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Firms' adjustment during 2010–13: evidence from the Wage Dynamics Survey

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Abstract

This paper sets out the main lessons learnt from a survey of wage-setting in the United Kingdom, carried out as part of the European Central Bank's Wage Dynamics Network survey covering 25 European countries. The survey covered the 2010–13 period, during which most firms experienced an increase in demand and a moderate increase in costs as the economy recovered from the Great Recession. We found the median frequency of wage-setting to be annual and that around 30% of firms directly and explicitly related changes in their base wage to inflation. There was also some evidence of downward nominal wage rigidity with around 25% of firms freezing wages in 2010, although by 2014 this had fallen to around 10%. The survey suggested that theories of wage rigidity based around the ability of workers to 'shirk' and/or fairness considerations explained why firms were reluctant to cut wages.

Key words: Wage-setting, survey evidence, labour market adjustment.

JEL classification: E24, J30.

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1 Introduction

The Great Recession that followed the financial crisis of 2007/8 resulted in large falls in output and rises in unemployment across Europe. In particular, countries in the periphery of the Euro Area experienced particularly large rises in unemployment as their respective governments were forced to consolidate in the wake of sovereign debt crises and as firms were forced to become more competitive. In order to try and address these unemployment and competitiveness problems, a number of countries engaged in structural reforms of their labour markets.

Against this background the European Central Bank's Wage Dynamics Network (WDN) launched a 'wage-setting survey' of 25 European countries in 2014 as an update to the two previous surveys carried out in 2007 and 2009. The motivation for the new survey was to understand the nature of the shocks driving the financial crisis, how firms had responded to the financial crisis as well as to what extent the structural labour market reforms had affected firm behaviour. Having not conducted a survey as part of the first or second waves, the Bank of England joined the other European central banks in carrying out the survey in 2014. Thus, not only did the survey provide an opportunity to assess how firms in the United Kingdom responded to the financial crisis, but it presented an opportunity to understand wage-setting in the UK context more broadly. This paper seeks to lay out the main lessons learnt.

Although the United Kingdom also experienced the Great Recession, with output (gross value-added at basic prices) falling by 6.0% (peak to trough), the UK unemployment rate only rose by 3.3 percentage points (from 5.2% to 8.5% as shown in Chart 1). At the same time, real wages fell (Chart 2). Since late 2011, unemployment has fallen back but real wages continued to fall, only starting to rise again towards the end of 2014. Given the surprising behaviour of unemployment during the Great Recession and the surprising weakness of wages both during and after the Great Recession, the wage-setting survey seems like the perfect source for possible explanations as to what was going on in the UK economy at this time.

Chart 1: 16+ unemployment rate

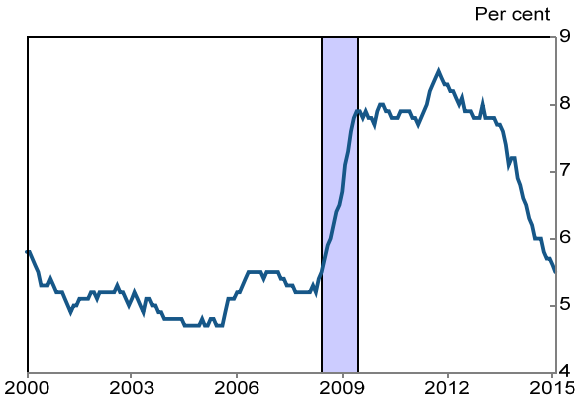
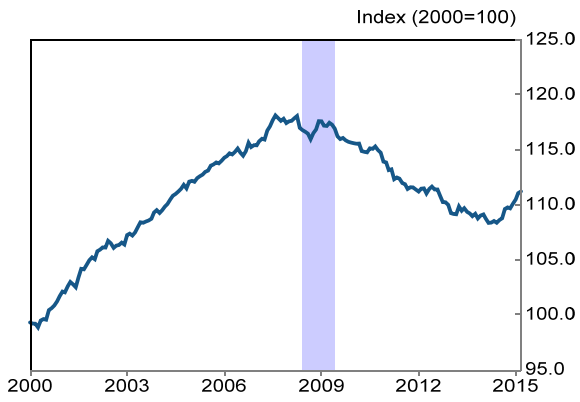


Chart 2: Real wages



As is well known, the UK labour market is flexible vis-à-vis most other European countries. According to Hobijn and Şahin (2007), the monthly job finding rate is 11.27% and the monthly

job separation rate is 1.53%; in both cases this is towards the top of the range of estimates for OECD economies. The United Kingdom has among the lowest degrees of employment protection across OECD countries and union coverage at 35% is also among the lowest in OECD countries. (See Venn (2009).) Finally, Dickens *et al.* (2006) suggests that the UK labour market exhibits low degrees of both downward nominal and real wage rigidity relative to other European economies. Given the behaviour of UK unemployment during and after the Great Recession, as well as the existing flexibility of the UK labour market discussed above, there has been no pressure on the UK government to carry out any structural reforms of the labour market. As a result, and unlike in other European countries, this period represents one of stability in terms of labour market institutions.

The rest of this paper proceeds as follows. Section 2 discusses the survey itself. Section 3 discusses the main results from the survey on labour market adjustment and wage-setting. Section 4 concludes.

2 The Wage Dynamics survey in the United Kingdom

The survey was based on a random gross sample of 18,416 firms covering firms with one or more employees and contained within SIC2007 sectors C-N and R-S. The gross sample was obtained from the Bank of England's Agency contacts and the Bureau van Dijk's (BvD) Companies Database. The stratification was done by 1-digit SIC2007 (NACE Rev. 2.2) industry classifications based on gross-value added shares for the selected industries. Before the survey was conducted in the field, a pilot study was carried out. The feedback from this study resulted in the streamlining and clarification of a number of questions. A copy of the final questionnaire can be found in Appendix A.

The field work was conducted in three stages. The first stage took place in late July/August 2014 when the survey was sent to Bank of England Agency contacts. Because some of the selected firms had recently participated in another Bank of England survey, they were surveyed in October 2014 to avoid 'survey-fatigue'. This was the second stage. A third stage took place in late November/December 2014 and was based on the BvD database. This stage was designed to boost the size of the final sample.

Respondents could reply to the survey in two ways. They could submit their responses online or by email. Around 90% of those who responded chose to reply online. Around two thirds of the final sample came from Agencies' contacts with one third from the BvD. The response rates varied by sub-sample. The Agency sub-sample response rate was around 11% as shown in Chart 3. This was much higher than the BvD sub-sample response rate of around 2% shown in Chart 4. The response rates were broadly similar across industries. There are many reasons why the response rate might have differed across the different samples. The Agencies' contact database is composed of firms that have voluntarily agreed to be contacted by the Bank of England for the purposes of providing firm-based intelligence on the economy. In contrast, firms in the BvD sub-sample were not previously asked whether they would like to participate in the WDN survey. This could have resulted in lower response rate in the BvD sub-sample when

compared with the Agency sub-sample. In addition, part of the contact information provided by the BvD was not up-to-date which meant the survey never reached some firms.

Chart 3: Response rates for Agency sample

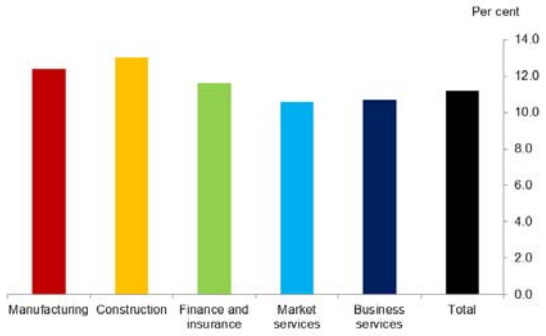
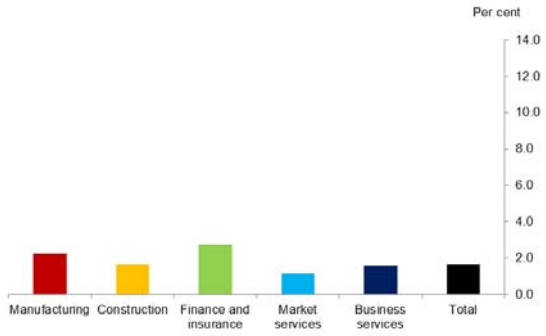
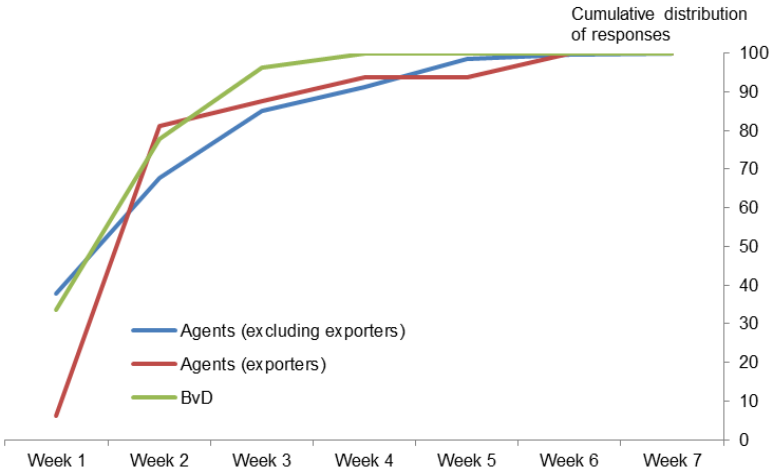


Chart 4: Response rates for the BvD sample



Most of the questions were answered, with the overall question-specific response rate at around 90%. Some questions, though, particularly on the proportion of wage freezes and cuts, were not well answered. This could have been because such information was difficult or too sensitive to obtain. In terms of timing, 70-80% of the responses were received within two weeks. Chart 5 shows the cumulative proportion of responses over time. It took around five to six weeks for all the respondents to reply. Several consistency checks were performed to improve the quality of the data. They ensured the answers were logically coherent and any errors in responses were corrected. This resulted in improved quality of the underlying data.

Chart 5: Timing of responses



The final sample is broadly representative of the UK private sector. Table A compares the final sample to GVA shares of each industry. It indicates the sample is fairly balanced. Table B compares the employment shares by each industry and firm size (1-49, 50-149, 250+ employees). It shows that the final sample is somewhat overweight in manufacturing and business services. It also suggests that larger firms in the final sample represent a larger share of employment than in the population. This comes at the expense of smaller firms which are underweight.

