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WAGE DYNAMICS
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NO 974 / DECEMBER 2008

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OF WAGE BARGAINING IN
23 EUROPEAN COUNTRIES,
THE US AND JAPAN**

by Philip Du Caju,
Erwan Gautier, Daphne Momferatou
and Melanie Ward-Warmedinger

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by Philip Du Caju², Erwan Gautier³,
Daphne Momferatou⁴ and
Melanie Ward-Warmedinger⁴



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¹ The opinions expressed in this paper are solely that of the authors and do not necessarily reflect the opinion of the European Central Bank and the European System of Central Banks the authors are affiliated to. Acknowledgements are listed on a separate page in this paper.

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Wage Dynamics Network

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

The WDN is chaired by Frank Smets (ECB). Giuseppe Bertola (Università di Torino) and Julian Messina (Universitat de Girona) act as external consultants and Ana Lamo (ECB) as Secretary.

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

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

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The statement of purpose for the ECB Working Paper Series is available from the ECB website, <http://www.ecb.europa.eu/pub/scientific/wps/date/html/index.en.html>

ISSN 1561-0810 (print)
ISSN 1725-2806 (online)

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Abstract

This paper presents information on wage bargaining institutions, collected using a standardised questionnaire. Our data provide information from 1995 and 2006, for four sectors of activity and the aggregate economy, considering 23 European countries, plus the US and Japan. Main findings include a high degree of regulation in wage setting in most countries. Although union membership is low in many countries, union coverage is high and almost all countries also have some form of national minimum wage. Most countries negotiate wages on several levels, the sectoral level still being the most dominant, with an increasingly important role for bargaining at the firm level. The average length of collective bargaining agreements is found to lie between one and three years. Most agreements are strongly driven by developments in prices and eleven countries have some form of indexation mechanism which affects wages. Cluster analysis identifies three country groupings of wage-setting institutions.

Keywords: wage bargaining, institutions, indexation, trade union membership, cluster analysis

JEL Classification: J31, J38, J51, J58

Non-Technical Summary

This paper provides an overview of the main institutional characteristics affecting wage formation in developed countries over the last decade. The information presented was collected using a standardised questionnaire answered by national experts from the central banks of each of the countries considered. Our data provide information from 1995 and 2006 for 23 European countries, plus the US and Japan. An important value added of this dataset in relation to those underlying existing literature is the consistent coverage of institutional features for two common points in time. Furthermore, the questionnaire collects information at both the sectoral and national level and contains, to our knowledge, uniquely comparable information on wage bargaining institutions. This includes some more procedural aspects of union density, coverage and coordination, as well as other issues that can be related to the relative flexibility/rigidity of wages across countries, such as the average agreement length and elements considered during wage negotiations. Furthermore, this paper considers the role of government in the determination of not only public, but also private sector wages and the importance of minimum wages and wage indexation to wage setting.

The main findings include:

(i) There is large variation in the degree of trade union density across countries and sectors. Although it has been declining over the past decade in Europe, a large proportion of workers are still covered by some kind of collective wage agreement and collective bargaining coverage is still generally high. Coverage generally increases with firm size and is more common for high-skilled employees, full-time employees and in the case of industry also manual workers. Furthermore, extension procedures (which make a collective bargaining agreement binding for all employees and employers within its usual field of application) are widespread in Europe.

(ii) Considerable heterogeneity in the levels at which bargaining takes place is apparent across countries. In a first group of countries (Finland, Ireland and Slovenia) the national level of wage bargaining is dominant. Negotiations at the national level are the first step before more decentralised (and less dominant) negotiations take place. In a second group of countries, which include nearly all euro area countries, Denmark, Japan and Norway, the sectoral level is the most dominant for wage bargaining. For most countries in this group, company-level agreements are common as the second (or third) stage of bargaining. There is some limited evidence that firms use “escape” clauses to avoid company level agreements from being at least as favourable as sectoral ones. In a third group, including Eastern European countries, France, Luxembourg, the UK and the US, the company level is dominant and wage bargaining systems are highly decentralised.

(iii) Most countries are found to operate under some form of coordination. The exceptions are Hungary, Poland the UK and the US. Four countries have some form of state imposed wage indexation – namely Belgium, Cyprus, Luxembourg and Slovenia – and minimum wages with some form of government enforcement are used as a coordination device in six countries. In

Europe and the US, government is heavily involved in the setting of public sector wages and in eleven countries it is also involved in setting private sector wages. Inter-associational agreements have gained importance over the last decade and are the dominant mechanism for wage coordination in three countries, intra-associational coordination is dominant in 8 countries. Finally, pattern bargaining, when negotiations start at one sectoral association (trend-setter) and are then repeated at others are found in Austria, Germany, Norway and Sweden. Some form of legally binding national minimum wage is found to exist in most countries in 2006, with the notable exception of Germany and Italy. Minimum wages generally cover less than 25% of the workforce. Increases in minimum wages can also form the basis for other wage increases.

(iv) The average length of collective bargaining agreements lies between one and three years in Europe and is one year in Japan. Most agreements follow a regular calendar and many are concluded within the first quarter of a year. With regard to the elements entering wage negotiations, prices are the most important determining factor. Eleven countries are found to have some form of indexation to prices (although significant differences exist between countries in terms of the reference used) and when indexation is fully automatic (as in Belgium, Cyprus and Luxembourg) it affects more than 66% of the workforce. Labour productivity is the second most important factor cited as entering wage negotiations with three countries making reference to national productivity developments and five countries considering sectoral productivity developments. In the UK (and to a lesser extent in Japan), firm level profitability plays an important role. Changes in taxation and social contributions are cited as important in wage negotiations.

As a conclusion, we summarize these main findings by using cluster analysis to group together countries that seem to have similar wage bargaining characteristics and to identify the broad types of bargaining systems that exist across the 25 countries. Three groups of countries can be identified through the cluster analysis of wage setting institutions: The first group (Austria, Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal and Sweden) mainly consists of countries with a broadly regulated system of wage bargaining, which is quite typical of Western European countries. This group can be characterised by the existence of extension procedures and a high level of collective agreement coverage, a dominance of sectoral (and to a less extent firm-level) wage bargaining and the general absence of coordination except through minimum wages (or trend setting sectors). The second group (Belgium, Cyprus, Finland, Luxembourg, Slovenia and Spain) exhibits the same general wage setting characteristics of the previous group, except that in addition, indexation, intersectoral agreements and the role of government are all more important. Finally, the last group (Czech Republic, Estonia, Hungary, Japan, Lithuania, Poland, the UK and the US) gathers the countries where the wage bargaining system is largely deregulated.

1. Introduction

Among the labour market structures influencing macroeconomic performance, wage bargaining institutions affecting wage outcomes play an important role. There is a vast literature on the role of collectivisation, centralisation and coordination of wage bargaining in shaping labour market outcomes, wage levels, wage dispersion and wage flexibility. In a recent survey, Freeman (2007) presents three ways in which wage-setting institutions affect economic performance: they “alter incentives”, they “facilitate efficient bargaining”, and they “increase information, communication, and trust”. Institutional arrangements related to the labour market may also modify the effect of monetary policy on inflation and unemployment. The well-known Barro and Gordon (1983) model emphasizes the inability of monetary policy to influence unemployment directly: first, unions set nominal wages conditionally on rational expectations of the money supply, then the central bank sets the money supply to minimize inflation and unemployment. The equilibrium of this model is characterized by monetary policy neutrality and excess inflation. On the other hand, recent literature shows that non-neutrality can appear when there are strategic interactions between unions and the central bank. Soskice and Iversen (2000) show that when there is a finite number of wage-setters and product markets are monopolistic, a non-accommodating monetary policy leads to important effects on employment. These conclusions are empirically supported by Cukierman and Lippi (1999), Hall and Franzese (1998) and Aidt and Tzannatos (2005). Using model simulations, Acocella *et al.* (2008) find that the effects of monetary policy on the real economy may depend on the different wage setting strategies.

