Downward Wage Rigidities in an Emerging Economy: Evidence from a Survey of Colombian Firms[♣]

Ana María Iregui B.
aireguboo@banrep.gov.co

Ligia Alba Melo B.
lmelobec@banrep.gov.co

María Teresa Ramírez G.
mramirgi@banrep.gov.co

Abstract

This paper uses a wage setting survey of 1,305 Colombian firms to explore the nature and sources of wage rigidities. This is the first study of a non-European emerging economy that uses evidence from a survey of firms to analyse this topic. The survey was carried out during the first half of 2009, when the Colombian economy was showing signs of a slowdown in economic activity and increasing unemployment. The sample is fully representative of the population under study. The results provide evidence of nominal and real downward wage rigidity in the country. The most important factor in not reducing base wages during an economic slowdown is to avoid the loss of more experienced and productive workers, which is related to the efficiency wage theory in its adverse selection version. In addition, ordered *logit* regressions were used to determine what factors are related to wage rigidities. The findings indicate that, in general, permanent contracts, workforce composition, labour intensity and the presence of collective agreements play an important role in explaining wage rigidities in the country.

Keywords: wage rigidities, survey evidence, efficiency wages, Colombia, labour market, ordered *logit*

JEL Classification: C25, J30, J50

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I. Introduction

It is important to understand the nature and causes of wage rigidities, since such rigidities partly determine the persistence and volatility of inflation, as one of the main components of the marginal cost. As Tobin (1972) and Akerlof et al. (1996) state, when nominal wages are downwardly rigid, a certain level of inflation allows for a greater flexibility in real wages, thereby helping adjustments in the labour market.

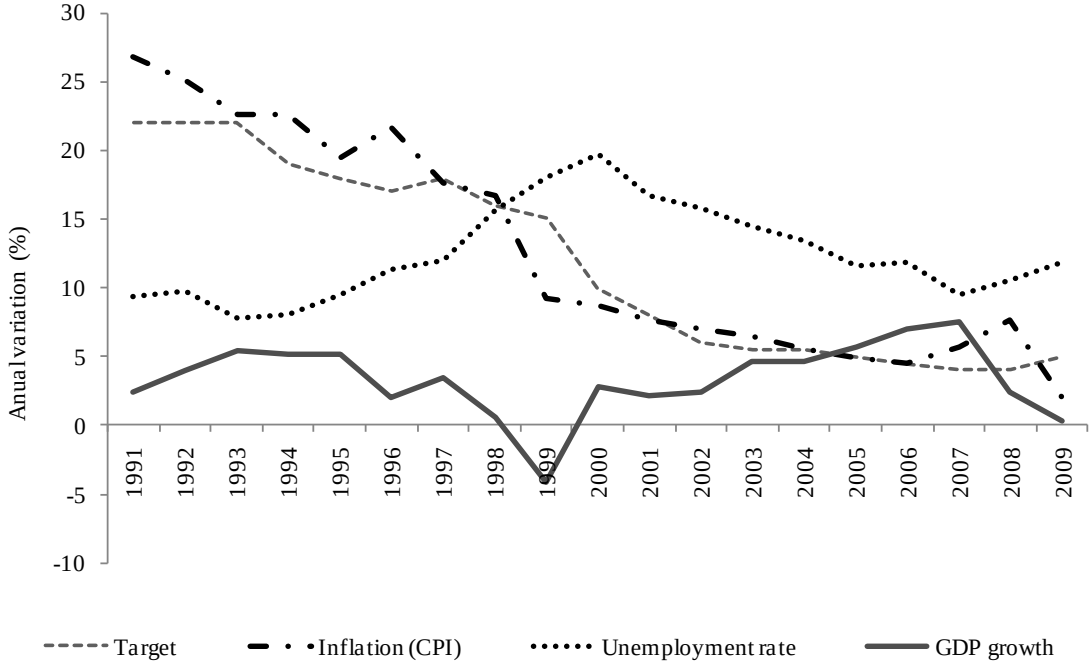
The reduction of inflation and the adoption of an inflation targeting regime, which took place in several countries during the past two decades, have renewed interest in the study of wage rigidities, due to the impact they can have on the labour market.[1] The Colombian case is no exception. Colombia has experienced a gradual fall in inflation since the beginning of the nineties; however, it was only after 1997 that inflation was near or below the announced quantitative target.[2] The main decline in inflation took place between 1998 and 1999, when it went from 16.7% to 9.3%. Since then, inflation has remained in the single digit level. On the other hand, unemployment increased, reaching a peak in 1999-2000, when the economy faced a deep recession. By 2009, the scenario in Colombia was one of low inflation, high unemployment and signs of an economic slowdown (see Figure 1). Since the aim of this paper is to study wage rigidities, the

[1] See, for example, European Central Bank, "Wage Dynamics in Europe: Final Report of the Wage Dynamics Network (WDN)," December 2009.
[2] In Colombia, explicit inflation targets have existed since 1991. For details on the implementation of an inflation targeting regime in Colombia, see Gómez et al. (2002).

economic conditions prevailing in the country offer a suitable context for applying a unique survey to Colombian firms.

Figure 1

Inflation, unemployment and GDP growth in Colombia: 1991-2009



Source: DANE and Banco de la República

To explore wage setting mechanisms, analyse the nature and sources of wage rigidities and test different theories of wage rigidities in the country, we designed and applied a survey to Colombian firms. The survey allows us to obtain answers directly from those who set wages in a firm and helps us to understand the behaviour of firms and the labour market. In addition, it provides evidence for the micro-foundation of the Central Bank's

wage and price models, by incorporating real and nominal rigidities, and offers elements for monetary policy decisions.

A study of wage rigidities in an emerging country, such as Colombia, is also important because the country's institutions and labour market could have characteristics that differentiate it from developed countries where this type of study has been concentrated. For instance, Colombia has high levels of informality. In fact, informal workers accounted, on average, for 58% of the total number of workers during the period 2001-2007. Unlike the situation in Europe, union density in Colombia is very low: less than 5% in recent years. As a result, we would expect the role of unions in explaining wage rigidities in Colombia to be less important than in Europe. Furthermore, the legal minimum wage in Colombia plays a very important role in setting wage increases. Another aspect to highlight is the presence of high non-wage labour costs, which come to nearly 40% of base wages.

To the best of our knowledge, this is the first study for a non-European emerging economy that uses evidence from a survey of firms to identify and analyse downward wage rigidities. The literature on downward wage rigidities using surveys dates back to the studies of Kaufman (1984) and Blanchflower and Oswald (1988) for the United Kingdom, Holzer (1990), Blinder and Choi (1990), Bewley (1995, 1998, 1999) and Campbell and Kamlani (1997) for the United States, and Agell and Lundborg (1995, 2003) for Sweden. In general, these studies found that firms do not cut wages because they do not want to affect the motivation, effort and morale of workers. Consequently,

this leads to downward nominal wage rigidity. Similar results associated with efficiency wage theories in explaining wage rigidities were found recently by Agell and Bennmarker (2002, 2007) for Sweden, Franz and Pfeifer (2003, 2006) for Germany, Zoega and Karlsson (2006) for Iceland, Copaciu et al. (2010) for Rumania, Kawaguchi and Ohtake (2008) for Japan, and Amirault et al.(2009) for Canada. In addition, Franz and Pfeifer (2003) and Agell and Bennmarker (2002, 2007) found the existence of collective agreements is another important factor in preventing wage cuts.

The *Eurosystem Wage Dynamics Network (WDN)*, a research network composed of economists from the European Central Bank and the central banks of the European Union, conducted an *ad hoc* survey on price and wage setting behaviour among nearly 17,000 firms in 17 countries of the European Union between the end of 2007 and the first half of 2008. The results of the *WDN* survey indicate the existence of significant downward rigidity in base wages in the European Union, with important cross-country differences. For example, downward nominal rigidity prevails in the Netherlands, Greece, Germany, Austria and Portugal, whereas downward real rigidity is more prevalent in Belgium, Finland, Luxembourg, Spain and Sweden. According to the survey, the most important reasons for preventing wage cuts are the impact on work morale and effort, preventing the most productive workers from leaving the firm, and labour regulations or collective agreements.[3]

[3] For details on the WDN firm survey, see European Central Bank, Wage Dynamics in Europe: Final Report of the Wage Dynamics Network (WDN), December 2009.

In particular, we applied our wage setting survey to 1,305 Colombian firms in the country's thirteen main cities, taking into account nine economic sectors and three firm sizes. This survey has the advantage of using a representative sample of firms, which allows us to generalize the results to the population under study. As Campbell and Kamlani (1997), we designed the survey to obtain answers for different occupational groups, in our case, managers, professionals, technicians and assistants, and unskilled workers, since the reasons for wage rigidity may differ across types of workers. Regarding the response rate, it is important to mention that we obtained responses from 1,305 firms.

The survey asked firms how likely it is they will conduct certain actions during a period of economic slowdown. Then, using ordered *logit* models, we empirically examine the firms' responses, taking into account the firm-specific information collected for the survey. The survey also asked firms why they do not reduce wages in difficult times and provided respondents with a series of reasons based on the more relevant theories, so as to test which of them explain wage rigidities in the Colombian case. We also used ordered *logit* models to examine the firms' responses in greater detail.

The results of this study point to the presence of nominal and real downward wage rigidities in Colombia.[4] According to the survey, the most important reasons why Colombian firms do not cut wages during difficult times are to prevent loss of the most

[4] This finding confirms previous micro-economic evidence of wage rigidities in Colombia; see Iregui et al. 2009a.

productive and experienced workers, not to affect worker's effort and productivity, and not to affect worker's motivation. These reasons are related to the efficiency wage theory, particularly to the adverse selection model, the shirking model, the gift-exchange model and the fair wage-effort hypothesis. Interestingly, these results are similar to those found in the literature for developed countries.

Survey evidence also suggests that firms could use other alternatives to adjust costs in difficult times, besides changes in base wages, such as reducing non-statutory benefits and variable pay, laying off employees, changing the type of employment contract and hiring new workers at lower wages. The use of these strategies varies across economic sectors and occupational groups.

This paper is divided into five sections, in addition to the introduction. In the second section, we describe the survey design and sample selection. The third section analyses the presence of downward nominal and real wage rigidities in Colombia and empirically test firms' responses to the related questions. Section four studies the reasons for preventing wage cuts and empirically tests different theories on wage rigidities. In the fifth section, we discuss alternatives other than changes in base wages that firms could use to adjust labour costs during a period of economic slowdown. The final section presents the main conclusions.

