% counted some employees as members.

Figure 1 here

Measurements

Our key measure of *pay settlements* secured by unions was captured by a 3-point ordinal variable with the following categories: (i) wages were cut or frozen (no pay rise) (ii) pay increases did take place but below the inflation rate (nominal wage increases); (iii) pay increases were at or above the inflation rate. Respondents were asked to indicate pay outcomes for each year from the onset of the recession in 2009 through to 2013. As noted, the annual rate of CPI was provided each year to help respondents correctly classify pay settlements achieved.

To look at the *dynamics of employment* over the downturn we gathered indicators of changes in 'standard' direct, permanent full-time and part-time employment, and the use of five kinds of contingent employment: temporary employment, agency labour, self-employment, subcontracting or zero-hours contracts. Respondents were asked, on a 7-point Likert type scale, whether and to what extent the share of each type of employment increased or decreased in the past five years. These were then combined into 2 composite measures: one of standard employment change, and the other measuring contingent employment change over the period.

Job security was captured by three items denoting union representatives' perceptions of the extent to which jobs in their respective workplaces were at risk. The direct impact of the *recession* was measured by two sub-scales capturing: (i) the effect of the recession on collective bargaining (two Likert-type variables); (ii) an overall impact on the organisation and its employees (five Likert-type variables).

Collective bargaining priorities were measured on a seven-point Likert type scale across two groups of priorities related to pay and job security. Pay-related priorities were measured by two Likert-type items reflecting the perceived importance of pay increases for all workers and pay increases specifically for low-paid workers. Priorities related to job security were captured by four items: perceptions of the importance of overall job security, staffing levels, employers' use of contingent labour and organisational restructuring. Factor analysis confirmed the adequacy of a two-factor model. We have also measured union priorities in relation to working hours and pensions entitlements, but these have not featured prominently in factor and subsequent regression analysis and are therefore omitted from this study.

Key study variables, their respective means, standard deviations and reliability scores for the latent constructs used in phase two of the analysis are reported in Table 1. We used Confirmatory Factor Analysis (CFA) to assess the fit between our measurement model and

empirical data, with the model returning good fit. Further scrutiny of the measurement model to determine discriminant and content validity was also undertaken, along with a range of tests for common method variance and non-response bias. All results from these tests were satisfactory and can be found in the Appendix. We conclude that our sampling strategy provided a reliable sample of trade union bargaining units, with 400 responses providing one of the most comprehensive primary surveys of unionised workplaces in England.

Table 1 here

Analytical strategy

Our analysis proceeds in three stages. Firstly, we offer a descriptive portrait of bargaining priorities of unions during recession to explore how important pay rises are to unions in a recession, compared to other factors. Secondly, we use Latent Class Analysis (LCA) to cluster bargaining units into statistically different subgroups (no pay rise; below inflation pay rise; at or above inflation pay rise) in order to establish unique trajectories of pay rises during recession. LCA splits a heterogeneous population into statistically independent subgroups called 'classes' on the basis of common variation among variables. The underlying assumption we make is that trade union bargaining units exhibit different trajectories of outcomes over pay, and on that basis it is possible to recover a number of profoundly different subgroups reflecting the extent to which they have been able to secure pay rises over the downturn.

In the third stage of the analysis, we use established latent classes as predictors of job security and employment composition (using a composite measure of job security and composite measures of the share of standard and contingent employment) in linear regression analysis. Further details of the analytical strategy can be found in the Appendix. Regression models additionally controlled for firm size (large firms, small and medium size enterprises), industry, sector (owing to the fact that in the UK public sector collective bargaining tends to be

centralised), trade union recognition agreements, percentage of female members in overall union membership (log-transformed), trade union membership density (log-transformed) and union negotiators' tenure.

Sensitivity and robustness checks

The survey design and use of latent class analysis (LCA) are prone to several biases which we addressed in sensitivity and robustness checks. The main limitation of modal assignment, an approach used to classify bargaining units in LCA, is that units are assigned with just above 50 per cent chance of belonging to a certain class. To ensure the borderline cases have not affected the outcomes of our modeling we repeated analyses reported in this study without such cases. This did not materially affect our findings primarily because the share of borderline cases was low, at under 3 per cent. We further applied an alternative procedure called proportional assignment that estimates posterior probabilities of belonging to each established class and expands the data by storing such probabilities for every respondent, which serve as weights in subsequent analyses. This manipulation did not change the outcomes of our analysis.

Survey design based on a single source of response variables and predictors is prone to common method variance and non-response bias. A single common method factor method was employed, and we found no evidence to suggest the presence of a single common method factor in the measurement model. Lastly, we have considered non-response bias (a type of bias relating to demographic and social differences between the groups of respondents and non-respondents). We compared the first and fourth quartiles of responses for statistically significant differences in basic sampling characteristics: union membership density, industry and firm size. The magnitude of such differences was marginal therefore indicating a limited effect of non-response on our findings.

Results

Bargaining priorities and pay rises during recession

What are the bargaining priorities of unions during recession and do pay rises remain a key priority? Table 2 reports average scores (from 1-7, with 7 being extremely important and 1 being extremely unimportant) given by union respondents in our sample, for the period 2009-2013, alongside the relative change in each of the two groups of priorities throughout the downturn. All bargaining priorities went up in their perceived importance between the start and the end of recession. Pay, notably 'pay levels for all workers', remained the most important bargaining priority for unions throughout the downturn. However, the relative importance of bargaining priorities associated with job security increased more significantly (Table 2 indicates a nearly two-fold gap in the relative increase between the two groups of priorities). As economic conditions deteriorated, organisational restructuring, the use of contingent labour, staffing levels and the overall job security of employees all become markedly more important, but pay levels for all workers remained the most important priority. Interestingly, the shift in bargaining priorities towards job security relative to pay was not associated with sector (the difference between public and private sector unions was marginal and not statistically significant) but showed a moderate association with centralised bargaining (in centralised collective bargaining as opposed to more decentralised environments the perceived importance of job security increased more rapidly relative to pay, an effect statistically significant at $p<0.1$).

