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WAGE DYNAMICS NETWORK

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NO 1274 / DECEMBER 2010

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RESULTS OF A COMPANY SURVEY CONDUCTED IN AUSTRIA

by Claudia Kwapil

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Wage Dynamics Network

This paper contains research conducted within the Wage Dynamics Network (WDN). The WDN is a research network consisting of economists from the European Central Bank (ECB) and the national central banks (NCBs) of the EU countries. The WDN aims at studying in depth the features and sources of wage and labour cost dynamics and their implications for monetary policy. The specific objectives of the network are: i) identifying the sources and features of wage and labour cost dynamics that are most relevant for monetary policy and ii) clarifying the relationship between wages, labour costs and prices both at the firm and macro-economic level.

The WDN is chaired by Frank Smets (ECB). Giuseppe Bertola (Università di Torino) and Julián Messina (World Bank and University of Girona) act as external consultants and Ana Lamo (ECB) as Secretary.

The refereeing process of this paper has been co-ordinated by a team composed of Gabriel Fagan (ECB, chairperson), Philip Vermeulen (ECB), Giuseppe Bertola, Julián Messina, Jan Babecký (CNB), Hervé Le Bihan (Banque de France) and Thomas Mathä (Banque centrale du Luxembourg).

The paper is released in order to make the results of WDN research generally available, in preliminary form, to encourage comments and suggestions prior to final publication. The views expressed in the paper are the author's own and do not necessarily reflect those of the ESCB.

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Abstract

This article is based on the results of two company surveys - the first was conducted in 2007, before the recession 2008/2009 hit Austria, and the second was conducted in 2009 shortly after the trough of it. We analyse firms' reactions to the crisis and focus on their labour market relevant decisions. Although base wages were cut more frequently than in economically calm times, wage reductions continued to be the exception rather than the rule. This indicates the existence of nominal wage rigidities in Austria. Instead of wage cuts, firms preferred to reduce working hours and to dismiss employees. We find that firm specific characteristics as well as characteristics of the workforce help explaining a firm's probability of dismissing employees. However, the force of the shock by which an individual firm is hit (during the 2008/2009 recession) does not influence the likelihood of dismissals.

Keywords: Wage Rigidity, Demand Shock, Micro Survey Data

JEL codes: C25, E24, J30

Non-technical summary

This article is based on the results of two company surveys - the first was conducted in 2007, before the recession 2008/2009 hit Austria, and the second was conducted in 2009 shortly after the trough of it. We analyse firms' reactions to the crisis and focus on their labour market relevant decisions.

We document that Austrian companies are reluctant to cut base wages not only under normal circumstances but also - albeit to a lesser extent - in times of crisis. Although our analysis reveals that during the latest economic crisis, more companies have reduced base wages than in non-crisis times, wage cuts are an exception rather than the rule. While in the 2007 survey, some 2 percent of companies reported to have cut base wages over the previous five years, an equal proportion of companies said they had done so - within one year - during the recession 2008/2009. This confirms that the frequency of wage cuts increases during a recession and at the same time indicates the existence of nominal wage rigidities in Austria.

Looking for explanations of nominal downward wage rigidities, we find that efficiency wage theories as well as institutional arrangements like collective wage agreements are the most popular causes indicated by our respondents. Our reading of the Austrian results is that collective wage agreements are not only a barrier to wage cuts because they literally enjoin them, but also because of social pressure. It might be difficult for a firm to cut wages, while they are being raised for similar employees in other enterprises.

Nominal wage rigidities are responsible for companies responding to the shock by changing labour input rather than prices. Accordingly, our results show that while cutting base wages is always (regardless how hard the crisis

hit) the reaction preferred the least, the most popular reaction of Austrian firms is cutting working hours. This is compatible with the results from macro data showing that the reduction in employment in Austria during the crisis was relatively mild, while the main adjustment burden was borne by the reduction in working hours.

During the crisis we saw a significant shift towards reducing labour costs instead of non-labour costs. Our analysis shows that firms that were severely hit by the crisis are significantly more likely to cut labour costs than non-labour costs. However, the size of the shock does not seem to affect the decision on how to reduce labour costs. The choice between dismissing employees and cutting labour costs by other means is influenced by the production technology and workforce characteristics and not by the dimension of the drop in demand. Companies with labour-intensive production technologies, employing a high share of young and low-skilled employees are more likely to dismiss workers.

The Austrian example shows that wage rigidities do not necessarily lead to a dramatic increase in unemployment, but can also be dealt with by reducing working hours. This might, however, only be possible, when firms perceive the crisis as a temporary phenomenon.

1 Introduction

The economic literature has documented downward nominal wage rigidities on many occasions, in different countries and with different tools (e.g. Agell and Lundborg, 2003; Bewley, 1999 and Dickens et al., 2007). The result that nominal wage cuts are rare is, however, uniform, even when economic downturns should put downward pressure on them. Our work will add to this literature by focusing on wage rigidities in Austria not only in normal times but also in times of recession. Severe downturns, like the one experienced in 2008/2009 seem to be a natural occasion to look whether wages are adjusted in economic slack.

Following the work of Agell and Lundborg (1995) and Agell and Lundborg (2003) we conducted two surveys. One on the brink of the most severe recession in Austria since the 1930ies in 2007 and one at the trough of it in 2009. The surveys were set up within the Wage Dynamics Network (WDN), a research network by the European System of Central Banks. Within the WDN, researchers from the ECB and from 24 national central banks in the EU studied the characteristics and sources of wage and labour cost dynamics in the euro area and other EU countries.

This paper analyses wage rigidities in Austria and beyond that focuses on different adjustment channels in reaction to the crisis, given that wage adjustment is difficult. When base wages are rigid, firms have to adjust other sources of labour costs. These include mainly the reduction of labour input, either through the change in working hours or by dismissing employees. The aim of the paper is to find a structure behind these decisions. Which of the firms' characteristics are driving these decisions? Which firms are more likely

to dismiss employees and which are less likely?

Our survey results show that Austrian companies are indeed reluctant to cut base wages not only under normal circumstances but also - albeit to a lesser extent - in times of crisis. These rigidities cause companies to respond to a recession by changing labour input rather than wages. The most widespread reaction of Austrian companies is the reduction of working hours, followed by the dismissal of employees. We show that the size of the shock hitting a firm only influences the decision to reduce labour costs instead of non-labour costs. However, what kind of labour cost to reduce is unaffected by the size of the drop in demand. The decision to dismiss employees versus reducing labour costs by other means is affected by the firm's production technology as well as by characteristics of the workforce. Hence, firms with a labour intensive production function and with a high share of young and low skilled employees are more likely to dismiss workers.

This article is structured as follows: Section 2 describes the technical details of the two surveys and the economic environment in which they were conducted. Section 3 describes the companies' reactions to the recession 2008/2009 and compares these results with the outcome from the survey 2007. Moreover this section investigates the driving forces of these decisions. Possible explanations for rigidities of nominal base wages are discussed in Section 4. Finally, Section 5 concludes the paper.