II. Survey Design

In this paper, the analysis is based on a unique survey of 1,305 Colombian firms. It was designed to explore wage setting mechanisms, the nature and sources of wage rigidities, and the link between wages and prices (see Iregui et al. 2009b). The survey also collects data on several characteristics of the firms in question, such as the economic sector where they operate, the kind of labour contracts they use, the existence of collective agreements and different types of remuneration, among other features, which helped us to characterize the firms in the empirical analysis.

The survey has the advantage of using a representative sample of firms. This allowed us to generalize the results to the population under study: namely 39,004 small, medium and large scale enterprises[5], which are legally constituted and belong to all economic sectors, except the public sector.[6] The firms are located in 13 major cities[7], which account for 70% of the formal employment in Colombia.

The sample selection was done by stratified random sampling, considering nine strata and obtaining a final sample of 1,305 firms. The strata correspond to the following economic sectors: agriculture, forestry and fishing; trade; construction; electricity, gas, water and mining; manufacturing; financial services; transport, storage and communications;

[5] Firms with less than 10 employees were excluded.
[6] The public sector was excluded, because the wages of public employees are set mainly by government decree.
[7] The cities are Bogotá, Bucaramanga, Barranquilla, Cali, Cartagena, Medellín, Manizales, Pereira and their metropolitan areas. Barrancabermeja, Buga, Tuluá, Girardot and Rionegro were also included.

education and health; and other services. In addition, firm size was considered as a domain to guarantee that all sizes were represented in the final sample. With regard to the response rate, it is important to mention that responses were obtained from 1,305 firms. The firms that did not answer the questionnaire, for whatever reason, were replaced by companies with similar characteristics. To do so, we used a sample surplus to maintain its representativeness within the population.

In the design of the questionnaire, certain questions were adapted from the literature. In particular, we considered the studies by Blinder and Choi (1990), Campbell and Kamlani (1997), Bewley (1999), Agell and Lundborg (1995, 2003), and Franz and Pfeiffer (2006). Preliminary versions of the questionnaire were discussed with senior specialists in survey design and human resources managers; this enriched the survey.[8]

The selected firms were contacted first by telephone; those showing interest in answering the survey were sent a letter explaining the academic purpose of the study and emphasising the confidentiality of the information provided. Once the company agreed to participate in our survey, a face-to-face interview was scheduled to apply the questionnaire. The survey was directed to managers involved with wage policies, who should be able to answer the questions for different occupational groups (managers, professionals, technicians and assistants, and unskilled workers). The survey was carried out during the first semester of 2009, when the Colombian economy was showing signs of a slowdown in economic activity, low inflation and increasing unemployment.

[8] A Spanish version of the questionnaire is available in Iregui et al. (2009b), Appendix 4.

Finally, it is important to mention that all the results presented hereafter are generalized for the population. The coefficients of variation (*cve*) are calculated for each answer; the coefficients obtained did not exceed 5%, which is an indicator of the reliability of the population estimates.

III. Downward Nominal and Real Wage Rigidities

To assess whether wages are downward rigid, we asked firms about the likelihood of their conducting certain actions during a period of economic slowdown, using a scale from 1 to 4, where 1 is *not at all* and 4 is *very likely*. To allow for comparisons, we calculated the mean score of the answers. Following Blinder (1991), a mean score greater than or equal to 3.0 is considered excellent and a score of less than 1.5 is very poor; a mean score greater than or equal to 2.5 is considered to be reasonably strong.

In particular, to identify downward nominal wage rigidity (DNWR), the options of reducing and freezing base wages were considered. For downward real wage rigidity (DRWR), the alternative of increasing basic pay at a rate lower than inflation was included.[9] Table 1 shows the percentage of responses *not at all* / *not likely* and *likely* / *very likely* for each occupational position, as well as the mean scores obtained for the aforementioned options.

[9] The previous alternatives can be considered only for base wages higher than the legal minimum wage. According to Colombian law, the purchasing power of the minimum wage must be maintained.

Table 1
How likely is your firm to carry out the following actions?

Occupational group	Do not increase base wages	Reduce base wages	Pay raises below the inflation rate
Managers			
Mean score*	2.33	1.52	2.13
Responses (%)			
Not at all / *not likely*	54.0	85.9	59.6
Likely / *very likely*	46.0	14.1	40.4
Professionals			
Mean score*	2.33	1.52	2.17
Responses (%)			
Not at all / *not likely*	53.8	86.4	57.9
Likely / *very likely*	46.2	13.6	42.1
Technicians, assistants, and unskilled workers			
Mean score*	2.04	1.45	1.96
Responses (%)			
Not at all / *not likely*	67.7	89.3	68.2
Likely / *very likely*	32.3	10.7	31.8

*Average score based on the following scale: 1 = *not at all*, 2 = *not likely*, 3 = *likely*, 4 = *very likely*.
Source: Authors calculations.

The results suggest the presence of DNWR, considering that, in all cases, more than 85% of the firms indicated the option of *reducing base pay* was *not at all* / *not likely* and the mean score was 1.5. In addition, more than half the firms replied that the alternative of *not increasing base wages* was *not at all* / *not likely*. The option of *pay raises below the inflation rate* had a mean score of around 2.0 for all occupational groups and it is *not at all* / *not likely* for about 60% of the firms in the case of managers and professionals and 70% of the firms for technicians, assistants and unskilled workers, all of which provides evidence of DRWR. It is worth mentioning that the results show no important differences

by firm size. However, across sectors, the results do show some variation.[10] For instance, in financial services, the alternatives of *reducing base pay* and *not increasing base wages* have a percentage of response for *not at all* / *not likely* that is considerably higher than in the other sectors. In the construction sector, the alternative of *pay raises below the inflation rate* has the highest response rates for *not at all* / *not likely* compared to all occupations (73% on average).

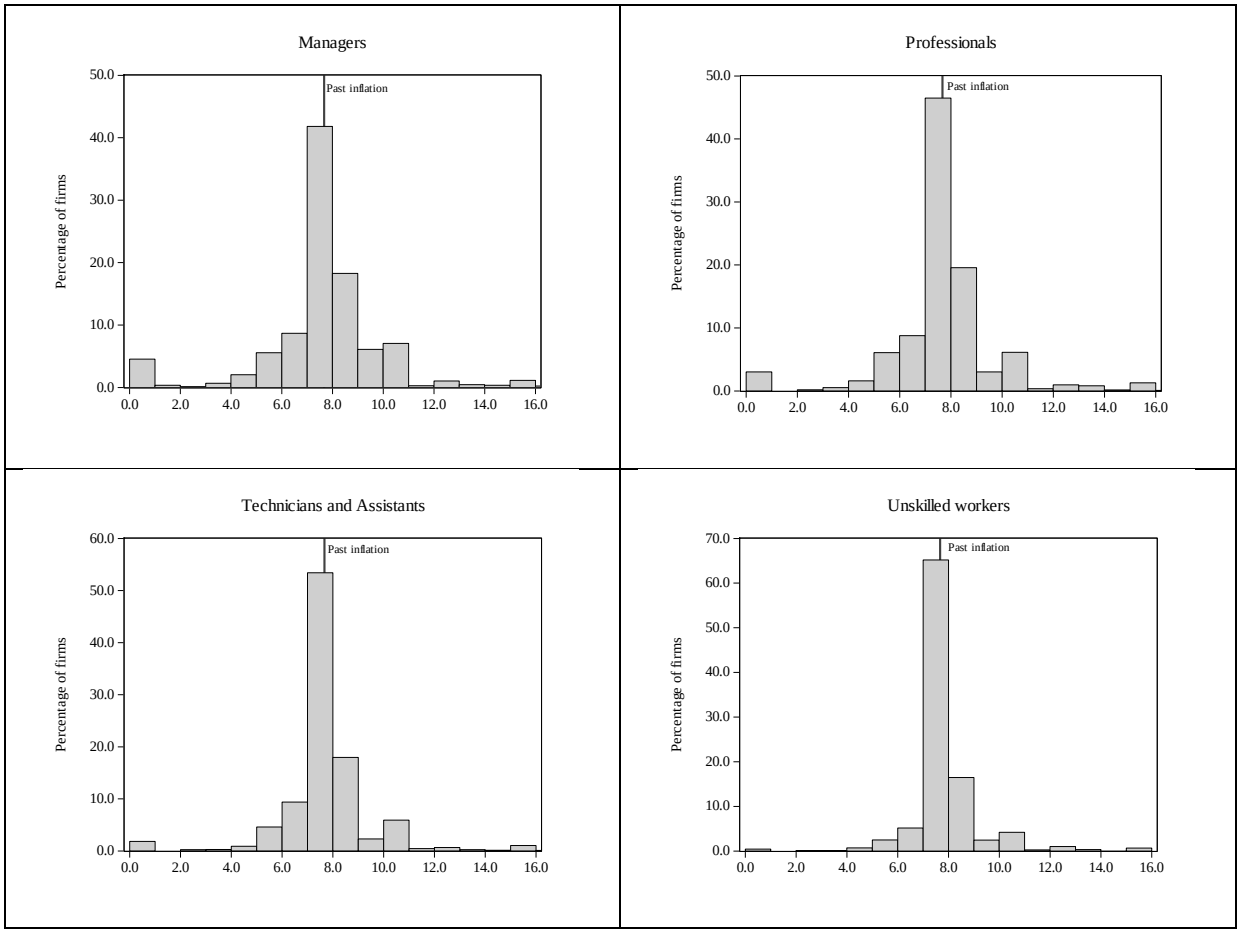
The answers concerning wage rigidities are consistent with the results obtained when the firms were asked about the last annual effective pay raise. Figure 2 shows the histograms of the distribution of the average nominal wage change for each occupational position between 2008 and 2009, when the country was showing signs of a slowdown in economic activity. As illustrated, none of the companies cut wages and there is a spike around the observed rate of inflation, 7.67%. In the case of unskilled workers, wage changes were concentrated around this value for about 60% of the firms; however, for managers, this proportion declines to about 40%. Furthermore, wage freezes are less frequent among less-skilled workers, since they might be protected by collective agreements.

Next, to test the relevance of the firm's characteristics for the responses, we estimated ordered *logit* models for each action and occupational group. The dependent variable increases with the likelihood of carrying out such actions. It takes values from 1 to 4, where 1 = *not at all*, 2 = *not likely*, 3 = *likely* and 4 = *very likely*. The threshold parameters estimated in all the models are statistically different from one another;

[10] These results may be obtained from the authors upon request.

therefore, we maintained the four categories for the dependent variables in all the models.[11]

Figure 2
Histograms of the distribution of the last nominal wage increase, 2009/2008



Source: Author's calculations

The explanatory variables allow for differences in economic sectors and the location of the firms (*region*); we considered trade and cities other than Bogotá (the nation's capital) as the reference categories in the regressions. Firm size also is included and is measured

[11] A Wald test was used to test the difference among the threshold parameters. The results of the tests, as well as the marginal effects for all models, may be obtained from the authors upon request.

by the number of employees (*log (No. employees*)). In addition, the share of managers and professionals (*skilled workers*), the percentage of workers earning the minimum wage (*minimum wage earners*), and the share of employees with a permanent employment contract (*permanent workers*) were included to take into account the characteristics and composition of the labour force. Moreover, a dummy variable that takes the value of *1,* if the firm has any form of collective agreement (*collective agreements*), and a measure of union density (*union members (%))* were considered to evaluate the importance of collective wage agreements. Furthermore, we included dummy variables to account for the presence of flexible benefits and variable pay.[12] Finally, labour costs as a share of total costs were also included to approximate labour intensity.