Table A: GVA shares (population vs. sample)

		Population	Final sample
Manufacturing	C	14.097	16.820
Construction	F	8.725	9.174
Market services	G,H,I,R,S	33.428	29.969
Finance	K	10.834	13.761
Business services	J,L,M,N	32.917	30.275
		100	100

Table B: Comparison of the employment composition in the sample and in the population

	All	Small	Medium	Large
Manufacturing C	4.5	3.7	2.3	-1.4
Construction F	-3.9	3.9	0.6	-8.4
Market services G,H,I,R,S	-3.9	16.1	3.7	-23.8
Finance K	-10.9	0.6	-0.2	-11.3
Business services J,L,M,N	14.2	10.0	3.4	0.8
	-	**34.3**	**9.9**	**-44.1**

is overweight
is underweight

In order to account for the unequal probabilities of the firms being selected into the gross sample as well as the differing response rates, both firm-based and employment based weights were constructed. This was done using the methodology adopted by the WDN in their previous surveys. More details can be found in Appendix B. In practice, for most of the qualitative questions unweighted and weighted responses are equivalent. But when analysing quantitative questions in what follows, we use the weighted data.

A more detailed analysis of final sample characteristics, based on weighted responses, is comparable to population characteristics on a number of dimensions. Table C provides an overview of the sample. Further comparisons suggest that the final weighted sample is broadly representative of the UK private sector and can serve as a useful basis for analysis.

3 Results from the survey

During 2010-2013, the UK economy experienced a modest recovery in output while employment strongly increased. As a result, productivity growth was weak over that period. In addition, and as we said earlier, real wages fell over this period. Uncertainty seemed to abate slowly but credit conditions remained difficult especially for smaller firms. The evolution of productivity and real wages over this period represented a departure from previous economic relationships. So, understanding the sources and size of shocks as perceived by firms, as well as their responses to such shocks during that period, might provide insights as to why productivity and real wages were so weak.

3.1 Changes in the economic environment

The WDN survey asked firms about how they experienced a number of different changes in the economic environment. Most firms reported an increase in nominal demand, consistent with the aggregate data. A large part of the increase in demand occurred through a rise in domestic volumes and a little less through domestic prices. An increase in the volume of foreign demand played a less important role, which is consistent with the modest recovery in UK exports over this period. Demand also increased through foreign prices although this tended to play the smallest role in the recovery probably due to a more competitive environment for those firms that export their goods and services abroad.

Table C: Sample characteristics

Variable		Type	Statistic
Age		Mean	30.53
Age		Median	23.00
Domestic ownership		Mean	90.52
Foreign ownership		Mean	9.48
Parent		Mean	63.16
Subsidiary		Mean	17.22
Other		Mean	19.62
Multi-establishment firm (many physical		Mean	18.42
Single establishment firm		Mean	81.58
Foreign sales		Median	2.00
Foreign sales		Mean	16.40
Competition		Median	Strong
Labour cost / Total cost		Mean	41.60
Bonus share		Mean	7.48
Frequency of wage setting		Median	Once a year
Union density		Mean	0.12
Manufacturing		Mean	0.16
Construction		Mean	0.10
Finance and insurance		Mean	0.18
Market services		Mean	0.12
Business services		Mean	0.08
Wage freezes			
	2010	Mean	0.26
	2011	Mean	0.23
	2012	Mean	0.16
	2013	Mean	0.11
Tenure			
<1y		Mean	14.05
1-5 yrs		Mean	34.86
>5 yrs		Mean	49.48
Occupation			
Higher skilled non-manual (SOC: 1-3)		Mean	36.77
Lower skilled non-manual (SOC 4-5)		Mean	29.64
Higher skilled manual (SOC: 7-8)		Mean	18.11
Lower skilled manual (SOC: 9)		Mean	15.12
Employment			
Total		Mean	1,236
Permanent FT		Mean	731
Permanent PT		Mean	520
Temporary/fixed-term		Mean	55
Number of agency workers, freelancers, etc.		Mean	207

Chart 6: Changes in the economic environment

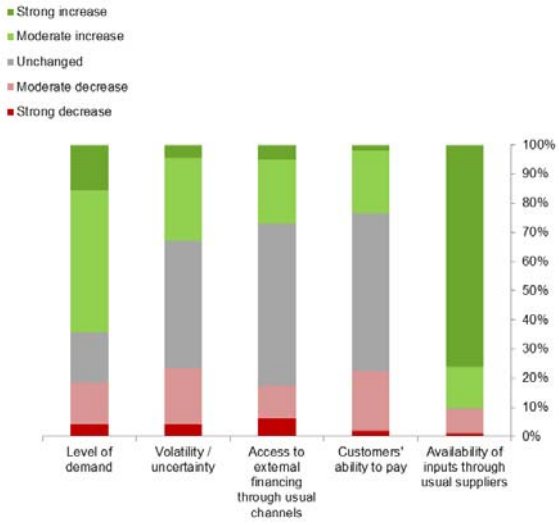
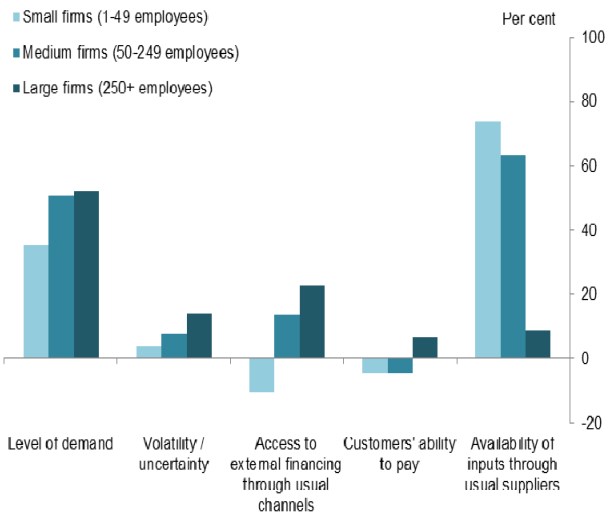


Chart 7: Changes in the economic environment by firm size (net balances)



As is well known, the financial crisis was associated with restricted access to, in particular, bank finance and a general increase in uncertainty. Given that, it is interesting that Chart 6 suggests that only a minority of firms reported that uncertainty decreased, and that access to external financing through the usual channels rose, between 2010 and 2013. Most firms reported no change which suggests that, on balance, uncertainty and credit conditions remained at levels experienced in 2010. That is, despite the economy growing, the tightness in credit conditions and increase uncertainty remained. However, this varied by firm size: larger firms tended to report, on balance, an improvement in access to external finance while small firms tended to report, on balance, a worsening in access to external finance. This is in line with aggregate measures showing that firms were raising about £1 billion a month of net finance by issuing capital (the main source of external funding for large firms) over this period whereas bank lending (the main source of external funding for small firms) was falling.

Most firms reported a strong increase in the availability of inputs through the usual suppliers. On the face of it, this result looks surprising, particularly when compared with the responses to the same question in other countries. Digging deeper into the data, we found that this strong increase in the availability of inputs was most marked among smaller and medium-sized firms. This is suggestive that suppliers – particularly those supplying smaller and medium-sized firms – were hit particularly hard during the recession. Hence, as they recovered coming out of the recession, the firms they supplied to saw a strong increase in the availability of supplies. Those firms that reported a strong change in economic conditions also tended to think these changes were partly or fully permanent.

When asked about credit conditions in more detail, only a minority of firms reported difficulties in accessing credit, whether it was the inability to access credit at all or obtaining it at a sufficiently acceptable price and/or conditions (Chart 8). This differed by size of firm in the cases of price and conditions being too onerous for obtaining working capital and financing new

investment: SMEs tended to experience more difficulties than larger firms and this difference was statistically significant.[1] This result is also partly corroborated by Bank of England (2013) and is, again, likely to result from the fact that small firms tend to rely on bank lending whereas larger firms tend to have multiple sources of financing including capital markets as well as banking relationships in other countries.

Chart 8: Credit conditions in 2010-2013

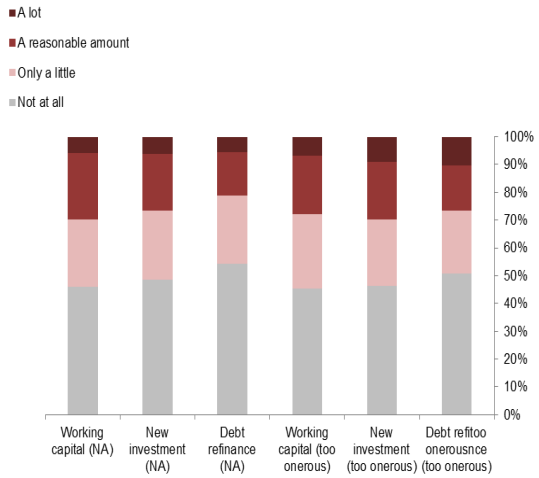
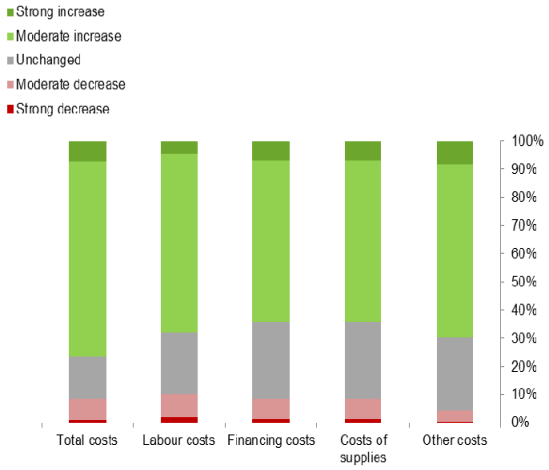


Chart 9: Changes in costs



Over this period, firms' costs changed as well. Chart 9 suggests that most firms experienced a moderate increase in total costs over the period 2010-13 and this increase had been fairly evenly spread across different sub-components of total costs. Interestingly, Chart 10 suggests that larger firms tended to report a fall in other costs. Given that – as shown in Chart 11 – firms tend to cite rent and rates, insurance, utilities and fuel as being their main other costs, this result suggests that large firms have been able to take more advantage of the falls in energy costs than smaller firms.