Table 2 here

We now turn to the second research question of whether unions are able to secure nominal pay increases or pay increases at or above inflation during a recession, and the bargaining conditions under which increases occur. The outcomes of LCA and latent class regression are reported in

Tables 3 and 4. Using comparative fit indices, we identified a model with our established three latent classes as optimal (no pay rise; below inflation pay rise; at or above inflation pay rise). This model provided a better, more meaningful separation between the latent classes than alternative specifications with fewer or more classes. Fit indices for the optimal and alternative models are reported in Table 3[1]. The upper portion of Table 3 reports the estimated probabilities of a respondent (bargaining unit) within each latent class achieving a nominal or an at or above inflation real pay rise, or a pay cut in each individual year of the recession, whilst the lower portion of Table 3 provides the overall proportions of bargaining units found in each cluster. In what follows we provide a detailed description of the three emerging clusters of bargaining units from this analysis.

Table 3 here

Cluster one: No pay rise (34% of bargaining units)

Bargaining units in this cluster mostly experienced cuts or frozen wages during recession, which amount to a real wage cut, given inflation, as the economic crisis took hold. In the three years following the peak of this recession (2010-2012) there was an 83 per cent chance that the employers with whom these bargaining units were negotiating had cut or frozen wages. In 2013, as recovery began, the likelihood of pay cuts fell sharply to almost 50 per cent, standing at a similar level to 2009, while the probability of securing a nominal pay rise below the inflation rate increased to over 40 per cent. Whilst some bargaining units in this cluster did secure nominal increases or increases in pay at or above inflation in some individual years, overall, this cluster has the strongest propensity for pay cuts during the recession compared to other clusters. This cluster accounted for one third (34%) of trade union bargaining units.

[1] Detailed comparisons between a three-class model and alternative solutions are available on request

Cluster two: Nominal pay rises (42% of bargaining units)

This cluster represents the bargaining units and employers that generally increased nominal wages throughout a recessionary period, though such pay rises were mostly below the inflation rate which amounts to real wage cuts. The likelihood of securing pay increases below the inflation rate was remarkably high in this cluster: 81 per cent in 2009 and around 90 per cent on average in subsequent years. This cluster represents 42 per cent of trade union bargaining units. Neither sector nor the level at which collective bargaining takes place affected the likelihood of assignment into this cluster relative to cluster one (no pay rise).

Cluster three: At or above inflation pay rises (24% of bargaining units)

Our analysis revealed a significant cluster of bargaining units that secured pay increases at or above the inflation rate. The likelihood of a bargaining unit in this cluster achieving a pay rise at or above the level of inflation in any year during the recession was consistently above 80 per cent. This was the least populated of the three clusters (24% of bargaining units).

Bargaining concessions for real pay rises

So unions can and do secure pay increases (nominal or real) throughout a recession, an outcome consistent with the notion of downward wage rigidity in unionised workplaces. Two thirds of bargaining units secured such an outcome in our study. Furthermore, at or above inflation increases in pay are also possible (with one quarter of bargaining units achieving this in our study).

We now turn to our third question of whether pay rises secured by trade unions in recessions impact upon job security and the composition of the workforce, in terms of the share of standard and contingent workers used. Estimates concerning the consequences of pay rises for job security are reported in Table 4, including unstandardised regression coefficients (β), test

statistics and standard errors. Regression analysis reported in model one reveals that pay rises at or above inflation are associated with *higher* perceived levels of job security (see model one in Table 4) relative to the cluster of bargaining units that had frozen or cut pay (β = 0.717 at $p<0.05$), whilst there is no statistically significant difference in perceived job security between the cluster of nominal pay rises and compared to the cluster of unions that had frozen or cut pay (β = -0.034, n.s.).

As model one is controlled for both the effect of the recession and changes in bargaining priorities, it seems that on average unions successful in protecting real wages succeed in other areas as well. That said, to understand whether any concessions have been made for pay rises our analysis ought to take into account situations where the impact of the recession was notably negative and shifts in bargaining priorities towards job security particularly pronounced. We analysed interaction effects between pay rises, recession and bargaining priorities. In Table 4, models two and three report two-way (between pay rises and recession) and three-way (between pay rises, recession, and bargaining priorities) interaction effects respectively. Model two shows that the interaction effect between the cluster that had achieved pay rises at or above inflation and the 'impact of the recession' measure was positive and statistically significant (β = 0.500 at $p<0.05$). According to Figure 2 the positive regression coefficient for the interaction effect stems from a less negative impact of the recession on perceived job security (hence, a flatter slope of the respective line on the graph) in bargaining units that achieved pay rises at or above inflation.

Model three in Table 4 adds a three-way interaction effect with bargaining priorities which is statistically significant and negative for the cluster of pay rises at or above inflation (β = -0.953 at $p<0.05$). Figure 3 shows that in bargaining units affected by the recession where collective bargaining priorities shifted significantly towards job security, real pay rises were associated

with lower levels of perceived job security (the three lines on the graph signify the shifts in bargaining priorities on average, and at one standard deviation above and below the average). By contrast, where bargaining priorities remained stable this effect was reversed. In conjunction with the two-way interaction effect explained above, our findings suggest that unions tend to engage in concession bargaining when there is a high possibility of securing real wages and, crucially, when bargaining priorities shift significantly towards job security. That is to say, even if union negotiators perceive the external economic environment as threating to employees' job security they are still willing to engage in concession bargaining provided there is a high possibility of achieving at or above inflation pay rises.

Table 4 here

Figure 2 here

Figure 3 here

So far, we have established that concession bargaining is more likely to take place for pay rises at or above inflation under certain bargaining conditions and that it affects perceived levels of job security. This does not necessarily assume lay-offs or significant changes in staffing levels. To estimate such possibilities, we analysed the effect of pay rises on two additional outcome variables that measure the composition of the workforce, in terms of the use of standard and contingent forms of labour. The models are presented in Table 5 in a manner similar to the previous table: model one estimates direct effects of pay rises, recession and shifts in bargaining priorities on outcomes; model two adds a two-way interaction effect between pay rises and the perceived impact of the recession; model three extends model two to include an additional interaction term with shifts in bargaining priorities.