2 About the Survey

2.1 Technical Details on the Survey

The first EU-wide company survey within the framwork of the WDN was carried out by 17 NCBs[1] in 2007, while the second survey was carried out by (only) 10 NCBs[2] in 2009. Both questionnaires were designed in a harmonised way within the Wage Dynamics Network. Thereby we drew upon the experience of Blinder and Choi (1990), Bewley (1995, 1998, 1999), Campbell and Kamlani (1997), Agell and Lundborg (2003), Fabiani et al. (2006), Franz and Pfeiffer (2006) as well as Agell and Bennmarker (2007).

Both Austrian surveys were commissioned by the Oesterreichische Nationalbank (OeNB) and conducted by the Austrian Institute of Economic Research (WIFO). The pre-crisis survey started in November 2007 and took until February 2008, including two rounds of reminder letters. A total of 3,780 firms were contacted by mail, and 557 returned the filled-in questionnaire. This corresponds to a response rate of approximately 15 percent. The questioning of the second survey took place in summer 2009 and contacted 1,538 Austrian companies. 731 companies provided responses to the survey, which equals a response rate of 48 percent. The much higher response rate in the second round is most likely due to the much shorter questionnaire, which comprised one page of questions compared to four pages in the first round. When comparing the answers from both surveys we only use those

[1]The 17 countries are Austria, Belgium, the Czech Republic, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Slovenia and Spain.

[2]The 10 countries are Austria, Belgium, the Czech Republic, Estonia, France, Italy, Luxembourg, the Netherlands, Poland and Spain.

firms that responded to both questionnaires. This leaves us with a sample of 322 firms.

The samples in both surveys cover classes C to N in the Statistical Classification of Economic Activities (NACE) and are therefore representative of the private sector of the Austrian economy.[3] To correct for sampling deficiencies, i.e. differences in the probability of a respondent receiving a questionnaire and completing it, we use ex-post weights. These weights are applied in a way that the distribution of persons employed in the net sample as closely as possible mirrors the distribution of employment in the entire Austrian economy.

One advantage of conducting an ad hoc survey at the firm level is flexibility. By asking firms directly about their decisions between cutting labour input and wages, and how they would respond to hypothetical situations it is possible to collect data that are otherwise difficult to obtain. Such firm-level information makes it possible to examine the effects of both firms' characteristics and their economic and institutional environment on their labour market relevant decisions. Furthermore, firm surveys typically have the advantage of providing more accurate information on wage developments than household surveys. Nevertheless, several shortcomings inherent in ad hoc surveys, such as low rates of response, should be borne in mind.

[3]Only agriculture and forestry (NACE class A) as well as mining (B) are not included in the sample. Thus, the sectors covered in the survey contribute more than 99 percent of the Austrian private sector's gross value added.

2.2 Characteristics of the Crisis

News of high losses of IKB Deutsche Industriebank AG in July 2007 marked the beginning of the U.S. financial crisis spreading to Europe. While initially it seemed that the turmoil would essentially be limited to financial markets, some of Austrias broader economic sentiment indicators started to decline visibly from mid-2007 onward, others stayed constant until the end of 2007.

Austria's GDP continued growing strongly until the first quarter of 2008 (with a growth rate of 1.3 percent quarter-on-quarter). Hence, the first survey round (at the end of 2007) took place in a relatively calm economic environment. Economic forecasts for 2008 were revised down slightly to around 2 percent because of the financial crisis. However, at that time nobody expected a hard landing let alone a recession. In the second quarter of 2008 the growth rate dropped to 0.4 percent still remaining positive, while it turned negative in the third quarter of 2008, marking the beginning of a four-quarter recession.

The financial crisis became a global economic crisis and affected Austria first of all through a slump in exports. Real exports of goods plummeted by approximately 25 percent between the beginning of 2008 and mid 2009. Also industrial production decreased by 16 percent during this period. Real GDP contracted by a total of some 5 percent. Such sharp declines in an economy's value added have substantial repercussions for the labour market. However, while the number of hours worked decreased by around 5 percent and thus to a similar extent as GDP itself, the level of employment decreased by less than 2 percent and thus to a much smaller extent. From mid-2008 to mid-2009, Austria's unemployment rate climbed from 3.5 percent to 5.2 percent.

That is a relatively mild increase compared to historical crisis episodes and also compared to international experiences (for further details see Stiglbauer, 2010).

At the time the second survey was conducted (i.e. at the beginning of the third quarter of 2009), the recession had already reached its peak, and the economy was starting to bottom out. Confidence indicators started to rise in the second quarter of 2009, and the ATX (Austrian Traded Index - the most important equity index of the Austrian stock exchange) advanced by some 20 percent in the first half of 2009. However, uncertainty about future economic developments was still high. The forecasts for 2010 predicted a stagnation or further contraction of Austrian GDP; inflation was expected to be around 1 percent in 2010 and 2011.

In order to get an idea on what the crisis meant to Austrian enterprises, the questionnaire of 2009 contained a question (see Question 1 in Appendix A) on the impact of the crisis on the responding company's sales, providing six possible answer categories: Sales have (1) increased, (2) remained unchanged, (3) declined marginally, (4) declined moderately (5) declined strongly, and (6) declined exceptionally strongly.

Table 1 provides a summary of the replies, showing that around three quarters of Austrian companies reported falling sales in the wake of the economic crisis. Some 20 percent reported that sales had declined strongly, some 6 percent even said that sales had declined exceptionally strongly. Broken down by economic sector, the survey results confirm the trends implied by the macro data.

Table 1: Change in Sales Due to the Crisis

Change in sales	Total	Manufac-turing	Energy Supply	Const-ruction	Trade	Financial Services	Other Services
Increased	5.48	3.70	0.00	1.42	9.92	4.97	5.51
Unchanged	21.08	16.78	0.00	32.98	23.18	13.44	22.01
Declined marginally	20.45	14.62	32.22	27.49	22.26	16.24	22.53
Declined moderately	27.51	21.50	50.83	31.81	26.24	51.42	27.67
Declined strongly	19.22	30.72	16.94	3.52	13.99	13.92	18.24
Declined exceptionally strongly	6.26	12.68	0.00	2.78	4.41	0.00	4.04
Export share	31.18	53.84	17.64	1.95	18.55	26.05	22.13

Notes to Table 1: The figures are weighted by employment weights and are rescaled excluding non-responses. The heading of the columns stand for the following NACE-codes: Manufacturing=C, Energy Supply=D/E, Construction=F, Trade=G, Financial Serivces=K, Other Services=H, I, J, L, M, N.

Manufacturing, e.g., saw sales falling significantly more strongly than other industries. Strong or exceptionally strong declines in sales were reported by some 43 percent of companies in manufacturing, but only by between 15 percent and 20 percent of companies in the other sectors. In construction, by contrast, only some 6 percent of responding companies indicated that they had been faced with sharply or very sharply falling sales. The slump in sales in manufacturing can be traced first and foremost to the fact that the sector is highly export oriented. The last line in Table 1 shows that more than half of manufacturing sales in our sample are generated by exports, which plummeted dramatically during the crisis. The export share also explains why construction has been fairly mildly affected by the crisis: First, construction does not depend on exports; second, construction projects require very long lead times, which delays this sector's response to economic developments; and third, construction has benefited from the fiscal and economic stimulus measures, which provided for investment in infrastructure worth roughly EUR 1.5 billion for 2009 (see Breuss et al., 2009).