Chart 10: Changes in costs by firm size

Chart 11: Types of other costs

[1] Using Fisher's exact test for the equality of populations at the 10% level.

An interesting question is the extent to which costs are related to economic conditions. In particular, New Keynesian theory suggests that inflation is driven by real marginal cost, which itself rises when demand is rising relative to supply. One way of using the WDN survey data to look at how costs might be related to changes in economic factors is to examine the correlations between them. Table D reports Spearman's rank correlation coefficients between total costs and economic factors. Statistically significant coefficients are highlighted in red. The level of demand seems to be positively correlated with most of the changes in firms' total costs although the correlations are not very high. This suggests that over 2010-2013, increases in demand seem to have been associated with increases in costs, in line with the theory. Surprisingly, access to external financing also seems positively correlated with labour costs. It may just be that firms that have experienced an improvement in access to finance also saw a positive change in demand and labour costs. In terms of financing costs, two factors were statistically significant. Customers' ability to pay was negatively correlated with financing costs, presumably because an increase in the time taken for invoices to be paid and/or a need to firms to be more flexible in their charging for goods/services would create more reliance on working capital finance. The availability of inputs, however, seems to be positively correlated with financing costs. This might suggest that firms are using finance to help buy inputs. If this is the case, one would expect the two to increase together. Of course, with all the pairwise correlations in Table D, it is more than possible that some of them are driven by common factors and there is no sense in which we can say any variable is 'causing' any other variable.

Table D: Pair-wise correlations between changes in the economic environment

	Level of demand	Volatility / uncertainty	Access to external financing through usual channels	Customers' ability to pay	Availability of inputs through usual suppliers
Total costs	**0.23**	-0.04	0.02	-0.07	0.00
Labour costs	**0.26**	0.02	**0.12**	0.04	-0.02
Financing costs	-0.06	-0.01	-0.18	**-0.16**	**0.07**
Costs of supplies	**0.09**	0.03	0.02	-0.05	-0.06
Other costs	**0.08**	-0.04	0.02	-0.06	**-0.10**

Note: these are Spearman's Rank correlations. Numbers highlighted in red are statistically significant at the 10% level.

Focusing more specifically on how labour costs evolved, there was some variation in firms' responses. Most firms reported a moderate increase in base wages and a strong increase in other labour costs. These were probably the most important components accounting for the moderate increases in total labour costs (Chart 12). Alongside base wage increases, firms experienced moderate increases in flexible wage components such as bonuses and other discretionary compensation. On balance, firms increased the number of permanent workers and, to a lesser extent, temporary and agency workers. There was a relatively smaller rise in working hours. Medium-size and larger firms were more likely to report increasing working hours (Chart 13).

Chart 12: Changes in labour cost components

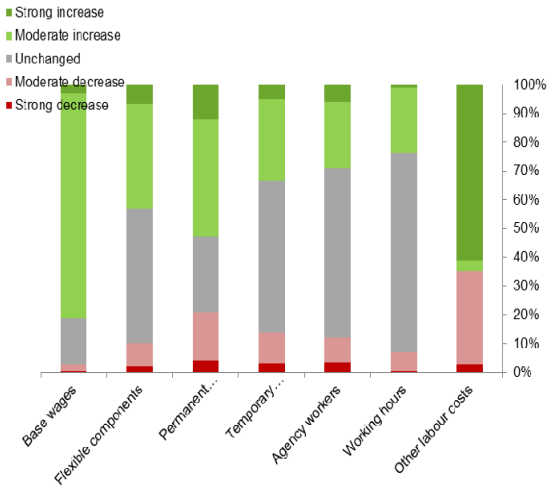
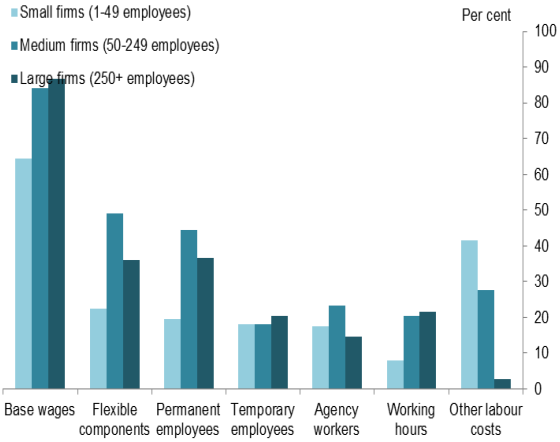


Chart 13: Changes in labour cost components by firm size



The strong increases in other labour costs were most prevalent for SMEs rather than large firms. These other labour costs amounted to just over 18% of total labour costs over the 2010-13 period. The firms in our survey most often cited pensions when asked to specify other labour costs (Chart 14), which suggests that the strong increase in these costs was associated with a rise in the cost of providing pensions to their staff. This increase in pension costs came from two sources. First, low gilt yields since the Great Recession would have widened deficits in defined-benefit (DB) pension schemes. These deficits would have had to have been plugged by increased firm contributions to such schemes, and ONS self-administered pension fund survey data indicate that special contributions to private and public-funded DB schemes were particularly high in 2012 and 2013. Second, auto-enrolment of employees without workplace pension provision into qualifying pension schemes began in 2012 Q4. This means that employers must make minimum pension contributions – currently 1% of earnings – in respect of eligible employees' earnings. The fact that the word 'Auto' appears fairly clearly in Chart 14 suggests that this was an issue for at least some of the firms in our survey.

Again, it is interesting to see how changes in the economic environment are correlated with changes in labour cost components. The WDN survey results are shown in Table E. The level of demand is positively correlated with most labour cost components suggesting firms that see an increase in demand expand output and increase their inputs, thereby also increasing labour costs. Other labour costs seem to be negatively correlated with the level of demand. This probably reflects the fact that pension costs rose partly on account of the low interest rates that responded to low demand and partly for exogenous reasons (discussed above) at the same time as demand was low. Uncertainty seems to be positively correlated with growth in base wages per hour, possibly suggesting that firms are insuring their workers against this, as suggested by some efficiency wage models. Interestingly, changes in customers' ability to pay were positively correlated with the number of permanent employees and working hours, suggesting that when firms saw their customers spending more, they took this as a sign to increase employment. As might be expected, an increased supply of non-labour inputs was negatively

correlated with the demand for permanent employees, temporary employees and working hours since these will be substitutes for each other.

Chart 14: Types of other labour costs

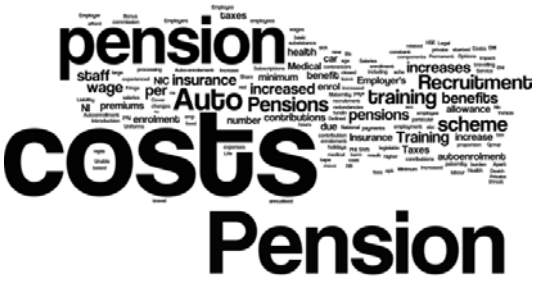


Table E: Pair-wise correlations between changes in the economic environment

	Level of demand	Volatility / uncertainty	Access to external financing through usual channels	Customers' ability to pay	Availability of inputs through usual suppliers
Base wages	**0.17**	**0.08**	**0.14**	0.07	-0.07
Flexible components	**0.25**	-0.06	**0.11**	0.07	-0.04
Permanent employees	**0.40**	0.03	**0.13**	**0.08**	**-0.09**
Temporary employees	**0.23**	0.00	**0.11**	0.05	**-0.13**
Agency workers	**0.18**	0.04	**0.13**	0.03	-0.07
Working hours	**0.29**	0.00	**0.08**	**0.18**	**-0.11**
Other labour costs	**-0.15**	-0.03	-0.05	0.03	0.04

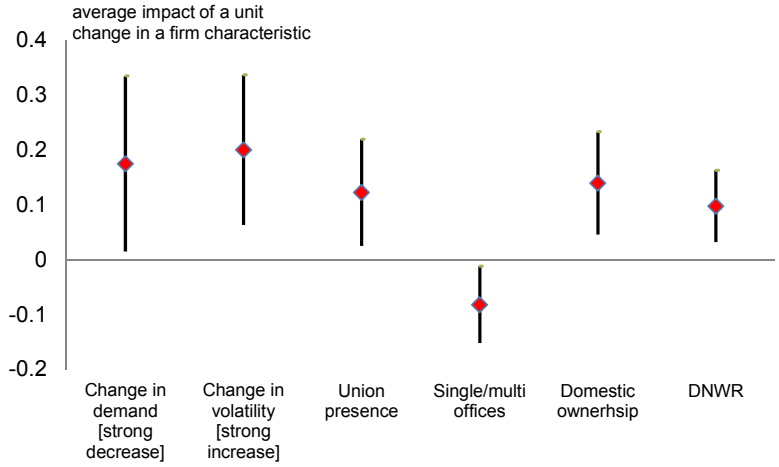
Note: these are Spearman's Rank correlations. Numbers highlighted in red are statistically significant at the 10% level.

3.2 Methods of adjustment

The flexible structure of the UK labour market will likely have played a role in how firms adjust to changes in the economic environment. In order to investigate this, the WDN survey asked a series of questions on how firms experienced downward labour adjustment in terms of factors related to the structure of the labour market. We investigate this issue in two steps. First we ask what factors influenced those firms who strongly adjusted their labour input downwards. Second, conditional on there being a downward adjustment, we examine what factors affect the methods of adjustment used.

Around 22% of firms reported that they needed to significantly reduce their labour input over the period 2010-13. These firms significantly differed from other firms which did not have to significantly reduce their labour input, seeing weaker demand on balance. Using a simple regression, Chart 15 summarises which characteristics increased the probability of a significant downward labour adjustment. We found that a strong increase in volatility would increase the probability of a downward adjustment around 20%, similar in magnitude to a strong decrease in demand. The presence of a union would also increase the likelihood of a significant downward adjustment. This could be perhaps because unions might resist smaller changes in pay and/or employment until the need for a substantial adjustment arises. Also, the inability to lower nominal wages is an important factor contributing to a likelihood of a significant downward labour input adjustment. The data suggests a similar type of effect, around 10%, for foreign ownership. This could be due to a form of home bias, a tendency to adjust first in locations not in the home country. Interestingly, the simple results also indicate that firms operating in a single location, as opposed to multiple locations, seemed less likely to require a significant reduction in labour input.