The relationship between wage bargaining institutions and wage rigidity is also interesting for monetary policy since nominal rigidities play a crucial role in explaining the impact of monetary policy on output. Nominal wages may be rigid downwards because of the presence of substantial resistance to nominal wage cuts, most often attributed to money illusion, fairness considerations, nominal minimum wages or nominal contracts (Keynes 1936, Slichter and Luedicke 1957, Tobin 1972, Akerlof, Dickens and Perry, 1996). Under low inflation, such rigidity means that more workers have real wage freezes and fewer experience real wage cuts than would be the case otherwise. This is of concern to monetary authorities because the lack of real wage cuts may cause unemployment, while the possibility of a higher inflation target would ease this problem as it would de facto allow for greater cuts in real terms. In particular, macroeconomic models have recently shown the importance of real wage rigidity in reproducing nominal rigidities (Christiano *et al.* (2005)). Alternatively, if the resistance to wage cuts is informed e.g. as a result of unionisation or wage indexation, wages may still exhibit downward real rigidity (see Dickens *et al.* 2007). If workers resist real (rather than nominal) wage cuts, a higher inflation target will not ease the problems associated with downward real wage rigidity. In this case wage changes will be highly concentrated at or above the expected rate of inflation, irrespective of the rate of inflation. In this paper, we provide some detailed and comparative insight into wage bargaining institutions such as the duration of agreements and its main determinants, including possible indexation mechanisms

that naturally affect the speed and the extent to which wages react to economic changes. For example, the available literature suggests that the average duration of wage agreements limits the relative flexibility of wages (see Taylor (1983), Cecchetti (1987), Fregert and Jonung (1998) who use this duration as an indicator of rigidity). Furthermore, Dickens *et al.* (2007) find a positive relationship between the degree of union density and union coverage and real wage rigidity.

Although the theoretical literature accords an important role to wage bargaining institutions and a vast empirical literature tries to quantify this role, the measurement of institutions remains difficult and comparable information at an international level is still limited. Arguably the most comprehensive time series of quantitative information on the percentage of union density, the ratio of minimum to median wage, and indexes of union coverage, coordination and corporatism for a number of OECD countries is available from the OECD (see for example Elmeskov, Martin and Scarpetta 1998). However these series provide little information on any other aspects of wage setting mechanisms and very little qualitative information on how wage setting institutions are designed or how they function. Furthermore, information for some EU countries is not available. This makes a good understanding, and particularly the cross-country comparison, of such institutions difficult.

More detailed quantitative time series and qualitative information on other aspects of wage bargaining mechanisms (such as union membership, union coverage, bargaining level, the extent of government involvement in wage setting and the largest unions) is available in Golden, Lange and Wallerstein (1998) and Ebbinghaus and Visser (2000). Kenworthy (2001) provides comparative information on many indexes of corporatism and Checchi and Lucifora (2002) provide a bivariate dummy for the existence of wage indexation for some countries up until the late 1990s. However, these sources generally lack recent information since the mid-1990s or 2000, are not available for many EU countries and the degree of qualitative information available is varied. Finally, international organisations such as the European Commission, the European Industrial Relations Observatory (EIRO) and the OECD (e.g. in their Employment Outlook 2004, 2005) provide more detailed qualitative information from ad-hoc studies of particular aspects of wage setting institutions. The sometimes non-standardised nature of the collection or presentation of this information, the varying and different coverage of countries, periods and institutional features considered can make the comparison of institutions across countries difficult. Finally, detailed quantitative and qualitative information on variables such as average agreement length and detailed information on institutions such as wage indexation mechanisms (arguably extremely important to understand the link between wage and price developments) is generally not available. Nor do any of the above sources provide sectoral information on wage-setting institutions by country.

This paper thus adds to the existing literature on wage bargaining institutions and attempts to fill in some of the gaps in the available quantitative and qualitative information by providing an overview

of the main characteristics affecting wage formation in 23 European countries², the United States and Japan for the years 1995 and 2006³. The information in this paper is based on a standardised questionnaire answered by national experts from central banks of each of the countries concerned. The remainder of this paper is organised as follows. Section 2 looks at the questionnaire design and gives details of the data collection method, outlining the aspects of wage setting mechanisms considered. Section 3 looks at the collectivisation of wage bargaining in the 25 countries covered, including the degree of trade union density, collective bargaining coverage and extension procedures. Section 4 outlines the degree of centralisation across countries. Section 5 describes the coordination of wage bargaining, also including the role of government in the setting of not only public, but also private sector wages. Section 6 examines the main determinants of wage agreements, their average duration and the possible existence, design and coverage of wage indexation mechanisms. As a conclusion, we summarize our results by doing a cluster analysis and grouping countries with similar institutions of wage bargaining.

2. Data

The information in this paper was collected using a standardised questionnaire (see Annex 1) especially designed within the framework of the Eurosystem's Wage Dynamics Network. This network was made up of national experts and leading academics in the area of wage setting and the questionnaires themselves were completed by national experts from the central banks of each of the countries considered, who were both committed and responsible for giving detailed and accurate replies. Within this setting, the most common disadvantage of using a questionnaire for data collection (namely, low or non-response) is overcome. Furthermore, other typical caveats of a questionnaire based survey, such as subjective assessments which may vary across respondents in different countries, or the use of different definitions for the one or other indicator which are not fully comparable across countries are also arguable less problematic within this framework: First, the respondents are usually experts in the area of wage setting, therefore their knowledge of the subject matter should be maximised and subjectivity minimised. Second, many respondents, through their day to day work, participate regularly in the collection of data to be used for cross country study within e.g. the Eurosystem. They are therefore arguably more aware of the importance of comparability of data across countries and of those definitions most appropriate and commonly used for cross-country comparison. Although the total absence of caveats related to the use of a questionnaire cannot be guaranteed, we find that answers are consistent with and add to previously available information on wage setting institutions. Annex 2 presents a comparison of some of the information we collected with OECD data. For some of the countries under study here,

² These are Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxemburg, the Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden and the United Kingdom

³ Respondents were requested to provide information on wage bargaining institutions for current practices or the most recent year available (in most cases 2006) and a reference point a decade earlier (in most cases 1995).

OECD collected comparable information on trade union density (Annex 2 Table 4), union coverage (Annex 2 Table 5), extension procedures (Annex 2 Table 6), and the level of wage bargaining (Annex 2 Table 7). For these 4 variables, the answers to our questionnaire and OECD data provide very similar results, giving us confidence that the data we collected is generally accurate and highly comparable, across the dimensions of time and country.

This questionnaire was designed to collect comparable information on key wage setting institutions for two data points (1995 and 2006) and 4 sectors (agriculture, industry, market services and non-market services (based on the NACE)) as well as the total economy. 23 European countries, Japan and the US took part in this data collection exercise. An important value added of this data in relation to pre-existing information is that it allows a comparison of the most recent features of wage setting institutions with a common reference point in the previous decade. Furthermore, the questionnaire to our knowledge collects some uniquely comparable information on sectoral wage setting and wage bargaining institutions, starting from some more procedural aspects of union density, coverage and coordination and continuing with further issues that can be related to relative flexibility/rigidity of wages across countries, such as average agreement length and the elements considered during wage negotiations. In addition, this paper also considers the role of government in the determination of not only public, but also private sector wages and the importance of minimum wages and wage indexation in particular. In order of the questionnaire, data was collected on: details of trade union density; collective bargaining; the level of wage bargaining; the coordination of wage bargaining; the determinants of collective wage negotiations; collective bargaining agreement length; minimum wages and indexation mechanisms. Respondents were asked to state a reply, or alternatively indicate that data were not relevant, or alternatively not known. The data presented in this paper is based on the pure data collected. That is, it does not mix information from other sources. Comparison of some of the rudimentary information available from other sources indeed shows a high degree of the comparability of replies. For example, comparison with information available from the European Trade Union Institute (ETUI) e.g. Fajertag (2000) and European Industrial Relations Observatory (EIRO) on the country-specific systems in the mid to late 1990s including average contract length and level of minimum wages is in line with that collected in this dataset.