3 Firms' Reactions to the Crisis

3.1 Cost-cutting Strategies Dominate

For most of the firms the crisis felt like a demand shock. Hence, we asked how they had responded to this demand shock (see Question 3 in Appendix A). We provided five different response options, namely reducing prices, reducing output, reducing profit margins, reducing costs as well as leaving prices unchanged. The companies were asked to indicate whether these measures had been 'very relevant', 'relevant', 'hardly relevant' or 'not relevant at all'.

Table 2: Relevance of Different Strategies in Response to a Demand Shock

Possible strategy	Survey 2007	Survey 2009
Reduce costs	84.38	84.95
Reduce output	54.42	43.54
Reduce profit margins	51.90	42.61
Leave prices unchanged	49.66	45.09
Reduce prices	30.53	23.21

Notes to Table 2: The figures are weighted by employment weights and are rescaled excluding non-responses. They include only answers from firms that responded to both questionnaires (2007 and 2009).

'Very relevant' and 'relevant' answers were counted as approval to a specific measure, which is given as a percentage of all valid responses.

Table 2 (last column) shows that some 85 percent of companies considered cost cutting a 'very relevant' or 'relevant' measure in their specific situation, which makes it the most widespread response of enterprises to the crisis. Significantly fewer companies - about 45 percent - reported that for them, cutting output, reducing profit margins, and leaving prices unchanged were key measures to cope with the crisis. Cutting prices is a measure only roughly 23 percent of companies considered to be relevant.

At the end of 2007, before companies started to feel the impact of the crisis, the first survey round was carried out, which comprised a question almost identical to this one. The only difference between the two questions was that in the 2007 survey, the decline in demand was hypothetical, whereas the 2009 survey referred to the repercussions of the economic crisis. 322 enterprises took part in both surveys, enabling a comparison of response measures. As can be seen in Table 2, the aggregate shows very similar patterns: Cutting costs is considered the most important measure by far, while only a

Table 3: Relevance of Cost-Cutting Strategies

Cost-cutting strategies	Survey 2007	Survey 2009
Cut non-labour costs	51.38	28.58
Cut working hours	20.43	33.13
Cut flexible wage components	11.76	17.28
Dismiss parts of the core workforce	9.87	11.01
Dismiss temporary employees	6.56	9.55
Cut base wages	0.00	0.45

Notes to Table 3: The figures are weighted by employment weights and are rescaled excluding non-responses. They include only answers from firms that responded to both questionnaires (2007 and 2009).

minority regards cutting prices a relevant response to the hypothetical drop in demand. Support for the other measures among the companies surveyed ranges around 50 percent.

3.2 Firms Choose Mainly to Reduce Labour Costs

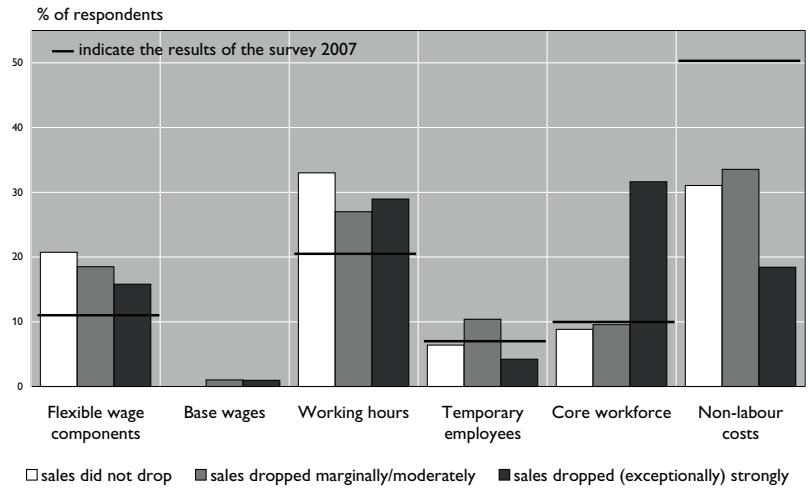
Those roughly 85 percent of firms that regard cost cuts as 'highly relevant' or 'relevant' in response to a demand shock were also asked in what way they would reduce costs (see Question 4 in Appendix A). Firms could choose from six response options, five of which focused on labour costs and one covered other costs (collectively termed non-labour costs). Labour cost-cutting strategies included (1) reducing flexible wage components, (2) cutting base wages, (3) reducing working hours, (4) discontinuing temporary employment contracts as well as (5) laying off permanent staff. Respondents were asked to indicate only their main cost-cutting strategy. Table 3 comprises not only the summary of responses provided in the 2009 survey but also those of the 2007 survey.

Apparently, in 2009, some 70 percent of respondents have cut costs primarily by reducing labour costs, while approximately 30 percent have driven down non-labour costs. Those companies that have focused on cutting labour costs reported to reduce working hours (33 percent of companies) or flexible wage components (some 17 percent). The options of discontinuing temporary or permanent work contracts each accounted for approximately 10 percent of the replies. Less than 1 percent said they mainly reduce base wages.

In international comparison it is striking that dismissing temporary employees is a reaction to the crisis of little importance in Austria. However, temporary employees are in general a limited phenomenon in Austria. While Eurostat figures show that the share of temporary employees in total employment is around 20 percent in the Netherlands and Portugal and around 30 percent in Spain, it is less than 10 percent in Austria.

In Figure 1 we compare the responses to this question in the two surveys (2007 and 2009) and find a visible shift toward cutting labour costs. When asked how they would respond to a hypothetical decline in demand two years earlier, some 50 percent of companies said they would mainly reduce non-labour costs, while in 2009, only 30 percent replied that this was the most important measure. Among the labour cost cutting strategies, especially shortening working hours and reducing flexible wage components are the instruments that have been used more widely during the crisis than in the 2007 survey. The results of the 2007 and the 2009 surveys do not show similarly big differences as regards layoffs and cutting base wages.

Figure 1: Cost-cutting Strategies Differentiated by How Hard the Crisis Hit (bars giving the results of the survey 2009 and black lines indicating the results of the survey 2007)



Moreover, as can also bee seen in the second column of Table 3, the results show that reducing working hours was the most preferred way of Austrian firms in dealing with the consequences of the crisis. This explains why the decrease in employment in Austria was quite mild compared to the slump in production and also compared to other countries. The reduction in working time is partly due to short-time working schemes that are one of Austria's active labour market policies. Firms in this programme can reduce employee's working time, while these employees receive compensation for the loss in salaries. As Stiglbauer (2010) argues, however, the existence of short-

time working schemes explain only a small part of the overall reduction in working hours.