Chart 15 - Average marginal effects of a unit change in a firm characteristic on the probability of a significant downward adjustment



Having examined what factors cause firms to adjust their labour input downwards, we next look at how they go about this adjustment. The survey suggests that when adjusting their labour input downward, firms used a combination of strategies: the most prevalent being individual redundancies and some form of a hiring freeze (non-renewal of temporary contracts and reduction of new hires) as shown in Chart 16. Collective redundancies were used moderately. Some firms also reported reducing agency workers and other external contractors while a few also chose to reduce working hours. Among the firms that adjusted moderately or a lot, most used one to four instruments. These were a combination of all the instruments discussed above, although no dominant strategy emerged. Firms seemed to mix and match different methods of adjusting their labour input downward.

Chart 16: Measures used to reduce labour input

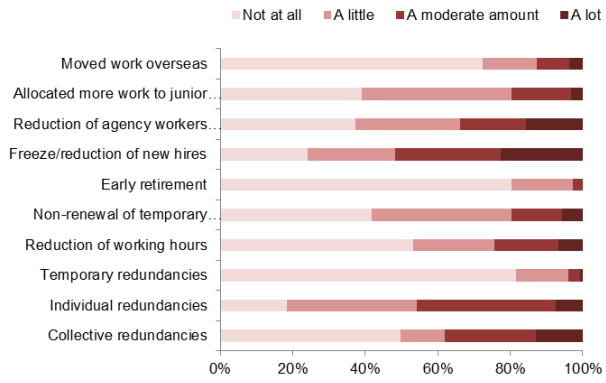
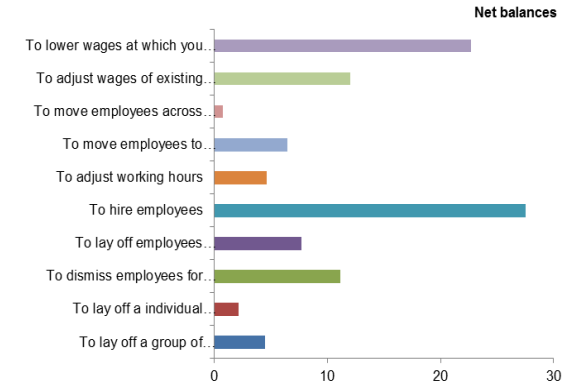


Chart 17: Have any of these become more difficult in 2013 compared to 2010?



Note: the questions referred to factors that depend on rules and procedures rather than the state of the labour market

To explore which firm characteristics might lead to different adjustment strategies, conditional on the firm having reduced labour input, we ran a few simple regressions. For each of the adjustment channels, we tried to explain whether a firm had used it or not by a number of firm characteristics. We did not include an indicator of demand in this analysis, given that we would

expect demand to determine whether or not firms adjust their labour input at all, rather than how they might adjust. That said, in future work we hope to use the results from the WDN survey across many countries to examine whether the extent of any change in demand is related to the method of adjustment used.[2]

Table F below shows the results of these individual probit regressions. Statistically significant marginal effects (at the mean) are given in colour where red indicates a negative effect and green a positive effect. In terms of the main channels of adjustment used, collective redundancies tended to be used more by larger firms and those with many offices. Individual redundancies were more likely to be used by older firms. Firms with downwardly rigid nominal wages were also more likely to use individual redundancies as a means of adjusting their labour input downwards. The presence of downward nominal wage rigidity was also positively associated with a freeze/reduction of new hires. But firms with one office and firms in construction were less likely to adjust their labour force in this manner. Interestingly, foreign-owned firms were more likely to move work overseas to either their offices or another company than domestically-owned firms were.

Table F: Adjusting labour input downwards and firm characteristics

		Collective redundancies	Individual redundancies	Temporary redundancies	Reduction of working hours	Non-renewal of temporary contracts	Early retirement	Freeze/reduction of new hires	Reduction of agency workers and others	Allocated more work to junior staff than before	Moved work overseas
Firm age			0.0015282								0.0015282
Number of employees		0.0000162		0.0000162					0.0000162		
Union presence											
Single establishment		0.0396841				0.0396841		0.0396841			
Foreign ownership					0.4341209	0.4341209					0.4341209
Parent compnay											
Inflation indexation											
Downward nominal wage rigidity			0.0453456					0.0453456			
Manufacturing				0.1312548							
Construction				0.0508771				0.0508771		0.0508771	
Finance					-0.0836834						
Market services				-0.1142289							
Access to external financing	*Strong decrease*						0.0498808		0.0498808		
Access to external financing	*Moderate decrease*										
Access to external financing	*Moderate increase*										
Access to external financing	*Strong increase*										
Labour costs / Total costs				-0.0028372						-0.0028372	
Flexible pay / Total wage bill					0.0018025						
Share of highly skilled workers											0.0047917
Share of workers with 5+ years of tenure				0.0008914							

Note: coloured cells indicate statistical significance at the 5% level. Green indicates a positive coefficient and red a negative one. The marginal effects indicate an impact on the likelihood of using a particular adjustment method for a unit change in each explanatory variable at its mean.

While the range of strategies used by UK firms might suggest the labour market is relatively flexible, the survey also asked how firms perceived changes in institutional features of the labour market. Chart 17 reports the net balances across a range of different factors. On balance, firms perceived the labour market to be more rigid. But this was mostly concentrated in two areas. Almost 30% of firms found hiring employees more difficult in 2013 than in 2010, a little over 20% of firms also found lowering wages at which they hire more difficult and around 10% of firms, on balance, reported that they also found adjusting wages of existing workers more difficult in 2013 than in 2010.

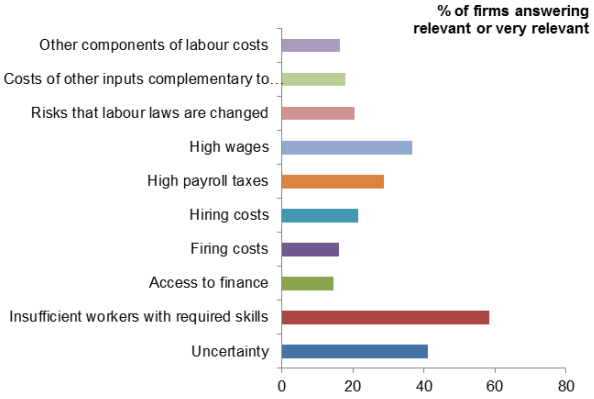
Given there were no obvious institutional changes in the UK labour market, these results seem surprising. One possible explanation is that firms responded to the question based on their experience of labour market conditions in 2013 vs. 2010, and simply failed to read or take in the

[2] See Bertola *et al.* (2012) for a similar exercise using a previous wave of the WDN survey.

part of the question that said: 'The questions refer to factors that depend on rules and procedures rather than the state of the labour market'. This seems to be borne out by the answers to the question on the main obstacles to hiring new workers.

There could be many obstacles to hiring new workers but UK firms cited a few factors as being particularly relevant. Chart 18 reports that in 2013, 60% of firms reported that insufficient skills were an obstacle to hiring new permanent workers. Around 40% indicated that uncertainty prevented them from hiring. And around a quarter said that high wages for new workers were a problem.

Chart 18: Obstacles to hiring workers on an open-ended, permanent contract



To sum up this section, although firms tend to use a combination of strategies to adjust their labour inputs downwards, it is clear that the availability of suitable and 'cheap' workers became more of an issue for UK firms that wanted to adjust their labour input upwards. This could perhaps be a reason why net migration to the United Kingdom remained relatively robust despite there being slack in the labour market during this period.

3.3 Wage-setting and wage dynamics

Another important margin of adjustment for firms, when responding to shocks, is the ability to change wages. So, the ability to adjust to competing demand and cost pressures will also depend on features of the wage-setting process. In this sub-section, we consider the questions of how often wages are set before going on to examine downward nominal and real wage rigidity.

The frequency at which firms change wages will affect the flexibility with which they can react to shocks. In particular, the more often firms change wages, the more opportunities there are to adjust wages to unexpected economic developments. In the United Kingdom, most firms tend to review wages once a year and around a quarter of them change wages less frequently than that. The median frequency of wage-setting is annual with the exception of construction where it is between one and two years. Across firm size, the median frequency was also annual but smaller firms reported a broader range of wage-setting frequencies (Chart 19). While around 80% of large firms tend to change wages once a year, only 50% of smaller firms do so with almost a quarter of them changing less frequently than once every two years. This could suggest

wage-setting is more rigid in smaller firms although this could be offset by greater flexibility in wage growth, ie, if wage changes are more variable than in larger firms.

The presence of unions in wage bargaining can also introduce less flexibility in wage-setting. In the survey, unions only cover around 12% of employees. They tend to be present at the level of the firm and, on average, cover around two-thirds of employees in the firms where they are present. But the aggregate wage-setting picture is not that different between firms with and without a union presence (Chart 20). Often unions tend to negotiate for real wages by focusing on inflationary pressures. The survey asked whether firms directly and explicitly linked changes in base wages to inflation. Around 30% of firms overall reported that they did. For those firms where there was a union presence, this number was 38%, but the difference was not statistically significant. In both cases, this is indicative of some downward real wage rigidity.