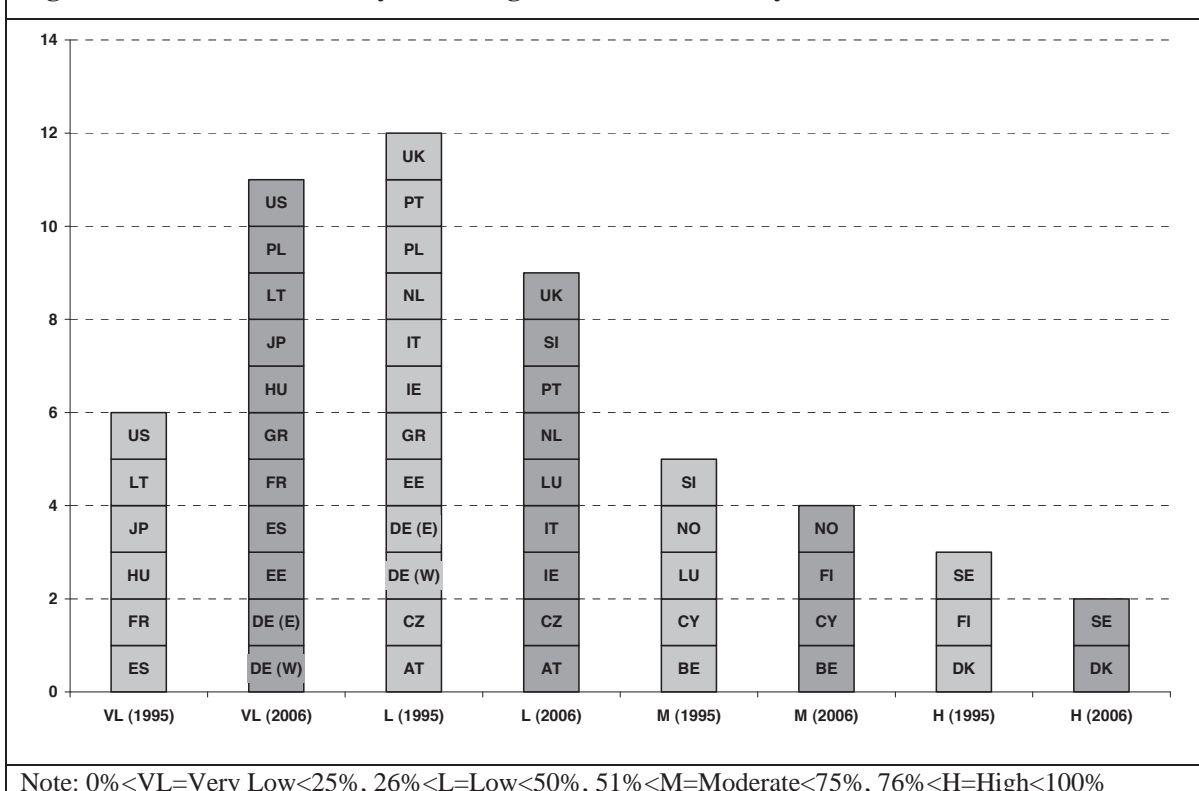
Although much effort was assigned to collecting detailed information on the most important characteristics of wage setting institutions in a comparable way, it should also be noted that the details of national wage setting institutions are inherently complicated. Individual countries may have exceptions, nuances and additional elements to any of their wage setting institutions, which underlay the key characterisation of their national system. One paper cannot hope to do justice to this complexity while also presenting all of national details in a short and accessible manner. Here, we therefore focus on the key characteristics of each national system.

3. Collectivisation of wage bargaining

The first characteristic of wage setting that we consider is collectivisation. Many studies have related the collectivisation of wage setting to average wage levels and to the responsiveness of wages to labour market conditions. Collectivisation is generally measured by the proportion of workers in a workplace that are trade union members (trade union density) and by the proportion that are covered by a collective wage agreement (collective bargaining coverage). The above-mentioned international data sources generally cover this aspect of wage setting for the national level rather well. We provide here information from questions 1 and 2 of the questionnaire, for our set of 25 countries, for 1995 and 2006.

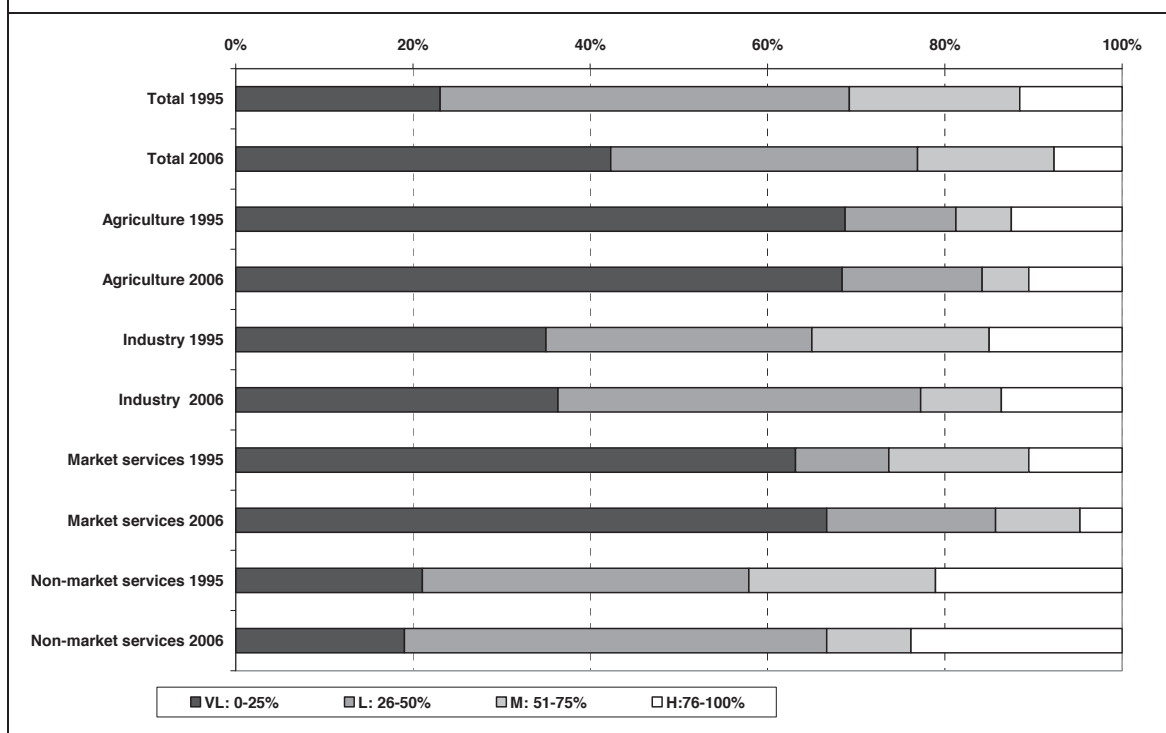
The degree of trade union density, defined as the percentage of workers who are members of a trade union, varied strongly across developed countries in 2006 (Question 1, see Figure 1 and Annex 3 Table 8). It is relatively high in countries like Denmark, Finland and Sweden (between 70 and 80%). Trade union densities in Belgium, Cyprus, Luxembourg and Norway are a little lower in a close range between 50% and 60%. In contrast, the lowest rates of trade union density are observed in most of the Eastern European countries, France, Spain, and the United States (close to 10%-15% or less). Trade union density decreased around the industrialised world between 1995 and 2006. It decreased particularly strongly in Eastern Europe and the former Eastern Germany. In contrast, countries where the trade union density was already rather low did not experience any further strong decrease in trade union density during the last decade (see Annex 3 Table 8).

Figure 1: Countries with very low to high trade union density



The rate of trade union density also differs significantly across sectors. In most countries, union density is the highest in non-market services. In this sector, rates of membership below 25% are rare (see Figure 2 and Annex 3 Table 8) and rates have generally been stable over the last decade in most countries, even slightly increasing in the UK and US. Union density is lower but traditionally still important in the industrial sector. In the majority of countries, rates of trade union density in this sector range between 25 and 50%, but have been declining since 1995. Density rates are very low in market services and agriculture. In market services, the lowest rate is observed in France and in the United-States (around 5%) where density rates are half as high as those in industry and even three times lower than in non-market services. Union density rates in the market services sector have also declined over the last decade.

Figure 2: Trade Union Density by Sectors (% of total countries with very low, low, medium and high levels of trade union density, total economy and by sector across time)



Although trade union density has been declining over the past decade in Europe, a large proportion of workers are still covered by some kind of collective wage agreement. In fact collective bargaining coverage is still generally high in Europe (Question 2, see Table 1 below). In Austria, Belgium, France, Greece, Italy, the Netherlands, the Nordic countries, Portugal and Slovenia the coverage rate is between 80 and 100% and stable (or even slightly increasing in some countries) over the last decade. On the other hand, bargaining coverage is low in the Czech Republic, Hungary, Poland, the UK (between 30 and 40%), and especially low in Japan, Lithuania and the United States (lower than 20%), even decreasing in the case of the latter since the mid-nineties.

Coverage rates also vary across sectors, but for those countries where national collective bargaining coverage rates are high, coverage rates are also consistently high across sectors. In both Germany

and Spain, the decrease in coverage rates stems mainly from the industry sector. In countries with low or very low bargaining coverage, coverage is also very low in market services, higher but still low in the industry sector and a little higher in the non-market services.

