



BANCA D'ITALIA  
EUROSISTEMA

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A survey-based analysis

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# WAGE ADJUSTMENT BY ITALIAN FIRMS: ANY DIFFERENCE DURING THE CRISIS? A SURVEY-BASED ANALYSIS

by Silvia Fabiani\* and Roberto Sabbatini\*

## Abstract

The study analyses wage adjustment by Italian firms on the basis of information collected through a coordinated survey carried out in 17 European countries in two waves (at the beginning of 2008 and in the summer of 2009). The pre-crisis evidence indicates that the degree of wage rigidity is relatively high in Italy: wages remain unchanged on average for about two years, against an average of just over one year in the other countries. Italian firms hardly cut nominal wages, reflecting not only institutional constraints, but also an attempt to avoid a negative impact on their productivity. During the economic recession the firms most severely affected by the fall in demand reduced their costs mainly by adjusting the input of labour (in terms of both employment and hours worked). A higher incidence of skilled and white-collar workers was accompanied by greater recourse to strategies aimed at containing non-labour costs, presumably in order to preserve the human capital accumulated.

**Keywords:** survey, wage rigidity, economic recession.

**JEL Classifications:** D21, E30, J31.

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\* Bank of Italy, Economics, Research and International Relations.

This paper has been prepared in the context of the Eurosystem Wage Dynamic Network (WDN) research project. The opinions expressed in the paper are those of the authors and do not necessarily reflect the views of the Institution they belong to.



## 1. Introduction

This paper explores Italian firms' wage-setting practices and cost adjustment strategies, exploiting the evidence provided by firm-level surveys carried out in the context of a Eurosystem research project, the Wage Dynamics Network (WDN).

The analysis focuses on two main issues. The first concerns how firms "normally" set and adjust wages in Italy. These aspects are addressed by analysing both the institutional framework that governs wage setting and various features of firm-level wages that shape their aggregate degree of rigidity. The second issue is to what extent the severe economic downturn that occurred in 2008-09 produced "exceptional" reactions by firms and softened the constraints that typically hinder wage adjustment.

Both questions are important because of the role played by wage and price adjustment in the transmission of monetary policy to the real economy, in particular within a multi-country monetary union with still segmented labour markets such as the euro area. The degree of wage flexibility is one of the determinants of the speed at which national economies adjust to shocks and of the related costs. More generally, the current debate on the macroeconomic imbalances among euro-area countries highlights wage and price adjustment as a correction mechanism. In this light, any evidence that improves our knowledge and assessment of the behaviour of wages increases our ability to anticipate the reaction of macro variables (Christiano et al., 2005; Levin et al., 2005; Blanchard and Galí, 2007).

The WDN survey was deployed in a large number of European economies, in two waves: the first between the end of 2007 and the beginning of 2008; the second in mid-2009. Its design partly drew upon previous corporate surveys carried out in other countries, mostly the United States and a few European economies (Blinder and Choi, 1990; Campbell and Kamlani, 1997; Agell and Lundborg, 2003; Franz and Pfeiffer, 2006), focusing on the extent and causes of downward wage rigidity. The most important contribution of the WDN survey to this literature is twofold. First, it collects a rich set of cross-country information regarding not only firm-level characteristics, but also aspects such as firms' wage and price-setting strategies, the extent and sources of wage and price rigidities and how they feed into each other, the reaction of firms to economic shocks, the various channels for reducing labour costs, and the institutional features governing wage behaviour. Second, it extends the analysis to the cost-adjustment mechanisms actually adopted by firms during the 2008-09 global recession, assessing the robustness of their strategies (and of the constraints they faced) in the presence of a demand shock exceptionally severe in a historical perspective.

The use of such an extensive database, though of a qualitative nature, has important advantages. It makes it possible to exploit information at the firm level that is usually not observable in other types of data used in the literature. Moreover, its cross-country and cross-sector dimensions enable to assess whether and how firm-level wage policies are affected by product and labour market characteristics, and in particular by the institutional environment that governs wage determination. Finally, whereas in firm-level quantitative datasets, such as matched employer-employee ones, the shocks hitting firms are typically not observed and need to be inferred, the 2009 WDN survey provides direct information on the nature and amplitude of the shocks which hit European firms during the last economic recession.

The plan of the paper is as follows. Section 2 describes the main characteristics of the survey. Section 3 focuses on the institutional framework regulating wage bargaining in Italy. Section 4 presents the aspects

of firm-level wage behaviour that have a bearing on the stickiness of wages. The shocks faced by Italian firms during the 2008-09 crisis and the wage and labour input adjustment strategies they adopted in response to them are addressed in Section 5, which also presents an econometric exercise aimed at capturing, within a multivariate framework, the main features that discriminate firms in the way they chose to reduce costs. Section 6 concludes.

## 2. The survey

The data used in this paper is a subset of a cross-country dataset collected, through two coordinated firm-level surveys on price and wage setting, in the context of the WDN. The first survey was carried out between the end of 2007 and the first half of 2008 by the national central banks of nineteen European countries (in Italy in the second quarter of 2009).<sup>1</sup> The samples were designed so as to be representative at the country level and the questionnaires were harmonised across countries.<sup>2</sup> In the summer of 2009 a follow-up survey was conducted in a sub-group of countries (ten, including Italy), with the specific aim of investigating the impact of the global crisis on wage and labour adjustment policies in the firms that had participated in the original survey. Country-level micro data were pooled to create a single dataset covering about 18,000 firms operating in different economic sectors.

In Italy, the two surveys were submitted to a sample drawn from that used by the Bank of Italy for its annual business survey.<sup>3</sup> The reference population consists of firms with more than 5 employees in manufacturing and services (trade, market services and financial intermediation), stratified according to size and geographical area. Of the 4,000 sampled firms, about 1,000 completed the questionnaire submitted to them in December 2007 (Table 1). The response rate (about 25%) is satisfactory for this kind of survey and in line with that of other countries (Druant et al., 2009). The same respondents were contacted again in August 2009 and sent a much shorter questionnaire, focused on the crisis.<sup>4</sup> Overall, more than two-thirds replied; the sector and size breakdowns are similar in the two surveys.

**Table 1 – The survey samples**  
(percentages except as indicated)

	Sector		Size				Total	
	Manufacturing	Services	5-19	20-49	50-199	200+	# firms	
2007 survey	45.5	54.5	3.2	37.0	17.8	42.1	100	953
2009 survey	46.4	53.6	2.9	37.9	17.7	41.5	100	677

The harmonised questionnaire of the 2007 survey was organised in four sections, all focused on “typical conditions and practices”. The first regarded wage-setting practices and institutional arrangements, and the frequency and timing of wage changes. The second section addressed the (potential) obstacles to downward wage adjustment and the reaction of firms to different types of hypothetical shock; the third

<sup>1</sup> All the countries belonging to the euro area are included except Finland and Malta.

<sup>2</sup> Only information collected in Germany is not comparable to that of the other countries due to major differences in the questionnaire; this is why German data are not considered in this paper.

<sup>3</sup> The questionnaire was submitted mainly over the Internet. The person required to fill in the questionnaire was the CEO or the HR Manager.

<sup>4</sup> For the questionnaire of the 2007 survey, see Druant et al. (2009); the Italian questionnaire of the 2009 survey is reported in Appendix A of this paper.



focused on price-setting and the frequency of price changes.<sup>5</sup> The final section gathered information about the firm, such as the structure of the workforce, the share of labour in total costs, the exposure to foreign markets, the intensity of competitive pressures.