Chart 19: Distribution of wage-setting frequencies

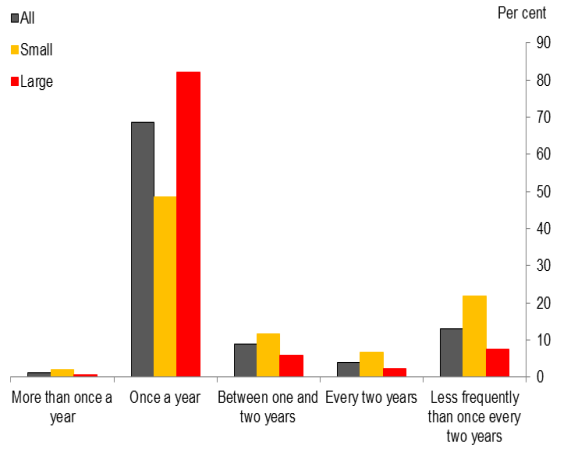
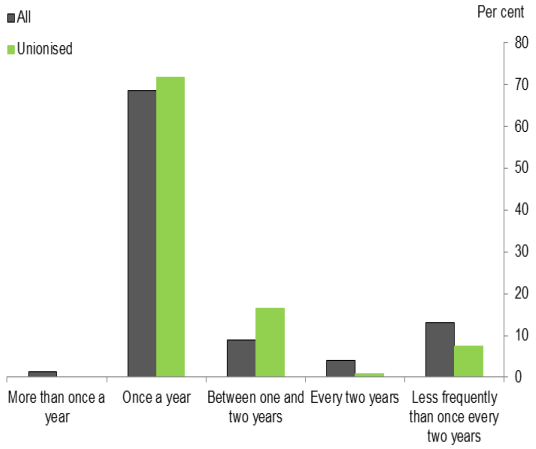


Chart 20: Distribution of wage-setting frequencies



During 2010-2013, many firms had to adjust wages downwards. In the absence of downward wage rigidity, this means that the distribution of wage changes should be symmetric. Using employee-level data, Chart 21 shows that this is not the case for the growth in nominal pay per hour. There is a clear spike at zero and an absence of mass to the left of zero. This is indicative of downward nominal wage rigidity. WDN survey evidence corroborates this picture. According to the survey, the overall incidence of wage freezes was relatively high at around 25% in 2010 although by 2014 this had fallen to around 10%. Chart 22 shows the sectoral variation among firms. The incidence of pay freezes was highest among firms in construction and lowest among firms in finance. On average, a pay freeze would last around two and a half years but for around a quarter of the firms it lasted at least three years. Pay freezes lasted the longest in construction, almost an average of three years. In contrast, firms reported only a handful of wage cuts. Anecdotally, where they did cut wages, the median wage cut ranged from 2.5% to 25%.

Chart 21: Distribution of employees' wages per hour growth

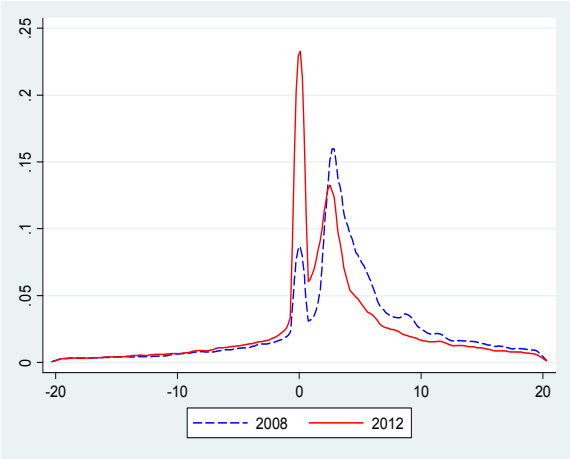
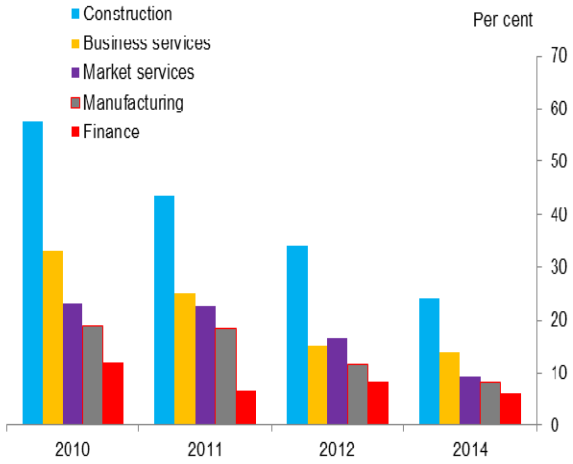


Chart 22: Incidence of pay freezes among UK firms



Source: New Earnings Survey Panel Dataset

In understanding how wages respond to shocks, it is important to understand which factors might account for the high incidence of wage freezes we saw just after the financial crisis and the lower number of freezes seen more recently. In order to assess which factors might determine the likelihood of a pay freeze, we again estimate multivariate probit regressions. The implicit assumption is that a pay freeze is a proxy for downward nominal wage rigidity (DNWR). The approach adopted is similar to Babecky *et al.* (2010). We use a probit model to explain the likelihood of a pay freeze occurring in a firm. Since some of the questions refer to 2010-2013, we construct a new pay freeze variable. We define the firm as having a pay freeze if there are two or more years (out of four) where it had a pay freeze. On this definition, around 40% of firms in the sample have had a pay freeze during 2010-2013. But, for robustness, we also run the same regressions on pay freeze variables for each year. We omit wage cuts from our analysis since they rarely occurred and we do not have enough data for statistical analysis.

The determinants of DNWR are taken from theory. Babecky *et al.* (2010) provide a summary of different theories that suggest why firms with certain characteristics might be more/less likely to have rigid wages. For example, the shirking model of Shapiro and Stiglitz (1984), the gift-exchange model of Akerlof (1982) and the fair wage-effort hypothesis of Akerlof and Yellen (1990) imply that wages might be more rigid for highly skilled workers. Lindbeck and Snower's (1998) insider-outsider theory suggests that insiders, such as those with long tenure or permanent contracts, might have more power over outsiders, which would lead to more wage rigidity. The presence of unions in wage bargaining might also lead to more downward wage rigidity (see Oswald, 1986).

The marginal effects of the probit model, using the 2010-2013 pay freeze variable as the dependent variable, are presented in Table G. Highlighted rows indicate statistically significant marginal effects at the 10% level. The model suggests that firms in construction were around 22% more likely to have a pay freeze relative to firms in finance (omitted category). This was also the case for smaller firms relative to larger firms although the effect was much smaller and not significant in 2013. These results are both in line with the descriptive evidence presented

above. A decrease in access to external financing, a proxy for credit conditions, mostly appears to increase the likelihood of a pay preeze by 16-17% relative to a baseline of no change. Interestingly, in 2012 firms that reported a moderate increase in access to external financing were also slightly more likely to experience a pay freeze. This might suggest that in 2012 other factors, not accounted for in the simple model, might have been important. For example, firms could have reported an increase in access but might have been unwilling to increase their financing for other reasons. Increases in other economic factors, such as volatility, customers' ability to pay and demand tended to have large impacts on the probability of a pay freeze. But a moderate decrease in volatility, relative to no change, was also found to positively contribute to the likelihod of a pay freeze. This merits further investigation.

Table G: Determinants of DNWR: evidence from the UK WDN survey

Variable		2010-2013	2010	2011	2012	2013
Pay freeze						
Manufacturing						
Construction		0.2161	0.2161	0.2161	0.2161	0.2161
Market services						
Business services						
Small firm		0.0301	0.0301	0.0301	0.0301	
Medium-size firm						-0.1178
Demand	*Strong decrease*					
Demand	*Moderate decrease*					
Demand	*Moderate increase*					-0.0915
Demand	*Strong increase*				-0.1886	-0.1886
Volatility/uncertainty	*Strong decrease*					
Volatility/uncertainty	*Moderate decrease*	0.0355	0.0355	0.0355	0.0355	
Volatility/uncertainty	*Moderate increase*					
Volatility/uncertainty	*Strong increase*	0.1711	0.1711	0.1711	0.1711	0.1711
Access to external financing	*Strong decrease*	0.1653	0.1653	0.1653	0.1653	0.1653
Access to external financing	*Moderate decrease*	0.0969	0.0969	0.0969	0.0969	0.0969
Access to external financing	*Moderate increase*	0.0508			0.0508	
Access to external financing	*Strong increase*					
Customers' ability to pay	*Strong decrease*	-0.0957				
Customers' ability to pay	*Moderate decrease*					
Customers' ability to pay	*Moderate increase*		0.0418	0.0418		
Customers' ability to pay	*Strong increase*					-0.2696
Union presence			-0.2504	-0.2504		-0.2504
High-skill, white collar						
Low-skill, white collar						
High-skill, blue collar						
1-5 years' tenure						
5+ years tenure						
Share of permanent employees					0.0008	
Labour costs as a % of total costs					0.0019	0.0019
Bonuses as a % of total wage bill						

Note: coloured cells indicate statistical significance at the 10% level. Green indicates a positive coefficient and red a negative one. The marginal effects indicate an impact on the likelihood of using a particular adjustment method for a unit change in each explanatory variable at its mean.

The UK WDN survey evidence found some support for some of the theoretical arguments for wage rigidity. For example, the presence of a union was found to have a large negative impact of the likelihood of a pay freeze. Tenure or skills did not seem to have much explanatory power. But the share of permanent employees and labour costs expressed as a proportion of total costs (a proxy for capital intensity) were found to be significant in 2012 and 2013. A one percentage point increase in the share of permanent workers would have increased the probability of a pay freeze by 0.08%. This runs counter to theoretical predictions. It might point to a compromise between workers and management that reduced wages instead of jobs in

order to reduce labour costs. But it is unclear whether this was an important factor; this effect was only significant in 2012 and was quantitatively small. The model also suggests that higher the share of labour costs, the more likely is a pay freeze to occur in a firm. Here too, the marginal effect is quite small. But it supports the theoretical argument put forward by Howitt (2002) which suggests that firms with high labour costs are less likely to lower wages since this would result in lost profits due to a 'disgruntled' workforce.

Many firms did not have pay freezes but experienced positive wage increases. But, given our survey, we can also measure downward real wage rigidity (DRWR). In particular, we asked whether firms directly and explicitly linked changes in base wages to inflation over the period 2010-13. We use the same setup as above. Our dependent variable takes the value of unity if the firms answered 'Yes' and zero otherwise. The explanatory variables are similar.

Table H: Determinants of DRWR

Variable		2010-2013
Inflation-linked pay		
Manufacturing		-0.042
Construction		-0.131
Market services		0.032
Business services		0.014
Small firm		-0.055
Medium-size firm		0.016
Demand	*Strong decrease*	0.008
Demand	*Moderate decrease*	-0.036
Demand	*Moderate increase*	0.053
Demand	*Strong increase*	0.142
Volatility/uncertainty	*Strong decrease*	-0.039
Volatility/uncertainty	*Moderate decrease*	-0.018
Volatility/uncertainty	*Moderate increase*	-0.021
Volatility/uncertainty	*Strong increase*	0.059
Access to external finan	*Strong decrease*	-0.184
Access to external finan	*Moderate decrease*	0.045
Access to external finan	*Moderate increase*	-0.024
Access to external finan	*Strong increase*	0.053
Customers' ability to pay	*Strong decrease*	0.018
Customers' ability to pay	*Moderate decrease*	-0.018
Customers' ability to pay	*Moderate increase*	-0.020
Customers' ability to pay	*Strong increase*	0.010
Union presence		0.076
High-skill, white collar		0.000
Low-skill, white collar		0.000
High-skill, blue collar		0.001
1-5 years' tenure		0.005
5+ years tenure		0.004
Share of permanent employees		0.001
Labour costs as a % of total costs		0.001
Bonuses as a % of total wage bill		-0.002

Note: coloured cells indicate statistical significance at the 10% level. Green indicates a positive coefficient and red a negative one.