Table 1: Trade union coverage by country, across sectors and time

	Agri A-B			Ind C-F			Mkt Serv G-K			Non-Mkt Serv L-P			Total A-P		
	2006	1995	2006 vs 1995	2006	1995	2006 vs 1995	2006	1995	2006 vs 1995	2006	1995	2006 vs 1995	2006	1995	2006 vs 1995
2006/Most recent															
Austria	H	H		H	H		H	H		H	H		H	H	↑
Belgium	H	H		H	H		H	H		H	H		H	H	
Cyprus													M	M	↑
Czech Republic	L			M			L			M			M	L	↑
Denmark	M	L	↑	H	M	↑	M	M	↑	H	H		H	H	↑
Estonia													L		
Finland	H	H		H	H		H	H		H	H		H	H	
France				H	H	↑	H	H	↑	H	H		H	H	↑
Germany (West)	M	H	↓	M	H	↓	L	L		H	H		M	M	↓
Germany (East)	L	L		L	L		L	L		H	H		L	M	↓
Greece				H	H		H	H		H	H		H	H	→
Hungary	VL	VL	↑	L	L	↓	L	L	↓	L	L	↓	L	L	↓
Ireland															
Italy	H	H		H	H		H	H		H	H		H	H	
Japan				VL	L	↓	VL	VL	↓	VL	VL	↑	VL	VL	
Lithuania	VL	VL		VL	VL		VL	VL		L	L		VL	VL	
Luxembourg		VL			H			H			H			M	
The Netherlands	H	H		H									H	H	
Norway	L	L		M	M		M	M		H	H		M	M	
Poland													L	M	↑
Portugal	H	H		H	H		H	H		H	H		H	H	
Slovenia	H	H		H	H		H	H		H	H		H	H	
Spain	H	M	↑	H	H	↓	H	M	↑	IR	IR		H	H	↓
Sweden	H	H		H	H		H	H		H	H		H	H	
The United Kingdom	VL			L			VL			M			L	L	↓
The United States	VL	VL		VL	VL	↓	VL	VL	↓	VL	VL	↓	VL	VL	↓
In sum - number of countries															
Very low	4	4		3	2		4	3		2	2		3	3	
Low	3	3		3	3		4	3		2	2		5	3	
Moderate	2	1		3	2		2	3		2	0		4	6	
High	9	9		12	12		10	10		13	14		12	12	
Total	18	17		21	19		20	19		19	18		24	24	

Note: 2006 refers to 2004 in Germany, 2005 in Spain, 2004 in France, 2000 in Denmark, 2003 in Estonia, 2004 in Hungary, 2001 in Poland
Note: 1995 refers to 1997 in France, 1994 in Denmark, 1998 in Hungary and 2000 in Luxembourg
Note: Arrows refer to position in 2006 relative to 1995, if quantitative value is provided and difference is at least 1pp. A sign is also filled in if there is a change in
Source: Answers provided by NCB experts to WDN wage questionnaire

Note: 0%<VL=Very Low<25%, 26%<L=Low<50%, 51%<M=Moderate<75%, 76%<H=High<100%

An important feature for Continental Europe countries is the difference between very low rates of trade union density and high rates of collective bargaining coverage. Two factors explain this discrepancy between union density and union coverage. First, contrary to the US, in most European countries, employers voluntarily apply to non-union members the terms of an agreement. Thus, workers can be covered by a wage agreement without being members of a trade union, which has generally reduced trade union membership. The second explanation is the existence and the widespread use of extension procedures for (sector-level) wage agreements (see Annex 3 Table 9). These procedures (which are generally administrative or legal) make a collective agreement binding for all employees and employers within its usual field of application, even if some employers or trade unions did not directly sign the agreement. This means that in those countries where trade union bargaining generally occurs at a sectoral level, extension procedures may extend the coverage of the outcome of this bargaining to cover additional sectors, firms and therefore also individuals who are not members of the negotiating unions. By definition, these procedures directly or indirectly extend the effects of bargaining agreements by increasing the “collectivisation” of wage bargaining. In some countries, such an extension is automatic (see Annex 3 Table 10), such

as in Spain (by law), Italy (by the constitution)⁴ or Austria (due to mandatory membership of employers in the Austrian Economic Chambers). However, for the majority of countries, public institutions play a crucial role, with specific public commissions taking charge of extensions (e.g. in France, Finland, Germany, Hungary or Luxembourg). Extensions can also be requested by unions, employers or the Ministry of Labour, being granted by a public decision (such as a decree or a specific decision from the Ministry of Labour). Other requirements may also need to be met before an extension is possible. For example, in Finland, Germany, Greece, the Netherlands and Spain, at least 50% of employees must already be covered by a wage negotiation for an extension to be possible.

The absence of extension procedures is rare in Europe. Austria, Belgium, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovenia and Spain all have extension procedures. In the Czech Republic and in Germany, such procedures are limited to specific sectors and in the Czech Republic, Estonia and Slovenia extension procedures have been adopted only very recently. The lack of extension procedures in Denmark, Norway and Sweden is explained by the already very high level of trade union membership. In Cyprus, Lithuania and the UK, extension procedures did not exist in 2006 and the rate of collective bargaining coverage is almost equal to that of trade union density, thus collective agreements only apply for union members. This is very similar to the American case.

Coverage also appears to vary to some extent by firm size (at the firm level) and worker type (for example at the industry or sectoral level). Differences across firms of different size are apparent in Cyprus, the Czech Republic, Denmark, France, Germany, Japan, Luxembourg, Norway, the UK and the US. In principle, coverage increases with firm size. For example, in the case of Western Germany, coverage increases from 30%, to 60%, to 80% for respective firm sizes of 1-9, 50-199 and over 500 employees respectively. Some countries like Austria, Cyprus, Denmark, Germany, Hungary, Japan, and Slovenia mention the existence of higher coverage rates for some types of workers. These include better-educated/higher-skilled employees, full-time employees and in the case of industry, manual workers.

4. Centralisation of wage bargaining

The economic literature predicts different impacts of the centralization of wage bargaining on economic performance. Bruno and Sachs (1985) support the view that there is a linear relationship between the centralization of wage bargaining and economic outcomes and the best economic outcomes are obtained when wages are set at a centralized level. Calmfors and Driffill (1988) in a well-known paper challenge this theory and suggest a hump-shaped relationship between the degree of centralization of wage bargaining and economic performance with both centralized and

⁴ Only “representative” agreements are extended - i.e. in case of disputation, judges can grant pay raises to workers based on these agreements (though no law defines what makes a collective contract “representative”).

decentralized levels of wage bargaining helping to reduce unemployment and inflation. They argue that in centralised environments “large and all-encompassing trade unions naturally recognise their market power and take into account both inflationary and unemployment effects of wage increases. Conversely, unions operating at the individual firm or plant level have limited market power. In intermediate cases, unions can exert some market power but are led to ignore the macroeconomic implications of their actions” (Calmfors and Driffill, 1988, p.13). A vast empirical literature (see Aidt and Tzannatos (2005) or Flanagan (1999) for surveys) concludes that it is difficult to find a robust relationship between the centralization of wage bargaining and economic outcomes.

A second interesting issue is the relationship between wage dispersion and the level of wage bargaining. Wages that are not sufficiently differentiated, for example, by skill or region may contribute to increase the mismatch between labour supply and labour demand, thus increasing the unemployment rates of some skill groups and in some regions. If relative wage compression is too strong, in particular low-skilled workers or workers living in low productivity regions may remain unemployed. Similarly minimum wages which are too high may price young and lower skilled workers out of the labour market. Highly centralized wage bargaining can be expected to lead to less wage dispersion than under decentralized wage bargaining and empirical results obtained with micro data seem to confirm these expectations (see Card and de la Rica (2006), Cardoso and Portugal (2005), Hartog *et al.* (2002)).

Question 3 collects information on the level of wage bargaining. In most countries wages are negotiated at multiple levels. Two related questions therefore emerge: at which level does bargaining take place and what is the relationship between the different levels of wage bargaining in the whole process through which final outcomes are reached? Our data distinguishes between 6 levels of bargaining: national, regional, intersectoral, sectoral, occupational and company level.

Three levels of bargaining appear to be less important than the rest - the regional level, the intersectoral level, and to a lesser extent the occupational level (see Figure 3). The regional level is only relevant for wage bargaining in Austria, France, Germany and Spain. Intersectoral agreements are observed only in Belgium, Denmark, France, Norway and Sweden. Agreements at the occupational level are observed in a slightly larger group of countries. Consequently, wage bargaining is the most common in Europe, the US and Japan at three levels, namely the national, sectoral and company level. According to the answers to our wage questionnaire, in Europe, the sectoral level is the most frequently occurring and also tends to be dominant. The company level is also very usual but generally not dominant.⁵

Cross country heterogeneity in the levels at which wage bargaining takes place is strong and three groups of countries can be identified: First, in Finland, Ireland and Slovenia, the national level of wage bargaining is dominant. In these countries, negotiations between trade unions and employer

⁵ The dominant level does not necessarily need to be only one. For more details on this topic see part 4.

federations at the national level lead to general recommendations for negotiations at lower levels. These negotiations are the first step before more decentralized and less dominant negotiations take place at the sectoral level in Finland and Slovenia or at the firm level in Ireland.

Second, in Austria, Belgium, Denmark, Germany, France, Greece, Italy, Japan, the Netherlands, Norway, Portugal, Slovenia, Spain and Sweden the sectoral level is the dominant one for wage bargaining, which does not exclude that national guidelines could still play a role in these countries. In Germany and Spain, sectoral level bargaining is coupled with regional level negotiations. For most of the other countries in this group, company-level agreements are common, but cover a limited share of employees (10% in Spain and 22% in France), with the exception of Denmark where company agreements are dominant in the industry sector. Generally speaking, company level agreements cannot be less favourable than sectoral agreements. Even if firms can legally avoid sectoral level clauses (as in Austria, France since 2005, Greece, Hungary, Italy, the Netherlands, Poland, Slovenia and Spain) these “escape clauses” were scarcely used in 2006. On the other hand, escape clauses have been commonly used in Germany in the most recent years, allowing for more flexibility at the company level as individual firms have been able to control and cut down on wage costs by limiting for example bonus and holiday payments.