Table 6 here

Figure 4 here

Overall, the clusters of nominal and at or above inflation pay rises both saw an increase in the share of standard employees (those on direct open-ended employment contracts) throughout the recession (β = 0.434 and 0.240 respectively, see model one in Table 5). However, when we interact pay rises with the impact of the recession, pay rises at or above inflation are associated with reductions in the share of standard employees (β = -0.296 at $p<0.05$; see Figure 4 for marginal effects). This lends additional support to our finding that in bargaining units that feel that the recession had a deep impact, but still managed to secure pay rises at or above inflation, unions may have made concessions to achieve this. A relatively small effect size can have reasonable explanations. A reduction in the share of standard employees could have occurred through marginal increases in the share of contingent workers, that our regression model was unable to pick up due to the lack of statistical power. Some moderate layoffs could have been spurred on by the recession but were seen as inevitable in the long-run and thus not perceived as a major threat to job security.

The three-way interaction effects between pay rises, the impact of the recession and shifts in bargaining priorities in relation to the composition of the workforce have not yielded statistically significant results. This may indicate weak – if any – concession for the use of contingent labour, however, the limitations of our data preclude stronger theoretical conclusions.

Discussion and conclusions

Real-terms pay rises for workers are achievable without concession, during recession or against a hostile economic tide, as evidenced in a subset of bargaining units in this study. Furthermore,

we have uncovered new insights about union behaviour and the effects of union bargaining on pay and other outcomes during recessions. Through an analysis of trade union bargaining units in England during and after one of the most significant recessions in recent history, we have highlighted the extent of pay rises at or above inflation achieved in unionised workplaces during economic downturn. While the empirical analysis corroborates concession bargaining in recession where unions trade off real pay rises for job security, we also uncovered the possibility that some unions can be successful on multiple fronts with no substantial shifts in bargaining priorities, even when economic downturns hit hard, without trade-offs between real pay increases and other outcomes. In our cluster of bargaining units that had secured at or above inflation pay rises during a recession, job security levels were also higher. This positive relationship is consistent with 'morale' effects, with higher wages impacting on other outcomes such as job security in firms (Du Caju et al., 2015; Verdugo, 2016; Wang and Seifert, 2017). It also suggests that unions are able, in some circumstances, to use their bargaining power to secure gains in recession without concessions, and that they may play an important role in communicating realistic information to employers and workers around inflation rates to secure real terms pay increases (Backaby et al., 2010; Bewley, 2021).

These findings have the potential to inform unions in negotiating future pay rises as inflation increases markedly in the UK, and around the world. The practical implications of this study are important for trade unions, their negotiators and representatives involved in bargaining (and in the UK, the TUC which provides training for them). In simple terms, there will be bargaining episodes where negotiators should pursue real-terms pay rises and hold firm against offering concessions, during unfavourable economic or market conditions. At the time of writing, UK inflationary measures continue to increase while wages in most key industries lag behind, so these are important and pressing issues for the labour movement to take on board.

We found that in bargaining units that had secured pay rises at or above inflation, shares of standard employment had also increased, apart from in those workplaces most severely affected by the recession. This latter finding is consistent with notions of trade-offs or concessions being made by unions to secure some gains in recessionary periods (Roche et al, 2015). However, the former finding points towards particularly successful union and bargaining activity. The heterogeneity of experiences in our study indicates that concessions are not inevitable in recessions, but rather are contingent on institutional (we looked at centralised against decentralised collective bargaining) and internal collective bargaining environments (we examined shifts in bargaining priorities). These factors merit much closer attention in future research, especially across economies where institutional structures and processes that facilitate collective bargaining might differ (Braakmann and Brandl, 2021). We find no clear evidence of layoffs in bargaining units where unions secure pay rises at or above inflation in a recession. On the contrary, the share of standard employment is likely to rise in these bargaining units, in contrast to expectations from the concession bargaining and labour economics literatures. In unionised workplaces, then, pay rises themselves seem unlikely to cause significant departure from standard employment relationships in recessions (see also Bewley, 2021; Hall, 2005; Elsby et al, 2016). The exception is in bargaining units most heavily affected by the recession where we find that real pay cuts may have been traded off to allow for new hires. This is congruent with concession bargaining theories, and with other studies examining union behaviour in a recession (Ivlevs and Veliziotis, 2017; Roche et al., 2015; Kaufman, 2002), while also highlighting the possibility that in some bargaining units pay gains were not necessarily accompanied by concessions in other areas.

Future studies may build on this research to explore how unions bargain successfully for multiple positive outcomes against the economic tide, or in turn could explore the varied mechanisms used by firms to accommodate alternatives to pay cuts in a recession. Arising from

these results, there is seemingly scope for research on a macro level, either comparative or in other national economic contexts, which could gauge the varying levels of bargaining success or other outcomes as affected by different types of bargaining process or in different policy regimes. There is also scope for more intensive qualitative or case-based research, which could explore the micro-level social processes and power structures within firms to better understand how bargaining priorities are determined and pursued.

There are limitations to these findings. Although methodological guidance was followed to minimise reliability risks in the reporting of retrospective data, there was still a small risk of under or over-reporting when recalling pay rises over a period of five years (Bernard et al., 1984; Henry et al., 1994). Our methodological approach (latent class analysis underpinned by the Bayesian approach) minimises possible risks of under or over-reporting by classifying bargaining units on the basis of relative probabilities of securing pay rises. We conducted extensive robustness checks to ensure that cases where estimated probabilities are borderline (e.g., close to 50 %) have not materially affected the outcomes of our analysis. The focus on union negotiators or representatives responsible for bargaining was the most appropriate and effective route to the data required, however it does limit the views reported to the union side of the bargaining relationship, while it was also not possible to distinguish between the wage developments sought by those negotiating and those that were finally achieved. Equally, while our survey reported on the wider bargaining priorities and outcomes achieved, we do not know the position or preferences on the managerial side of the negotiation, the precise process through which negotiations progressed, nor the ease with which outcomes were arrived at. It is possible that the wage developments resulting from bargaining were recalled without complete accuracy, despite our best efforts to mitigate this, and that this risk might be expected to increase as the time of retrospective reporting increased from the one to the five- year data points in the survey. Finally, as with many original surveys, there is also potential bias to the data in terms of the