Table 2 shows the ordered *logit* estimates for the alternatives *do not increase base wages* and *reduce base wages*. According to the results for all occupational groups, the probability that firms *do not increase base wages* in an economic slowdown increases with the share of labour costs as a portion of total costs, as expected. Moreover, this strategy in firms operating in the construction, manufacturing and financial services is less likely than for firms in the trade sector (the reference category), where the high share of temporary workers could affect the bargaining power of employees. Regarding the composition of the labour force, in the case of managers and professionals the probability that firms *do not increase base wages* decreases as the share of skilled workers increases.

[12] Flexible benefits correspond to a formal plan whereby employees can choose among different employer-paid benefits or take cash. Variable pay corresponds to a form of compensation that links employee payment to some measure of job performance.

This could be explained by the difficulty in recruiting employees of this type, as our survey indicates. The presence of flexible benefits is statistically significant only in the case of managers, where such benefits account for approximately 15% of their remuneration. Finally, in the case of technicians, assistants and unskilled workers, as firm size and the share of minimum wage earners increase, the likelihood of not increasing base wages declines; this is also true for firms operating in agriculture, forestry and fishing sectors.

The results for the alternative of *reducing base wages* are also reported in Table 2. For all occupational positions, we found the likelihood of reducing base wages decreases as the share of employees on permanent contract increases, which suggests these workers have more bargaining power. As for managers, firms located in Bogotá are less likely to reduce wages than in other cities of the country; however, for firms in other services and electricity, gas, water and mining, the probability of reducing wages is higher than in the trade sector. For technicians, assistants and unskilled workers, the likelihood of reducing wages declines as the percentage of union member's increases, suggesting that collective agreements are one of the main reasons for wage rigidity in this occupational group.

We also examined what type of firm is more prone to increase wages at a rate less than that of inflation. In general, the results show that the probability of using this alternative decreases as the share of labour costs increases, suggesting the presence of DRWR is more likely in firms that are less labour intensive. At the sector level, firms belonging in the "other services" sector are more likely to increase wages below the inflation rate.

Table 2
How likely it is for a firm not to increase base wages or to reduce base wages
(Ordered *logit* estimates, weighted)

	Not to increase base wages						*Reduce base wages*					
Variables	**Managers**		**Professionals**		**Technicians, assistants and unskilled workers**		**Managers**		**Professionals**		**Technicians, assistants and unskilled workers**	
Agriculture, forestry, fishing	-0.123	(0.217)	-0.327	(0.238)	-0.594***	(0.236)	-0.040	(0.238)	-0.244	(0.254)	-0.279	(0.250)
Construction	-0.805***	(0.234)	-0.619**	(0.227)	-0.529***	(0.211)	-0.369	(0.253)	0.120	(0.236)	0.352*	(0.228)
Electricity, gas, water, mining	-0.105	(0.248)	-0.414*	(0.253)	-0.188	(0.227)	0.487*	(0.290)	0.451*	(0.295)	0.372	(0.283)
Manufacturing	-0.396**	(0.199)	-0.410**	(0.207)	-0.511***	(0.188)	0.101	(0.214)	0.370*	(0.229)	0.288	(0.221)
Financial services	-0.764***	(0.305)	-0.696***	(0.298)	-1.316***	(0.316)	-0.493	(0.377)	-0.501	(0.364)	-0.643*	(0.388)
Transport, storage and comm.	-0.031	(0.168)	-0.009	(0.183)	-0.209	(0.180)	-0.122	(0.212)	-0.119	(0.222)	0.023	(0.212)
Education and health	-0.118	(0.263)	-0.064	(0.286)	-0.350	(0.256)	0.181	(0.317)	0.222	(0.318)	-0.098	(0.311)
Other services	0.203	(0.166)	0.109	(0.185)	-0.035	(0.174)	0.467***	(0.213)	0.315	(0.219)	0.166	(0.210)
Region	-0.214*	(0.128)	-0.050	(0.134)	0.177	(0.122)	-0.311***	(0.137)	-0.105	(0.141)	-0.137	(0.137)
Log (No. employees)	0.010	(0.048)	-0.049	(0.051)	-0.074*	(0.045)	-0.063	(0.060)	-0.072	(0.059)	-0.051	(0.056)
Skilled workers (%)	-0.006**	(0.003)	-0.007***	(0.003)	-0.002	(0.003)	-0.004	(0.003)	-0.002	(0.003)	0.004	(0.003)
Minimum wage earners (%)	0.002	(0.002)	0.003	(0.003)	-0.004*	(0.002)	0.002	(0.002)	0.004	(0.003)	0.001	(0.003)
Flexible benefits	0.232**	(0.129)	0.128	(0.135)	0.035	(0.135)	0.157	(0.147)	0.193	(0.154)	0.000	(0.151)
Variable pay	0.108	(0.129)	0.018	(0.138)	-0.090	(0.127)	0.026	(0.155)	-0.085	(0.160)	-0.075	(0.152)
Collective agreements	-0.264	(0.243)	-0.245	(0.241)	-0.181	(0.238)	0.226	(0.252)	0.154	(0.256)	0.184	(0.270)
Union members (%)	0.006	(0.005)	0.006	(0.005)	-0.002	(0.005)	-0.005	(0.005)	-0.007	(0.006)	-0.010*	(0.007)
Labour costs (%)	0.006**	(0.003)	0.007**	(0.003)	0.007**	(0.004)	0.002	(0.004)	0.006	(0.004)	0.005	(0.004)
Permanent workers (%)	0.001	(0.002)	-0.001	(0.002)	0.000	(0.002)	-0.004**	(0.002)	-0.005***	(0.002)	-0.003**	(0.002)
Number of observations	1,266		1,163		1,283		1,266		1,163		1,283	
Pseudo R^2	0.023		0.020		0.027		0.022		0.023		0.017	

Notes: Robust standard errors in parentheses. (*), (**) and (***) denote statistical significance at 10, 5 and 1 percent, respectively. The dependent variable increases with the likelihood, ranging from 1 to 4, where 1=*not at all*, 2 = *not likely*, 3 = *likely* and 4 = *very likely*.
Source: Authors calculations.

IV. Reasons Preventing Wage Cuts

In this section, we analyse the reasons why firms do not reduce base wages in difficult times and test different theories of wage rigidity. In particular, the contract theory states that companies and their employees sign long-term agreements so wages are fixed in advance, the idea being to maintain a stable real wage throughout the business cycle (see Baily, 1974; Azariadis, 1975, Taylor, 1979). With the insider-outsider theory, companies are reluctant to fire their employees (insiders) and to hire unemployed workers (outsiders) at lower wages, because of the cost involved in hiring and training new workers. In addition, insiders can refuse to cooperate with new incoming employees. This increases the possibility of reducing the firm's productivity, giving insiders power to negotiate their wages (see Lindbeck and Snower 2001).

According to the efficiency wage theory, workers' productivity is a function of their wages. This theory has several versions, including the shirking model, the adverse selection model, the labour turnover model, the gift exchange model and the fair wage – effort hypothesis. With the shirking model, the cost of losing a job depends positively on the wage (see Shapiro and Stiglitz, 1984); with the adverse selection model, the most productive workers are the most likely to resign in the event of a wage reduction, (see Weiss, 1990); with the labour turnover model, workers' resignation rates depend negatively on the wage rate (see Stiglitz 1974); with the gift exchange model, the loyalty of workers is directly related to their salary, and this loyalty leads to higher productivity (see Akerlof 1982, 1984); and with the fair wage-effort hypothesis, workers' effort

declines if the salary they receive is below what they perceive as a fair wage (see Akerlof and Yellen, 1990).

In simple and nontechnical language, the respondents were presented with a number of reasons associated with the theories mentioned above, which explain why firms do not reduce wages (see Table 3). We asked the interviewees to indicate the importance of each reason based on a scale of 1 to 4, where 1 is *not important* and 4 is *very important*. The average scores obtained were ordered and *t* statistics were calculated for each option to test whether the mean differences between contiguous alternatives were statistically significant. In all cases, the results show the null hypothesis of equal average scores for contiguous actions is rejected, with a confidence level of 99%.[13]

Table 4 reports the means scores for all occupational groups, as well as the response rates *not important* / *of minor importance* and *moderately important* / *very important* for the different reasons preventing wage cuts. The alternative with the highest mean score was *to prevent the loss of the most productive and experienced workers*. This reason receives the highest response rate as the most important explanation for not cutting wages paid to managers and professionals. This reason is related to the efficiency wage theory, specifically to the adverse selection model. Similar results were found by Campbell and Kamlani (1997) for the United States, Zoega and Karlsson (2006) for Iceland, Martins (2009) for Portugal and Copaciu et al. (2010) for Romania.

[13] These results may be obtained from the authors upon request.

Table 3
Theories associated to wage rigidity

Proposed reasons	Associated theory
To prevent the loss of the most productive and more experienced workers	Efficiency wages (adverse selection)
To prevent the loss of the firm's reputation	Efficiency wages (firm's reputation)
Do not affect employee's motivation	Efficiency wages (fair wage-effort hypothesis, gift exchange)
Do not affect workers' efforts and productivity	Efficiency wages (shirking, fair wage-effort hypothesis, gift exchange)
Previous agreements between employees and employers	Contracts theory
Minimize costs of labour turnover	Efficiency wages (minimize turnover)
Do not affect relative wages in relation to competition (outside the firm)	Keynesian theory
Legal restrictions	Contract theory
Collective agreements	Insider-Outsider

Source: *Iregui et al*. (2009b).