Third, in the Czech Republic, Estonia, Hungary, Poland, Lithuania, Luxembourg, the UK and US, the company level is the dominant level of wage bargaining and wage bargaining systems are highly decentralized. Sectoral or national levels of wage agreements existed in some Eastern European countries in the mid 1990s, but by 2006 no longer played a role.

Significant heterogeneity in the wage bargaining level across sectors is not apparent. One can only note that non-market services wages are often set at the national level through negotiation with the government. For example, even when company-level agreements dominate in the market sector in countries like Lithuania and the UK, government or at least public health employees’ wages are determined at a national level. With the exception of the changes in Eastern Europe mentioned above, no variation in the dominant level of wage bargaining over time is apparent. Although it is generally stated that bargaining has become more decentralised in many countries with more negotiation taking place at the company level, this is mainly through additional adjustments at the company level or via the use of opt-out clauses in higher level agreements. All in all, the sectoral level seems to have maintained the dominant role in most countries. Furthermore, for those countries with dominant sectoral bargaining, trade-union coverage is also generally higher.

Figure 3: The levels at which wage bargaining both occurs and is most dominant, by country over time

	2006 1995		2006 1995		2006 1995		2006 1995		2006 1995		2006 1995	
	National		Regional		Intersectoral		Sectoral		Occupational		Company	
AT			AT	AT			AT	AT	AT	AT		
BE	BE	BE			BE	BE	BE	BE	BE	BE	BE	BE
CY							CY	CY			CY	CY
CZ							CZ	CZ			CZ	CZ
DE			DE	DE			DE	DE				
DK					DK	DK	DK	DK	DK	DK	DK	DK
EE	EE	EE									EE	EE
ES	ES	ES	ES	ES			ES	ES			ES	ES
FI	FI						FI	FI			FI	
FR	FR	FR	FR	FR	FR	FR	FR	FR	FR	FR	FR	FR
GR	GR	GR	GR	GR			GR	GR	GR	GR	GR	GR
HU	HU	HU					HU	HU			HU	HU
IE	IE	IE										
IT							IT	IT			IT	IT
JP							JP	JP			JP	JP
LT	LT	LT									LT	LT
LU							LU	LU	LU	LU	LU	LU
NL	NL	NL					NL	NL			NL	NL
NO					NO	NO	NO	NO	NO	NO	NO	NO
PL	PL	PL						PL			PL	PL
PT							PT	PT				
SE					SE		SE	SE	SE	SE	SE	SE
SI	SI	SI					SI	SI			SI	SI
UK	UK	UK					UK	UK	UK	UK	UK	UK
US									US	US	US	US

Legend: applies to country is dominant in country

5. Wage bargaining coordination and government involvement

The coordination of wage formation relates to the extent to which wage negotiations are coordinated across the various wage bargaining levels/actors within an economy and thus the extent to which the external consequences of wage agreements on the whole economy are taken into account. Horizontal coordination requires the synchronisation of players within the same level of bargaining (e.g. in the case of sectoral wage bargaining, the synchronisation of different unions within the same sector) and vertical coordination refers to the synchronisation across the different levels of bargaining explained in the previous section, so as to achieve consensus on a joint macroeconomic strategy. The coordination and centralization of wage bargaining are different concepts and the relation between the two is not obvious. For example, coordination is still possible in an environment of decentralised wage bargaining if coordination institutions are present. Alternatively, coordination can be difficult to achieve at a centralized level if there are divisions among unions.

It is not clear whether coordination is beneficial. Theoretical literature on the coordination of wage bargaining argues that a wage bargaining system with coordinated sectoral wage bargaining can lead to the same economic outcome as with centralized bargaining (Soskice, 1990, Teulings and Hartog, 1998). Moreover, strategic interactions between trade unions and monetary policy have been extensively studied by the theoretical literature. The general conclusions are mixed, but

suggest that semi-coordinated bargaining can lead to higher levels of employment, challenging the Calmfors and Driffill hump-shaped relationship.

Our data distinguish between five possible forms of coordination, these are: state-imposed indexation, state-imposed minimum wage and other government involvement, inter-associational coordination, intra-associational coordination, and pattern bargaining. Most countries operate under at least one form of coordination, with intra-associational coordination seeming to be dominant for the majority in countries, in line with most negotiations taking place at the sectoral level. However, in Hungary, Poland, the UK and the US, wage bargaining is characterized by highly decentralized wage negotiations and no coordination (even the minimum wage plays a limited role in the coordination of wages). In Ireland, when again no specific type of coordination is apparent, national collective agreements are reached through a process of first negotiations between unions and employers and then further negotiations at an inter-associational level. Furthermore, these characteristics of wage setting have remained very stable, with little apparent variation across time and almost none by sector. Results are gathered in Figure 4 and a more detailed description of the various forms of coordination in the Europe, Japan and the US follows.

Figure 4: Types of wage bargaining coordination that apply and are most dominant, by country over time

	State imposed									
	Wage indexation		Statutory min. wage		Inter-associational		Intra-associational		Pattern bargaining	
	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995
AT							AT	AT		
BE	BE	BE	BE	BE	BE	BE				
CY	CY	CY								
CZ	CZ	CZ	CZ	CZ			CZ	CZ		
DE							DE	DE		DE
DK					DK	DK	DK	DK	DK	DK
EE			EE	EE	EE					
ES			ES	ES	ES					
FI							FI	FI		
FR			FR	FR	FR	FR				
GR					GR	GR				
HU			HU	HU					HU	HU
IE			IE		IE	IE				
IT							IT	IT		
JP			JP	JP	JP	JP	JP	JP	JP	JP
LT			LT	LT						
LU	LU	LU	LU	LU			LU	LU		
NL					NL	NL	NL	NL		
NO					NO	NO	NO	NO	NO	NO
PL		PL	PL	PL						
PT			PT	PT						
SE					SE		SE	SE		SE
SI	SI	SI	SI	SI	SI	SI	SI	SI		
UK			UK						UK	UK
US			US	US					US	US

Legend: applies to country is dominant in country

5.1 Direct government involvement in wage setting

a. State imposed wage indexation

Answers to question 4 show that in three countries (Belgium, Cyprus and Luxembourg), state-imposed indexation is a dominant form of coordination in the economy as a whole (see Figure 4).

These countries have a formal and automatic indexation of nominal wages to an official price index which goes beyond indexation clauses for some workers that need to be negotiated in each wage contract (this type of wage indexation is discussed further in section 6). In Luxembourg, wages are adjusted upwards, as soon as the 6-month moving average of the national CPI is 2.5% higher than its level when the last wage indexation occurred. In Belgium, there are several systems, with fixed time intervals or fixed magnitudes of 2 %, but the reference index is always the “Health Index” (national CPI excluding motor fuels, alcohol and tobacco). In Cyprus, indexation is less formal, it is not legally binding but is part of the consensus between the government and social partners. Almost all collective agreements in Cyprus contain Cost-of-Living-Allowance (COLA) clauses (linked directly to the CPI change) and the government publishes twice a year the COLA index used in the wage bargaining process leading to a *de facto* automatic wage indexation. In some cases this has resulted into the need for additional measures to moderate wage inflation. Furthermore, in the case of Belgium, wage indexation is nowadays combined with national intersectoral coordination.

Looking into the sectoral information on this question, two more countries appear to have state-imposed wage indexation, albeit only in the public sector, the Czech Republic and Slovenia. In the case of Slovenia, state imposed indexation existed for the whole of the economy in 1995, but this was no longer the case for the private sector by 2006. Finally, the Polish public sector was also affected by state-imposed wage indexation in 1995, but this was abolished by 2006. More information on less formal types of wage indexation and the way that price developments are taken into account in wage negotiation rounds can be found in the following section.

b. State-imposed minimum wages

Minimum wages are set through national legislation, collective agreements, or sometimes through a mixture of the two and are in all cases legally binding. Questions 4 and 8 of the questionnaire (see Table 2 below) show that some form of a national minimum wage was found in all countries under review in 2006, with the exception of only Italy, which had no state or other form of minimum wage in any sector of the economy⁶, and Germany, where bargained minimum wages were only present in a few branches of the industrial sector. In Nordic countries like Finland, Sweden and Norway but also in Austria, minimum wages are negotiated in each sector and are part of the collective agreements. Seventeen countries had a state imposed minimum wage in 2006. National minimum wages were introduced in Ireland and the UK during the ten year period considered.