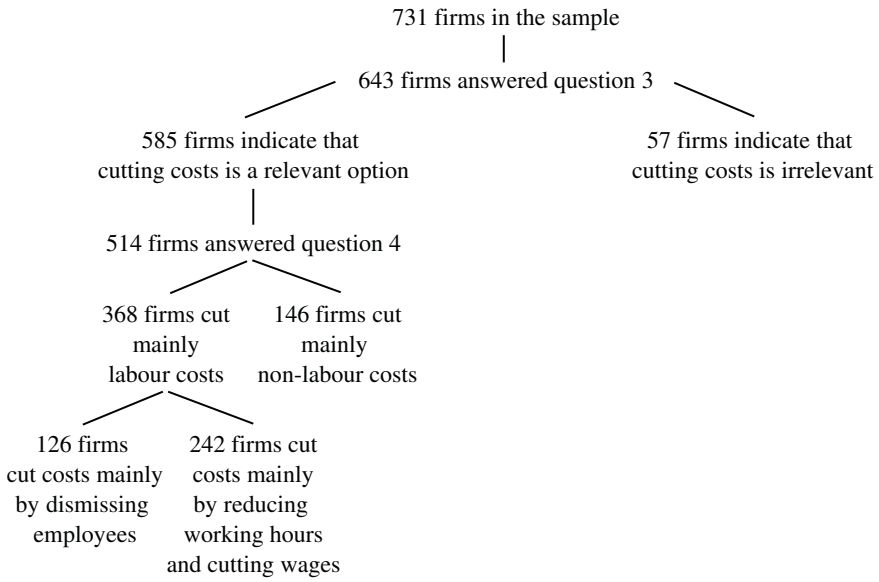
The available data allow us to analyse whether companies affected by the crisis to a different extent respond to the crisis differently. Figure 1 shows that reducing non-labour costs is a measure taken primarily by companies that have been affected by the crisis only mildly or not at all, whereas firms that have been hit severely tend to cut costs by laying off permanent staff. While less than 10 percent of firms that indicated no or only a small drop in sales reported to cut costs by dismissing permanent staff, more than 30 percent of the companies affected severely by the crisis have taken this measure. In other words, layoffs followed by shortening working hours are the most important cost-cutting instruments applied by companies that recorded a sharp or very sharp decline in sales.

3.3 Factors Driving the Choice of which Costs to Cut

It is likely that not only the size of the drop in turnover is driving the choice of the main cost-cutting strategy - as discussed in Section 3.2 - but that also other forces are relevant for this decision. Following the findings of Bertola et al. (2010), we expect the cost structure of a firm to be essential in this respect. Capital intensive firms, which have a high share of fixed costs, probably use other cost-cutting strategies than labour-intensive firms.

To model the decision on the main cost-cutting strategy, we define discrete choice models. In a first step we model the decision between cutting labour costs on the one hand and non-labour costs on the other hand. In a second step we analyse the more detailed decision on which kind of labour costs

Figure 2: Overview of the Replies to Questions 3 and 4 of the Survey 2009



to cut. Figure 2 gives an overview of the answers to Question 4 that are the basis for the following analysis. It shows how we group the answers for presentational reasons and how many answers were given.

For all the estimations carried out in this section, the dependent variable y_i can take on two values. From the range of estimation procedures we choose to present the probit model, as the log-likelihoods are on average slightly higher than for our logit models. However, the results are quite similar and the average marginal effects are also close to simple OLS coefficients. The

probit model can be written as

$$P[y_i = 1|x_i] = \Phi(x_i'\beta), \tag{1}$$

where β is a vector of coefficients, x_i is a vector of explanatory variables and $\Phi(\cdot)$ denotes the cumulative normal distribution function.

Basically, we use two explanatory variables in this model. Firstly, we include the size of the shock, which is deducted from the question summarised in Table 1 and defined by three dummy variables: 'sales did not drop', 'sales dropped slightly' and 'sales dropped significantly'.[4] Moreover, we use the sector the firm operates in as a proxy for its production function (being the mirror image of the cost function). Regarding the sector we distinguish between the manufacturing sector, which is more capital intensive, and the service sector, which is more labour intensive.

3.3.1 The Choice between Labour and Non-labour Costs

Our first dependent variable maps the choice between cutting labour costs and non-labour costs. Firms answering that they mainly reduce flexible wage components, cut base wages, reduce working hours, discontinue temporary employment contracts and lay off permanent staff are coded with 1, while firms indicating that they mainly reduce non-labour costs are coded with 0.

The estimation results of this probit model are shown in Table 4. The values given represent average marginal effects (AME), as they are easier to interpret than coefficients. The AME gives the average over all marginal

[4] We split the six answer categories presented in Table 1 into three groups: Increasing and unchanged sales = 'sales did not drop'; sales declined marginally/moderately = 'sales dropped slightly'; and sales declined strongly and exceptionally strongly = 'sales dropped significantly'.

Table 4: Probit Model Explaining the Decision between Cutting Labour Costs (= 1) and Non-labour Costs (= 0)

	Model 1		Model 2		Model 3	
Sector	-0.16	***				
	(0.03)					
Labour-cost share			0.10	*	0.12	*
			(0.06)		(0.06)	
Competition			-0.02		-0.03	
			(0.02)		(0.02)	
Slight drop in sales	0.05		0.12			
	(0.05)		(0.09)			
Significant drop in sales	0.15	***	0.18	*		
	(0.06)		(0.10)			
Export share					0.19	**
					(0.09)	
Pseudo R^2	0.04		0.03		0.03	
Number of observations	507		191		187	

Notes to Table 4: The table gives average marginal effects. Standard errors calculated using the Delta-method are given in parenthesis. ***(**)[*] stands for significant at the 1 (5) [10] percent level. For the variable 'sector' the manufacturing sector serves as base category. Moreover, regarding the size of the shock the 'sales did not drop' category serves as the basis.

effects, which indicate the change in the probability that a firm will reduce labour costs (instead of non-labour costs) for a change in each independent, continuous variable (in the case of indicator variables from zero to one).

As shown in the first column of Table 4, the results of model 1 suggest that - as expected - the decision to cut labour costs is significantly affected by the sector of the firm and the size of the shock. Firms that are severely hit by the crisis (with a significant drop in sales) are on average by about 15 percentage points more likely to cut labour costs than firms with constant or even increasing sales. This was already apparent in Figure 1. However, over

and above this effect, firms in the service sector are on average by about 16 percentage points less likely to cut labour costs than manufacturing firms. As we are controlling for the size of the shock, the different reactions of industrial and service firms should be due to other driving forces. At first sight the sign of the effect seems counterintuitive. Associating the service sector mainly with labour intensive production technologies, we would expect it to have a higher probability of reducing labour costs than manufacturing firms and, thus, we would expect a positive sign. However, it is conceivable that the variable 'sector' captures more characteristics of a firm than just the labour intensity of the production technology.

In order to investigate this question further, we define model 2, which instead of the variable 'sector' includes a proxy for the labour intensity of the firm and a proxy for its competitive environment. This information is, however, only available from the survey 2007. Hence, the inclusion of this information leads to a large drop in observations (from 507 to below 200), as only those firms remain in the 2009 sample that also responded to the first questionnaire in 2007.

The variable 'labour-cost share' is defined as an indicator variable. Firms with a share of labour costs in total costs that is above the sample average (37 percent) are coded with one, the others are coded with zero. To map the price competitiveness of a firm, respondents were asked, as in Fabiani et al. (2006), to indicate on a scale from 1 ('very likely') to 4 ('very unlikely') whether they would lower their prices if their main competitor did so. In the following analysis, this information is described by a dummy variable: All firms that are likely and very likely to follow their main competitor's price

reduction are defined as being exposed to strong price competition (= 1) and the remaining firms as facing only weak competition (= 0).