Table 4
Importance of the following reasons in preventing wage cuts

Reasons	Managers			Professionals			Technicians, assistants, and unskilled workers		
	Mean score*	Responses *Not important / of minor importance* (%)	Responses *Moderately important / very important* (%)	Mean score*	Responses *Not important / of minor importance* (%)	Responses *Moderately important / very important* (%)	Mean score*	Responses *Not important / of minor importance* (%)	Responses *Moderately important / very important* (%)
Collective agreements	1.90(9)	69.9	30.4	2.22(8)	56.5	43.5	3.00(5)	27.2	72.8
Legal restrictions	2.03(8)	64.4	35.6	2.03(9)	64.8	35.2	2.08(9)	62.6	37.4
Previous agreements between employees and employers	2.51(5)	43.9	56.1	2.67(5)	35.3	64.7	2.70(6)	36.1	63.9
To prevent the loss of the firm's reputation	3.14(2)	22.0	78.0	3.13(4)	21.1	78.9	3.15(4)	21.2	78.8
Do not affect employee's motivation	3.01(3)	26.8	73.2	3.21(3)	16.9	83.1	3.30(3)	14.8	85.2
Do not affect workers' efforts and productivity	2.98(4)	27.2	72.8	3.22(2)	17.1	82.9	3.33(2)	14.4	85.6
Minimize costs of labour turnover	2.48(6)	45.0	55.0	2.60(6)	40.8	59.2	2.61(7)	39.7	60.3
To prevent the loss of the most productive and more experienced workers	3.16(1)	21.5	78.5	3.34(1)	14.0	86.0	3.35(1)	14.9	85.1
Do not affect relative wages in relation to competition (outside the firm)	2.28(7)	53.2	46.8	2.28(7)	51.7	48.3	2.28(8)	54.2	45.8

*Average scores based on the following scale: 1 = *not important*, 2 = *of minor importance*, 3 = *moderately important*, 4 = *very important*.
Note: The numbers in parentheses correspond to the order obtained by each action.
Source: Authors calculations.

The survey also found that *do not affect worker's effort and productivity* and *do not affect worker's motivation* are *very important* reasons for not reducing base wages. These alternatives also are related to the efficiency wage theory, particularly to the shirking model, the gift exchange model and the fair wage-effort hypothesis. Despite differences in the labour market institutions, our results are similar to those found for developed countries. For instance, Bewley (1995, 1999 and 2004) found, for the United States, that employers do not cut wages because of the effect doing so might have on workers' morale and motivation. Similar evidence was found by Blinder and Choi (1990) and Campbell and Kamlani (1997) for the United States, Kaufman (1984) for the United Kingdom, Agell and Bennmarker (2002, 2007) for Sweden, Franz and Pfeiffer (2003) for Germany, Kawaguchi and Ohtake (2008) for Japan, Martins (2009) for Portugal and the *Wage Dynamics Network* (*European Central Bank*, 2009 and Babecký et al. 2009a) for different European countries.

Another *important* reason mentioned by respondents for not cutting base wages is to *prevent the loss of the firm's reputation*. For technicians, assistants and unskilled workers, as opposed to managers and professionals, strong support was found for the existence of collective agreements, which might be associated to the *insider-outsider* theory.[14] Similarly, Franz and Pfeiffer (2003) found that labour union contracts explain wage rigidities for the less skilled workers in German firms. In Sweden, the high rate of unionization explains the wage rigidity in all positions (Agell and Bennmarker, 2002,

[14] The insider-outsider theory considers union members as insiders who show little concern for non-members (outsiders). These insiders have power when negotiating wages.

2007).[15] In Colombia, when firms are classified by size, this option receives more support in large firms than in small ones, possibly because of the fact that collective agreements are more prevalent in larger firms.[16] Across sectors, this option obtains the highest response rates in electricity, gas, water and mining and manufacturing, where the number of firms with collective agreements (26.1% and 19.6% respectively) is above average (9.3%).

Other reasons receive less support in explaining why firms do not cut wages. Moderate support was found for *minimize costs of labour turnover,* especially in large firms and in the "other services" sector. However, in the construction sector this option obtains the lowest response rate among all sectors, possibly because of an excess of labour supply in this sector. As mentioned by Campbell and Kamlani (1997) and Agell and Bennmarker (2002), firms do not reduce wages to avoid an increase in the number of resignations. According to our survey, a better wage offer is one of the main reasons why workers resign, which might indicate that firms perceive the risk of voluntary turnover as a wage-policy constraint.

Then, we controlled for factors that might explain wage rigidities in the country by estimating ordered *logit* models. The dependent variable takes values from 1 to 4, where 1 = *not important*, 2 = *of minor importance*, 3 = *moderately important* and 4 = *very*

[15] In Sweden, the union density rate was 75.1% in 2006; in Germany, it was 14.6% (data available at http://stats.oecd.org/Index.aspx?DatasetCode=U_D_D). In Colombia, this rate was 3.4% in 2007 (Guataquí et al. 2009).

[16] According to the results of our survey, 35% of the large firms have collective agreements as opposed to only 3% of the small firms.

important. As before, we used the same set of benchmark regressors and kept four categories for the dependent variable in all the models, since the threshold parameters are statistically different from one another.

The results for the reason rated as the most important for not cutting wages, namely to *prevent the loss of the most productive and more experienced workers* are reported in Table 5. In the case of managers, the main findings indicate the size of the firm, its geographic location and the sector where it operates affect the probability of rating this reason as important. In particular, greater support for the adverse selection model is found among larger firms and those operating in the "other services" sector. On the contrary, less support is found among firms located outside the nation's capital and those operating in construction, manufacturing, financial services and education and health, compared to the trade sector. For professionals, the probability of rating this reason as important is statistically significant only for firms involved in transport, storage and communications and "other services"; however, for technicians, assistants and unskilled workers, it is significant only for firms involved in transport, storage and communications.

Table 5
Importance of the following reasons in preventing wage cuts
(Ordered *logit* estimates, weighted)

Dependent variable and occupational groups / Explanatory variables	*To prevent the loss of the most productive and more experienced workers*					
	Managers		**Professionals**		**Technicians, assistants and unskilled workers**	
Agriculture, forestry, fishing	0.091	(0.225)	0.307	(0.225)	0.026	(0.218)
Construction	-0.746***	(0.210)	-0.065	(0.216)	-0.171	(0.221)
Electricity, gas, water, mining	0.374	(0.282)	0.241	(0.289)	0.195	(0.282)
Manufacturing	-0.491***	(0.217)	0.140	(0.226)	0.207	(0.216)
Financial services	-0.829***	(0.293)	0.118	(0.347)	-0.043	(0.344)
Transport, storage and comm.	-0.333*	(0.195)	0.586***	(0.213)	0.391**	(0.206)
Education and health	-0.458*	(0.260)	0.388	(0.283)	-0.060	(0.262)
Other services	0.444***	(0.191)	0.452***	(0.203)	0.033	(0.184)
Region	-0.729***	(0.132)	-0.190	(0.142)	-0.165	(0.138)
Log (No. employees)	0.218***	(0.055)	0.066	(0.059)	-0.015	(0.056)
Skilled workers (%)	0.002	(0.003)	-0.001	(0.003)	-0.004	(0.003)
Minimum wage earners (%)	-0.002	(0.003)	-0.001	(0.003)	-0.003	(0.003)
Flexible benefits	0.069	(0.148)	0.145	(0.154)	0.196	(0.147)
Variable pay	0.175	(0.133)	0.215	(0.148)	0.159	(0.144)
Collective agreements	-0.086	(0.283)	-0.228	(0.299)	-0.380	(0.279)
Union members (%)	0.001	(0.006)	0.001	(0.007)	-0.001	(0.005)
Labour costs (%)	0.001	(0.004)	0.003	(0.004)	0.006	(0.004)
Permanent workers (%)	0.001	(0.002)	0.001	(0.002)	0.000	(0.002)
Number of observations	1266		1163		1283	
Pseudo R^2	0.043		0.011		0.009	

Notes: Robust standard errors in parentheses. (*), (**) and (***) denote statistical significance at 10, 5 and 1 percent, respectively. The dependent variable increases with the importance, ranging from 1 to 4, where 1=*not important*, 2 = *of minor importance*, 3 = *moderately important* and 4 = *very important*.
Source: Authors calculations.

For the alternatives *do not affect employee's motivation* and *do not affect worker's effort and productivity*, the results indicate the probability that the firms rate each of these reasons as important increases with the number of employees. Agell and Bennmarker (2007) point out that wage rigidity might be an issue in larger firms because of shirking, since it is more difficult for them to supervise workers' effort. In addition, the importance

of these reasons increases for firms in the "other services" sector, which includes highly specialized activities that require a particular expertise.[17] On the contrary, the importance of these alternatives is less for firms located in Bogotá compared to the rest of the country. In the case of managers, the economic sector where the firm operates could significantly increase or decrease the probability of rating these two alternatives as important, compared to the trade sector. For instance, the probability reduces for firms in construction, manufacturing and financial services, whereas it increases for firms involved in electricity, gas, water and mining (see Table 6).

[17] This sector includes activities such as software consultancy and supply; maintenance and repair of office; accounting and computing machinery; research and experimental development in natural sciences, engineering, social sciences and humanities; legal, accounting, book-keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; and advertising, among other activities.

Table 6
Importance of the following reasons in preventing wage cuts
(Ordered *logit* estimates, weighted)