State-imposed minimum wages are minimum wages which are enforced by government. Whereas under a system of negotiated minimum wages, workers not covered by a minimum wage agreement can be paid at rates below that minimum wage, this is not the case for workers under a national

⁶ In Italy, there is no national minimum wage. However, judges grant pay raises to workers based on sectoral extended agreements which may substitute for the legal minimum wage.

minimum wage, where a statutory or national minimum wage constitutes the legal wage floor for all workers. Question 4 shows that in the Czech Republic, France, Lithuania, Portugal and Slovenia, a state imposed national minimum wage is the dominant form of wage coordination and is set by tripartite negotiations (including employer representatives, employee representatives and government, such as in Belgium) or decided unilaterally by the Government (as in France and Slovenia). Furthermore, the rate of increase in the minimum wage is often used as a reference for sectoral or even firm level wage bargaining in France, Greece, Ireland and Spain.

Table 2: The existence of minimum wages, by country, sector and over time

Country	Agri A-B		Ind C-F		Mkt Serv G-K		Non-Mkt Serv L-P		Total A-P	
	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995
Austria	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
Belgium	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cyprus	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Czech Republic	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Denmark	N	N	Y*	Y			N	N	Y*	Y
Estonia	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Finland	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
France	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Germany	N	N	Y	N	N	N	N	N	N	N
Greece	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
Hungary	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ireland	Y	N	Y	N	Y	N	Y	N	Y	N
Italy	N	N	N	N	N	N	N	N	N	N
Japan	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lithuania	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Luxembourg	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
The Netherlands	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Norway	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
Poland	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Portugal	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Slovenia	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Spain	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sweden	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
The Untited Kingdom	Y	N	Y	N	Y	N	Y	N	Y	N
The United States	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
In sum - number of countries										
Yes	17	15	18	16	17	15	17	15	17	16
Yes*	5	5	6	5	5	5	5	5	6	5
No	3	5	1	4	2	4	3	5	2	4

Source: Answers provided by NCB experts to WDN wage questionnaire

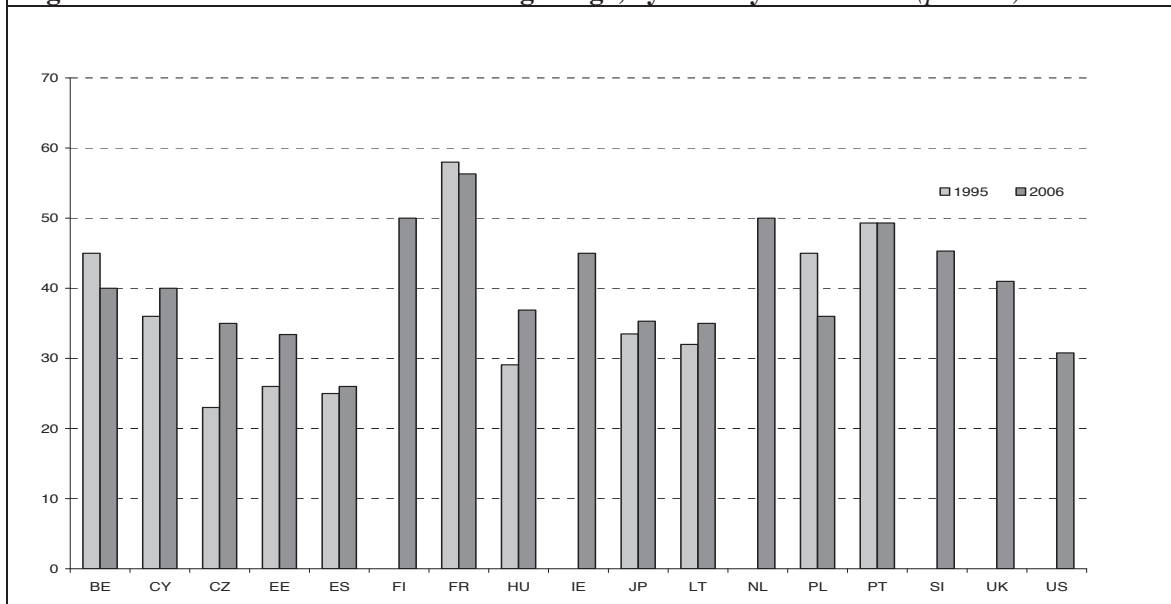
Notes: Y: Exists, N: Does not exist, a * denotes the existence of minimum wages set by collective agreements as opposed to national legislation/statutory minimum wages.

For most countries where a statutory minimum wage exists, the actual proportion of workers working at that wage is systematically less than 25% (see Annex 3 Table 11). Three groups of countries can be distinguished. In Ireland, Japan, the Netherlands, Poland, Slovenia, Spain and the US, less than 5% of employees were paid at the minimum wage in 2006. In Estonia, Hungary, Portugal or Lithuania, the figure was between 5 and 10% and in Cyprus, France, and Luxembourg between 10 and 20%. This coverage varies with sector, the proportion of employees paid at the minimum wage being higher in market services and lower in non-market services than in other sectors. There is also evidence that the proportion of employees paid at the minimum wage has increased in some countries such as Cyprus, France and Hungary over the last decade.

The level of minimum wages (statutory or bargained) varies significantly by country at above 1,000 euros per month in Belgium, Finland, France, Ireland, Luxembourg, the Netherlands and in the UK in 2006, and less than 500 euros in Czech Republic, Estonia, Hungary, Poland, Portugal, and Lithuania. The position of the minimum wage on the wage distribution also differs across

countries. In Spain, the minimum wage is equal to less than 30% of the average wage of all employees in 2006. In contrast, it is above 50% in Finland, France and the Netherlands. For those countries with a comparatively low level of minimum relative to the average wage, the tendency has been for this ratio to increase over the last decade (see Figure 5).

Figure 5: The ratio of minimum to average wage, by country across time (percent)



In some countries such as Austria, Germany, Japan, Spain and Sweden the level of minimum wages is also sector specific. There are variations between the minimum wages of blue-collar workers and white-collar workers in Denmark, between manual and non-manual workers in Austria and Greece and by occupation in Spain and Sweden. A number of countries set a lower level of minimum wages for the young, less educated while the minimum wage also varies by tenure (Austria, Belgium, Czech Republic, Greece, Ireland, Luxembourg, the Netherlands, Portugal, Sweden and the US). Variation by hours of work (Slovenia) and region (Japan) are also apparent. However, most countries do not consider their minimum wages to interact with other systems of protecting pay at the lower end of the labour market (such as training schemes and wage subsidies), with the exception of Greece, Denmark, Estonia, Hungary, Poland and Portugal. In these countries, unemployment benefits, social benefits, vocational subsidies and wage subsidies can depend upon the level of minimum wages.

In terms of how fast they rise, minimum wages are indexed or adjusted for past inflation or some other inflation measure in most countries, including Belgium, Cyprus, Czech Republic, Estonia (inflation forecast), France (indexed), Greece, Hungary, Poland, Portugal, Slovenia, Spain and the US (most commonly with reference to the CPI and with indexation in some US states). In some countries fairness arguments related to convergence to average pay (Austria, Belgium, France, Italy, Lithuania) or at least increases similar to the economy average (Cyprus, Estonia, Finland, Hungary, Japan, the Netherlands, Portugal, Spain and Sweden) or European Union average (Greece) are also taken into account. Minimum wages are adjusted according to explicit formulas