The results of model 2, which are presented in column 2 of Table 4, show that the labour intensity of a firm indeed plays a role for its decision to cut labour versus non-labour costs. As expected, labour-intensive firms have on average a by about 10 percentage points higher probability to cut labour costs than capital-intensive firms. Moreover, the effect of the size of the shock on the main cost-cutting strategy remains by and large unchanged.

For a final robustness check, we define a third model in which we replace the variable 'size of the shock' with each firm's 'export share'. It is a continuous variable giving the share of sales earned abroad. As already described in Section 2.2, the crisis was mainly characterised by plummeting export demand and those firms with high export shares were hit most. Column 3 of Table 4 gives the results of model 3 and shows that an increase in a firm's export share by 10 percentage points (thus facing a larger drop in demand) increases the probability to cut labour costs by 1.9 percentage points.

Hence, we can conclude that not only the size of the shock matters for the decision on whether to cut labour versus non-labour costs. Our results show that also the cost structure being the mirror image of the production function matters for the decision on the main cost-cutting strategy. Consistent with the findings of Bertola et al. (2010), labour-intensive firms are more likely to cut labour costs than capital-intensive firms.

3.3.2 Different Ways of Cutting Labour Costs

After analysing the choice between labour and non-labour costs, we now turn to investigate which firms prefer to cut labour costs via laying employees off. Hence, we assort the five remaining answer categories into two groups, namely dismissing temporary and permanent employees on the one hand and reducing flexible wage components, cutting base wages and reducing working hours on the other (see Figure 2).

As before, we use probit models, where the dependent variable y_i can take on two values. Let y_i be equal to one if a firm reduces labour cost by dismissing employees and let y_i be equal to zero if it reduces labour costs by other means. The results are shown in Table 5, where in a first step we use the same explanatory variables as in Section 3.3.1. However, models 2 and 3 seem to be more suitable than model 1, because - as already seen in Section 3.3.1 - the variable 'sector' in model 1 is only a rough proxy of a firm's production technology. Hence, we leave model 1 aside and focus on models 2 and 3. This leaves us with a much smaller sample size as only those firms remain in the sample that answered both questionnaires (in 2007 and 2009).

The results for models 2 and 3, which are displayed in Table 5, show that firms with a high labour-cost share are on average by about 17 to 18 percentage points more likely to dismiss employees than capital-intensive firms. Moreover, also the competitive environment of the firm seems to matter for this decision. Firms facing higher price competition are by about 9 to 12 percentage points less likely to dismiss employees than firms facing low competition. However, the coefficient is only marginally significant in one

Table 5: Probit Model Explaining the Decision between Laying Employees off (= 1) and Reducing Labour Costs by other Means (= 0)

	Model 2		Model 3		Model 4		Model 5	
Labour-cost share	0.18	***	0.17	**	0.18	***	0.16	**
	(0.07)		(0.07)		(0.07)		(0.07)	
Competition	-0.12	*	-0.09		-0.14	**	-0.13	*
	(0.07)		(0.07)		(0.07)		(0.07)	
Slight drop	-0.02				0.01			
in sales	(0.12)				(0.11)			
Significant drop	0.08				0.09			
in sales	(0.12)				(0.12)			
Export share			-0.08				-0.11	
			(0.10)				(0.11)	
Traditional					0.31		0.31	
employees					(0.20)		(0.21)	
Alternative work					0.00		-0.04	
arrangements					(0.36)		(0.37)	
Share of young					0.78	***	0.72	**
employees ($< 24y$)					(0.32)		(0.33)	
Share of high skilled					-0.29	*	-0.32	*
blue collar workers					(0.17)		(0.18)	
Share of high skilled					-0.24		-0.23	
white collar workers					(0.15)		(0.15)	
Pseudo R^2	0.07		0.05		0.11		0.11	
Number of observations	134		130		130		126	

Notes to Table 5: The table gives average marginal effects. Standard errors calculated using the Delta-method are given in parenthesis. ***(**)[*] stands for significant at the 1 (5) [10] percent level. For the variable 'sector' the manufacturing sector serves as base category. Moreover, regarding the size of the shock the 'sales did not drop' category serves as the basis.

model and not significantly different from zero in the other model. Finally, the size of the shock does not seem to matter for this decision, regardless of whether the dimension of the shock is approximated by the indicator variable 'drop in sales' or expressed by the continuous variable 'export share'.

It is conceivable that not only the production technology and the size of the shock determine the probability of dismissing employees, but that also characteristics of the labour force itself affect this decision. In order to investigate this question further, we define models 4 and 5.

An interesting question is whether the relative shares of traditional and non-traditional workers affect the probability of employees being dismissed. The traditional employment relationship can be defined as full-time, where the central aspects of this relationship includes an employment contract of indefinite duration. Non-traditional employment relationships are temporary contracts and alternative work arrangements, which include independent contractors, employees of contract companies, employees hired on the basis of a contingent work contract as well as self-employed. Bertola et al. (2010) find that firms having a high share of temporary workers are indeed more likely to dismiss them in times of crisis. They follow that temporary workers act as a buffer against employment fluctuations for permanent workers and against wage fluctuations. In the following analysis we distinguish between three working relationships. An employment contract can be permanent/full-time and hence traditional. Regarding non-traditional contracts we distinguish between temporary contracts and alternative work arrangements. Each of these three variables gives the share of the respective group in the company's workforce. Thus, they sum to one and we keep only two of them, namely

'traditional employees' and 'alternative work arrangements', which are continuous and are defined to be between 0 and 1.

Moreover, Stiglbauer (2010) reports that during the crisis increasing unemployment affected young employees in Austria much more than employees of any other age. Hence, we also include a variable representing the age structure of the workforce. We define the variable 'share of young employees', which gives the percentage share of workers younger than 24 years. In order to find out, whether young people are being dismissed because they are low skilled or because it is really the age that is driving this decision, we additionally control for the skills of the workforce. Our model includes the variables 'share of high skilled blue collar workers' and 'share of high skilled white collar workers', while the variable 'share of low skilled workers' serves as base category.

The results in Table 5 show that characteristics of the labour force itself indeed seem to matter for the decision to dismiss employees. However, the hypothesis that the employment relationship (traditional versus non-traditional workers) matters for this decision is rejected for the Austrian labour market. Firms are equally likely to dismiss employees regardless of the relative shares of traditional and non-traditional workers. This might, however, be due to the fact that non-traditional employment relationships are quite rare in Austria. The median firm in our sample has got 90 percent of permanent/full-time employees.

The age structure as well as the skills of the workforce, however, significantly matter for the decision to dismiss employees. If the share of young people (with age of less than 24 years) in a firm increases by 10 percentage

points, the likelihood of dismissals increases by 7.8 percentage points. Moreover, if the share of high skilled workers (in contrast to low skilled workers) increases, the likelihood of dismissals decreases. An explanation for the fact that firms with a high proportion of young employees are more likely to dismiss them (even when controlling for skills) can be found in the Austrian labour market legislation. Legal norms state that employers have to take social factors into account when dismissing employees. One of these social factors for example is whether the employee is the family's bread-earner. Hence, age increases to a certain extent the legal protection against dismissals.