Table 2 summarises some of the above features for the Italian sample. The share of labour costs in total costs is on average around 30%; unsurprisingly, it is significantly higher in service firms than in manufacturing firms (37% and 25%, respectively). The vast majority of the workforce (above 80%) is employed on a full-time basis; more than 90% with permanent contracts, with only marginal differences across sectors. On the contrary, significant cross-sectoral differences emerge with respect to the skill distribution of employees: about 65% of manufacturing firms' workforce consists of production and technical workers, whereas in services almost 60% of employees are clerical or professional. Turning to firms' degree of openness, about one-third of manufacturing firms' turnover comes from sales on foreign markets; the proportion is much lower for service firms (less than 10%).

**Table 2 – Company characteristics**  
(percentages; 2007 survey) (1)

	Labour cost share	Main occupational group				Type of workers			Export share
		Production	Technical	Clerical	Professional	Full-time	Part-time	Temporary	
Total	31	31	21	21	27	84	8	8	21
Manufacturing	25	38	26	15	22	88	4	7	35
Services	37	25	17	27	32	80	11	9	9

(1) The figures are weighted by employment weights and rescaled excluding non-responses. The services sector includes trade, market services and financial intermediation.

Firms were required to refer their answers on wage policies to their “main occupational group” and to “normal conditions and behaviour”; in the case of quantitative information (for instance on the composition of the workforce) the reference period was the previous accounting year (2006).

When the first survey was carried out, the global economy was just starting to be affected by the financial crisis originating in the US sub-prime mortgage market and by the sharp increase in international commodity prices. In the fourth quarter of 2007 Italian GDP increased by 0.1% y-o-y (Table 3); households' consumption and fixed investment decelerated in line with GDP and foreign demand was increasingly restrained by the appreciation of the exchange rate and the economic slowdown in major outlet markets. In this scenario, Italian labour market conditions were still favourable: more people were employed compared with the previous year and the rate of unemployment was low (6.4%), though rising compared with the previous two quarters.

**Table 3 – The Italian economic outlook at the time of the surveys**  
(y-o-y percentage changes, except as indicated)

	GDP	HICP	Unemployment rate (%)	GDP Consensus Economics	
				Current year	Next year
2007 survey (2007-Q4)	0.1	2.6	6.4	1.8	1.3
2009 survey (2009-Q2)	-6.1	0.9	7.5	-5.1	0.1

<sup>5</sup> This part of the questionnaire largely mirrors the structure of the survey carried out in the context of the Eurosystem Inflation Persistence Network (Fabiani et al., 2007).

In July 2009, when firms were contacted again, the economic environment had changed considerably. In the second quarter of the year the fall in economic activity was very pronounced (-6.1% y-o-y; -0.5% q-o-q); inflation was very low (0.9% y-o-y compared with the peak of 4.1% in the summer of 2008). The unemployment rate rose to 7.5% and the short-term outlook was highly uncertain; growth expectations pointed to stagnation in 2010, with substantial downside risks.

The analysis presented in the remainder of the paper is based on data from the 2007 survey, with the exception of section 6, which is based on the 2009 survey data. Results are computed using “employment-adjusted” weights.<sup>6</sup>

### **3. The Italian wage-bargaining institutional framework**

A large body of theoretical studies (see Freeman, 2007 for a summary) deals with the relationship between labour market institutional settings and economic outcomes. Specifically, bargaining institutions are seen as playing an important role for the dynamics of wages, affecting in particular the extent and speed with which they adjust to economic shocks.

On the empirical side, however, despite the extensive literature devoted to qualifying and quantifying this role, the actual link between institutions and outcomes is difficult to measure, mostly due to the limited amount of comparable information at the international level. The WDN survey partly fills this gap, by collecting harmonised firm-level information on a number of institutional features affecting wage setting (the degree of centralisation of collective wage bargaining, its coverage, the extent and nature of indexation mechanisms) in European countries.

In this international comparison, Italy stands out as one of the countries (together with France, Belgium and Austria) where virtually all firms apply a national collective agreement; about 40% of Italian firms also report the existence of firm-level collective bargaining (Table 4).

Overall, the euro area appears as characterised by highly centralised bargaining systems, with national or sectoral contracts applied on average by 86% of firms and firm-level agreements, replacing or complementing the higher-level provisions, only by 36%. Conversely, wage negotiations are more decentralised and predominantly organised at the company level in non-euro area countries, where only 6% of companies apply national or sectoral contracts as against 23% that resort to firm-level collective bargaining (in such countries, only about one-fifth of employees are covered by collective agreements).

The picture emerging from the WDN firm-level data confirms the centralised nature of the Italian institutional framework for wage negotiations, which in the last two decades saw two major innovations.

In 1992-93 the Income Policy Agreement replaced the so-called “*scala mobile*” (the automatic indexation of wages to past inflation), introducing a two-tier structure of bargaining: national contracts devoted to maintaining wages’ purchasing power and firm-level contracts devoted to the distribution of productivity gains. The length of national contracts was set at two years for wage determination and at four years for the regulatory aspects; wage rises were linked to the Government’s inflation target for the following biennium. At the end of the two-year horizon, the social partners could agree on further wage compensation in the event of a difference between actual and target inflation; however, the amount of

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<sup>6</sup> The weights are the ratio between the number of employees in the population in a sampling category (sector, firm size) and that of firms in the same category. They add up to total employment in the population the sample represents.

such compensation was not automatic but had to be agreed within a more general bargaining framework, with account taken, *inter alia*, of macroeconomic conditions. Company-level contracts envisaged performance-related wage premia, with the aim of creating a productivity-stimulating environment. The new framework also introduced new rules on temporary contracts and flexible working time arrangements.

**Table 4 – Coverage of collective contracts**  
(percentages) (1)

	Firms applying collective contracts		Employees covered by collective contracts
	National level	Firm level	
AT	96	23	95
BE	98	35	88
CY	25	28	33
CZ	17	51	50
EE	3	10	9
ES	84	16	97
FR	99	58	67
GR	86	21	91
HU	-	-	-
IE	68	31	39
<b>IT</b>	<b>100</b>	<b>43</b>	<b>97</b>
LT	1	24	16
LU	43	17	44
NL	46	30	68
PL	5	20	18
PT	59	9	55
SI	75	25	.
SVK	18	56	56
Total	65	32	67
<b>Euro area</b>	<b>86</b>	<b>36</b>	<b>83</b>
Non-euro area	6	23	21

(1) The figures are weighted by employment weights and rescaled excluding non-responses.

Overall, the 1992-93 reform was successful in producing wage moderation, as it contributed significantly to bringing Italian inflation into line with that of the other major European countries and to anchoring inflation expectations.<sup>7</sup> It also made an important contribution to enhancing the flexibility of the labour market. However, the role of firm-level bargaining remained limited compared with the original intentions,<sup>8</sup> partly owing to the relatively poor productivity gains recorded in the years after 1993 (Brandolini et al., 2007; Visco, 2008; Brandolini and Bugamelli, 2009).

The second major innovation in the Italian bargaining system was the agreement signed in the spring of 2009. The new setup confirms the previous two-tier structure and extends the duration of both the economic and the work-rules parts of contracts to three years. Importantly, wage increases under the national contract are no longer linked to the Government's inflation target but to a new three-year inflation

<sup>7</sup> See Fabiani et al. (1997) for an estimate of the impact of the new income policy in Italy on headline inflation. Casadio (2003) contains a detailed description of the 1992-93 agreement and reports some empirical evidence on the effects of its introduction.