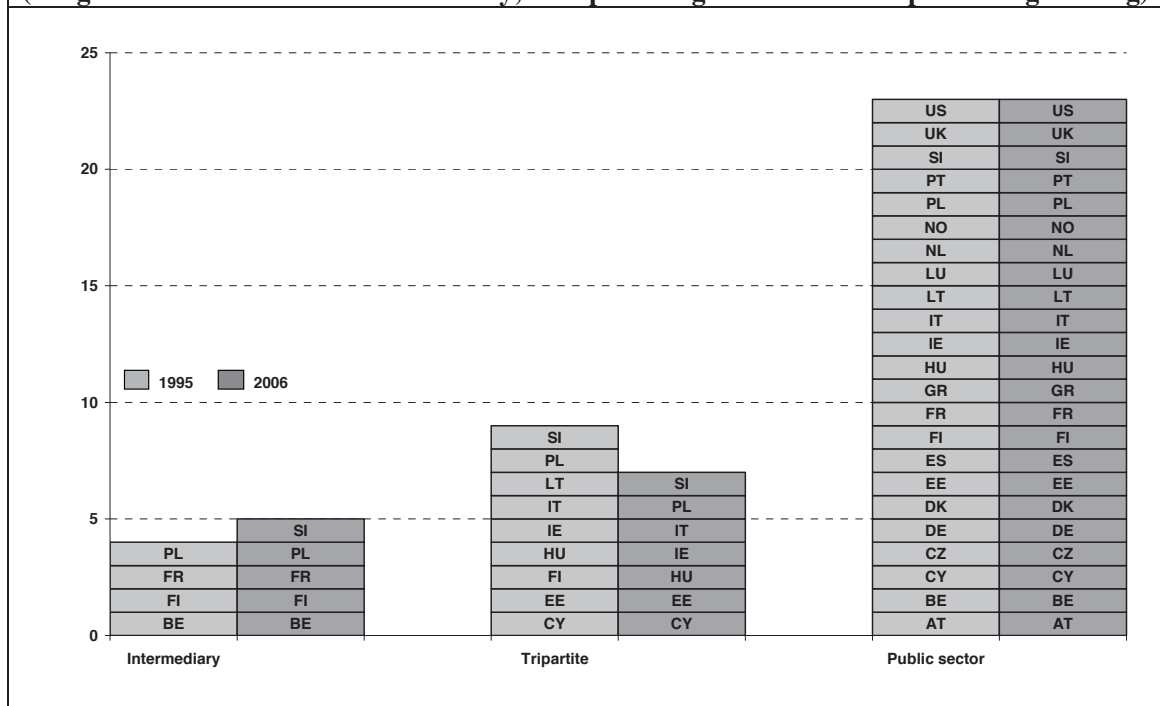
in France, Poland and to a lesser extent Estonia. However, in all countries apart from Germany (where the minimum wage is binding for a limited number of sectors), minimum wage increases are also legally binding at the national level and in Austria, France, Greece, Ireland and Poland, they also constitute a floor or a determining factor for other wage increases.

c. Other government involvement

In Europe and in the US, the government is heavily involved in the setting of public sector wages. Answers to question 5 of our questionnaire show this to be the case for most countries with the exception of Japan and Sweden, with specific commissions sometimes in charge of the bargaining process and after negotiations with the unions (see Figure 6). The final decision is however largely in the hands of the government and ultimately dependent and consistent with the annual government budget that needs to be approved by the Parliament. In the cases of federal systems, like Germany and the US, the government is involved in the setting of wages at the federal level and for federal employees, but further negotiations take place at the level of the Länder or the individual States for local public employees.

In some countries, the government also provides specific mediation services for the private sector as an intermediary mostly in cases of disputes, such as in France (“Commission mixte paritaire” at the sectoral level - 88 cases in 2005), the US (National Mediation Board), Cyprus, Finland, Poland, the UK (Advisory, Conciliation and Arbitration Service - 1353 cases in 2002/2003 at the firm level). In Belgium, government can set the wage norm that gives the expected wage increase in three neighbouring countries as an indication of maximum wage increases in the own country and in order to preserve competitiveness, in case social partners fail to agree on this themselves. Turning to government involvement in tripartite agreements, these are usually geared at more social policy related issues like unemployment compensation, social security contributions and minimum wages (e.g. Estonia, Lithuania and Portugal). For example, the government intervenes in wage negotiations on a regular basis in Finland when a tripartite Incomes Policy Commission gathers each year to decide wage increase guidelines, in principle in line with inflation and productivity developments. In most countries, tripartite meetings are also held to discuss labour conditions, or promote social dialogue, with parties gathering on a regular basis (e.g. in Estonia and Hungary) or more irregularly (Cyprus in 2004, France in 2005 and Italy in 1993). Government involvement has remained very stable over last decade (see Figure 6).

Figure 6: Form and extent of government involvement in wage setting, by country over time. (the government acts as an intermediary, in tripartite agreements and in public wage setting)



5.2 Inter and intra-associational coordination and pattern bargaining

Based on the replies to question 4 of our questionnaire, it appears that inter-associational agreements have gained importance over the last decade and that they are often the dominant mechanism of wage coordination, as in Belgium, Greece and Spain. In Belgium, negotiations take place every two years, when a wage norm is also agreed. In Spain, there has been a national agreement between major unions and employer representatives since 2002 that establishes the main lines of wage negotiation each year. In Finland, Ireland and Slovenia, general guidelines are set by a tripartite conference between the government, unions and employers federations. In Norway, negotiations take place at a confederal level in odd years and in other years, intersectoral elements are taken into account during negotiations.

Intra-associational coordination or coordination within peak associations occurs when unions and/or employers' organisations take the lead in coordination and commit to undertake joint decisions. This is naturally the case when peak associations encompass most bargaining units. Intra-associational coordination is dominant in the Czech Republic, Denmark, Finland, Italy, Japan, the Netherlands, Norway, and Sweden.

Pattern bargaining occurs when wage negotiations start in one (often sector-level) bargaining unit (the leader) and are then repeated by other bargainers (followers) who orientate their wage negotiations towards the leading sector's settlements (Question 4). Sometimes the agreements in the leading sector have such a strong influence that wage formation becomes *de facto* coordinated. In Austria, Germany, Norway and Sweden, the industrial sector is often the first to conclude

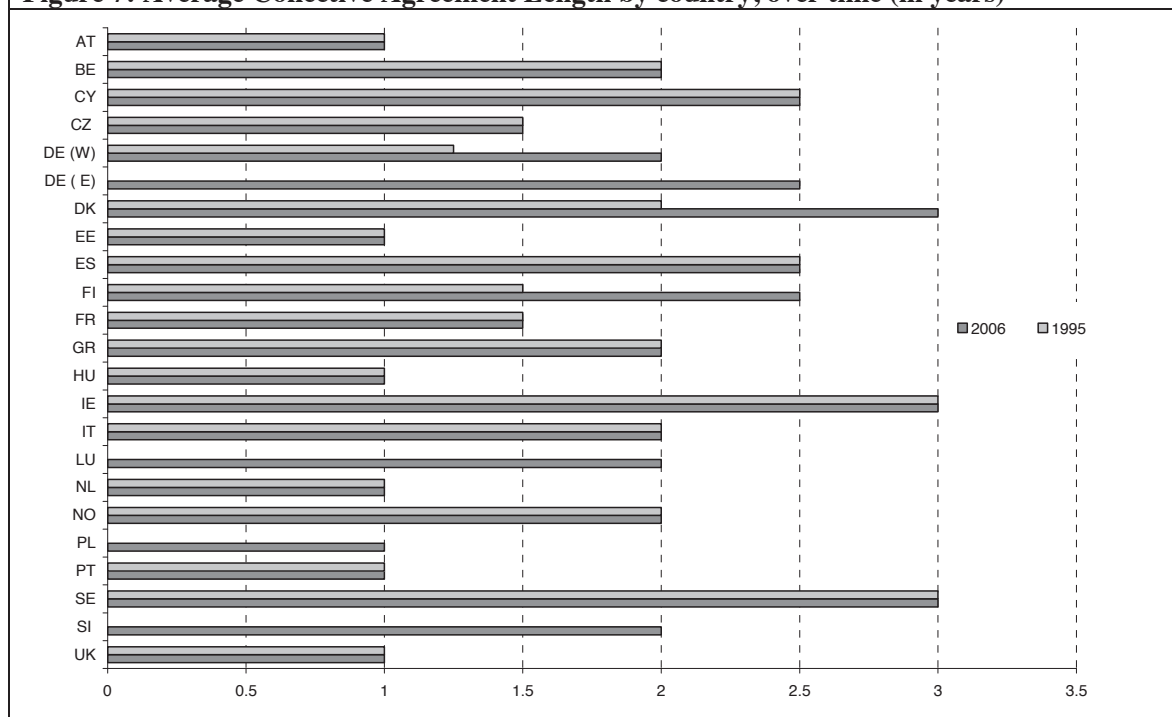
agreements and is then followed by other sectors. The exchange of information within and between sectors is easier when this takes place within a smaller country like Austria for example. In the latter case, economic forecasts by the Austrian Institute of Economic Research, which is *de facto* owned by the social partners, also play a major role as they are regarded by all negotiators as authoritative.

6. Length and other elements/determinants entering collective wage agreements

As outlined in the introduction, a particularly relevant question from the view of the monetary policy-maker is how collective bargaining agreements affect the rigidity/flexibility of wages. For example, the average duration of wage agreements and the main determinants of collective agreements can be expected to limit the relative flexibility of wages.

Question 7 of the questionnaire collects information on the average length of collective bargaining agreements. Figure 7 shows that, according to most recent data, the average length of collective agreements varies between one and three years in Europe and stands at one year in Japan (see also Annex 3 Table 12). European countries with the longest average agreement length of three years are Sweden, Denmark and Ireland. In contrast, average agreement lengths of one and one and a half year's duration are found in Austria, Czech Republic, Estonia, France, Hungary, the Netherlands, Portugal, Poland and the United Kingdom. In Belgium, Cyprus, Finland, Germany, Greece, Italy, Luxembourg Norway, Slovenia and Spain, agreements frequently last two years or two years and a half. In Europe as a whole, very little change in the average agreement length is apparent over the last decade. However in Denmark, Finland and Germany, the replies to the questionnaire suggest that the average agreement length has increased, possibly implying less flexibility, but also the possibility of longer higher-level agreements that allow however more flexibility at lower (e.g. company) levels. In terms of differences across different economic sectors, some countries quote longer agreements in services, such as Estonia, Hungary and Spain. In some cases public sector wage agreements have a shorter duration compared to the market sectors, of about a year, possibly reflecting the link of public sector wage-setting to annual budgets.