Table H reports estimates from a probit model of DRWR. Only two things stand out. A strong increase in demand is positively associated with inflation-linked pay. This is perhaps because

firms that have seen a strong recovery in demand were able to explicitly link wage growth to inflation. Also, the share of workers with more than five years of tenure is positively associated with DRWR. This would be in line with the predictions of Lindbeck and Snower (1998), where insiders have more bargaining power than outsiders and are more likely to resist any falls in real wages.

There is some further survey evidence to support the insider-outsider argument. When asked, around 60% of firms stated that the labour cost of a new worker was similar to that of a comparable existing worker. In line with Akerlof and Yellen (1990), the reasons given by those firms were mostly that any differences would be perceived as unfair by existing employees and that it would generate pay pressure from existing employees (Chart 23). The third most important reason cited was that any differences would have a negative impact on employees' work effort, in line with the shirking model of Shapiro and Stiglitz (1984). This result is also important in the context of the wider debate over the flexibility of the wages of newly-employed workers. Our results suggest that these are fairly 'sticky', which is important in enabling search and matching models to generate volatility in the unemployment rate.

While there is evidence of DNWR and DRWR among UK firms operating during the period 2010-13, our quantitative analysis did not reveal many reasons why they might be present. But we asked those firms that did not cut wages why they did not do so. Some of the most common answers were that the most productive workers would leave and that outside wage options act as a constraint on pay. (See Chart 24.) Also, firms placed an emphasis on morale and employee effort. This evidence supports the shirking model of Shapiro and Stiglitz (1984) and the fair wage-effort hypothesis of Akerlof and Yellen (1990). In contrast, comparatively less importance was placed on implicit wage contracts, ie, firms 'smoothing' through wage changes because their workers are risk averse and like wage stability. Also, perhaps unsurprisingly given the low union density in the United Kingdom, regulations and collective agreements were less important reasons for not cutting wages.

Chart 23: Reasons why labour costs of new workers are the same as those of comparable existing workers

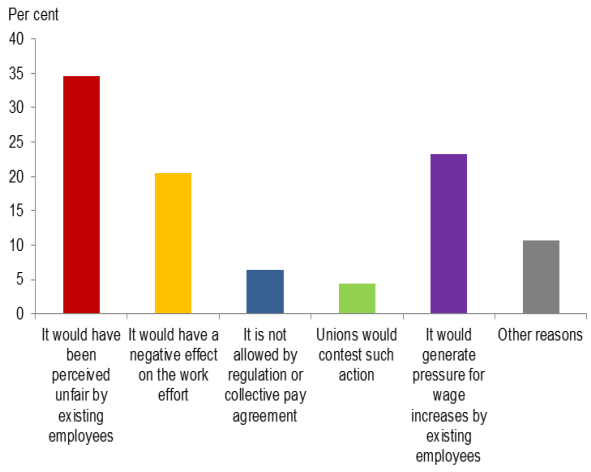
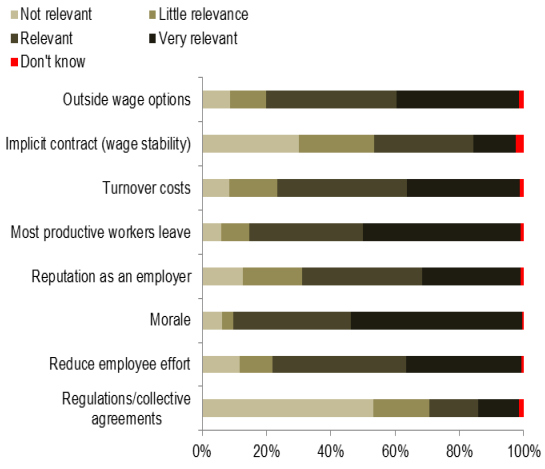


Chart 24: Reasons why firms did not cut wages



4 Conclusions

The behaviour of the UK labour market during the Great Recession and in the subsequent recovery has been surprising. Despite a fall in output of 6.0% from peak to trough, the unemployment rate only rose by 3.3 percentage points, and had fallen back to roughly its pre-crisis level by the beginning of 2015. At the same time, real wages fell by just under 10%. This made it propitious that – as part of the WDN – the Bank of England carried out a wage-setting survey covering the period from 2010-13. Not only did the survey provide an opportunity to assess how firms in the United Kingdom responded to the financial crisis, but it presented an opportunity to understand wage-setting in the UK context more broadly.

In this paper we have set out the main lessons learnt from this survey. Over the 2010-13 period, most firms experienced an increase in demand and a moderate increase in costs as the economy recovered from the Great Recession. Most firms reported an increase in labour costs coming from increases in base wages and increased employment of permanent workers and, to a lesser extent, temporary and agency workers. Firms were able to use a combination of strategies to adjust their labour inputs downwards, the most prevalent being individual redundancies and some form of a hiring freeze (non-renewal of temporary contracts and reduction of new hires), but those firms increasing their labour input found problems with the availability of suitable workers. This could perhaps be a reason why net migration to the United Kingdom remained relatively robust despite there being slack in the labour market during this period.

In terms of the frequency with which wages are set, we found the median frequency of wage-setting to be annual in all sectors apart from construction, where it is between one and two years. Around 30% of firms reported that they directly and explicitly related changes in their base wage to inflation, suggesting that there is likely some downward real wage rigidity. That said, the aggregate behaviour of real wages would suggest that this was not a limiting factor during the 2010-13 period. Downward nominal wage rigidity, on the other hand, was possibly more important with around 25% of firms freezing wages in 2010, although by 2014 this had fallen to around 10%. The survey suggested that 'efficiency wage' theories of wage rigidity based around the ability of workers to 'shirk' and the importance workers attach to being paid a 'fair' wage explained why firms were reluctant to cut wages. Looking forward, the key question is whether the presence of these rigidities on the way down might limit, or slow down, rises in wages on the way up.

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Appendix A: The Wage Dynamics Survey Questionnaire

Many thanks for participating in the survey. You can use the provided link to fill out the survey online or you can use the attached electronic form (requires Acrobat reader) and send it to our e-mail address wdn@bankofengland.co.uk. Alternatively, you can also print out the form and email us a scanned copy of the questionnaire. In case you need any further information or assistance, please feel free to contact Srdan Tatomir or Stephen Millard at the email address above or at 020 7601 5263.

This survey is carried out by the Bank of England. Any information collected through the questionnaire will be treated on a secure and confidential basis, and will be used exclusively in anonymised format for research purposes. A copy of the report with aggregated results will be sent to you.

Personal data collected at the end of the questionnaire will only be used to communicate with the firm participating in this survey and will be kept confidential.

Below there are some instructions on how to fill in the questionnaire.

1. **Firm**: The questionnaire refers to the firm as a whole and not necessarily the establishment (which is a single physical location at which business is conducted).

2. **Reference period**: The time period covered is stated in each question. But since the aim is to explore changes in practices following the financial crisis, most questions refer to your firm's experience between 2010 and 2013.

3. **Figures**: If exact figures are difficult to find please use approximate answers. Where end-of-year figures are not available please use the appropriate financial year (e.g. 2013/14 instead of end 2013). Most questions are qualitative and only a few require exact figures.

4. **Who should fill in the survey?:** The questionnaire should be answered by the firm's CEO or a combination of the Human Resource manager and the Finance director, if possible.

Section 1 Information about the firm

1.1 – When was your firm established? ________ *(mmm - yyyy)*

1.2 – Describe the structure, ownership status and autonomy of your firm at the end of 2013:

Parent company: *A single or a group of incorporated/unincorporated companies that have directly invested inand control companies operating in countries other than that of the parent company.*

Affiliate company: *An incorporated or unincorporated company in which a foreign investor has an effective voice in management. This may be a subsidiary, associate or branch.*

Subsidiary: *An incorporated company in the host country in which another company directly owns more than half of the shareholders´ voting power, or is a shareholder in the enterprise, and has the right to appoint or remove a majority of the members of the administrative, management or supervisory body.*

Structure:		**Ownership:**		**Autonomy:**	
Single establishment firm	□	Mainly domestic	□	Parent company	□
Multi-establishment firm (many physical offices/factories/shops)	□	Mainly foreign	□	Subsidiary/affiliate	□
				Other	□

1.3 – In 2013 what was the share of revenues from your firm's main products, services or activity due to sales in domestic markets and foreign markets?

If you are a global firm, this question refers to your UK-based operations. If exact figures are not available, approximate figures that indicate the relative importance of domestic vs foreign sales would be helpful.

Sales in the domestic market _____% Sales in foreign markets _____%

1.4 – How would you characterise the degree of competition for your main product or services in 2013?

Weak	*Moderate*	*Strong*	*Very strong*	*Not applicable*
□	□	□	□	□

Additional comments

Section 2 Changes in the economic environment

This section aims at assessing the main changes in economic environment your firm experienced during **2010-2013** . When answering the questions please refer to **"the most significant changes**" taking place over this period. This section could best be answered by the CEO or the Finance director. **A box for additional comments is provided at the end of this section.**

2.1 – Please describe how each of the following factors affected your firm's activity in 2013 compared to 2010?

Please choose ONE option for each line.

	Strong decrease	*Moderate decrease*	*Unchanged*	*Moderate increase*	*Strong increase*
The level of demand for your products/services	□	□	□	□	□
Volatility/uncertainty of demand for your products/services	□	□	□	□	□
Access to external financing through the usual financial channels	□	□	□	□	□
Customers' ability to pay and meet contractual terms	□	□	□	□	□
Availability of inputs from your usual suppliers	□	□	□	□	□

2.2 – For those factors which affected your firm strongly in the question above, in your view, were the effects a 'one-off', partly permanent or permanent?

A 'one-off' effect might be something that is temporary and disappears within a year. Effects that are partly permanent might last longer than a year but not more than two. While a permanent effect would be something structural and last longer than two years.