<sup>8</sup> According to the Bank of Italy's Survey of Industrial and Service Firms with at least 20 workers, the incidence of company-level bargaining has decreased over time, reaching 26% in 2008. Since 2000 the share of workers covered by second-level agreements fell from 77% to 68% in firms with 50 or more workers and from 36% to 22% in those with 20-49 workers (Bank of Italy Annual Report on 2008).

forecast based on the harmonised index of consumer prices net of imported energy products.<sup>9</sup> As before, the difference between actual and forecast inflation is not automatically recovered ex-post but is subject to negotiation. Firm-level bargaining is encouraged through tax relief on wage increases linked to productivity, with the aim of increasing the proportion of workers covered by second-level contracts, which is still modest, especially in small and medium sized firms. An empirical evaluation of the impact of the new system is still premature, not least owing to the severe global recession under way at the time it was introduced.

#### 4. Firm-level wage adjustment in “normal” times

How does the Italian bargaining system, with its high degree of centralisation, scant development of firm-level agreements and relatively limited role of inflation in wage setting, affect wage dynamics and in particular its degree of flexibility?

Empirical studies based on cross-country data assembled within the WDN project show that wages are less flexible in the presence of centralised bargaining and employment protection legislation (EPL; Druant et al., 2009) and that the degree of downward real wage rigidity is positively associated with the coverage of collective agreements (Du Caju et al., 2009; Babecky et al., 2009a; Messina et al., 2010). The latter, together with employment protection, also influences the way firms react to shocks, making wage reductions a less likely means of cost adjustment (Bertola et al., 2009).

This section analyses firm-level wage behaviour in Italy, focusing on some of the features – such as the frequency and timing of wage changes and the extent and causes of downward wage rigidity – that determine the aggregate degree of wage flexibility. It does not address the issue of EPL, as it was not covered in the WDN harmonised survey.

##### 4.1 Frequency and timing of wage adjustment

A first indication of the stickiness of wage adjustment can be gathered by analysing how frequently firms typically modify wages. The WDN survey enquired about three types of firm-level wage adjustment related, respectively, to tenure, inflation and other factors. The exact wording of the question in each case was: “How frequently is the base wage of an employee belonging to the main occupational group in your firm typically changed?”. Respondents could choose one of the following options: “more than once a year”; “once a year”; “once every two years”; “less frequently than once every two years”; “never / don’t know”. In order to simplify the description of the results, we computed a synthetic measure, which assigns to each firm a frequency corresponding to the highest among those reported for the three types of wage adjustment described above (we label it as “wage change frequency for any reason”).

The results for Italy indicate that on average only about 30% of firms adjust the wages of their employees at least once a year (Figure 1); almost two-thirds do it less frequently, the vast majority of them once every two years. This is not surprising, as the national contract length at the time of the survey was two years for all sectors.<sup>10</sup> As for the reasons driving wage changes, tenure stands out as the factor

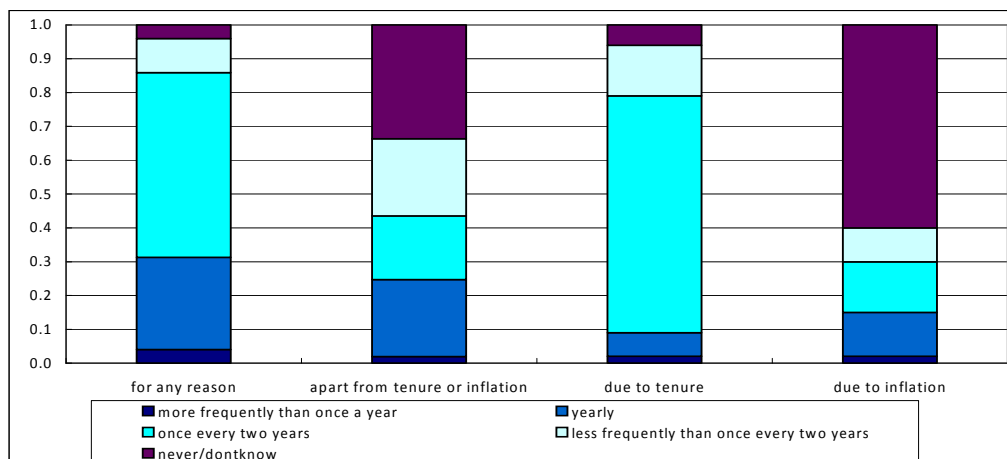
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<sup>9</sup> So far the forecast has been updated in May by ISAE; this Institute ceased to exist on December 31, 2010; many of its scientific and institutional functions were transferred to ISTAT, in particular those related to the economic analysis.

<sup>10</sup> This also explains the lack of significant differences across sectors.

producing the most infrequent changes (once every two years for about 85% of firms, in line with other countries). Inflation is a driver of wage changes only for about 40% of firms.

**Figure 1 – Frequency of wage changes**  
(percentages) (1)



(1) The figures are weighted by employment weights and rescaled excluding non-responses.

The extent of wage rigidity can also be measured by the number of months for which wages remain unchanged (“duration”). Though this indicator is still based on the answers concerning the frequency of wage changes, its computation requires additional assumptions. In particular, whereas some frequency categories translate directly into durations (e.g. “once a year” translates into a duration of 12 months), others refer to intervals (e.g. “less frequently than once every two years”) and therefore an expected duration needs to be imputed.<sup>11</sup> According to this indicator, wages in Italy remain unchanged, on average, just over 20 months. This result is consistent with the characteristics of the centrally negotiated contracts, which had a two-year duration at the time of the survey, and also reflects the limited role of firm-level negotiations.

In the international comparison, the frequency of wage adjustment in Italy is the lowest among all the countries participating in the WDN survey (Druant et al., 2009). On average about 60% of the 17,000 firms interviewed across Europe change wages at least once a year (a further 10-15% do so even more frequently); in terms of duration, wages are kept stable for about 15 months.<sup>12</sup>

Aside from its frequency, the nature of wage adjustment might also have a bearing on the extent of aggregate wage rigidity. In particular, in the presence of frequent shocks time-dependent rules, where the timing of the adjustment does not depend on the state of the economy but takes place at specific times of the year, might lead to higher nominal rigidity than state-dependent rules (for the impact on the

<sup>11</sup> For methodological details on the procedure adopted to impute expected durations in such cases, see Druant et al. (2009). An important qualification is that durations are not computed for firms that report “never/don’t know” to the question on the frequency of wage changes, which are only about 4%.

<sup>12</sup> A relatively low degree of wage flexibility can also have a positive impact on aggregate developments, for example preventing the rapid translation of unexpected positive shocks to raw material prices into upward wage adjustment and hence softening the so called “second round” effects on inflation.

transmission of shocks, see for example Olivei and Tenreyro, 2007 and 2008).<sup>13</sup> With a view to obtaining evidence on this issue, the WDN survey enquired whether firms' wage changes were typically concentrated in particular month(s) or took place with no pre-defined pattern.

In Italy, about one third of firms follow a time-dependent wage-setting strategy, with the majority making the adjustment in January.<sup>14</sup> This evidence, robust across sectors, points to a significant degree of synchronisation and clustering in wage changes, in line with what was found in other euro-area countries. Overall, the cross-country variation in both the incidence of time-dependence and the timing of wage changes appears to be remarkable (see Druant et al., 2009).<sup>15</sup>

## 4.2 Downward wage rigidity

An important aspect that qualifies the degree and nature of wage rigidity is the presence and extent of reasons that prevent nominal or real wages from being adjusted downwards.