Summing up, the results of this section show that firms that were severely hit by the crisis are significantly more likely to cut labour costs than non-labour costs. However, the size of the shock does not seem to affect the decision on how to reduce labour costs. The choice between dismissing employees and cutting labour costs by other means is influenced by the production technology and workforce characteristics and not by the dimension of the drop in demand. Companies with a labour-intensive production technology, employing a high share of young and low-skilled employees are more likely to dismiss workers. Thereby, the age of an employee is a characteristic on its own account and does not stand for low skills.

3.4 Firms Refrain from Cutting Base Wages

Turning back to the results of Section 3.2, we now focus on another phenomenon present in Figure 1. Regardless of how hard the crisis hit, cutting base wages is always the strategy least preferred. As presented in Figure 1, no firm that was spared by the crisis cut base wages. Moreover, less than

1 percent of firms that were faced by a drop in turnover cut the salaries of their employees.

This result points out a phenomenon that is widely discussed in the economic literature, namely that in response to a decline in demand firms would rather dismiss employees than cut their base wages. This corresponds to the findings of Agell and Lundborg (2003), who in 1998, following the most severe recession since the 1930s, asked Swedish firms whether they had reduced nominal wages in previous years. Out of 153 responding firms, only two stated that they had cut wages. Agell and Bennmarker (2007) also interviewed Swedish firms after the 1990s recession and arrived at the conclusion that only about 1 percent of employees covered by their sample had had to accept wage cuts. Accordingly, not even several years of high unemployment in Sweden (roughly 10 percent at the beginning of 1999) were able to make nominal wages more flexible. Such observations were also described in Akerlof et al. (1996).

Since the responses summarised in Figure 1 only reflect companies' most important cost-cutting measure in reaction to the crisis and for this reason do not cover possible wage cuts or wage freezes that represent the second most important cost-saving measure, the survey 2009 included more detailed questions on this issue (see Questions 5 and 6 in Appendix A).

Each responding company was asked whether it planned or had already been forced to cut or freeze wages due to the crisis. The replies to this question as well as those provided on this issue in the 2007 survey (though of a more general nature) are summarised in Table 6. Some 89 percent of companies said they were not planning or had not implemented wage

Table 6: Wage Freezes and Wage Cuts

	Survey 2007		Survey 2009	
	Wage freezes	Wage cuts	Wage freezes	Wage cuts
	in the last 5 years		in the last year	
Implemented	9.52	1.83	2.19	2.36
Planned	-	-	9.07	1.84
No intention	-	-	88.74	95.80

Notes to Table 6: The figures are weighted by employment weights and are rescaled excluding non-responses. They include only answers from firms that responded to both questionnaires (2007 and 2009).

freezes due to the current crisis. About 2 percent reported to have negotiated wage freezes, 9 percent were planning to do so. Wage cuts were even more rare. About 96 percent of the companies surveyed replied that they were not planning to cut wages, and only 2 percent said they had already reduced wages or were planning to do so.

Again it is possible to compare these results with those of the 2007 survey. In both surveys, about 2 percent of companies surveyed reported to have negotiated wage cuts. In the 2007 survey, however, companies were asked about wage cuts they had implemented over the previous five years, while the 2009 survey referred to the past year only. This means that some 2 percent of the surveyed companies reduced wages between 2002 and 2006, and an equal amount did so in 2008/2009. Interestingly, not a single company that reported wage cuts between 2002 and 2006 said it had reduced wages in 2009, and vice versa.

These results indicate downward nominal wage rigidity in Austria. The following section deals with possible explanations for these rigidities.

4 Explaining the Rigidity of Base Wages

Within the scope of the survey 2007, Austrian firms were asked why they would avoid base wage cuts. Respondents were presented with eight prominent theories explaining downward nominal wage rigidities, which they could grade. Such a question was not included in the survey 2009. Hence, a comparison between the subjective reasons for wage rigidities before and in the crisis cannot be drawn for Austria.

4.1 Efficiency Wage Theories are Highly Appreciated

In the Austrian survey conducted in the year 2007 firms were asked to assign a score from 1 (irrelevant) to 4 (highly relevant) to each of eight theories. Column 1 in Table 7 gives an estimate of the mean value of all scores assigned, ranking the theories according to the average number of scores achieved. In an alternative ranking approach, ratings of 3 (relevant) and 4 (highly relevant) are interpreted as approval of a theory, whereas 1 (irrelevant) and 2 (of little relevance) are rated as disapproval. Column 2 in Table 7 indicates the rate of approval by theory according to this alternative approach. However, ranking the theories in line with the alternative approach largely corresponds to ranking them by the mean value.

The ranking itself shall, however, not be overrated in the following interpretation of the results. The mean values of the theories with a top ranking lie within a very narrow band and, correspondingly, all theories reaching an average score of more than 3 or gaining the approval of almost 80 percent of respondents shall be deemed widely accepted explanations of nominal wage rigidities.

Table 7: Ranking of Theories Explaining Sticky Wages

	Reasons preventing base wage cuts	Mean value	Approval rate
1	Reduces employees' effort	3.36	91.40
2	Reduces employees' morale	3.31	88.15
3	Collective wage agreements	3.29	79.58
4	Most productive employees leave	3.25	85.58
5	Increases labour turnover costs	3.10	78.86
6	Firm's reputation suffers	2.99	70.85
7	External wages matter	2.83	70.75
8	Implicit contracts	2.29	43.95

Notes to Table 7: The figures are weighted by employment weights and are rescaled excluding non-responses. Only the survey 2007 contained this question. Hence, a comparison between 2007 and 2009 is not available.

The findings summarised in Table 7 basically confirm previous results found in survey literature. As in Campbell and Kamlani (1997) and in Fabiani et al. (2010), the theory on employees' effort (1), the thesis on employees' morale (2), the adverse selection model applied to quits (4) as well as the turnover model (5) obtain high rates of approval also in this survey. All these explanatory models belong to the family of efficiency wage theories.

The theory that wage cuts would reduce the employees' effort (1) recorded a more than 90 percent approval rate. The theory described in detail by Bewley (1995, 1998, 1999) that wage cuts reduce employees' morale (2) and, as a consequence, their effort finds similarly high acceptance with the respondents. Bewley argues that employers think an apparent fall in the employees' standard of living and the insult implied by lower pay would result in a loss in loyalty toward the company. On the basis of this reasoning, Howitt (2002) concludes that companies would consider cutting base wages only in cases of

extreme financial difficulty. Moreover, this theory explains why firms prefer to lay off workers instead of cutting their base wages. Layoffs only hurt the morale of those leaving the company, while wage cuts have a lasting effect on the effort and productivity of remaining staff and, thus, on the firm.

Furthermore, the adverse selection model applied to quits (4) appears to be widely accepted. Around 86 percent of firms agreed that the most productive employees would leave the company following a wage cut. This conforms to the findings of Campbell and Kamlani (1997) and Fabiani et al. (2010) who also report high approval rates for this theory. The adverse selection model provides another explanation for the question why firms prefer dismissals to wage cuts. While wage cuts cause the most productive employees to leave the firm, dismissals may be used selectively to lay off less productive employees.