information that could or should be known by our union participants about the measured concepts. For example, there may be limits to the accuracy of responses on concepts such as the use of contingent labour, where the most accurate data would likely be known by the management of the firm. It is possible that respondents who were firm-based representatives would likely be more accurate on these concepts than respondents who were union negotiators responsible for bargaining across multiple workplaces. Our strategy was to include both in the survey, to ensure we captured whoever was responsible for bargaining at each organisation. Against these limitations, we highlight the rich data gathered via retrospective questioning covering the whole of a downturn, and the novel focus on union negotiators as respondents in our study. The unresolved limitations may be addressed in future research.

The key contribution of the study is to highlight the heterogeneity in the ability of bargaining units to orchestrate pay rises in recessions. Some unions, we find, do not concede other positive outcomes during a recession to secure pay rises, in contrast to the findings of Ivlevs and Veliziotis (2017) under similar recessionary conditions. This somewhat unexpected finding highlights the value of focusing in on the bargaining context to understand these outcomes (Glassner et al., 2011). However, caution must be given to how far these findings are generalised. Given the complexity and diversity of bargaining environments across Europe (Marginson, 2015), the specific institutional and procedural environments will likely differ to the extent that alternative outcomes are likely, and there is thus room for further studies to address these gaps. That said, our findings bring important implications for understanding the resilience and future of collective bargaining practices: that during recession above inflation pay rises are achievable in certain contexts, and that bargaining successes over wages are not necessarily at the expense of concessions in other areas. Whilst there was some evidence of trade-offs to secure wage increases, overall, these findings demonstrate that such concessions were contingent rather than inevitable (see also Moore et al., 2019; Simms et al, 2019). Given

that the COVID-19 pandemic has led to global economic downturn once more and inflation is rising across the global economy, it is timely to return to lessons from previous recessions, lessons that offer hope for improved pay, working conditions, and in some cases both for those employees covered by collective bargaining agreements.

References

Addison JT, Portugal P and Vilares H (2017) Unions and collective bargaining in the wake of the Great Recession: evidence from Portugal. *British Journal of Industrial Relations* 55(3): 551-576.

Akerlof GA and Yellen JL (1986) *Efficiency wage models of the labor market*. Cambridge: Cambridge University Press.

Babecky J, Du Caju P, Kosma T, Lawless M, Messina J and Rõõm T (2010) *Downward nominal and real wage rigidity: Survey evidence from European firms*. The World Bank.

Barrar, P. and Sullivan, T. (1988), Employment adjustments in recession: A wire industry study. *Employee Relations*, Vol. 10 No. 1, pp. 22-31.

Beaumont, P.B. (1983), "Concession Bargaining: The British Experience", *Employee Relations*, Vol. 5 No. 5, pp. 13-16

Bernard, R., Killworth, P., Kronenfield, D. and Sailer, L. (1984) The problem of informant validity: The validity of retrospective data. *Ann. Rev. Anthropol.* 13: 495-517

Bewley TF (2021) *Why wages don't fall during a recession*. Harvard: Harvard University Press.

Blanchflower DG and Bryson A (2010) The wage impact of trade unions in the UK public and private sectors. *Economica* 77(305): 92-109.

Braakmann, N. and Brandl, B. (2021), The performance effects of collective and individual bargaining: A comprehensive and granular analysis of the effects of different bargaining systems on company productivity. *International Labour Review*, 160: 43-64.

Brandl B and Bechter B (2019) The hybridization of national collective bargaining systems: The impact of the economic crisis on the transformation of collective bargaining in the European Union. *Economic and industrial democracy* 40(3):469-489.

Brown W, Bryson A, and Forth J (2009) Competition and the retreat from collective bargaining. In: Brown W, Bryson A, Forth J and Whitfield K (eds) *The Evolution of the Modern Workplace*. Cambridge: Cambridge University Press, pp 48-73

Bryson A and Forth J (2017) *The added value of trade unions*. Trade Union Congress.

Burgess J, Connell J and Winterton J (2013) Vulnerable workers, precarious work and the role of trade unions and HRM. *The International Journal of Human Resource Management* 24(22):4083-4093,

Christofides LN and Stengos T (2003) Wage rigidity in Canadian collective bargaining agreements. *ILR Review* 56(3):429-448.

Dolvik, J., Marginson, P., Alsos, K., Arnholtz, J., Meardi, G., Muller, T., Trygstad, S. (2018) Collective wage regulation in Northern Europe under strain: Multiple drivers of change and differing responses. *European Journal of Industrial Relations* 24(4): 321-339.

Du Caju P, Kosma T, Lawless M, Messina J, and Rõõm T (2015) Why Firms Avoid Cutting Wages: Survey Evidence From European Firms. *ILR Review* 68(4):862-888.

Elsby MWL, Shin D, and Solon G (2016) Wage adjustment in the Great Recession and other downturns: Evidence from the United States and Great Britain. *Journal of Labor Economics* 34(S1): S249-S291.

Glassner V, Keune M and Marginson P (2011) Collective bargaining in a time of crisis: developments in the private sector in Europe. *Transfer: European Review of Labour and Research* 17(3):303-322.

Hall RE (2005) Employment efficiency and sticky wages: Evidence from flows in the labor market. *Review of Economics and statistics* 87(3):397-407.

Heery E (2016) British industrial relations pluralism in the era of neoliberalism. *Journal of Industrial Relations* 58(1):3-24.

Henry, B., Moffitt, T., Caspi, A., Langley, J. and Silva, P. (1994) On the “Remembrance of Kumar, S.Things Past”: A longitudinal evaluation of the retrospective method. *Psychological Assessment* 6(2): 92-101.