Aside from its theoretical explanations, the resistance of wages to adjust downwards has implications for the conduct of monetary policy and its transmission to the real economy. The debate on its consequences for the choice of the optimal inflation rate goes back to the well-known question of whether inflation can "grease" the wheels of the economy by allowing easier wage adjustments (Tobin, 1972). Recently the issue became topical again following the moderation of inflation in the advanced economies and triggered a growing body of empirical literature focusing on whether there is indeed evidence of downward wage rigidity. Studies based on quantitative data of the distributions of wage changes across workers (Dickens et al, 2007) and sectors (Holden and Wulfsberg, 2007) were supplemented by a completely different branch of empirical work which relied instead on firm-level surveys, triggered by the seminal work of Blinder and Choi (1990).<sup>16</sup>

Following this approach, the WDN survey asked firms across Europe whether they had cut or frozen base wages in the preceding five-year period and, if not, what factors had prevented wage cuts. The explicit aim was to assess and compare the degree and sources of downward nominal rigidity across European countries. The former was measured on the basis of the incidence of wage cuts and freezes reported by firms, in line with most of the studies mentioned above.

In Italy wage reductions were practically nil in the period 2002-07 (implemented by less than 1% of firms; Table 5). Wage freezes were slightly more common, but still reported by less than 4% of firms, with a somewhat higher incidence in services.

Comparison of these figures with those obtained for the other European countries indicates that the inability of firms to reduce or freeze nominal wages is a common feature in the euro area (respectively 1.4% and 7.4% of firms), though relatively more pronounced in Italy. In non-euro area countries, instead,

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<sup>13</sup> Olivei and Tenreyro (2008) show that in Japan, where most firms set their wages between February and May, a monetary policy shock occurring in the first half of the year should have a smaller impact on real activity, since this is a period of more flexible wages, than a shock occurring in the second half. Olivei and Tenreyro (2007) derive similar results for the United States where wage changes are concentrated at the turn of the year.

<sup>14</sup> The peak in the frequency of wage changes at the beginning of each year also emerges from other studies based on micro quantitative data (Knell and Stiglbauer, 2008; Heckel et al., 2008; Lünemann and Wintr, 2009).

<sup>15</sup> Lithuania is the country with the lowest concentration of wage changes in specific months (17%); at the other extreme Portugal has the highest proportion (94%). More generally, the percentage of firms that adopt time-dependent wage rules exceeds 70% in Spain, the Netherlands, France and Greece.

<sup>16</sup> See for instance Campbell and Kamlani (1997), Bewley (1999), Agell and Lundborg (2003).

wages appear to be slightly less constrained downwards, with 4.9% and 11.3% of firms declaring that they had reduced/frozen wages in the five-year period prior to the survey.

**Table 5 – Downward nominal rigidity: wage cuts and freezes**  
(percentages of firms that cut or froze wages in the five years before the survey) (1)

	Italy			Euro area	Non-euro area	Total
	Manufacturing	Services	Total			
freezes	3.2	4.4	3.9	7.4	11.3	8.5
cuts	0.2	1.1	0.7	1.4	4.9	2.4

(1) The figures are weighted by employment weights and rescaled excluding non-responses.

Various theories predicting downward wage rigidity have been proposed in the literature. According to efficiency wage models, wage cuts hinder workers' productivity and effort, hence reducing firms' profitability (Shapiro and Stiglitz, 1984; Akerlof and Yellen, 1990). Adverse selection theories suggest, instead, that the most productive workers are most likely to quit their job as a reaction to a wage cut, causing a decline in the firm's productivity (Weiss, 1980). In turnover models, wage reductions increase employee turnover and lead to higher hiring and training costs (Stiglitz, 1974). Another branch of the literature focuses on the role of institutional factors in shaping the degree of downward wage rigidity (see Holden, 1994), arguing for example that the latter is positively related to the centralisation of wage setting and the coverage of union contracts (Oswald, 1986). Finally, an argument originally put forward by Keynes (1936) is that workers oppose wage cuts unless the latter are widespread throughout the economy, that is, they care about relative wages.

Empirically testing the validity and relative importance of these theoretical explanations is not straightforward, as most of them involve non-observable variables such as effort and informational asymmetries. Interview surveys with company managers partly overcome this difficulty and provide evidence that may help to discriminate among alternative theories. In this vein, the 2007 WDN survey directly asked firms to assess the importance of several reasons that prevented them from cutting wages when needed, selected among the most popular theories proposed by the literature. Table 6 presents the list of such theories together with the mean score attached by Italian firms to each of them.

**Table 6 – Factors preventing wage cuts in Italy**  
(mean scores) (1)

Labour regulation/collective agreements prevent wages from being cut	3.6
Faced with wage cuts the most productive employees might leave the firm	3.6
Wage cuts would reduce employees' efforts and morale, resulting in less output or poorer service	3.4
Wage cuts would increase the number of employees who quit, increasing the cost of hiring and training	3.4
Employees compare their wages with those of similarly qualified workers in other firms in the same market	3.3
Wage cuts would create difficulties in attracting new workers	3.1
Wage cuts would damage the firm's reputation as an employer	2.8
Workers and firms have an implicit contract: wages will neither fall in recessions nor rise in expansions	2.5

(1) Average mean scores are computed from the answers provided by the firms interviewed in the 2007 survey to the question: "If your firm has not (or is not considering to) cut the base wage, how relevant is each one of the following reasons in preventing it?". Firms were required to answer for each of the theories provided in the list, attaching a score from 1=not relevant to 4=very relevant.

The highest position in the list is achieved (mean score of 3.6) by two competing arguments: institutional constraints – imposed by labour market regulations or by collective agreements – and adverse selection effects related to the risk that the most productive workers would leave the firm in response to a

nominal wage cut. The second most relevant obstacles to wage reductions are (mean score 3.4) the potential negative impact on workers effort and/or morale, as predicted by efficiency wage theories, and the costs of hiring and training new workers that would derive from the exit of incumbents, in line with turnover models. Relative wage arguments are ranked third (mean score 3.3).

The results for Italy are in line with those obtained for the whole sample of European firms (see Fabiani et al., 2010a), according to which the two explanations most acknowledged by company managers are productivity-related arguments due to both workers effort and morale and adverse selection effects. A slightly lower degree of importance is attached to institutional constraints, which turn out to be much less binding in non-euro-area countries. This is consistent with earlier research conducted in the United States (Bewley, 1999 and Campbell and Kamlani, 1997).

Though the evidence provided so far points to a fairly high degree of downward rigidity of nominal wages in Italy, it does not allow conclusions to be drawn regarding the extent of real-wage rigidity, i.e. the (im)possibility for firms to increase wages by less than the inflation rate. This aspect is likely to be linked to either the existence of a formal indexation mechanism at the national level and/or to the pervasiveness of wage adjustment to inflation at the company level (Babecký et al., 2009a).

**Table 7 – Wage adjustment to inflation**  
*(percentage of firms reporting the existence of  
an internal policy of base wage adjustment to inflation) (1)*

	<b>Total</b>	<b>Automatic rule</b>	<b>Informal rule</b>
AT	24	10	12
BE	98	98	0
CY	48	41	8
CZ	60	12	51
EE	54	5	50
ES	70	54	16
FR	33	10	27
GR	47	20	23
HU	33	11	20
IE	33	10	28
<b>IT</b>	<b>6</b>	<b>2</b>	<b>4</b>
LT	48	11	37
LU	100	100	0
NL	-	-	-
PL	31	7	23
PT	52	9	42
SI	60	23	37
SVK	60	21	39
<b>Total</b>	<b>36</b>	<b>17</b>	<b>19</b>
Euro area	36	9	15
<b>Non-euro area</b>	<b>38</b>	<b>30</b>	<b>30</b>

(1) The figures are weighted by employment weights and rescaled excluding non-responses.