Dependent variable and occupational groups / Explanatory variables	*Do not affect employee's motivation*						*Do not affect workers' efforts and productivity*					
	Managers		**Professionals**		**Technicians, assistants and unskilled workers**		**Managers**		**Professionals**		**Technicians, assistants and unskilled workers**	
Agriculture, forestry, fishing	0.045	(0.228)	0.160	(0.224)	-0.176	(0.209)	-0.175	(0.224)	0.078	(0.223)	-0.068	(0.218)
Construction	-0.717***	(0.227)	-0.076	(0.221)	-0.176	(0.218)	-0.818***	(0.234)	0.028	(0.214)	-0.127	(0.216)
Electricity, gas, water, mining	0.466**	(0.259)	0.149	(0.269)	-0.010	(0.273)	0.447*	(0.252)	0.181	(0.266)	0.156	(0.282)
Manufacturing	-0.701***	(0.196)	-0.213	(0.221)	-0.235	(0.213)	-0.779***	(0.193)	0.048	(0.221)	-0.128	(0.207)
Financial services	-0.906***	(0.308)	-0.315	(0.337)	-0.338	(0.334)	-1.088***	(0.304)	-0.170	(0.350)	-0.263	(0.360)
Transport, storage and comm.	0.090	(0.196)	0.677***	(0.209)	0.501***	(0.198)	-0.117	(0.193)	0.810***	(0.208)	0.595***	(0.209)
Education and health	-0.337	(0.271)	-0.082	(0.266)	-0.185	(0.257)	-0.178	(0.287)	0.047	(0.286)	-0.211	(0.264)
Other services	0.981***	(0.192)	0.582***	(0.197)	0.093	(0.185)	0.889***	(0.191)	0.585***	(0.192)	0.190	(0.187)
Region	-0.908***	(0.136)	-0.399***	(0.139)	-0.284**	(0.135)	-1.025***	(0.135)	-0.379***	(0.140)	-0.328***	(0.140)
Log (No. employees)	0.211***	(0.056)	0.153***	(0.054)	0.084*	(0.053)	0.220***	(0.055)	0.155***	(0.056)	0.091*	(0.054)
Skilled workers (%)	0.003	(0.003)	0.004	(0.003)	0.001	(0.003)	0.001	(0.003)	0.003	(0.003)	0.000	(0.003)
Minimum wage earners (%)	0.000	(0.003)	0.000	(0.003)	-0.001	(0.003)	0.001	(0.003)	0.000	(0.003)	-0.001	(0.003)
Flexible benefits	-0.052	(0.143)	0.019	(0.144)	0.055	(0.141)	-0.042	(0.141)	0.187	(0.146)	0.107	(0.144)
Variable pay	0.297**	(0.134)	0.180	(0.144)	0.207	(0.137)	0.167	(0.130)	0.089	(0.142)	0.063	(0.138)
Collective agreements	0.190	(0.257)	-0.032	(0.238)	0.057	(0.237)	0.221	(0.276)	-0.091	(0.253)	-0.184	(0.243)
Union members (%)	-0.002	(0.007)	0.002	(0.006)	-0.001	(0.005)	-0.002	(0.006)	-0.003	(0.006)	-0.005	(0.006)
Labour costs (%)	-0.006*	(0.003)	-0.001	(0.004)	0.000	(0.004)	-0.007**	(0.003)	-0.002	(0.004)	0.002	(0.004)
Permanent workers (%)	0.002	(0.002)	0.003**	(0.002)	0.001	(0.002)	0.003**	(0.002)	0.004**	(0.002)	0.002	(0.002)
Number of observations	1266		1163		1283		1266		1163		1283	
Pseudo R^2	0.062		0.020		0.011		0.068		0.019		0.012	

Notes: Robust standard errors in parentheses. (*), (**) and (***) denote statistical significance at 10, 5 and 1 percent, respectively. The dependent variable increases with the importance, ranging from 1 to 4, where 1=*not important*, 2 = *of minor importance*, 3 = *moderately important* and 4 = *very important*.
Source: Authors calculations.

Similarly, as can be seen in Table 7, for the reasons *minimize costs of labour turnover* and *do not affect relative wages in relation to competition (outside the firm)*, the size of the firm, its location and economic sector are significant in explaining why firms rate these reasons as important in preventing wage cuts.

It is worth mentioning that an ordered *logit* model also was estimated for collective agreements as a reason for preventing wage cuts (see Table 8). Only in the case of technicians, assistants and unskilled workers was the share of unionized workers found to be positive and highly significant; this is indicative of the bargaining power these workers might have. In addition, the results show that, for most sectors, the coefficients are negative and significant with respect to the trade sector where union density is very low (according to our survey, only 2.2% of the firms in this sector have unions).

Regarding the reasons associated with the contract theory, *legal restrictions* and *previous agreements between employees and employers* (see Tables 8 and 9, respectively), the results show that firms located in Bogotá are more likely to consider these reasons as an explanation for wage rigidity. In the particular case of previous agreements, the coefficient of the share of employees who have a permanent contract is negative and highly significant. As suggested by Agell and Benmarker (2007), the bargaining power of these workers might increase as the share of employees with more secure jobs increases.

Table 7
Importance of the following reasons in preventing wage cuts
(Ordered *logit* estimates, weighted)

Dependent variable and occupational groups / Explanatory variables	*Minimize costs of labour turnover*						*Do not affect relative wages in relation to competition (outside the firm)*					
	Managers		**Professionals**		**Technicians, assistants and unskilled workers**		**Managers**		**Professionals**		**Technicians, assistants and unskilled workers**	
Agriculture, forestry, fishing	-0.239	(0.225)	-0.258	(0.245)	-0.455**	(0.229)	-0.201	(0.234)	-0.062	(0.250)	-0.202	(0.227)
Construction	-0.820***	(0.209)	-0.711***	(0.205)	-0.519***	(0.199)	-0.415**	(0.204)	-0.232	(0.201)	-0.125	(0.191)
Electricity, gas, water, mining	0.194	(0.266)	-0.110	(0.286)	-0.041	(0.276)	0.381	(0.253)	0.244	(0.269)	0.336	(0.243)
Manufacturing	-0.889***	(0.193)	-0.598***	(0.202)	-0.471***	(0.194)	-0.716***	(0.189)	-0.558***	(0.200)	-0.461***	(0.191)
Financial services	-1.009***	(0.3479	-0.870***	(0.308)	-0.728***	(0.282)	-0.983***	(0.353)	-1.120***	(0.333)	-0.881***	(0.341)
Transport, storage and comm.	-0.496***	(0.184)	-0.144	(0.189)	0.011	(0.179)	-0.516***	(0.190)	-0.474***	(0.208)	-0.324*	(0.193)
Education and health	-0.188	(0.273)	-0.072	(0.270)	-0.052	(0.256)	-0.136	(0.241)	-0.154	(0.234)	0.062	(0.226)
Other services	0.753***	(0.184)	0.574***	(0.195)	0.442***	(0.184)	0.517***	(0.192)	0.461***	(0.197)	0.616***	(0.184)
Region	-0.718***	(0.133)	-0.488***	(0.141)	-0.321***	(0.132)	-0.765***	(0.129)	-0.715***	(0.135)	-0.676***	(0.126)
Log (No. employees)	0.185***	(0.052)	0.159***	(0.053)	0.120***	(0.047)	0.227***	(0.057)	0.237***	(0.055)	0.134***	(0.050)
Skilled workers (%)	0.001	(0.003)	0.001	(0.003)	0.000	(0.003)	0.003	(0.003)	0.004	(0.003)	-0.001	(0.003)
Minimum wage earners (%)	0.001	(0.002)	0.002	(0.003)	0.001	(0.002)	-0.001	(0.002)	0.000	(0.003)	-0.004	(0.002)
Flexible benefits	0.061	(0.139)	0.158	(0.144)	0.176	(0.138)	-0.105	(0.130)	-0.125	(0.139)	-0.109	(0.130)
Variable pay	0.178	(0.132)	0.132	(0.138)	0.087	(0.130)	0.170	(0.137)	0.141	(0.140)	0.076	(0.131)
Collective agreements	0.189	(0.266)	-0.028	(0.271)	-0.148	(0.260)	0.291	(0.222)	0.218	(0.236)	0.317	(0.223)
Union members (%)	0.002	(0.006)	0.005	(0.006)	0.006	(0.006)	0.001	(0.005)	0.002	(0.005)	0.001	(0.005)
Labour costs (%)	-0.006	(0.004)	-0.003	(0.004)	-0.001	(0.004)	0.003	(0.004)	0.002	(0.004)	0.002	(0.004)
Permanent workers (%)	-0.001	(0.002)	-0.001	(0.002)	-0.001	(0.002)	0.002	(0.002)	0.002	(0.002)	0.001	(0.002)
Number of observations	1266		1163		1283		1266		1163		1283	
Pseudo R^2	0.055		0.036		0.024		0.048		0.043		0.034	

Notes: Robust standard errors in parentheses. (*), (**) and (***) denote statistical significance at 10, 5 and 1 percent, respectively. The dependent variable increases with the importance, ranging from 1 to 4, where 1=*not important*, 2 = *of minor importance*, 3 = *moderately important* and 4 = *very important*.
Source: Authors calculations.

Table 8
Importance of the following reasons in preventing wage cuts
(Ordered *logit* estimates, weighted)

Dependent variable and occupational groups / Explanatory variables	*Collective agreements*						*Legal restrictions*					
	Managers		**Professionals**		**Technicians, assistants and unskilled workers**		**Managers**		**Professionals**		**Technicians, assistants and unskilled workers**	
Agriculture, forestry, fishing	-0.898	(0.784)	-1.800***	(0.731)	-1.638***	(0.709)	-0.188	(0.222)	-0.191	(0.236)	0.011	(0.220)
Construction	-0.573	(0.952)	-2.302	(0.788)	-2.080	(1.365)	-0.829***	(0.221)	-0.817***	(0.222)	-0.79***0	(0.215)
Electricity, gas, water, mining	-1.217	(0.863)	-1.116***	(0.788)	-0.008	(0.800)	-0.101	(0.236)	-0.192	(0.245)	-0.162	(0.236)
Manufacturing	-1.065*	(0.684)	-1.530***	(0.598)	-1.201**	(0.586)	-0.931***	(0.194)	-0.933***	(0.201)	-0.787***	(0.189)
Financial services	-0.989	(0.947)	-1.695**	(0.799)	-1.539**	(0.820)	-0.839***	(0.349)	-1.014***	(0.353)	-0.951***	(0.333)
Transport, storage and comm.	-1.325*	(0.797)	-1.695***	(0.690)	-1.870***	(0.753)	-0.522***	(0.196)	-0.682***	(0.210)	-0.442***	(0.191)
Education and health	0.307	(0.999)	-0.142	(0.981)	-1.716*	(1.067)	-0.262	(0.283)	-0.366	(0.295)	-0.375	(0.273)
Other services	-0.944	(0.863)	-2.341***	(0.756)	-2.180***	(0.843)	-0.090	(0.190)	-0.189	(0.205)	-0.292	(0.193)
Region	-0.749**	(0.407)	-0.154	(0.386)	-0.605*	(0.372)	-0.678***	(0.130)	-0.633***	(0.134)	-0.652***	(0.124)
Log (No. employees)	-0.393***	(0.155)	-0.240	(0.173)	0.410***	(0.180)	0.060	(0.055)	0.085	(0.057)	0.043	(0.052)
Skilled workers (%)	-0.021*	(0.013)	-0.024**	(0.012)	-0.009	(0.012)	0.001	(0.003)	0.000	(0.003)	0.002	(0.003)
Minimum wage earners (%)	0.002	(0.007)	-0.009	(0.006)	-0.005	(0.006)	-0.002	(0.002)	-0.001	(0.003)	-0.001	(0.002)
Flexible benefits	0.310	(0.429)	0.369	(0.399)	-0.398	(0.415)	0.110	(0.138)	0.141	(0.144)	0.139	(0.139)
Variable pay	-0.129	(0.392)	-0.344	(0.479)	-0.109	(0.398)	0.232*	(0.140)	0.172	(0.147)	0.183	(0.135)
Collective agreements							0.313	(0.224)	0.350	(0.229)	0.392*	(0.231)
Union members (%)	-0.005	(0.006)	0.002	(0.005)	0.014***	(0.005)	0.004	(0.004)	0.003	(0.004)	0.003	(0.004)
Labour costs (%)	0.001	(0.008)	-0.001	(0.009)	-0.003	(0.010)	0.000	(0.004)	-0.001	(0.004)	-0.001	(0.004)
Permanent workers (%)	0.003	(0.006)	0.004	(0.006)	0.000	(0.005)	-0.002	(0.002)	-0.002	(0.002)	0.000	(0.002)
Number of observations	182		175		187		1266		1163		1283	
Pseudo R^2	0.079		0.064		0.110		0.035		0.035		0.031	

Notes: Robust standard errors in parentheses. (*), (**) and (***) denote statistical significance at 10, 5 and 1 percent, respectively. The dependent variable increases with the importance, ranging from 1 to 4, where 1=*not important*, 2 = *of minor importance*, 3 = *moderately important* and 4 = *very important*.
Source: Authors calculations.