Hirsch B (2016) Dual labor markets at work: the impact of employers’ use of temporary agency work on regular workers’ job stability. *ILR Review* 69(5):1191-1215.

Ivlevs A and Veliziotis M (2017) What do unions do in times of economic crisis? Evidence from Central and Eastern Europe. *European Journal of Industrial Relations* 23(1):81-96.

Kataria, A., , Sureka, R. and Gupta, B. (2020), "Forty years of Employee Relations – The International Journal: a bibliometric overview", *Employee Relations*, Vol. 42 No. 6, pp. 1205-1230

Kaufman BE (2002) Models of union wage determination: What have we learned since Dunlop and Ross? *Industrial Relations: A Journal of Economy and Society*, *41*(1): 110-158.

Kelly, J. (1998). *Rethinking Industrial Relations: Mobilisation, Collectivism and Long Waves* (1st ed.). Routledge.

Lindbeck A and Snower DJ (2001) Insiders versus outsiders. *Journal of Economic Perspectives*, *15*(1):165-188.

Lee J-Y (2015) Internal Labor Markets Under External Market Pressures. *ILR Review* 68(2):338–371.

Marginson, P. (2015), Coordinated bargaining in Europe: From incremental corrosion to frontal assault? *European Journal of Industrial Relations,* 21 (2): 97-114

Moore, S., Onaran, O., Guschanski, A., Antunes, B. and Symon, G. (2019), "The resilience of collective bargaining – a renewed logic for joint regulation?", *Employee Relations*, Vol. 41 No. 2, pp. 279-295.

Nowak, P. and Hodder, A. (2019), "150 years of the Trades Union Congress – reflections on the past and challenges for the future", *Employee Relations*, Vol. 41 No. 2, pp. 270-278.

Pencavel, J., (2015). Keynesian controversies on wages. *The Economic Journal*, *125*(583), pp.295-349.

Roche WK, Teague P and Coughlan A (2015) Employers, trade unions and concession bargaining in the Irish recession. *Economic and Industrial Democracy* 36(4):653-676.

Simms, M., Holgate, J. and Roper, C. (2019), "The Trades Union Congress 150 years on: A review of the organising challenges and responses to the changing nature of work", *Employee Relations*, Vol. 41 No. 2, pp. 331-343

Teague P and Roche WK (2014) Recessionary bundles: HR practices in the Irish economic crisis. *Human Resource Management Journal* 24(2):176-192.

Traxler, F. and Brandl, B. (2012), Collective bargaining, inter-sectoral heterogeneity and competitiveness: A cross-national comparison of macroeconomic performance. *British Journal of Industrial Relations* 50 (1): 73-98

Verdugo G (2016) Real wage cyclicality in the Eurozone before and during the Great Recession: Evidence from micro data. *European Economic Review* 82: 46-69

Walton, R. and McKersie, R. (1965) *A Behavioral Theory of Labor Negotiations: An An alysis of a Social Interaction System*. McGraw-Hill

Wang, W. and Seifert, R. (2017), "Pay reductions and work attitudes: the moderating effect of employee involvement practices", *Employee Relations*, Vol. 39 No. 7, pp. 935-9

Table 1: Measurement model

Scale	Item	Mean	SD	α	Factor loadings	CR	AVE
Job security	The level of job security at this workplace has significantly decreased in the last five years (reversed)	2.75	1.84	0.771	0.750	0.885	0.772
	It is unlikely the employees at this workplace will lose their jobs in the near future	3.34	1.85		0.768		
	I am satisfied with the level of job security for employees at this workplace	3.09	1.77		0.975		
Recession	Collective bargaining agendas have been narrowed down	5.26	1.40	0.778	0.583	0.897	0.562
	Collective bargaining priorities has changed	5.09	1.37		0.756		
	This is not as good a place to work as it was before the recession	5.56	1.53		0.796		
	The conditions of employment at this workplace have deteriorated	5.33	1.73		0.903		
	The management-union relationship has deteriorated	4.43	1.87		0.561		
	The organisation has suffered as a consequence of the recession	5.37	1.67		0.745		
	The organisation has operated in an increasingly difficult external environment since the recession	5.57	1.53		0.838		
Changes in the composition of workforce (over a 5-year period)	Direct employees on permanent contracts	2.58	0.99	0.768	0.400	0.804	0.426
	Direct employees on permanent contracts working part-time	2.99	0.99		0.990		
	Direct employees on temporary contracts	3.29	1.08		0.400		
	Direct employees on zero-hour contracts	2.86	1.08		0.578		
	Agency workers	3.19	1.17		0.574		
	Self-employed	2.61	0.92		0.863		
	Subcontractors	3.01	1.11		0.757		
Pay increases	2009	2.14	0.72	0.899	0.642	0.872	0.579
	2010	1.93	0.74		0.722		
	2011	1.90	0.75		0.787		
	2012	1.90	0.74		0.887		
	2013	2.01	0.69		0.745		
	Confirmatory Factor Analysis: X2/df= 1.55; CFI = 0.926; TLI = 0.915; RMSEA = 0.05; SRMR = 0.07. Sample size: 400. Factor loadings are a complete standardised solution						

Table 2: Perceived importance of union bargaining priorities in recession, 2009 and 2013

Union bargaining priorities		Start of downturn (2009)		End of downturn (2013)		% increase in perceived importance (=2013/2009*100% - 100%)	
Pay	Pay increases for all workers	5.860	5.585	6.240	5.965	6.500	6.850
	Pay increases specifically for low-paid workers	5.310		5.690		7.200	
Security	Job security	5.520	4.893	6.160	5.490	11.600	12.300
	Staffing levels	5.140		5.680		10.500	
	The use of contingent labour	4.110		4.630		12.700	
	Restructuring and organisational change	4.800		5.490		14.400	

Responses scored on scale of 1-7, where 1= not at all important and 7 = very important. N=400