Please choose ONE option for each line if the factor strongly affected your firm.

	'One-off'	*Only partly permanent*	*Permanent*
The level of demand for your products/services	□	□	□
Volatility/uncertainty of demand for your products/services	□	□	□
Access to external financing through the usual financial channels	□	□	□
Customers' ability to pay and meet contractual terms	□	□	□
Availability of inputs from your firm's usual suppliers	□	□	□

2.3 – How much does each of the following statements reflect your firm's experience over the period 2010-2013?

Credit here refers to any kind of credit and not just bank credit. Please leave blank if the option does not apply to you e.g. your firm did not need or plan any new investment.

Please choose ONE option for each line.

	Not at all	*Only a little*	*A reasonable amount*	*A lot*
Credit was not available to finance working capital	□	□	□	□
Credit was not available to finance new investment	□	□	□	□
Credit was not available to refinance debt	□	□	□	□
Credit was available to finance working capital, but the conditions (interest rates and other contractual terms) were too onerous	□	□	□	□
Credit was available to finance new investment, but the conditions (interest rates and other contractual terms) were too onerous	□	□	□	□
Credit was available to refinance debt, but the conditions (interest rates and other contractual terms) were too onerous	□	□	□	□

2.4 – How did the components of total costs described below change in your firm during 2010-2013?

***Total costs** refer to all operating expenses. This includes **labour costs** (wages, salaries, bonuses, social security contributions, training, taxes,pension fund contributions, etc.), **financing costs**, **costs of obtaining supplies from suppliers**, and **other costs** (e.g. telecommunications, insurance and maintenance of buildings and equipment, utility expenses, travelling and other miscellaneous expenses).*

Please choose ONE option for each line.

	Strong decrease	*Moderate decrease*	*Unchanged*	*Moderate increase*	*Strong increase*
Total costs	□	□	□	□	□
Labour costs	□	□	□	□	□
Financing costs	□	□	□	□	□
Costs of supplies	□	□	□	□	□
Other costs (please specify_____)	□	□	□	□	□

2.5 – Please describe how each one of the components of labour costs listed below has changed in 2013 when compared to 2010.

***Labour costs**: wages, salaries, bonuses, social contributions, training, tax contributions, contributions to pension funds. From the employer's point of view these are often grouped as: direct remuneration (direct pay for time worked and bonuses), other direct costs (payments in kind, payment in capital and remuneration for non-working days) and indirect costs (social security contributions, vocational training and miscellaneous taxes).*

***Base wage:** direct remuneration excluding bonuses (regular wage or salary, commissions, piecework payments).*

***Bonuses/benefits (flexible wage components):** part of compensation different from the base wage and usually linked to the individual's performance or firm's performance.*

***Hourly, piece-rate and monthly base wage:** base wage per hour worked, per month worked, or per pieces produced.*

Please leave blank if the option does not apply to your firm e.g. you did not have any temporary/fixed term employees. Please choose ONE option for each line.

	Strong decrease	*Moderate decrease*	*Unchanged*	*Moderate increase*	*Strong increase*
Base wages (per hour) or piece work rates	□	□	□	□	□
Flexible wage components (bonuses, fringe benefits, etc.)	□	□	□	□	□
Number of permanent employees	□	□	□	□	□
Number of temporary/fixed-term employees	□	□	□	□	□
Number of agency workers and others (free-lance workers, contractors, i.e. those not hired under employment contracts)	□	□	□	□	□
Working hours per employee	□	□	□	□	□
Other components of labour costs (please specify_____)	□	□	□	□	□

2.6 – How did the demand and prices for your main product/service change during 2010-2013?

Demand for goods/services sold in the UK and exported abroad (to foreign markets) is considered foreign demand.

Please choose ONE option for each line.

	Strong decrease	*Moderate decrease*	*Unchanged*	*Moderate increase*	*Strong increase*
Domestic demand for your main product/service	□	□	□	□	□
Foreign demand for your main product/service	□	□	□	□	□
Prices of your main product/service in domestic markets	□	□	□	□	□
Prices of your main product/service in foreign markets	□	□	□	□	□

Additional comments

Section 3 Labour force adjustment

This section asks about the firm's workforce, its composition and changes to it. This section could be best answered by the CEO or the Human Resources director. A box for additional comments is provided at the end of the section.

3.1. – How many employees did your firm have on the payroll in the United Kingdom at the end of 2013? How many agency workers and others workers did your firm have at the end of 2013?

***Employees**: includes all type of employees i.e. those with employment contracts. Agency workers and freelance workers are excluded.*

***Permanent full-time**: those with employment contracts that do not set a termination date and whose regular working hours are the same as the customarily worked or collectively agreed.*

***Permanent part-time**: those with employment contracts that do not set a termination date and whose regular working hours are less than those specified for permanent full-time.*

***Temporary or fixed-term**: those with employment contracts that set a termination date or a specific period of employment. This includes apprenticeships.*

***Agency workers and others**: these are workers and employees **not** on the payroll of the firm e.g. consultants, employees being officially registered with a different company, etc.*

Total number of employees _____

Of which:

Permanent full-time _____

Permanent part-time _____

Temporary or fixed-term _____

Total number of agency workers, free-lancers, contractors, etc.

_____

3.2 – At the end of 2013, how were your firm's employees approximately distributed by occupational group and tenure? ***Please provide either proportions(%) or absolute numbers (#).***

Occupational categories (OC) with examples

1 Managers
e.g. CEOs, senior, production/finance/marketing/HR managers, IT directors.
2 Professionals
e.g. Scentists, engineers, IT developers, R&D workers, teachers, solicitors, accountants, surveyors, project managers, media professionals.
3 Technicians and associate professionals
e.g. Planning, process and production technicians., IT operations and user support, artists, designers, legal associate professionals, brokers, account managers.
4 Administrative and secretarial
e.g. Finance officers, credit controllers, HR assistants, office managers, secretaries.
5 Service and sales workers
e.g. Sales and retail assistants, call centre workers, sales supervisors.
7 Skilled trades workers
e.g. Smiths, tool makers, electricians, plumbers, decorators, tailors, printers, chefs, furniture makers.
8 Plant and machine operators, and assemblers
e.g. Food, drink and tobacco process operatives, assemblers, routine inspectors and testers, scaffolders, drivers.
9 Elementary occupations
e.g. Construction workers, packers, couriers, cleaners, security guards, porters, waiters.

If exact figures are not available, please provide approximate numbers.

Higher skilled non-manual (OC: 1, 2, 3)	_____%	#_____
Lower skilled non-manual (OC: 4 and 5)	_____%	#_____
Higher skilled manual (OC: 7 and 8)	_____%	#_____
Lower skilled manual (OC: 9)	_____%	#_____
	TOTAL (= 100%)	

JOB TENURE

***Job Tenure** is typically measured by the length of time workers have been in their current job or with their current employer.*

Below 1 year	_____%	#_____
Between 1 and 5 years	_____%	#_____
More than 5 years	_____%	#_____
	TOTAL (= 100 %)	

3.3 – Compared to 2010, how did staff turnover change in your firm in 2013? This includes both voluntary and involuntary changes (e.g. redundancies and disciplinary dismissals).

Decreased strongly	*Decreased moderately*	*Unchanged*	*Increased moderately*	*Increased strongly*
□ *(go to 3.4)*	□ *(go to 3.5)*	□ *(go to 3.5)*	□ *(go to 3.5)*	□ *(go to 3.4)*

3.4 – If you answered that staff turnover changed strongly (increased or decreased), was this mostly due to:

Changes in entries (increase or decrease)	*Changes in exits (increase or decrease)*	*Changes in both entries and exits*
□	□	□

3.5 – During the <u>entire</u> period from 2010 to 2013 did you need to significantly reduce your labour input or to alter its composition?

YES □ *(go to question 3.6)* *NO* □ *(go to question 3.7)*

3.6 – Which of the following measures did you use to reduce your labour input or alter its composition when it was most urgent?

<u>Regulations on dismissals/lay-offs</u> (collective or individual) are those that impose legal restrictions on dismissals and set compensation to be paid to former employees being laid off.

<u>Temporary lay-offs</u> (for economic reasons) concern both blue-collar and white-collar workers.

<u>Early retirement schemes</u> are to be understood as measures allowing workers being made redundant to receive a monthly pension and /or lump sum payment before reaching the statutory retirement age.

Please choose <u>ONE option for each line</u>.

	Not at all	*A little*	*A moderate amount*	*A lot*
Collective redundancies	□	□	□	□
Individual redundancies	□	□	□	□
Temporary redundancies	□	□	□	□
Non-subsidised reduction of working hours (including reduction of overtime)	□	□	□	□
Non-renewal of temporary contracts at expiration	□	□	□	□
Early retirement schemes	□	□	□	□
Freeze or reduction of new hires	□	□	□	□
Reduction of agency workers and others	□	□	□	□
Allocated more work to junior staff than before	□	□	□	□
Moved work overseas (to firms' offices in other countries, outsourced to another company, etc)	□	□	□	□

3.7 – Have any of the following become more or less difficult compared to the situation in 2010?

The questions refer to factors that depend on rules and procedures rather than the state of the labour market.

Please choose <u>ONE option for each line.</u>

	Much less difficult	*Less difficult*	*Unchanged*	*More difficult*	*Much more difficult*
To lay off a group employees for economic reasons	□	□	□	□	□
To lay off an individual employee for economic reasons	□	□	□	□	□
To dismiss employees for disciplinary reasons	□	□	□	□	□
To lay off employees temporarily for economic reasons	□	□	□	□	□
To hire employees (costs of recruitment incl. administrative costs)	□	□	□	□	□
To adjust working hours	□	□	□	□	□
To move employees to positions in other locations	□	□	□	□	□
To move employees across different job positions	□	□	□	□	□
To adjust wages of existing employees	□	□	□	□	□
To lower wages at which you hire new employees	□	□	□	□	□

3.8 – How relevant is each of the following factors as an obstacle in hiring workers with a permanent, open-ended contract in 2013?