Table 9
Importance of the following reasons in preventing wage cuts
(Ordered *logit* estimates, weighted)

Dependent variable and occupational groups / Explanatory variables	*Previous agreements between employees and employers*						*To prevent the loss of the firm's reputation*					
	Managers		**Professionals**		**Technicians, assistants and unskilled workers**		**Managers**		**Professionals**		**Technicians, assistants and unskilled workers**	
Agriculture, forestry, fishing	-0.178	(0.233)	-0.238	(0.231)	-0.154	(0.201)	-0.001	(0.237)	0.085	(0.240)	-0.289	(0.222)
Construction	-0.748***	(0.208)	-0.327*	(0.210)	-0.296	(0.207)	-0.076	(0.230)	0.000	(0.234)	0.058	(0.224)
Electricity, gas, water, mining	-0.073	(0.257)	-0.596**	(0.270)	-0.499**	(0.264)	0.129	(0.249)	0.026	(0.251)	0.051	(0.231)
Manufacturing	-0.650***	(0.189)	-0.218	(0.211)	-0.206	(0.206)	-0.085	(0.203)	-0.141	(0.215)	-0.126	(0.208)
Financial services	-0.298	(0.265)	0.155	(0.274)	0.361	(0.280)	0.204	(0.315)	0.083	(0.340)	-0.051	(0.302)
Transport, storage and comm.	-0.241	(0.194)	0.476***	(0.213)	0.394**	(0.186)	0.503***	(0.195)	0.550***	(0.209)	0.488***	(0.193)
Education and health	-0.057	(0.266)	0.025	(0.257)	-0.071	(0.234)	0.330	(0.264)	0.449*	(0.272)	0.284	(0.261)
Other services	0.505***	(0.191)	0.186	(0.191)	-0.104	(0.180)	0.578***	(0.180)	0.528***	(0.186)	0.336**	(0.181)
Region	-0.830***	(0.133)	-0.299***	(0.133)	-0.163	(0.120)	-0.173	(0.133)	-0.133	(0.138)	-0.074	(0.130)
Log (No. employees)	0.007	(0.052)	-0.064	(0.050)	-0.099**	(0.049)	-0.055	(0.050)	-0.037	(0.054)	-0.025	(0.049)
Skilled workers (%)	-0.001	(0.003)	0.000	(0.003)	-0.001	(0.003)	-0.001	(0.003)	0.000	(0.003)	-0.001	(0.003)
Minimum wage earners (%)	0.001	(0.002)	0.001	(0.002)	-0.003	(0.002)	0.000	(0.002)	0.002	(0.003)	0.000	(0.002)
Flexible benefits	0.156	(0.134)	0.227*	(0.141)	0.228*	(0.138)	0.162	(0.131)	0.223*	(0.140)	0.204	(0.136)
Variable pay	0.092	(0.131)	0.040	(0.140)	-0.018	(0.133)	-0.067	(0.136)	-0.053	(0.148)	-0.037	(0.134)
Collective agreements	0.343*	(0.212)	0.107	(0.224)	0.304	(0.229)	-0.103	(0.234)	-0.166	(0.239)	-0.017	(0.232)
Union members (%)	0.005	(0.006)	0.009*	(0.005)	0.014***	(0.005)	-0.001	(0.005)	0.000	(0.005)	-0.002	(0.004)
Labour costs (%)	-0.002	(0.003)	0.005	(0.004)	0.002	(0.003)	0.002	(0.004)	0.001	(0.004)	0.002	(0.004)
Permanent workers (%)	-0.004***	(0.002)	-0.004***	(0.002)	-0.002	(0.002)	-0.002	(0.002)	-0.003*	(0.002)	-0.003*	(0.002)
Number of observations	1266		1163		1283		1266		1163		1283	
Pseudo R^2	0.040		0.014		0.015		0.011		0.013		0.009	

Notes: Robust standard errors in parentheses. (*), (**) and (***) denote statistical significance at 10, 5 and 1 percent, respectively. The dependent variable increases with the importance, ranging from 1 to 4, where 1=*not important*, 2 = *of minor importance*, 3 = *moderately important* and 4 = *very important*.
Source: Authors calculations.

Finally, another reason for avoiding wage reductions was *to prevent the loss of the firm's reputation*. This reason is important for firms in "other services" and transport, storage and communications, generally because these sectors might employ specialized workers and firms do not want their wage policy to be a deterrent for future employees (see Table 9).

Complementarity among Theories on Wage Rigidities

Summers (1988) and Agell and Benmarker (2007) point out that different sources of wage rigidity can operate at the same time, reinforcing one another. To explore the possible interaction between different theories, we computed Spearman rank correlations between the reasons for preventing wage cuts (see Tables 10a, 10b and 10c).

The results show the reasons associated with the efficiency wage theory are highly correlated for all occupational groups. Specifically, in all cases, the highest observed correlation is between *do not affect employee's motivation* and *do not affect worker's effort and productivity*. The former also is highly correlated with the reasons *prevent the loss of the most productive and more experienced workers* and *minimize costs of labour turnover,* which could indicate that firms prefer to keep their employees motivated, so as to avoid losing their most valuable workers and incurring the cost to train new workers. It is also worth mentioning that the presence of collective agreements is highly correlation with the reasons associated with the contract theory, given the bargaining power unions have to set long term contracts between firms and workers.

Table 10a

Spearman rank correlations between reasons for preventing wage cuts: Managers

Reasons	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Legal restrictions (1)	1.000								
Previous agreements between employees and employers (2)	0.377*	1.000							
To prevent the loss of the firm's reputation (3)	0.092*	0.298*	1.000						
Do not affect employee's motivation (4)	0.239*	0.363*	0.398*	1.000					
Do not affect workers' efforts and productivity (5)	0.265*	0.381*	0.356*	0.818*	1.000				
Minimize costs of labour turnover (6)	0.349*	0.371*	0.222*	0.497*	0.553*	1.000			
To prevent the loss of the most productive and more experienced workers (7)	0.215*	0.350*	0.327*	0.619*	0.608*	0.473*	1.000		
Do not affect relative wages in relation to competition (outside the firm) (8)	0.303*	0.365*	0.207*	0.401*	0.420*	0.530*	0.394*	1.000	
Collective agreements (9)	0.255*	0.337*	0.062	-0.060	0.048	0.018	-0.010	0.057	1.000

Note: * denotes statistical significance at 1%. Number of observations 1,267, except for action (9), where the number of observations is 183.
Source: Authors calculations.

Table 10b

Spearman rank correlations between reasons for preventing wage cuts: Professionals

Reasons	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Legal restrictions (1)	1.000								
Previous agreements between employees and employers (2)	0.229*	1.000							
To prevent the loss of the firm's reputation (3)	0.048	0.399*	1.000						
Do not affect employee's motivation (4)	0.069	0.256*	0.524*	1.000					
Do not affect workers' efforts and productivity (5)	0.064	0.323*	0.517*	0.773*	1.000				
Minimize costs of labour turnover (6)	0.299*	0.236*	0.281*	0.360*	0.371*	1.000			
To prevent the loss of the most productive and more experienced workers (7)	0.023	0.311*	0.468*	0.563*	0.567*	0.332*	1.000		
Do not affect relative wages in relation to competition (outside the firm) (8)	0.300*	0.188*	0.197*	0.230*	0.224*	0.454*	0.213*	1.000	
Collective agreements (9)	0.354*	0.337*	0.107	-0.013	0.048	0.032	0.097	0.011	1.000

Note: * denotes statistical significance at 1%. Number of observations 1,164, except for action (9), where the number of observations is 176.
Source: Authors calculations.

Table 10c
Spearman rank correlations between reasons for preventing wage cuts: Technicians, assistants, and unskilled workers

Reasons	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Legal restrictions (1)	1.000								
Previous agreements between employees and employers (2)	0.134*	1.000							
To prevent the loss of the firm's reputation (3)	-0.028	0.382*	1.000						
Do not affect employee's motivation (4)	-0.019	0.266*	0.577*	1.000					
Do not affect workers' efforts and productivity (5)	0.007	0.303*	0.566*	0.759*	1.000				
Minimize costs of labour turnover (6)	0.152*	0.185*	0.330*	0.316*	0.310*	1.000			
To prevent the loss of the most productive and more experienced workers (7)	-0.013	0.304*	0.484*	0.558*	0.601*	0.329*	1.000		
Do not affect relative wages in relation to competition (outside the firm) (8)	0.184*	0.114*	0.220*	0.209*	0.192*	0.431*	0.211*	1.000	
Collective agreements (9)	0.364*	0.310*	-0.087	0.018	0.036	0.040	0.085	0.036	1.000

Note: * denotes statistical significance at 1%. Number of observations 1,284, except for action (9), where the number of observations is 188.
Source: Authors calculations.

V. Firms' Other Responses to an Economic Slowdown

Besides considering changes in base wages, we examined other alternatives firms could use to adjust labour costs during a period of economic slowdown. According to Babecký et al. (2009b) and Fabiani et al. (2010), the use of alternative strategies has gained importance due to the existence of wage rigidities that make it difficult to cut wages to adjust the labour market. In particular, we included options related to remuneration for employees, other than base wages, and the firm's personnel. The former includes the reduction of variable pay and non-statutory benefits[18], while the latter considers change in the type of employment contract, laying off employees, hiring of workers at lower wages and not hiring anyone (See Table 11).

The survey shows that, in all cases, around 30% of the firms consider the option of *reducing non-statutory benefits* and *reducing variable pay* as *likely* / *very likely*. The option of *laying off employees* is more common in the case of technicians, assistants and unskilled workers than in the case of managers and professionals, which suggests that firms are more reluctant to fire more skilled workers.[19] According to our survey, firms that found it difficult to fill vacancies argued the main reason was the lack of candidates with the required profile, especially in the case of managers.

[18] Non-statutory benefits are determined either by collective agreements or set at the discretion of the employer.

[19] In fact, the mean score obtained with respect to this strategy is the highest for professionals and technicians, assistants and unskilled workers.