In Italy, as discussed in Section 2, wage indexation as a national institutional arrangement no longer exists. Expected inflation enters centralised wage negotiations but the ex-post recovery of differences with respect to actual price developments is not automatic. However, past or expected inflation can be taken into account in the adjustment of wages at the firm level, either formally or informally. The WDN survey, which explicitly enquired about this aspect of firm-level wage negotiations, indicates that only about 6% of Italian firms take inflation into account in their wage-setting strategies, mostly through an informal



mechanism (Table 7).<sup>17</sup> This percentage is the lowest among European countries, reflecting the very modest role of second-tier firm-level bargaining in Italy.

All in all, the WDN survey results highlight a very low incidence of base wage reductions and freezes by Italian firms compared with other countries, which suggests a relatively high degree of nominal wage rigidity. Conversely, the absence of a formal national indexation mechanism and the limited role of wage adjustment to inflation at the firm level indicate that downward real wage rigidity is a less stringent constraint.

## 5. Any difference during the 2008-09 recession?

Have Italian firms' wage adjustment policies changed as a reaction to the 2008-09 recession, the most severe since World War II (Bassanetti et al., 2009)? The exceptional economic downturn is a natural framework for assessing the robustness of a specific feature of the behaviour of wages in Italy, that is, their downward rigidity. Moreover, it offers the opportunity to investigate the persistence or easing of the constraints that typically limit the recourse to wage cuts within the range of strategies firms can adopt to contain their costs. The survey conducted in summer 2009, about one and a half years after the first, provides some evidence on these issues, as it was specifically designed to assess the response of wages and labour costs in the new environment.

### 5.1 The effect of the crisis on firms' activity

The survey first required firms to assess the intensity and nature of the impact of the crisis on their activity. It was strong for 37% of Italian firms and exceptionally strong for about 5%; only 10% were not affected at all (Table 8). Manufacturing firms, more exposed to the collapse of world trade, were the most penalised: almost 55% suffered either an exceptionally strong or a strong negative effect, compared to 32% for service firms. The crisis impacted more negatively on the economic activity of smaller firms (with less than 50 employees) than on that of larger ones.

**Table 8 – Impact of the crisis on firms' activity**  
(percentages) (1)

	Sector		Size				All firms
	Manufacturing	Services	5-19	20-49	50-199	200+	
Positive	1.3	0.8	0.0	1.7	1.8	0.2	1.1
None	5.3	13.8	6.6	7.4	10.6	12.1	9.9
Negative:							
marginally	6.4	12.3	6.0	6.0	6.7	14.3	9.6
moderately	33.7	41.4	37.3	36.4	38.0	39.1	37.8
strongly	43.8	30.8	45.4	44.3	35.0	30.2	36.9
exceptionally strongly	9.4	0.9	4.7	4.2	7.9	4.2	4.8
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

(1) The figures are weighted by employment weights and rescaled excluding non-responses.

<sup>17</sup> Though price developments do not appear as a major driver of firms' wage dynamics in Italy, the relationship in the opposite direction is somewhat stronger (see Appendix B). Bertola et al. (2008) find that the effect of wage changes on price dynamics is larger in firms with a high labour share, confirming previous evidence from the Inflation Persistence Network. Druant et al. (2009) find that the frequency of wage changes has a statistically significant effect on the frequency of price changes.

As for the nature of the shock faced by firms, the main channels through which the crisis manifested itself were examined along three dimensions in the survey: fall in demand, financial constraints, and difficulty in being paid by customers. Firms were asked to rate the importance of these three factors. Table 9a reveals that, overall, the fall in demand was the aspect that affected firms' activity most severely (it was exceptionally strong or strong for around 44% of firms), followed by difficulty in being paid by customers (43%) and financial constraints (21%).<sup>18</sup>

In all three respects manufacturing firms were significantly more penalised than service firms (Table 9b), in particular regarding the intensity of the fall in demand (with twice as many firms declaring an exceptionally strong or strong impact: 60% against 30%). Similarly, firms with less than 50 employees (Table 9c) were the most affected; in particular, very small companies (5-19 employees) were both the most financially constrained (61% against around 20% for the other size classes) and had the greatest difficulty in being paid by customers (76% against 50%).

**Table 9 – Channels through which the crisis affected firms' activity**  
(percentages) (1)

**(a) by sector**

	Demand fall			Financial constraints			Difficulty in being paid		
	Total	Manuf.	Services	Total	Manuf.	Services	Total	Manuf.	Services
None / marginal	14.1	8.3	19.1	45.5	41.5	49.2	15.0	11.2	18.3
Moderate	41.8	32.0	50.2	29.8	29.5	30.1	40.7	40.5	41.0
Strong	36.6	47.2	27.4	16.5	19.9	13.4	32.4	37.1	28.3
Exceptionally strong	7.1	12.5	2.5	4.3	6.9	2.1	10.2	10.2	10.2
Don't know	0.4	0.0	0.8	3.8	2.2	5.2	1.7	1.1	2.3
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

**(b) by size**

	Demand fall				Financial constraints				Difficulty in being paid			
	5-19	20-49	50-199	200+	5-19	20-49	50-199	200+	5-19	20-49	50-199	200+
None / marginal	6.0	9.0	14.0	19.2	29.1	44.5	48.0	46.7	5.7	8.5	15.4	21.4
Moderate	43.9	37.9	39.1	46.3	8.3	30.4	31.6	30.1	18.1	40.3	39.3	43.4
Strong	45.4	45.8	32.7	29.3	48.8	17.8	14.6	13.7	33.3	40.3	31.8	25.3
Exceptionally strong	4.7	6.2	13.9	5.2	12.2	4.0	3.5	4.5	42.9	10.4	13.2	6.3
Don't know	0.0	1.0	0.3	0.0	1.6	3.3	2.4	5.0	0.0	0.5	0.3	3.6
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

(1) The figures are weighted by employment weights and rescaled excluding non-responses.

## 5.2 Firms' wage policies

Facing a sharply deteriorating labour market, high uncertainty about the timing and strength of the recovery and nearly zero inflation, a much higher proportion of Italian firms kept wages unchanged during the crisis, about one-third as opposed to less than 4% in the "normal times" situation analysed in the 2007 survey (Table 10a), the remaining two-thirds planned to do so in the near future.<sup>19</sup> Downward nominal rigidity remains, however, a robust feature of wage behaviour in Italy: despite the exceptional contraction in economic activity and rising unemployment, only 2% of firms implemented wage reductions and 4% intended to do so in the future.

<sup>18</sup> For further evidence of the effects of the global crisis on Italian firms, based on a different data source, see Bugamelli et al. (2009).

<sup>19</sup> Clearly, the comparison between the answers provided by firms in the two waves of the survey might also reflect the fact that the question on wage cuts and freezes refers to different time spans: five years in the 2007 survey; the recessionary phase in the 2009 survey.