Finally, also the theory on increased staff turnover (5) receives an average score of more than 3, with the approval rate being just below 80 percent. According to this theory, firms are reluctant to cut wages because this would make more employees leave the firm and entail higher costs for hiring and training new staff. This theory, too, ranks high in Campbell and Kamlani (1997) as well as in Blinder and Choi (1990).

4.2 Collective Agreements also Prevent Base Wage Cuts

Apart from efficiency wage theories describing the reasons for wage rigidities, in Austria collective wage agreements (3) also appear to play a role in explaining sticky wages. This is in line with the findings of Fabiani et al. (2010) who report that labour market regulations and collective agreements

are very relevant in explaining sticky base wages in euro area countries. However, Fabiani et al. (2010) show that such labour market frictions are only relevant explanations in euro area countries, while they do not seem to be equally important for employers in Estonia, Lithuania, Poland, the Czech Republic and Hungary (all non-euro area countries in their sample).

In Austria around 80 percent of firms indicated that collective wage agreements prevent wage cuts (see Table 7). In strictly contractual terms, collective agreements can prevent wage cuts in only two cases. Firstly, when the minimum wage laid down in the collective agreement is being paid. In this case the negotiated increase of the minimum wage is binding, as wages must not fall below that level. Secondly, in some collective agreements not only the increase of the minimum wage, but on top of that also an increase of higher wages, which is binding, is negotiated. These "Ist-Lohnverhandlungen" are, however, only present in about 10 percent of all collective agreements. Apart from these two cases, the negotiated wage increase laid down in collective agreements is not binding for firms. Hence, the collective agreement does not prevent wage cuts in legal terms. However, it cannot be ruled out that firms' answers to this question also reflect the social pressure associated with collective wage agreements, which makes it difficult for them to cut wages while they are being raised for similar employees in other firms.

In order to shed some light on this question, we take a closer look at which firms regard collective agreements as a 'relevant' and 'highly relevant' explanation for wage rigidities. Therefore, we estimate a probit model and let the endogenous variable y_i be equal to unity if a firm has indicated that collective agreements are 'relevant' and 'highly relevant' for explaining sticky

wages and zero, otherwise.

We are interested in the question whether firms perceive collective agreements as prohibitive for base wage cuts because the agreement literally prevents it or because of the social pressure stemming from collective agreements in general. Therefore, we define a dummy variable that is equal to unity for industries having "Ist-Lohnverhandlungen". These are found in some areas of the manufacturing sector (NACE-codes): 10, 16, 17, 20 and 24), in the energy sector (NACE-code: 35) and in the construction sector (NACE-code: 41-43).[5] Moreover, this dummy variable is set equal to one, if the industry is known as paying mainly minimum-wages. This it true for firms manufacturing textiles (NACE-code: 13), firms in the retail business (NACE-code: 47) and for hotels and restaurants (NACE-code: 55-56). In summary, this dummy variable indicates whether collective agreements are likely to be binding in contractual terms.

For a general robustness check, we include the variable 'collective wage agreements' in our model. It is a continuous variable giving the share of employees in a firm that is covered by a collective agreement. We expect firms with a low share of collective agreements to be less likely to perceive them as obstructive to wage cuts. Moreover, the variable 'firm level wage agreements' contains information on whether a firm additionally to collective agreements negotiates also wage agreements at the firm level. As these agreements are often based on quite institutionalised negotiations with the workers' council, they might be perceived as additional obstacle to wage cuts. The variable is equal to one if the firm negotiates wages at the firm level and zero, otherwise.

[5] "Ist-Lohnverhandelungen" are also taking place in the telecommunications industry, which is, however, not covered by the sample 2007.

After having learned in Section 3.3 that the labour intensity of a firm is highly relevant for its decision to dismiss employees, we also want to take it into account when analysing the firms' perception of wage rigidity. Put differently, it could well be that labour-intensive firms are more likely to perceive collective agreements as binding and thus, prefer to lay employees off rather than to cut their base wages. Moreover, we include the variable 'share of bonus payments', which indicates the share of flexible wage components. These wage components are not covered by collective agreements. Thus, it is conceivable, that firms with more leeway in cutting other wage components than base wages, perceive collective agreements as less binding. Finally, we also include the economic situation of a firm as explanatory variable. As Messina and Rõõm (2009) find that the absolute popularity of a theory of wage stickiness depends on the economic situation of the firm (and is thus state dependent), we control for the economic environment. The questionnaire 2007 contains a question on the development of a firm's revenues compared to last year's revenues. Hence, respondents could indicate whether revenues were 'much higher', 'higher', 'unchanged', 'lower' or 'much lower'. We include this set of dummy variables and use the category 'much higher' as base category.

Table 8 shows the results of the probit model. The table gives average marginal effects and the signs of the coefficients are as expected. Firstly, we find that firms operating in industries with "Ist-Lohnverhandlungen" and mainly paying minimum wages are indeed more likely to perceive collective agreements as binding restrictions for base wage cuts. A firm in one of these industries is on average by about 12 percentage points more likely to

Table 8: Probit Model Explaining which Type of Firm Regard Collective Wage Agreements as Important Explanation Preventing Base Wage Cuts

	Average marginal effects	
Binding collective agreements	0.12	***
	(0.04)	
Collective wage agreements	0.37	***
	(0.11)	
Firm level wage agreements	0.14	***
	(0.05)	
Share of labour costs	0.08	
	(0.12)	
Share of bonus payments	-0.17	
	(0.14)	
Higher revenues	0.02	
	(0.05)	
Unchanged revenues	0.00	
	(0.06)	
Lower revenues	0.04	
	(0.09)	
Much lower revenues	0.06	
	(0.16)	
Pseudo R^2	0.08	
Number of observations	314	

Notes to Table 8: The table gives average marginal effects. Standard errors calculated using the Delta-method are given in parenthesis. *** stands for significant at the 1 percent level. The model includes a set of dummies for the economic situation of a firm, where the variable 'much higher revenues' (than last year) serves as base category.

indicate that collective agreements cause wage stickiness. Secondly, we find that a high share of employees covered by collective agreements - both at the firm level and at a higher level - also influences this perception positively.

The coefficients on the share of labour costs in total costs and the one on the share of bonus payments in total labour costs show the expected signs. However, statistically they are not significantly different from zero. Also the economic situation does not seem to have an effect on the perception of collective agreements with regard to wage rigidity.

Summing up, we present evidence that collective agreements prevent wage cuts not only because of social pressure but also in strictly contractual terms. Firms operating in industries where collective agreements are likely to be binding have a higher probability of perceiving them as obstacles for wage cuts. However, although we find this statistically significant difference, also firms with non-binding contracts perceive them as preventive for wage cuts. While 86 percent of firms with binding collective agreements in our sample perceive them as obstacles for wage cuts, also 74 percent of firms having no binding collective agreements perceive them similarly. Hence, we conclude that collective agreements have two effects on employers - the real contractual barrier as well as the social pressure stemming from it - both of which explain why they are perceived as prohibitive for wage cuts.

While it is not possible for Austria to compare these results from the 2007 survey with data from 2009 and analyse the effect of the crisis, Messina and Rõõm (2009) conduct such a comparison for three other European countries, namely France, Italy and Poland. They conclude that the relative relevance (the ranking) of the different explanations remain almost identical. How-

ever, all explanations lose absolute popularity because of the crisis and the slack in the labour market. For some explanations, e.g. that firms refrain from cutting wages because workers would leave and it would be difficult to attract new workers, the support from respondents more than halved. Labour regulations and collective bargaining schemes as another explanation for rigid wages also lost popularity, however, at a much lower rate than all other explanations.