Table 3: Clusters of pay rises in unionised workplaces

	Wages were cut or frozen	Pay increase below the inflation rate	Pay increase at or above the inflation rate
		2009	
Cluster 1 – no pay rise	56%	31%	13%
Cluster 2 – below inflation pay rise	0%	81%	19%
Cluster 3 – pay rise at or above inflation	2%	8%	90%
		2010	
Cluster 1 – no pay rise	87%	9%	3%
Cluster 2 – below inflation pay rise	0%	93%	7%
Cluster 3 – pay rise at or above inflation	3%	12%	85%
		2011	
Cluster 1 – no pay rise	96%	2%	2%
Cluster 2 – below inflation pay rise	0%	97%	3%
Cluster 3 – pay rise at or above inflation	3%	7%	89%
		2012	
Cluster 1 – no pay rise	83%	14%	3%
Cluster 2 – below inflation pay rise	5%	93%	2%
Cluster 3 – pay rise at or above inflation	10%	3%	87%
		2013	
Cluster 1 – no pay rise	51%	44%	5%
Cluster 2 – below inflation pay rise	6%	87%	7%
Cluster 3 – pay rise at or above inflation	12%	8%	80%

	Predicted class memberships (by modal posterior probabilities)		
	Cluster 1	Cluster 2	Cluster 3
	34%	42%	24%

	2 latent classes	**3 latent classes**	**4 latent classes**
Sample size	400	400	400
BIC	2567.471	2143.869	2167.338
Entropy R-squared	0.948	0.972	0.949

Table 4. Regression estimates for the effect of pay increases, recession and bargaining priorities on perceived job security

	Model one			*Model two*			*Model three*		
Predictors	*Estimates*	*Confidence intervals*	*P-value*	*Estimates*	*Confidence intervals*	*P-value*	*Estimates*	*Confidence intervals*	*P-value*
Industry (manufacturing)	-0.888	-1.745 – -0.030	**0.042**	-0.705	-1.517 – 0.108	0.089	-0.719	-1.599 – 0.161	0.109
Industry (energy, construction etc)	0.246	-0.680 – 1.173	0.600	0.293	-0.570 – 1.156	0.504	0.043	-0.913 – 0.999	0.930
Industry (private services)	0.248	-0.579 – 1.076	0.555	0.224	-0.587 – 1.036	0.586	0.289	-0.545 – 1.124	0.495
Industry (public services)	-0.508	-1.242 – 0.226	0.174	-0.490	-1.202 – 0.223	0.177	-0.443	-1.182 – 0.297	0.239
Sector (public)	0.130	-0.334 – 0.593	0.582	0.092	-0.363 – 0.547	0.691	0.087	-0.381 – 0.555	0.714
Size (large)	-0.264	-0.657 – 0.128	0.185	-0.006	-0.369 – 0.356	0.972	0.079	-0.352 – 0.510	0.719
Union density (%)	0.060	-0.370 – 0.490	0.784	0.015	-0.142 – 0.171	0.851	0.043	-0.123 – 0.209	0.607
Partnership agreement	0.020	-0.143 – 0.184	0.808	-0.177	-0.547 – 0.193	0.346	-0.156	-0.559 – 0.247	0.447
Pay determination (centralised bargaining)	0.011	-0.154 – 0.175	0.896	0.076	-0.080 – 0.232	0.340	0.020	-0.147 – 0.186	0.814
Union recognition agreement	-0.238	-1.040 – 0.564	0.559	-0.163	-0.896 – 0.569	0.661	-0.185	-0.991 – 0.621	0.651
Tenure (1-3 years)	-0.220	-1.219 – 0.779	0.664	-0.244	-1.186 – 0.697	0.609	-0.262	-1.278 – 0.755	0.612
Tenure (3-5 years)	-0.241	-1.213 – 0.732	0.626	-0.252	-1.162 – 0.658	0.586	-0.334	-1.330 – 0.662	0.509
Tenure (5+ years)	0.012	-0.925 – 0.948	0.980	0.171	-0.710 – 1.053	0.702	0.009	-0.950 – 0.968	0.985
Gender (Female)	0.107	-0.359 – 0.572	0.651	-0.037	-0.459 – 0.385	0.864	0.270	-0.212 – 0.752	0.270
Age (years)	0.003	-0.240 – 0.246	0.980	-0.024	-0.255 – 0.208	0.841	0.025	-0.217 – 0.268	0.839
Pay rises at or above inflation	0.717	0.142 – 1.291	**0.015**	0.930	0.370 – 1.490	**0.001**	0.655	0.046 – 1.264	**0.035**
Pay rises below inflation	-0.034	-0.467 – 0.399	0.878	0.014	-0.398 – 0.425	0.947	-0.066	-0.517 – 0.385	0.773
Recession	-0.467	-0.658 – -0.276	**<0.001**	-0.715	-1.080 – -0.349	**<0.001**	-0.681	-1.056 – -0.306	**<0.001**
Priorities shift to job security	-0.202	-0.387 – -0.017	**0.032**	-0.178	-0.365 – 0.007	0.059	-0.343	-0.688 – 0.003	0.052
Pay rises at or above inflation X Recession				0.500	0.022 – 0.978	**0.040**			
Pay rises below inflation X Recession				0.064	-0.402 – 0.530	0.788			
Pay rises at or above inflation X Recession X Priorities shift							-0.953	-1.684 – -0.222	**0.011**
Pay rises below inflation X Recession X Priorities shift							-0.183	-0.808 – 0.442	0.564
Observations		400			400			400	
R^2 adjusted		0.243			0.257			0.265	

Table 5. Regression estimates for the effect of pay increases, recession and bargaining priorities on the composition of the workforce