In the other euro-area countries that participated in the 2009 survey the incidence of wage freezes also rose quite significantly during the recession, whereas wage reductions increased only marginally, remaining relatively rare. In non-euro area countries the incidence of wage cuts did not increase but nonetheless remained much higher than in the euro area. These average figures hide significant cross-country variability that, as shown by Fabiani et al. (2010b), is partly explained by the institutional setup; in particular, the extent of centralised collective bargaining and the stringency of EPL are found to play a significant role in preventing wage reductions during the recession.<sup>20</sup>

The severity of the fall in demand modestly increased the incidence of wage cuts as well as firms' intention to implement them in the near future (Table 10b).

**Table 10 – Downward wage adjustment in Italy in the last recession**  
(percentages) (1)

**(a) in comparison with other countries**

	2007 survey			2009 survey					
	what they did in the period 2002-2007			what they have done during the crisis			what they intend to do in the near future		
	Italy	Euro area	Non-euro area	Italy	Euro area	Non-euro area	Italy	Euro area	Non-euro area
No cut or freeze	95.6	91.6	82.1	66.2	62.4	70.1	34.7	56.0	89.3
Freeze	3.7	7.2	11.4	31.8	35.5	23.4	60.9	40.6	8.0
Cut	0.7	1.2	6.5	2.0	2.1	6.5	4.3	3.4	2.7
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100.0</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

**(b) by intensity of the demand fall**

	<i>None / marginal</i>	<i>Moderate</i>	<i>Strong</i>	<i>Exceptionally strong</i>
<b>What they have done during the crisis</b>				
No cut or freeze	65.0	65.7	68.7	61.6
Freeze	34.3	32.6	28.7	34.6
Cut	0.7	1.7	2.6	3.9
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>
<b>What they intend to do in the near future</b>				
No cut or freeze	43.0	34.5	30.6	39.2
Freeze	56.3	62.2	62.2	56.5
Cut	0.7	3.3	7.2	4.3
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

(1) The figures are weighted by employment weights and rescaled excluding non-responses. The euro-area average includes Austria, Belgium, Spain, France, Italy and the Netherlands; the non-euro-area average includes Estonia, the Czech republic and Poland. The figures in the first three columns of panel (a) may not coincide with those reported in Table 5 because they refer to firms that participated in both surveys; the differences are marginal, however.

Why didn't Italian firms implement more widespread wage reductions in response to the crisis? The questions put to firms in 2007 on the relevance of factors preventing wage cuts were repeated in the summer of 2009 to explore whether the constraints on downward wage adjustment were binding even in the presence of labour market slack and falling economic activity.

<sup>20</sup> In the euro area, France stands out as the country with the highest proportion of firms that kept wages unchanged (more than 80%), while in Austria only 1.5% of firms followed this policy. Outside the euro area, 44% of Estonian firms implemented wage cuts in response to the deterioration of the economic outlook, as opposed to only 4% of Polish firms.

The evidence collected in the second survey confirms that labour market regulations and collective wage agreements remained the main reasons for firms not to reduce wages (Table 11). Productivity-related factors, implied by both adverse selection effects and the negative impact on workers' effort and morale, continued to be the next most important drivers of downward wage rigidity.

**Table 11 – Factors preventing wage cuts during the crisis**  
(mean scores; in brackets ranking in the 2007 survey ) (1)

Labour regulation/collective agreements prevent wages from being cut	3.3 (1)
In presence of a wage cut the most productive employees might leave the firm	3.0 (1)
It would reduce employees' efforts and morale, resulting in less output or poorer service	3.0 (2)
A wage cut would increase the number of employees who quit, increasing the cost of hiring and training	2.6 (2)
Employees compare their wage to that of similarly qualified workers in other firms in the same market	2.6 (3)
It would create difficulties in attracting new workers	2.4 (4)
It would damage the firm's reputation as an employer	2.4 (5)
Workers and firms have an implicit contract: wages will neither fall in recessions nor rise in expansions	2.0 (5)

(1) The table presents average mean scores computed on the basis of the answers provided by the firms interviewed in the 2009 survey to the question: "If your firm has not (or is not considering to) cut the base wage, how relevant is each one of the following reasons in preventing it?". Firms were required to answer for each of the theories provided in the list, attaching a score from 1=not relevant to 4=very relevant. Figures in brackets report the ranking of each theory in the 2007 survey (see Table 6).

### 5.3 Alternative strategies for cost reduction

Base wage cuts are only one of the strategies firms can pursue to reduce costs when they face adverse circumstances. The 2009 WDN survey elicited information on the main channel firms chose to adjust costs in response to the fall in demand experienced during the crisis.<sup>21</sup> The range of possibilities included wage cuts (base or flexible components), reduction in the input of labour, both at the extensive and at the intensive margin (permanent or temporary employees, or hours worked), restraint of non-labour costs. Firms were asked to indicate, among these possibilities, only the most important.

Overall, the vast majority of firms (around two-thirds) chose the reduction of labour costs as their key strategy; only 35% acted mainly on the non-labour component (Table 12). The adjustment of labour costs was mostly implemented through the layoff of temporary employees and the decrease of hours worked (panel a). The latter strategy was followed by 18% of firms (21% in the manufacturing sector). This proportion is twice as large as what firms, interviewed in 2007, thought they would do in response to a hypothetical demand downturn.<sup>22</sup> Around 17% of firms laid off permanent employees; the disaggregation by size indicates that this strategy was more widespread among very small firms (59%). Instead, the percentage of firms that reduced the temporary component of their labour force increases with firms' size (from 10% among very small firms to 25% among those with more than 200 employees).

As for the adjustment of wages, only 1.2% of firms implemented base wage cuts, whereas almost 9% managed to reduce the flexible component.

The intensity of the shock faced by firms clearly mattered. A more pronounced demand fall is associated with a larger proportion of firms that adjusted their labour input, either by laying off permanent

<sup>21</sup> The same issue was addressed in the 2007 survey with reference to a hypothetical and unanticipated slowdown in demand.

<sup>22</sup> According to Cingano et Al. (2010), about 30% of the firms interviewed in 2009 in the Bank of Italy's periodic surveys of industrial and service firms declared that they had applied for support from the *Cassa Integrazione Guadagni*, the Government funded scheme for hours reduction.

employees or by reducing the number of hours worked (panel b). On the contrary, the more firms suffered from the crisis, the less they were capable of responding to the shock by resorting mainly to a reduction of non-labour costs. These results are consistent with evidence for Italy based on the Bank of Italy annual survey of industrial and non-financial service firms with more than 20 employees, according to which the sharp reduction in labour input in 2009 was mainly achieved through a contraction in total hours worked per capita and a freeze on hiring. By reducing hours, firms were able to limit the loss of jobs, facilitated in this by ample recourse to the Wage Supplementation Fund. Labour turnover fell substantially, especially in industry, due to the sharp cut-back in hiring, both of fixed-term and permanent workers; the decline in terminations was essentially the result of the reduction in the number of new fixed-term contracts (Bank of Italy, Annual Report on 2009).