Hence, following Messina and Rõõm (2009), the popularity of collective agreements as an explanation for wage rigidity is likely to drop during a recession. This might be an additional argument that collective agreements are not only preventing wage cuts in legal terms but also because of social pressures that fade in times of crisis.

4.3 Implicit Contracts are Less Relevant in Explaining Wage Rigidities

Coming back to the results shown in Table 7, we now turn to those theories which were less popular among our respondents. At an approval rate of about 70 percent, somewhat less relevance seems to be attributed to the thesis that wage cuts have a negative effect on a firm's reputation (6) and that hiring new staff would be more difficult in the future. The rate of approval to Keynes (1936) argument that wage hierarchy is important for employees (7) points into the same direction. According to this theory, employees oppose wage cuts that do not equally affect the overall distribution of wages.

Acceptance is found to be lowest for the theory of implicit contracts (8). Like the surveyed firms in Blinder and Choi (1990), only few Austrian firms

(close to 44 percent) think that wage rigidities are caused by an implicit contract between firms and employees. According to the implicit contract theory, pay does not fluctuate with the business cycle and thus, risk-averse employees can keep their standard of living constant regardless of the state of the economy. The implicit contract would, therefore, prevent wage cuts in phases of low demand. While implicit contracts are important in explaining price rigidities in Austria, as described in Kwapil et al. (2005), they seem to have considerably less relevance for explaining wage rigidities.

5 Summarising Conclusions

This paper focuses on the behaviour of Austrian firms during the recession 2008/2009. We document that Austrian companies are reluctant to cut base wages not only under normal circumstances but also - albeit to a lesser extent - in times of crisis. Although our analysis reveals that during the latest economic crisis, more companies have reduced base wages than in non-crisis times, wage cuts are an exception rather than the rule. While in the 2007 survey, some 2 percent of companies reported to have cut base wages over the previous five years, an equal proportion of companies said they had done so - within one year - during the recession 2008/2009. This confirms that the frequency of wage cuts increases during a recession and at the same time indicates the existence of nominal wage rigidities in Austria.

Looking for explanations of nominal downward wage rigidities, we find that efficiency wage theories as well as institutional arrangements like collective wage agreements are the most popular causes indicated by our respondents. Our reading of the Austrian results is that collective wage agreements

are not only a barrier to wage cuts because they literally enjoin them, but also because of social pressure. It might be difficult for a firm to cut wages, while they are being raised for similar employees in other enterprises. According to Messina and Rõõm (2009), the absolute importance of all explanations of wage rigidity decreases in times of crisis. Also collective agreements lose popularity as an explanation for wage rigidity, however, it does so at a much lower rate than all other explanations. Hence, collective wage agreements become relatively more important in explaining wage rigidities when there is slack in the labour market.

Nominal wage rigidities are responsible for companies responding to the shock by changing labour input rather than prices. Accordingly, our results show that while cutting base wages is always (regardless how hard the crisis hit) the reaction preferred the least, the most popular reaction of Austrian firms is cutting working hours. This is compatible with the results from macro data showing that the reduction in employment in Austria during the crisis was relatively mild, while the main adjustment burden was borne by the reduction in working hours.

During the crisis we saw a significant shift towards reducing labour costs instead of non-labour costs. Our analysis shows that firms that were severely hit by the crisis are significantly more likely to cut labour costs than non-labour costs. However, the size of the shock does not seem to affect the decision on how to reduce labour costs. The choice between dismissing employees and cutting labour costs by other means is influenced by the production technology and workforce characteristics and not by the dimension of the drop in demand. Companies with labour-intensive production technolo-

gies, employing a high share of young and low-skilled employees are more likely to dismiss workers.

The Austrian example shows that wage rigidities do not necessarily lead to a dramatic increase in unemployment, but can also be dealt with by reducing working hours. This might, however, only be possible, when firms perceive the crisis as a temporary phenomenon.

Our work adds to the discussion on how to tackle wage rigidities by advising caution. The results suggest that the most important causes of wage rigidities are efficiency wage theories and arguments dealing with fairness and morale - characteristics of a system that cannot be changed by law. Labour market institutions, like collective wage agreements, are only one among several explanations. However, as Messina and Rõõm (2009) argue, they seem to become relatively more important in times of crisis.

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A Appendix: Questionnaire of the WDN-Survey 2009

1 To what extent is your firm's activity (in terms of sales) affected by the current economic and financial crisis?

- Positively (increased) ! "
- Unchanged ! "
- Negatively (decreased)
  - declined marginally !
  - declined moderately !
  - declined strongly !
  - declined exceptionally strongly !

2 To what extent is the current economic and financial crisis affecting your firm with respect to each of the following aspects?

Please choose an option for each line!

	exceptionally strongly	strongly	moder-ately	not at all	don't know
Fall in the demand for your firm's products/services	! "	! "	! "	! "	! "
Difficulty in financing through the usual financial channels	! "	! "	! "	! "	!
Difficulty in being paid by customers	! "	! "	! "	! "	!
Difficulty in obtaining intermediate products from your usual suppliers	! "	! "	! "	! "	!

3 If the current economic and financial crisis is causing a fall in the demand for your firm's products/services, which of the following strategies has your firm adopted (or is going to adopt) to face such a fall?

Please choose an option for each line!

	very relevant	relevant	hardly relevant	not at all	don't know
We reduce output	! "	! "	! "	! "	! "
We leave prices unchanged	! "	! "	! "	! "	!
We decrease prices	! "	! "	! "	! "	! "
We decrease profit margins	! "	! "	! "	! "	!
We reduce costs	! "	! "	! "	! "	! "

4 If the reduction of costs is of any relevance in your answer to question 3, please indicate the main channel through which this goal is achieved in your firm.

Please choose a single option, the most important factor!

- We reduce flexible wage components (for example bonuses, benefits, etc.) !
- We reduce base wages !
- We adjust the number of hours worked per employee !
- We reduce the number of temporary employees / other type of workers !
- We reduce the number of permanent employees !
- We reduce non-labour costs !

5 In the current economic and financial crisis, has your firm frozen (or is it going to freeze) the base wage of some employees?

- Yes, we plan to freeze nominal wages. For what percentage share of your employees? _____ %
- Yes, we have already frozen nominal wages. For what percentage share of your employees? _____ %
- No !

6 In the current economic and financial crisis, has your firm (or is it going to) cut the base wage of some employees?

- Yes, we plan wage cuts. For what percentage share of your employees? _____ %
- Yes, we have already cut wages. For what percentage share of your employees? _____ %
- We cannot cut base wages, because we pay the minimum wage. For what percentage share of your employees? _____ %
- No !

7 In the current economic and financial crisis is your firm benefiting from government measures aimed at avoiding loss of workers or wage cuts?

- Yes, we plan to participate in a government programme. For what percentage share of your employees? _____ %
- Yes, we participate in a government programme. For what percentage share of your employees? _____ %
- No !