Please choose <u>ONE option for each line.</u>

	Not relevant	*Somewhat relevant*	*Relevant*	*Very relevant*
Uncertainty about economic conditions	□	□	□	□
Insufficient availability of workers with the required skills	□	□	□	□
Access to finance	□	□	□	□

Firing costs	□	□	□	□
Hiring costs	□	□	□	□
High payroll taxes	□	□	□	□
3.8 – continued	*Not relevant*	*Somewhat relevant*	*Relevant*	*Very relevant*
High wages	□	□	□	□
Risks that labour laws are changed	□	□	□	□
Costs of other inputs complementary to labour	□	□	□	□
Other components of labour costs (please specify _____)	□	□	□	□

Additional comments

Section 4 Wage adjustments

This section collects information on wage setting and the frequency of wage changes. Most of the questions refer to 2013. This section could best be answered by the CEO or Finance/HR directors i.e. those involved in wage setting at the firm. Approximate answers are fine.

	In 2013: Labour cost / Total cost
4.1 – What percentage of your firm's total costs (all operating expenses) was due to labour costs (wages, salaries, bonuses, social security contributions, training, tax contributions, contributions to pension funds, etc.)? →	_____ %
4.2 – What percentage of your total wage bill in 2013 was due to individual or company performance related (discretionary) bonuses and benefits? →	_____ %

4.3 – How frequently was the base wage of an employee belonging to the main occupational group in your firm (largest group in Question 3.2) typically changed in your firm? ***Please choose ONE option for each line***

	More than once a year	Once a year	Between one and two years	Every two years	Less frequently than once every two years	Never/Not applicable
During 2010-2013	□	□	□	□	□	□

4.4 – Did your firm directly and explicitly link changes in base wages to inflation during 2010-2013?

Base wage - direct remuneration excl. bonuses (regular wage or salary, commissions, piecework payments).

Yes □ **No** □ **Don't know** □

4.5 – Over 2010-2013, did you freeze or cut base wages in a given year? Please indicate in which years if possible.

Pay deferrals are considered pay freezes unless the subsequent pay rise was backdated.

Please tick all that apply. Broad and approximate proportions of workers affected are fine, if known.

	Wages were frozen		Wages were cut			Wages were increased
	YES	% workers affected (if known)	YES	% workers affected (if known)	average wage cut (if known)	YES
2010	□	_____%	□	_____%	**(%)**	□
2011	□	_____%	□	_____%	**(%)**	□
2012	□	_____%	□	_____%	**(%)**	□
2013	□	_____ %	□	_____%	**(%)**	□

4.6 – In your opinion, how relevant is each one of the following reasons in preventing base wage cuts in your firm?

	Not relevant	*Little relevance*	*Relevant*	*Very relevant*	*Don't know*
Labour regulations/collective agreements prevented wages from being cut	□	□	□	□	□
It would reduce employees' efforts, resulting in less output or poorer service	□	□	□	□	□
It would have a negative impact on employees' morale	□	□	□	□	□
It would damage the firm's reputation as an employer, making it more difficult to hire workers in the future	□	□	□	□	□

4.6 – continued	*Not relevant*	*Little relevance*	*Relevant*	*Very relevant*	*Don't know*
In presence of a wage cut the most productive employees might leave the firm	□	□	□	□	□
A wage cut would increase the number of employees who quit, increasing the cost of hiring and training new workers	□	□	□	□	□
Because workers dislike unpredictable reductions in income there is an implicit understanding that wages will neither fall in recessions nor rise in expansions	□	□	□	□	□
Employees compare their wage to that of similarly qualified workers in other firms in the same market	□	□	□	□	□

4.7 – How did the labour cost of a newly hired worker compare with that of similar (in terms of experience and task assignment) workers at your firm? ***Please choose ONE option for each line.***

	Much lower	*Lower*	*Similar*	*Higher*	*Much higher*
During 2010-2013	□	□	□	□	□
	(go to 4.9)		*(go to 4.8)*	*(go to 4.9)*	

4.8 – If the labour cost of a newly hired worker and a similar existing worker at your firm tends to be the same, why was this the case? ***Please choose any options that apply to your firm's experience .***

It would be perceived as unfair by existing employees	□
It would have a negative effect on work effort of the employees in the firm	□
It is not allowed by labour regulation or collective pay agreement	□
Unions would contest such action	□
It would generate pressure for wage increases by existing employees	□
Other reasons (please specify_____)	□

4.9 – In 2013, did your firm apply a collective pay agreement bargained for and signed either inside of the firm (i.e. at firm level) or signed outside of the firm (at the national, regional, sectoral or occupational level)?

A collective pay agreement is an agreement negotiated and agreed between both management (on behalf of the company) and employees' representatives such as a trade union. It covers pay as well as other terms and conditions of employment at the firm.

Please click all options that apply.

		At the firm level	Outside the firm
No, such an agreement does not exist	*(go to 'Additional comments')*	□	□
No, the agreement exists but the firm did not apply it	*(go to question 4.10)*	□	□
Yes, such an agreement is in effect	*(go to question 4.10)*	□	□

4.10 – What share of your employees was covered in 2013 by any collective pay agreement? _____% (approx.)

4.11 – How often is the collective pay agreement at your firm typically re-negotiated?

More than once a year	□	Once a year	□	Between one and two years	□	Every two years	□	Less frequently than once every two years	□	Never/Not applicable	□

Additional comments

Information about the respondent(s)

Name of the firm
Name of the respondent(s)
Respondents' position
Telephone number/email

THANK YOU!

Appendix B: Construction of the sampling weights

B1 Basic sampling weight (w_b): correcting for unequal probability of firms to be included in the realized sample

For a firm to be in the realized or final sample two conditions must have been met: (i) the firm must have been selected as a questionnaire recipient (i.e. the firm must belong to the gross sample n^*) and (ii) the firm must fill in the questionnaire. Section I.1. describes the factor that adjusts for the unequal probability of receiving the questionnaire and Section I.2. describes the factor that adjusts for the probability of filling in the questionnaire subject to having received it (conditional probability).

B1.1 Correcting for unequal probability of being in the gross sample (i.e. of receiving the questionnaire) (w_1)

If all firms in a stratum had the same probability of being selected as questionnaire recipients this probability would be n_h^* / N_h (note that the probability of being selected depends only on magnitudes relating to the stratum h). Thus the factor that will correct for the unequal probability of being selected is the inverse of this probability:

$$w_1 = \left(N_h / n_h^* \right) \qquad \textbf{(B1)}$$

In this document. this factor is referred to as unequal sampling probability adjustment factor Table 1 in Section IV.1 illustrates the construction of this factor through an example. Factor *w*l is calculated under the assumption that the original sampling procedure involved selection with equal probabilities within strata. If this is not the case weights should be calculated for categories in which sampling probabilities were (roughly) equal.

B1.2 Correcting for non-response conditional on having received the questionnaire (w_2).

In order to correct for non-response an estimate of the probability of replying by the firms that received the questionnaire is required.

Unfortunately, we do not know what the driving forces of response are (good candidates are size, etc.).[3] The strategy proposed here is to assume that the response probability is constant within each stratum but differs across strata. This assumption is more reasonable the more homogenous the strata.

[3] 'With all surveys, there is potential for non-response bias, and this is likely to be greater for small establishments relative to large workplaces. Employers doubtful about the legality of their practices or those that offer poor working conditions and low wages may be less likely to participate. The last WIRS [1990] showed a positive association between employment size and response rates…'. Cully (1998) p.12.

A very simple way of estimating the response probability for each stratum is to use the response rate within each sampling stratum, i.e:

$$\Pr(r) = \left(n_h \Big/ n_h^* \right) \tag{B2}$$

the non response adjustment factor is then the inverse of this probability, we denote it by w_2.

$$w_2 = \left(n_h^* \Big/ n_h \right) \tag{B3}$$

Two variants of w_2 could be considered:

First, equation **(2)** could be a reasonable estimator of the non response probability under the assumption that the probability that firms respond to the survey is constant within each stratum. When this is not a reasonable assumption and countries have more information available they could try to use a more accurate estimator, for example by defining classes or categories finer than the sampling strata within which the response probability can be assumed constant, and then calculating the response rate in these finer classes. The estimated non response adjustment rate will be then constant within classes that are finer than the strata *h* and therefore non constant within the sampling strata h. However, finer categories is probably not an option for most countries due to lack of information

Second, and as an alternative, equation **(2)**, and therefore equation **(3)**, could be calculated after the data have been weighted with w_1. This is the procedure of adjusting sampling weights for non-response that is most commonly used in household surveys.

The Basic Sampling Weight, w_b, that corrects for the unequal probability of being in the realized (final) sample (i.e. both of being in the gross sample and of replying) is then the product of w_1, that corrects for the unequal probability of being in the potential or gross sample, times the w_2 that corrects for non response. In other words: $w_b = w_1 * w_2$. In the particular case in which the non response rate has been calculated so as to be constant within strata and according to expression (3) w_b can be simplified as:

$$w_b = w_1 * w_2 = \left(N_h \Big/ n_h \right) \tag{B4}$$

Note that in this case w_b would be the same for all firms in the same stratum while if w_2 is estimated following other stratification or using additional information, this would not be the case.

B2 Employment based sampling weight (w_l): correcting for the differences of the workforce size represented by different strata

In addition to adjusting for differences between the population and the sample regarding the distribution of firms across strata it might also be desirable to adjust for differences in the importance of each stratum in terms of the number of employees the strata represents in the population.

If L_h is total employment in strata h (as given by the business registry or census) and if n firms from this stratum are in the realized sample then the simplest factor that adjust the importance of each stratum in terms of employees is :

$$w_3 = \left(L_h \big/ N_h \right) \qquad \textbf{(B5)}$$

This gives to each firm in the stratum a constant weight equal to the average firm size of the strata population which could be reasonable as in most of the cases as firm size has been taken as one of the criteria to define the strata.

Now to get the sampling weights that correct for non response, for the unequal probability of being in the gross sample and also for the differences of the population workforce represented by different strata one needs to multiply the three adjustment factors:

$$w_l = w_3 w_1 \; w_2 = \left(L_h \big/ N_h \right) w_b \qquad \textbf{(B6)}$$

That is, w_l is equal to the average size of the firm in the strata population times the basic sampling weight w_b

Under the assumptions that non response adjustment factors w_2 are estimated according to equation **(B2)**, replacing w_1 and w_2 by their value, the sampling weight w_l can be rewritten as:

$$w_l = L_h / n_h \qquad \textbf{(B7)}$$

Note that this weight would be the same for all firms in the stratum.