**Table 12 – Cost reduction in the last recession**  
(percentages) (1)

<b>(a) by sector, size and in comparison with other countries</b>									
	<b>Italy</b>						<b>Euro area</b>	<b>Non-euro area</b>	
	<i>Manuf.</i>	<i>Services</i>	<i>5-19</i>	<i>20-49</i>	<i>50-199</i>	<i>&gt;200</i>			<i>Total</i>
Base wage	1.7	0.8	0.0	2.0	0.0	1.1	1.2	1.1	2.7
Flexible wage component	8.5	9.1	5.8	8.8	8.3	9.2	8.8	8.8	16.4
Permanent employees	16.4	17.2	58.6	13.4	19.1	15.7	16.8	16.8	19.8
Temporary employees	21.5	19.4	10.2	15.5	21.5	24.7	20.4	27.8	14.1
Hours worked	21.0	15.5	14.9	21.9	14.0	16.7	18.1	15.4	6.6
Non-labour costs	31.1	38.0	10.5	38.4	37.1	32.5	34.7	30.2	40.4
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

<b>(b) by intensity of the demand fall</b>				
	<i>None / marginal</i>	<i>Moderate</i>	<i>Strong</i>	<i>Exceptionally strong</i>
Base wage	0.0	1.2	0.6	6.2
Flexible wage component	10.6	7.0	10.0	7.8
Permanent employees	10.6	14.8	19.1	28.0
Temporary employees	17.6	22.1	20.5	16.6
Hours worked	15.8	13.4	22.7	25.6
Non-labour costs	45.5	41.6	27.1	15.8
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

(1) The figures are weighted by employment weights and rescaled excluding non-responses.

In all the European countries involved in the survey costs were mainly contained by reducing the input of labour rather than wages (last two columns of panel a). In particular, the behaviour of Italian firms appears very similar to that observed in the euro area as a whole. However, Fabiani et al. (2010b) document substantial heterogeneity across individual countries and in particular between those belonging to the euro area and the others.<sup>23</sup> The dispersion observed across countries partly reflects the institutional framework. Centralised collective wage agreements and stronger employment protection, for example, are found to hinder the adjustment of wages, even the flexible component, and induce cost reduction through hours worked and layoffs of temporary employees (Bertola et al., 2009).

The evidence described so far, though broken down by sectoral or company characteristics, relates only to bivariate relationships. We conclude the exploration of firms' cost adjustment strategies in Italy during the last recession with a multivariate analysis aimed at identifying the main features that discriminate companies in the way they chose to reduce costs, taking into account the interaction between

<sup>23</sup> For example, the percentage of firms that chose to reduce temporary employment as the main channel to adjust costs was highest in Spain, Belgium and Netherlands (over 40%), while in the Czech Republic and Poland it was only 10%.

sectoral and corporate characteristics. We group firms into four categories: 1) those that reduced base or flexible wages; 2) those that dismissed permanent or temporary workers; 3) those that implemented a reduction in hours worked; 4) those that took steps to contain non-labour costs. We adopt a multinomial logit estimation approach where the dependent variable, constructed on the basis of the above categories, assumes values from 1 to 4.

The covariates included in the estimated equation are: i) firm-level features such as the composition of the workforce (the ratio of, respectively, white-collar, highly-skilled and permanent employees to total employees), the firm's employment turnover, a control variable for firms that outsourced abroad part of their activity and for those that follow state-dependent wage adjustment and ii) fixed effects for the sector of activity, the firm's size and its geographical location.<sup>24</sup> Importantly, information on all these aspects relates to 2007, when the first wave of the survey was carried out, before the demand and financial shock that the global crisis brought about in Italy. Hence these structural features are predetermined in a purely econometric sense with respect to the responses to the shocks we analyse here. In addition, we control for the type of shock faced by firms, distinguishing between those that suffered a strong demand fall and those that, together with the latter, also faced strong financial constraints during the crisis. For this purpose, we include two dummy variables among the covariates: the first is equal to 1 if the firm reports that the crisis brought a strong/exceptionally strong fall in demand; the second is equal to 1 if the effect of the crisis manifested itself both as a strong/exceptionally strong fall in demand and as strong/exceptionally strong financial constraints.

The multinomial logit model is valid if the independence of irrelevant alternatives (IIA) assumption holds, i.e. if the addition or exclusion of categories of the dependent variable does not affect the odds of the remaining ones. The IIA assumption is supported, in our regression, by the tests of both Hausman and McFadden (1984) and Small and Hsiao (1985), thus indicating that the estimation procedure adopted is applicable given the structure of our data.

Table 13 reports the estimated coefficients for the adjustment of wages, employment and hours vs. reduction of non-labour costs, which is the baseline category (respectively in columns 1 to 3). Heteroscedasticity-robust p-values are reported in brackets.

The results indicate that the adjustment strategies chosen by firms are strongly related to the composition of the workforce. In particular, companies employing a higher share of white-collar and highly-skilled workers were less likely to dismiss employees than to adjust non-labour costs. They were also less likely to reduce hours worked, possibly in relation to the more widespread recourse to this form of flexibility in the manufacturing sector, where the proportion of white-collar workers is typically lower (this could also explain why the sectoral dummy is not significant in the regression in column 3). A larger share of permanent employees was associated with a preference by firms to adjust non-labour costs rather than reduce wages, whereas companies that had previously moved part of their production to newly developed countries faced lesser constraints on the reduction of employment and hence were more likely to adopt this strategy rather than contain non-labour costs.

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<sup>24</sup> Time-dependent wage setters are companies that answer positively when asked whether they typically implement wage changes at predetermined times of the year. We also assessed the explanatory power of other variables, in particular the firm's exposure to foreign markets (captured by its export share), the intensity of perceived competition (proxied by the firm's response to competitors' price strategies) and the presence of firm-level collective bargaining, which however proved not to be significant.

**Table 13 – Firms’ characteristics and margins of cost adjustment**  
(*multinomial logit regression*) (1)

	wages/non-labour costs (1)	employment/non-labour costs (2)	hours/non-labour costs (3)
Manufacturing	<b>-0.688**</b> (0.338)	-0.209 (0.259)	-0.227 (0.285)
< 50 employees	-0.023 (0.327)	<b>-0.396*</b> (0.234)	0.121 (0.267)
North-East	<b>0.963**</b> (0.443)	0.477 (0.342)	-0.149 (0.384)
North-West	0.555 (0.449)	<b>0.609*</b> (0.321)	0.142 (0.346)
South	-0.080 (0.601)	0.467 (0.396)	-0.429 (0.476)
Strong demand shock	<b>0.791**</b> (0.348)	<b>0.670***</b> (0.249)	<b>0.816***</b> (0.287)
Strong demand and credit shock	<b>0.998*</b> (0.513)	<b>1.229***</b> (0.364)	<b>0.996**</b> (0.415)
State-dependent wages	-0.219 (0.328)	<b>0.535**</b> (0.243)	-0.039 (0.274)
Outsourcing	0.191 (0.419)	<b>0.596**</b> (0.292)	<b>0.507</b> (0.345)
Labour turnover	-0.433 (0.364)	-0.272 (0.167)	-0.736 (0.492)
Share of white-collars	-0.643 (0.544)	<b>-0.794**</b> (0.394)	<b>-1.53***</b> (0.469)
Share of permanent employees	<b>-1.485***</b> (0.570)	-0.235 (0.467)	0.139 (0.530)
Share of high-skilled employees	0.404 (0.562)	<b>-0.749*</b> (0.404)	-0.406 (0.455)
Observations		544	
Adj. count R2		0.117	
Log-likelihood		-659.44	

(1) The figures are estimated coefficients for, respectively, adjustment of wages (base and flexible component), employment (permanent and temporary) and hours of work vs. adjustment of non-labour costs. P-values in parentheses. \*, \*\* and \*\*\* indicate statistical significance at the 10%, 5% and 1% level, respectively.