Table 11

How likely is your firm to carry out the following actions?

Occupational group	Change the type of employment contract	Do not hire anyone	Lay off employees	Hire new workers at lower wages	Reduce non-statutory benefits	Reduce variable pay	Do nothing
Managers							
Mean score*	1.64	2.18	1.93	1.83	1.84	1.90	2.00
Responses (%)							
Not at all / not likely	81.2	58.2	70.8	73.6	70.5	68.9	78.6
Likely / very likely	18.8	41.8	29.2	26.4	29.5	31.1	21.4
Professionals							
Mean score*	1.86	2.21	2.20	2.14	1.82	1.90	1.76
Responses (%)							
Not at all / not likely	72.2	56.6	59.6	59.3	70.5	71.0	87.7
Likely / very likely	27.8	43.4	40.4	40.7	29.5	29.0	12.3
Technicians, assistants, and unskilled workers							
Mean score*	1.93	2.08	2.34	2.14	1.75	1.90	1.77
Responses (%)							
Not at all / not likely	68.8	63.3	53.4	60.9	74.0	73.0	87.0
Likely / very likely	31.2	36.7	46.6	39.1	26.0	27.0	13.0

*Average score based on the following scale: 1 = *not at all*, 2 = *not likely*, 3 = *likely*, 4 = *very likely*.

Source: Authors calculations.

The alternative of a *change the type of employment contract* is also *likely* / *very likely* for about 30% of the firms. At the sector level, in agriculture, forestry and fishing the options of *hiring new workers at lower wages* and *laying off employees* have higher response rates for *not at all* / *not likely* than the other sectors with respect to professionals and technicians, assistants and unskilled workers. In the construction sector, the alternative of *reducing variable pay* has the highest response rates for *not at all* / *not likely*, in all occupations (83% on average). Lastly, in the case of agriculture, forestry and fishing, the alternative of *hiring new workers at lower wages* has the highest response rate for *not at all* / *not likely*, in all occupations (80% on average).

The strategies to adjust labour costs in a period of economic slowdown are not mutually exclusive and firms could use more than one option. To evaluate the link between the different alternatives, Spearman rank correlations were calculated for the pairing of the different strategies (See Tables 12a, 12b and 12c). As expected, *laying off employees* and *hiring new workers at lower wages* have one of the highest correlation coefficients for all occupational positions, suggesting that some firms could use turnover to adjust labour costs. Similarly, the strategy of *changing the type of employment contract* is highly correlated with the options of *laying off employees* and *hiring new works at lower wages*, which might indicate that firms could deal with a difficult economic situation by recruiting workers under a different type of contract and at a lower wage. Another pair with high correlations is *reducing non-statutory benefits* and *reducing variable pay*. Similar results for Europe were obtained by Babecký et al. (2009b), who emphasized the complementary nature of these two strategies.

Table 12a
Spearman rank correlations between strategies to face a slowdown in economic activity: Managers

Actions	(1)	(2)	(3)	(4)	(5)	(6)
Change the type of employment contract (1)	1.000					
Do not hire anyone (2)	0.277*	1.000				
Lay off employees (3)	0.418*	0.427*	1.000*			
Hire new workers at lower wages (4)	0.425*	0.313*	0.491*	1.000		
Reduce non-statutory benefits (5)	0.318*	0.320*	0.317*	0.336*	1.000	
Reduce variable pay (6)	0.307*	0.286*	0.292*	0.315*	0.458*	1.000

Note: All correlations are significant at the 1% level. Number of observations 1,267, except for actions (5) and (6), where the number of observations is 947 and 678, respectively.
Source: Authors calculations.

Table 12b
Spearman rank correlations between strategies to face a slowdown in economic activity: Professionals

Actions	(1)	(2)	(3)	(4)	(5)	(6)
Change the type of employment contract (1)	1.000					
Do not hire anyone (2)	0.094*	1.000				
Lay off employees (3)	0.376*	0.306*	1.000			
Hire new workers at lower wages (4)	0.418*	0.104*	0.432*	1.000		
Reduce non-statutory benefits (5)	0.144*	0.303*	0.153*	0.134*	1.000	
Reduce variable pay (6)	0.247*	0.214*	0.177*	0.148*	0.456*	1.000

Note: All correlations are significant at the 1% level. Number of observations 1,164, except for actions (5) and (6), where the number of observations is 874 and 622, respectively.
Source: Authors calculations.

Table 12c
Spearman rank correlations between strategies to face a slowdown in economic activity: Technicians, assistants, and unskilled workers

Actions	(1)	(2)	(3)	(4)	(5)	(6)
Change the type of employment contract (1)	1.000					
Do not hire anyone (2)	0.068	1.000				
Lay off employees (3)	0.346*	0.221*	1.000			
Hire new workers at lower wages (4)	0.423*	0.053	0.382*	1.000		
Reduce non-statutory benefits (5)	0.125*	0.305*	0.133*	0.146*	1.000	
Reduce variable pay (6)	0.179*	0.258*	0.170*	0.177*	0.470*	1.000

Note: All correlations are significant at the 1% level. Number of observations 1,284, except for actions (5) and (6), where the number of observations is 955 and 673, respectively.
Source: Authors calculations.

To analyse the determinants of the different strategies, ordered *logit* models were estimated using the same set of regressors as in the previous models. With regard to the likelihood of reducing non-statutory benefits, the results indicate that the probability of cutting them increases in firms with flexible benefits. On the contrary, the likelihood is lower in firms located in Bogotá and in firms operating in construction and financial services. In addition, the probability reduces as the percentage of workers with permanent contracts increases. As mentioned earlier, workers' bargaining power might increase as the share of employees with more protected jobs increases. The strategy of *reducing variable pay* is less likely in firms operating in construction, manufacturing and financial services, where our survey shows that variable pay is more widespread (nearly 75% of the firms use this type of remuneration) (see Table 13).

The next alternatives are related to the type of labour contract and changes in company personnel. Regarding a *change in the type of employment contracts*, in general, we find the likelihood of using this strategy decreases as the share of permanent workers and the size of the firm increase; this is also the case with the presence of collective agreements. On the contrary, the probability of changing employment contracts increases in firms with flexible benefits. Moreover, the results show the likelihood of *not hiring anyone* increases with the presence of collective agreements and with firm size. Conversely, the probability reduces with higher labour costs and in firms located in Bogotá. At the sector level, firms belonging to construction, manufacturing, financial services, and transport, storage and communications are less likely not to hire anyone (see Table 14).

Table 13
How likely it is for a firm to reduce benefits or to reduce variable pay
(Ordered *logit* estimates, weighted)

Dependent variable and occupational groups / Explanatory variables	Reduce non-statutory benefits						Reduce variable pay					
	Managers		Professionals		Technicians, assistants and unskilled workers		Managers		Professionals		Technicians, assistants and unskilled workers	
Agriculture, forestry, fishing	0.366	(0.277)	0.108	(0.292)	0.063	(0.251)	0.021	(0.336)	-0.197	(0.356)	-0.053	(0.312)
Construction	-0.544**	(0.284)	-0.507*	(0.292)	-0.701***	(0.266)	-0.469*	(0.293)	-0.863***	(0.315)	-0.779***	(0.304)
Electricity, gas, water, mining	0.184	(0.299)	-0.005	(0.296)	-0.011	(0.284)	0.325	(0.380)	0.346	(0.363)	0.324	(0.352)
Manufacturing	-0.122	(0.225)	-0.210	(0.243)	-0.137	(0.230)	-0.540**	(0.262)	-0.442*	(0.269)	-0.685***	(0.261)
Financial services	-1.052**	(0.461)	-0.885**	(0.428)	-1.128***	(0.482)	-0.793**	(0.421)	-1.237***	(0.438)	-1.140***	(0.405)
Transport, storage, comm.	-0.147	(0.218)	-0.247	(0.225)	-0.216	(0.217)	-0.127	(0.264)	-0.206	(0.282)	0.061	(0.278)
Education and health	0.103	(0.301)	-0.008	(0.315)	-0.206	(0.308)	0.167	(0.430)	0.226	(0.433)	0.198	(0.436)
Other services	0.183	(0.231)	0.113	(0.243)	0.014	(0.233)	0.188	(0.236)	0.128	(0.252)	0.312	(0.260)
Region	-0.532***	(0.157)	-0.350**	(0.168)	-0.351**	(0.159)	-0.232	(0.179)	0.007	(0.183)	-0.081	(0.177)
Log (No. employees)	0.058*	(0.057)	0.080	(0.062)	0.038	(0.056)	-0.070	(0.073)	-0.030	(0.070)	-0.029	(0.065)
Skilled workers (%)	0.002	(0.003)	0.002	(0.004)	0.001	(0.004)	0.002	(0.004)	0.001	(0.004)	-0.005	(0.004)
Minimum wage earners (%)	-0.002	(0.003)	-0.001	(0.003)	-0.006**	(0.003)	0.000	(0.003)	0.001	(0.004)	-0.004	(0.004)
Flexible benefits	0.519***	(0.152)	0.417***	(0.157)	0.272**	(0.150)	0.234	(0.172)	0.365**	(0.187)	0.239	(0.182)
Variable pay	0.272*	(0.161)	0.241	(0.168)	0.301**	(0.160)						
Collective agreements	0.194	(0.239)	0.108	(0.264)	-0.160	(0.263)	1.052***	(0.288)	0.566**	(0.323)	0.328	(0.323)
Union members (%)	-0.005	(0.005)	0.002	(0.005)	-0.002	(0.005)	-0.006	(0.007)	-0.004	(0.006)	-0.006	(0.007)
Labour costs (%)	-0.001	(0.005)	0.000	(0.005)	-0.002	(0.005)	-0.001	(0.004)	-0.001	(0.005)	-0.001	(0.005)
Permanent workers (%)	-0.003*	(0.002)	-0.004*	(0.002)	-0.002	(0.002)	-0.001	(0.002)	-0.003	(0.003)	0.001	(0.002)
Number of observations	946		873		954		677		621		672	
Pseudo R^2	0.039		0.028		0.028		0.024		0.028		0.029	

Notes: Robust standard errors in parentheses. (*), (**) and (***) denote statistical significance at 10, 5 and 1 percent, respectively. The dependent variable increases with the likelihood, ranging from 1 to 4, where 1=*not at all*, 2 = *not likely*, 3 = *likely* and 4 = *very likely*.
Source: Authors calculations.