	Share of standard employees								
	Model one			*Model two*			*Model three*		
Predictors	*Estimates*	*Confidence intervals*	*P-value*	*Estimates*	*Confidence intervals*	*P-value*	*Estimates*	*Confidence intervals*	*P-value*
Pay rises at or above inflation	0.434	0.095 – 0.773	**0.012**	0.436	0.101 – 0.771	**0.011**	0.413	0.070 – 0.757	**0.019**
Pay rises below inflation	0.250	-0.006 – 0.506	0.056	0.311	0.065 – 0.558	**0.014**	0.282	0.022 – 0.542	**0.034**
Recession	-0.045	-0.159 – 0.069	0.436	0.138	-0.082 – 0.358	0.218	0.113	-0.110 – 0.336	0.319
Priorities shift to job security	-0.062	-0.172 – 0.047	0.264	-0.072	-0.183 – 0.038	0.199	-0.072	-0.183 – 0.038	0.199
Pay rises at or above inflation X Recession				-0.296	-0.584 – -0.008	**0.044**			
Pay rises below inflation X Recession				-0.256	-0.537 – 0.025	0.074			
Pay rises at or above inflation X Recession X Priorities shift							-0.258	-0.551 – 0.035	0.084
Pay rises below inflation X Recession X Priorities shift							-0.168	-0.454 – 0.118	0.248
Observations		400			400			400	
R^2 adjusted		0.055			0.064			0.060	
	Share of contingent workers								
	Model one			*Model two*			*Model three*		
Predictors	*Estimates*	*Confidence intervals*	*P-value*	*Estimates*	*Confidence intervals*	*P-value*	*Estimates*	*Confidence intervals*	*P-value*
Pay rises at or above inflation	-0.266	-0.601 – 0.069	0.119	-0.273	-0.614 – 0.069	0.117	-0.273	-0.614 – 0.069	0.117
Pay rises below inflation	-0.027	-0.281 – 0.226	0.831	-0.045	-0.303 – 0.214	0.733	-0.045	-0.303 – 0.214	0.733
Recession	0.041	-0.071 – 0.153	0.475	-0.025	-0.247 – 0.196	0.821	-0.025	-0.247 – 0.196	0.821
Priorities shift to job security	-0.003	-0.112 – 0.105	0.951	-0.003	-0.112 – 0.107	0.963	-0.003	-0.112 – 0.107	0.963
Pay rises at or above inflation X Recession				0.075	-0.216 – 0.367	0.610			
Pay rises below inflation X Recession				0.104	-0.180 – 0.388	0.471			
Pay rises at or above inflation X Recession X Priorities shift							0.075	-0.216 – 0.367	0.610
Pay rises below inflation X Recession X Priorities shift							0.104	-0.180 – 0.388	0.471
Observations		400			400			400	
R^2 adjusted		0.012			0.005			0.005	

Figure 1: Industry sector

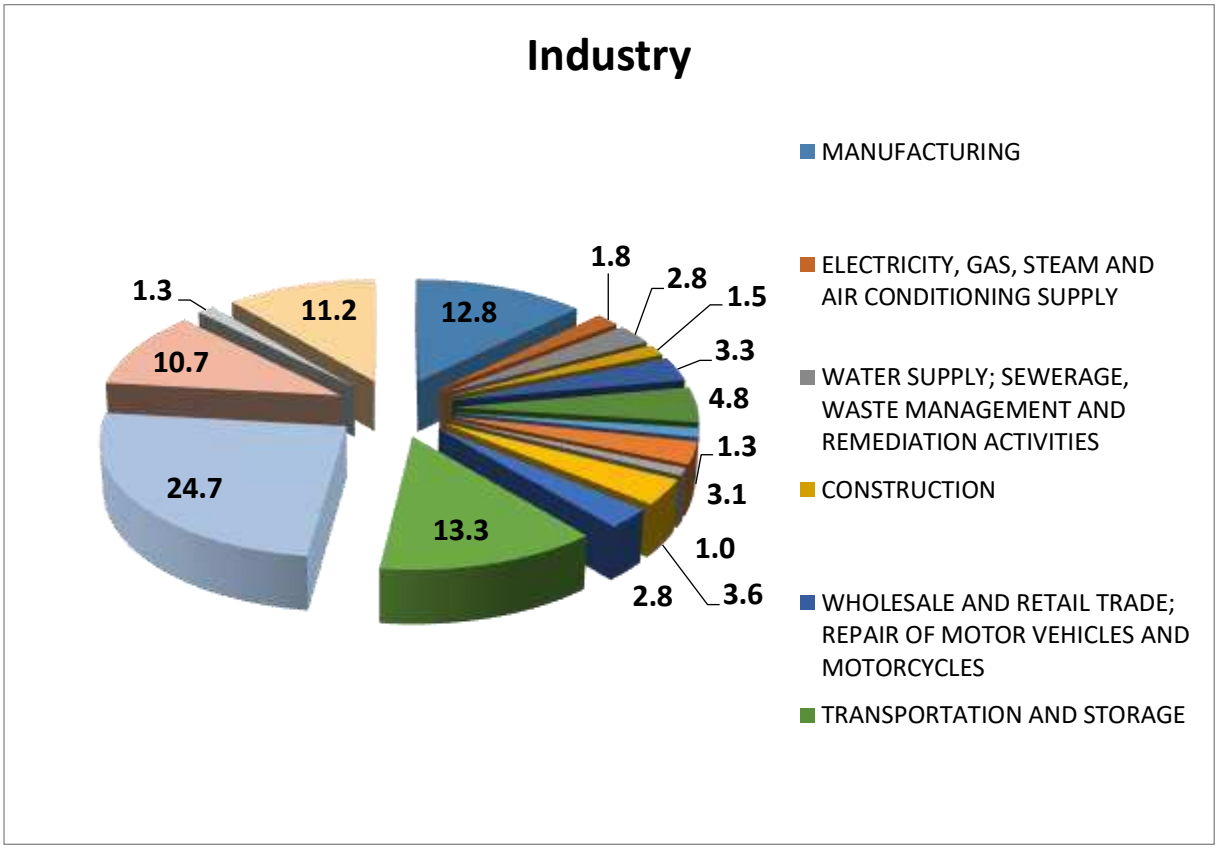

Figure 2: Interaction effect between pay rises and recession (dependent variable: perceived job security)