Confirming the descriptive evidence described in Table 12, the intensity and nature of the shock perceived by firms significantly affected their reactions: the larger the demand fall, the less likely the recourse to the adjustment of non-labour costs, as opposed to all the other strategies. Moreover, the probability of acting on labour costs (independently of the channels adopted) was significantly larger for firms facing both a strong negative demand shock and binding financial constraints. Finally, with this multivariate approach, the reduction of wages was less likely in the manufacturing sector, whereas the probability of laying off employees was lower in small firms. There is also some evidence pointing to heterogeneity in firms’ behaviour across geographical areas: those located in the North-East and the North-West were, respectively, more prone to act on wages (mostly through the flexible pay component) and on employment.<sup>25</sup>

<sup>25</sup> These results also hold running the regressions on two separate samples, including, respectively, only manufacturing and only services firms.

## 6. Conclusions

How do Italian firms typically set and adjust their wages? Facing a negative demand shock, what are the margins of flexibility they can resort to in order to adjust their costs in a centralised and regulated institutional setup? Is downward wage rigidity binding and, if so, what are the factors behind it? Are reactions different/reinforced when the fall in demand is coupled with credit constraints? This paper sheds some light on these issues, drawing on the wealth of information collected from two Europe-wide surveys of firms carried out at the end of 2007, just before the onset of the global recession, and in mid-2009.

In Italy wage adjustment at the firm level is infrequent (the average wage duration is almost two years, among the highest in Europe); downward nominal rigidity is a persistent feature of wage behaviour, as in most other euro area countries. In the face of an unprecedented fall in demand (perceived as strong or exceptionally strong by around half of Italian firms), increasing unemployment, zero inflation and gloomy short-term prospects, by the summer of 2009 wage freezes had become significantly more extensive than in normal times: approximately one-third of firms kept their wages constant during the crisis (less than 4% in the 2003-2007 period). On the contrary, only a very modest proportion of employers had reduced wages. The main reasons not to engage in more widespread wage cuts were, as reported by firms, not only institutional constraints – labour regulations and collective agreements – but also productivity related factors – as predicted by efficiency wage and adverse selection models.

Italian companies pursued alternative strategies to reduce costs in response to the sharp demand fall they faced. For most of them, the adjustment occurred through a modification of the input of labour, either at the extensive or at the intensive margin. In particular, the more severely firms were hit by the crisis, the more they had recourse to a reduction in hours worked and permanent workers, as opposed to resorting mainly to the adjustment of non-labour-costs; this effect was magnified for those firms also facing financial constraints. The composition of the labour force also affected the margin of adjustment chosen: companies employing a higher proportion of white-collar workers and highly-skilled workers were less likely to dismiss employees than to adjust non-labour costs, plausibly reflecting the attempt to preserve their human capital. They were also less likely to reduce hours worked, possibly in relation to the more widespread recourse to this form of flexibility in the manufacturing sector, where the proportion of white-collar workers is typically lower.



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## Appendix A – The 2009 survey questionnaire

1 – To what extent is your firm's activity (in terms of turnover) affected by the current economic and financial crisis? Please choose a <u>single option</u>					
<input type="checkbox"/> Negatively affected (please specify) → <input type="checkbox"/> marginally <input type="checkbox"/> moderately <input type="checkbox"/> strongly <input type="checkbox"/> exceptionally strongly <input type="checkbox"/> Positively affected <input type="checkbox"/> Not at all					
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					
	not at all / marginally	moderately	strongly	exceptionally strongly	don't know
Fall in the demand for your firm's products/services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty in financing activity through the usual financial channels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty in being paid by customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty in obtaining intermediate products from your firm's usual suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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					
	not relevant	of little relevance	relevant	very relevant	don't know
Reduce prices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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 <u>single option</u> , the most important factor					
Reduce base wages	<input type="checkbox"/>				
Reduce flexible wage components (for example bonuses, benefits, etc.)	<input type="checkbox"/>				
Reduce the number of permanent employees	<input type="checkbox"/>				
Reduce the number of temporary employees / other type of workers	<input type="checkbox"/>				
Adjust the number of hours worked per employee	<input type="checkbox"/>				
Reduce non-labour costs	<input type="checkbox"/>				
5 – In the current economic and financial crisis, has your firm (or is it going to) frozen the base wage of some employees? Freeze in base wage: base wage in nominal terms is unchanged from a pay negotiation to the next The last two options are not mutually exclusive					
- No	<input type="checkbox"/>				
- Yes we froze the nominal base wage	<input type="checkbox"/> for what percentage of employees ____%				
- Yes we are going to freeze the nominal base wage	<input type="checkbox"/>				
6 – In the current economic and financial crisis, has your firm (or is it going to) cut the base wage of some employees? Cut in base wage: base wage in nominal terms is decreases from a pay negotiation to the next The last two options are not mutually exclusive					
- No	<input type="checkbox"/>				
- Yes we cut the nominal base wage	<input type="checkbox"/> for what percentage of employees ____%				
- Yes we are going to cut the nominal base wage	<input type="checkbox"/>				
7 – If your firm has not (or is not considering to) cut the base wage, how relevant is each one of the following reasons in preventing it ? Please choose an option for each line					
	not relevant	of little relevance	relevant	very relevant	don't know
a. Labour regulation/collective agreements prevent wages from being cut	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. It would reduce employees' efforts, resulting in less output or poorer service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. It would have a negative impact on employees' morale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. It would damage the firm's reputation as an employer, making it more difficult to hire workers in the future	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. In presence of a wage cut the most productive employees might leave the firm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. A wage cut would increase the number of employees who quit, increasing the cost of hiring and training new workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. It would create difficulties in attracting new workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Workers dislike unpredictable reductions in income. therefore workers and firms reach an implicit understanding that wages will neither fall in recessions nor rise in expansions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Employees compare their wage to that of similarly qualified workers in other firms in the same market	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Appendix B – Wage-price relationships

The interaction between wage and pricing policies at the firm level had been investigated within the Eurosystem Inflation Persistence Network, which found, on the basis of mostly anecdotal evidence, that wage rigidity is an important factor behind price stickiness and inflation inertia in the euro area (see Altissimo et al, 2006). The WDN survey tackled this issue by focusing on two aspects: i) whether firms' decisions on wage and price adjustment are related and ii) the response of prices to wage shocks.

On the first aspect, only about 30% of firms acknowledge some relationship between the two decisions (Table B1), with no particular pattern, while 8% (10 in services where labour costs are a higher proportion of total costs) report that price changes tend to follow wage changes. These results are broadly in line with what was found for the other European countries covered by the survey and the euro area as a whole.

**Table B1 – The link between price and wage changes**  
(percentages)

	<b>Total</b>	<b>Manufacturing</b>	<b>Services</b>
no link	54.4	51.4	57.0
there is a link but no particular pattern	30.3	37.5	24.0
decisions taken simultaneously	1.2	0.8	1.5
price changes follow wage changes	8.0	5.3	10.2
wage changes follow price changes	1.5	0.9	2.1
don't know/not applicable	4.7	4.1	5.2

The relationship between wage and price adjustment appears much stronger when one addresses the second aspect, i.e. firm's reactions to unexpected permanent changes in wages. Indeed, when asked to assess the relevance of various adjustment strategies to a wage shock (Table B2), about 60% of Italian firms report that they would increase prices (which is in line with the results for the other European countries).

**Table B2 –Strategies for adjusting to shocks**  
(percentage of firms answering "relevant" or "very relevant") (1)

	demand slowdown	cost-push shock	wage increase
Adjust prices	56.4	62.7	58.0
Reduce output	42.6	26.6	18.7
Reduce costs	88.8	82.4	77.8

(1) The figures are weighted by employment weights and rescaled excluding non-responses.