Table 14
How likely it is for a firm to change the type of employment contract or not to hire anyone
(Ordered *logit* estimates, weighted)

Dependent variable and occupational groups / Explanatory variables	Change the type of employment contract						Not to hire anyone					
	Managers		Professionals		Technicians, assistants and unskilled workers		Managers		Professionals		Technicians, assistants and unskilled workers	
Agriculture, forestry, fishing	-0.311	(0.248)	-0.409*	(0.251)	-0.334	(0.234)	-0.103	(0.218)	-0.096	(0.223)	-0.454**	(0.226)
Construction	-0.570***	(0.240)	0.054	(0.215)	-0.035	(0.206)	-0.455**	(0.227)	-0.479**	(0.230)	-0.559***	(0.219)
Electricity, gas, water, mining	-0.001	(0.287)	-0.193	(0.319)	-0.473*	(0.289)	0.181	(0.272)	-0.180	(0.280)	-0.048	(0.255)
Manufacturing	-0.374**	(0.199)	0.304	(0.200)	0.208	(0.193)	-0.617***	(0.193)	-0.729***	(0.199)	-0.668***	(0.198)
Financial services	-0.503	(0.350)	0.442	(0.309)	0.231	(0.308)	-0.603**	(0.299)	-0.603**	(0.303)	-0.703***	(0.315)
Transport, storage, comm.	-0.018	(0.200)	0.428**	(0.214)	0.401**	(0.195)	-0.516***	(0.188)	-0.556***	(0.204)	-0.449***	(0.191)
Education and health	-0.018	(0.302)	0.327	(0.279)	0.200	(0.257)	-0.195	(0.285)	-0.388	(0.301)	-0.480*	(0.276)
Other services	0.215	(0.186)	-0.053	(0.194)	-0.341**	(0.188)	0.328*	(0.185)	0.228	(0.195)	0.058	(0.178)
Region	-0.289**	(0.136)	0.245*	(0.136)	0.418***	(0.127)	-0.400***	(0.130)	-0.370***	(0.136)	-0.248**	(0.128)
Log (No. employees)	-0.023	(0.054)	-0.140***	(0.051)	-0.109***	(0.047)	0.195***	(0.047)	0.175***	(0.050)	0.173***	(0.048)
Skilled workers (%)	0.000	(0.003)	-0.003	(0.003)	-0.002	(0.003)	0.004	(0.003)	0.004	(0.003)	0.006**	(0.003)
Minimum wage earners (%)	-0.001	(0.003)	0.000	(0.003)	0.001	(0.002)	0.001	(0.002)	0.002	(0.003)	0.000	(0.002)
Flexible benefits	0.228*	(0.140)	0.431***	(0.146)	0.297**	(0.144)	0.173*	(0.134)	0.115	(0.140)	0.083	(0.135)
Variable pay	0.198	(0.142)	-0.035	(0.145)	-0.061	(0.137)	0.202	(0.129)	0.201	(0.136)	-0.021	(0.129)
Collective agreements	-0.177	(0.265)	-0.416*	(0.268)	-0.436*	(0.255)	0.655***	(0.232)	0.636***	(0.227)	0.767***	(0.221)
Union members (%)	0.002	(0.005)	0.002	(0.004)	0.000	(0.005)	0.002	(0.005)	0.004	(0.005)	-0.003	(0.005)
Labour costs (%)	0.001	(0.005)	0.002	(0.004)	0.005	(0.003)	-0.008***	(0.003)	-0.008***	(0.003)	-0.007***	(0.003)
Permanent workers (%)	-0.006***	(0.002)	-0.005***	(0.002)	-0.002	(0.002)	0.000	(0.002)	0.000	(0.002)	0.001	(0.002)
Number of observations	1266		1163		1283		1266		1163		1283	
Pseudo R^2	0.021		0.017		0.016		0.036		0.033		0.025	

Notes: Robust standard errors in parentheses. (*), (**) and (***) denote statistical significance at 10, 5 and 1 percent, respectively. The dependent variable increases with the likelihood, ranging from 1 to 4, where 1=*not at all*, 2 = *not likely*, 3 = *likely* and 4 = *very likely*.
Source: Authors calculations.

The alternative of *laying off workers* is less likely in Bogotá and in firms in agriculture, forestry and fishing and more likely in firms with flexible benefits and those operating in transport, storage and communications. For technicians, assistants and unskilled workers, the presence of collective agreements reduces the probability of *laying off workers* (see Table 15).

The main determinants of the possibility of *hiring new workers at lower wages* differ among occupational groups. In the case of managers, the most important explanatory variables are labour intensity, the presence of variable pay and firm size. For professionals, the existence of flexible benefits, the location of the firm and the sector where the firm operates are the most significant determinants. Finally, for technicians, assistants and unskilled workers, the share of minimum wages earners and the share of employees on a permanent contract are significant explanatory factors, besides sector and location of the firm (see Table 15).

Table 15
How likely it is for a firm to lay off employees or to hire new workers at lower wages
(Ordered *logit* estimates, weighted)

Dependent variable and occupational groups / Explanatory variables	Lay off employees						Hire new workers at lower wages					
	Managers		Professionals		Technicians, assistants and unskilled workers		Managers		Professionals		Technicians, assistants and unskilled workers	
Agriculture, forestry, fishing	-0.424**	(0.234)	-0.625***	(0.239)	-0.456**	(0.226)	-0.167	(0.236)	-0.508**	(0.232)	-0.357*	(0.215)
Construction	-0.128	(0.223)	0.288	(0.210)	0.225	(0.201)	-0.259	(0.225)	0.442**	(0.216)	0.452**	(0.208)
Electricity, gas, water, mining	0.135	(0.251)	-0.423	(0.279)	-0.360	(0.265)	0.292	(0.268)	0.224	(0.263)	-0.093	(0.255)
Manufacturing	-0.342*	(0.193)	0.079	(0.192)	0.054	(0.186)	-0.273	(0.187)	0.366**	(0.188)	0.518***	(0.187)
Financial services	-0.446	(0.323)	0.119	(0.298)	0.095	(0.259)	-0.533*	(0.347)	0.524	(0.366)	0.719**	(0.335)
Transport, storage, comm.	0.084	(0.194)	0.517***	(0.205)	0.376**	(0.199)	0.266	(0.193)	0.715***	(0.202)	0.817***	(0.190)
Education and health	-0.128	(0.272)	0.140	(0.270)	0.061	(0.255)	0.308	(0.272)	0.901***	(0.273)	0.486**	(0.233)
Other services	0.324**	(0.173)	0.123	(0.180)	-0.103	(0.179)	0.565***	(0.187)	0.312*	(0.187)	0.181	(0.181)
Region	-0.635***	(0.133)	-0.329***	(0.136)	-0.246**	(0.122)	-0.177	(0.129)	0.455***	(0.136)	0.679***	(0.122)
Log (No. employees)	0.091**	(0.048)	-0.008	(0.050)	-0.033	(0.045)	0.146***	(0.052)	-0.026	(0.053)	-0.020	(0.044)
Skilled workers (%)	0.003	(0.003)	0.006*	(0.003)	0.002	(0.003)	-0.001	(0.003)	-0.003	(0.003)	-0.002	(0.003)
Minimum wage earners (%)	0.001	(0.002)	0.001	(0.003)	0.000	(0.003)	-0.002	(0.002)	-0.002	(0.003)	-0.007***	(0.002)
Flexible benefits	0.172	(0.141)	0.502***	(0.142)	0.417***	(0.136)	0.160	(0.134)	0.269**	(0.143)	0.179	(0.139)
Variable pay	0.215*	(0.137)	0.066	(0.140)	0.006	(0.128)	0.309**	(0.138)	0.238*	(0.148)	0.109	(0.137)
Collective agreements	-0.019	(0.226)	-0.176	(0.227)	-0.384**	(0.224)	0.377*	(0.227)	0.130	(0.244)	-0.081	(0.239)
Union members (%)	0.010***	(0.005)	0.008	(0.005)	0.008	(0.005)	-0.007*	(0.005)	-0.007	(0.005)	-0.006	(0.005)
Labour costs (%)	-0.001	(0.004)	0.001	(0.004)	-0.001	(0.003)	-0.009**	(0.004)	-0.004	(0.004)	-0.006*	(0.003)
Permanent workers (%)	-0.002	(0.002)	-0.003*	(0.002)	-0.002	(0.002)	-0.003*	(0.002)	-0.002	(0.002)	-0.003**	(0.002)
Number of observations	1266		1163		1283		1266		1163		1283	
Pseudo R^2	0.026		0.017		0.011		0.028		0.021		0.034	

Notes: Robust standard errors in parentheses. (*), (**) and (***) denote statistical significance at 10, 5 and 1 percent, respectively. The dependent variable increases with the likelihood, ranging from 1 to 4, where 1=*not at all*, 2 = *not likely*, 3 = *likely* and 4 = *very likely*.
Source: Authors calculations.

VI. Conclusions

This paper uses a unique wage setting survey of 1,305 Colombian firms to explore the nature and source of wage rigidities. Our sample is fully representative of the population under study and includes nine economic sectors, three firm sizes and three occupational groups. This is the first study for a non-European emerging economy that uses evidence from a survey of firms to study wage rigidities.

The survey provides evidence of nominal and real downward wage rigidities in Colombia. The results show firms would be more willing to freeze wages and to increase them below the inflation rate as opposed to cutting wages. The most important reasons why Colombian firms do not reduce wages during difficult times are to prevent the loss of the most productive and experienced workers, to not affect the worker's effort and productivity and to not affect the worker's motivation, all of which are associated with the efficiency wage theory. Interestingly, these results are similar to those found in the literature for developed countries, despite differences in labour market institutions.

In summary, these results suggest downward wage rigidity in Colombia could be explained by the efficiency wage theory. It is worth mentioning that the reasons associated with the different versions of the efficiency wage theory are highly correlated.

Ordered *logit* regressions were used to determine what factors are related to wage rigidities. The findings indicate that permanent contracts impose more wage rigidity than

other types of contracts, since workers are more protected by labour legislation. In addition, workforce composition and labour intensity play an important role in explaining of wage rigidities. For less skilled workers, the presence of collective agreements increases wage rigidity. Regarding the reasons preventing wage cuts, we found the sources of wage rigidity differ according to economic sector, firm location and firm size. For example, greater support for the adverse selection model and the shirking model is found among large firms and in those operating in the "other services" sector, which is comprised of specialized workers.

Survey evidence also suggests firms could use other alternatives to adjust costs in difficult times, since wage cuts are not usual. These alternatives include reducing non-statutory benefits and variable pay, laying off employees, changing the type of employment contract and hiring new workers at lower wages. The use of these strategies varies across economic sectors and occupational groups.

Finally, this paper contributes to a better understanding of wage rigidities and their sources at the firm level in Colombia. This is important for the monetary policy transmission process in a context of low inflation and high unemployment. In addition, the results help to improve the micro-foundation of macroeconomic models used in monetary policy decisions.

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