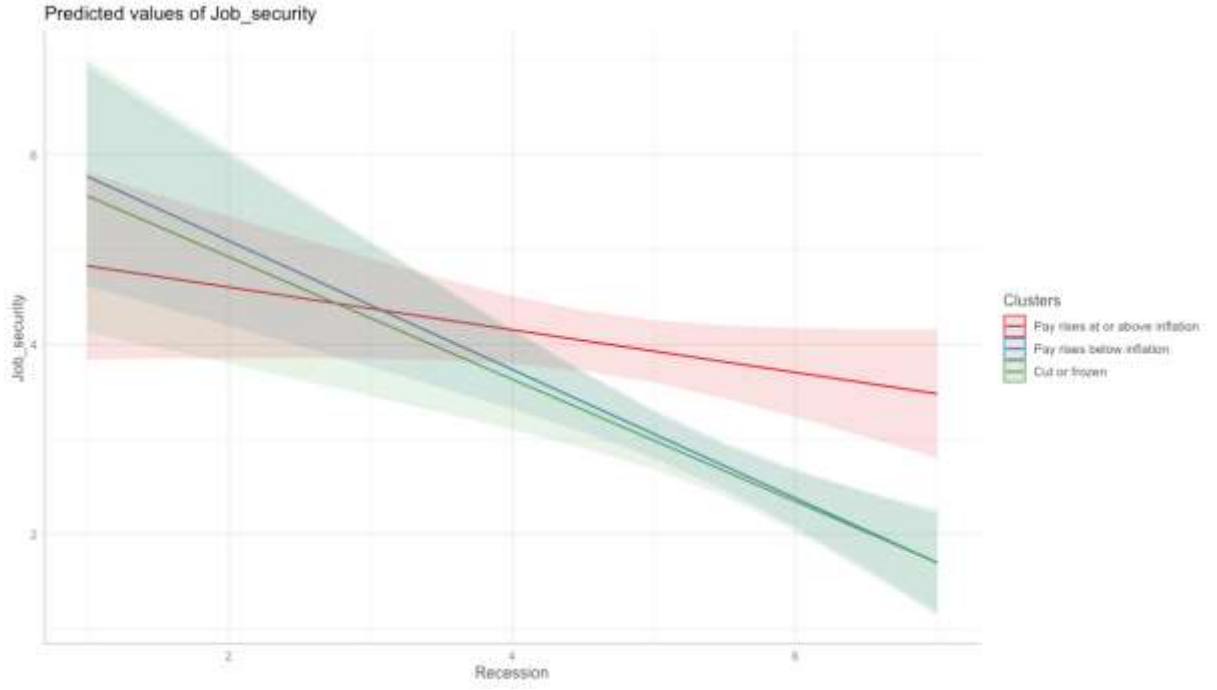

Figure 3: Interaction effect between pay rises, recession and shift in bargaining priorities (dependent variable: perceived job security)

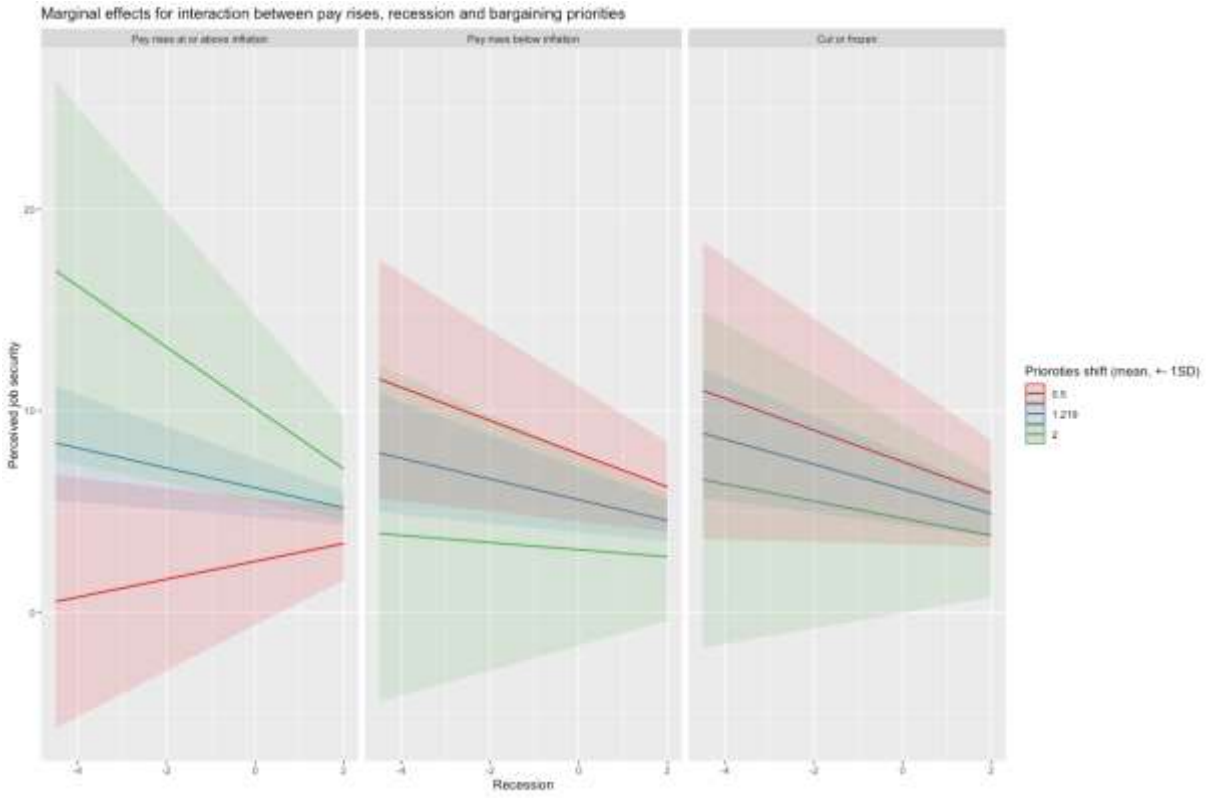
Marginal effects for interaction between pay rises, recession and bargaining priorities
Pay rises at or above inflation
Pay rises below inflation
Cut or frozen
Perceived job security
Recession
Priorities shift (mean, +- 1SD)
0.5
1.219
2

Figure 4: Interaction effect between pay rises and recession (dependent variable: share of standard employees)