Figure 7: Average Collective Agreement Length by country, over time (in years)



In most countries, a “seasonality” of wage negotiations is observed. In Belgium, Cyprus, Estonia, Finland, France, Greece, Hungary, Luxembourg, Portugal and the UK, wage negotiations begin at the end of one year or the first months of the next and agreements are concluded, mostly within the first quarter. This regular pattern is slightly modified in France where a peak is also observed in July (due to minimum wage adjustments), in Japan where nation-wide wage negotiations (called Shunto) take place in April, in Norway where the peak is observed between March and June and in Slovenia where wage negotiations mostly take place in August. For the other countries (the Czech Republic, Denmark, Ireland, Italy, the Netherlands, Poland, Spain, Sweden and the US) no particular month of the year when wage negotiations take place is defined, but many negotiations start one to two months prior to the end of a particular agreement. Some variation in the timing is apparent by sector, notably in Luxembourg, Norway (where industry usually negotiates first) and Portugal and public sector pay is specified in April while public sector pay is specified in April in the UK and is usually set within the first two months of the year in Greece

Delays in renegotiations are more common than pre-expiry renegotiation and in several countries (see Annex 3 Tables 13 and 14). Pre-expiry negotiations are frequent in the Czech Republic, Estonia, Germany, Luxembourg, the Netherlands, Slovenia, Sweden and the US and can be related at times to cyclical downturns and concerns about competitiveness (Luxembourg) or financial problems at the company level (Netherlands). Delays are observed frequently in Austria, Estonia, France, Germany, Greece, Ireland, Italy, Luxembourg, Portugal, Spain and in the US. These delays are usually due to the inability of parties involved in negotiations to reach an agreement and are commonly followed by retroactive application and one-off payments, e.g. in France, Germany, Greece, Italy and Luxembourg. Differences in terms of renegotiations and delays across sectors and

different types of workers (e.g. manual/non-manual, skilled/unskilled, part-time/full-time, permanent/temporary workers) are generally not apparent. Delays have become more common over the last decade in Germany.

Turning now to the elements entering collective wage negotiations, respondents were asked in question 6 to consider some broad categories of factors and provide details on the way that these are taken into account. These broad categories were namely: prices, labour productivity, competitiveness and changes in taxation or social contributions.

As one might expect, prices were found to be the most important determinant of negotiations. In almost all countries, the reference price index is the CPI, in some cases with its forecast entering negotiated wage increases (Slovenia and Sweden). More specifically on the role of prices in the determination of wage increases, further information was requested in question 9, where respondents were asked to address the issue of wage indexation, i.e. the case where price dynamics are indexed either automatically or through wage guidelines and incorporated into wage increases, rather than just being part of the elements discussed during wage negotiations. The extent to which wages are adjusted to price increases - in a formal or informal way - has an important impact on labour market and macroeconomic outcomes and is typically a crucial parameter in many macroeconomic models. Institutional data sources are almost always limited to binary information, i.e. whether or not a country has formal indexation by law or not. However, indexation can also be less formal, e.g. when there is no regulation covering the whole economy but still the incorporation of price increases in some segments of the labour market is widely accepted. In addition, it is also possible that some types of wages are automatically indexed according to law - often minimum wages - while others are not. The information received via the questionnaire on which this paper is based is innovative on this issue, through trying to assess the overall degree to which workers are actually affected by some kind of formal or informal wage indexation.

We find that 11 countries have some form of wage indexation to prices (Belgium, Cyprus, Estonia, Finland, France, Hungary, Italy, Slovenia, Luxembourg, Poland, Spain and the US) (see Table 3 below). Some differences exist between countries in terms of the reference that is used, with most countries linking wage increases to past price increases usually using some sort of a moving average (Belgium, Cyprus, France, Luxembourg, Spain and the US). In some cases however, wage increases actually embed expected inflation (Estonia, Slovenia) or a combination of an adjustment for past unforeseen increases and expected inflation ahead (Finland, Italy and Ireland). Furthermore, in some countries, wage indexation is fully automatic, with wages being adjusted as soon as inflation exceeds a reference rate (Cyprus, Luxembourg and partly Belgium), while in others, wages are adjusted retrospectively (Spain).

Table 3: Percentage of workers covered by wage indexation clauses, by country and sectors, across time

Country	Agriculture A-B		Industry C-F		Market Services G-K		Non Market Services L-P		Total A-P	
	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995
Austria	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL
Belgium	H	H	H	H	H	H	H	H	H	H
Cyprus									M	M
Czech Republic	None	None	None	None	None	None	None	None	None	None
Denmark	None	None	None	None	None	None	None	None	None	None
Estonia	None	None	None	None	None	None	None	None	None	None
Finland	H	VL	H	VL	H	VL	H	VL	H	VL
France			VL	VL	VL	VL			VL	VL
Germany	None	None	None	None	None	None	None	None	None	None
Greece	None	M	None	M	None	M	None	L	None	M
Hungary	None	None	None	None	None	None	None	None	None	None
Ireland	None	None	None	None	None	None	None	None	None	None
Italy	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL
Japan	None	None	None	None	None	None	None	None	None	None
Lithuania										
Luxembourg	H	H	H	H	H	H	H	H	H	H
The Netherlands	None	None	None	None	None	None	None	None	None	None
Norway	None	None	None	None	None	None	None	None	None	None
Poland	VL		VL		VL		VL		VL	
Portugal	None	None	None	None	None	None	None	None	None	None
Slovenia	VL	H	VL	H	VL	H	H	H	L	H
Spain							None	None	H	M
Sweden	None	None	None	None	None	None	None	None	None	None
The United Kingdom									None	None
The United States	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL
In sum - number of countries										
Very low	5	4	6	5	6	5	4	4	5	5
Low	0	0	0	0	0	0	0	1	1	0
Moderate	0	1	0	1	0	1	0	0	1	3
High	3	3	3	3	3	3	4	3	4	3
Total	8	8	9	9	9	9	8	8	11	11

Source: Answers provided by NCB experts to WDN wage questionnaire
VL = Very Low <0-25%>; L = Low <26-50%>; M = Moderate <51-75%>; H = High <76-100%>

We distinguish between countries with no formal indexation, countries with full automatic indexation, countries where only the minimum wage is indexed, and finally countries where indexation is implemented through collective wage agreements. When indexation is fully automatic, like in Belgium⁷, Cyprus (where the system is mixed see above) and Luxembourg, it affects nearly 100% of the workforce, but less when it works through collective agreements (like in Finland and Spain), as the resulting coverage also depends on the general collective agreement coverage. When the indexation is obtained through minimum wages, this coverage is as expected much lower (e.g. France and Slovenia). Finally, for some countries like Austria, Estonia, Hungary, Italy, Poland and the US, there does not appear to be any particular form of wage indexation to prices, nonetheless a low proportion of wage earners is affected, namely via some but limited amount of wage contracts.

No significant differences appear across sectors in terms of the extent to which wages are affected by indexation and no big changes have been introduced in the last decade. However, in Italy the reference value used is now the consensus expected inflation rather than the government target, in Greece past catch-up clauses for higher than realised inflation have been abolished and in Slovenia wages are now linked to expected rather than past inflation.

⁷ Note however that the reference price is the so called "Health Index", which excludes prices of motor fuels, alcohol and tobacco from the NICP, thus mitigating the second-round effects of oil price shocks on wages. Moreover, the indicative wage norm is set in nominal terms and an increasing number of collective agreements feature an all-in clause that avoids indexation to unexpectedly high inflation.

Labour productivity (at the firm, sector or economy-wide level) is the second most cited factor entering wage negotiations (Question 6). The link between wage growth and labour productivity is of course a natural one, however it is interesting to see whether different measures of productivity are taken into account across countries and sectors. It turns out that countries can broadly be divided into two groups in terms of measures of productivity considered, namely countries that consider productivity in the economy as a whole (Cyprus, France, Germany) and countries where sectoral developments are taken into account (Belgium, Germany, the Netherlands in some industrial sectors and Estonia in industry and the market services). In Japan and Norway, it is productivity both at the firm and the sectoral level that affect wage negotiations. In most cases, the level at which productivity developments are taken into account is consistent with the respective level on which collective agreements are signed. However, in the public sector, labour productivity appears to play less of a role and if any, only at the economy-wide level. Finally, no changes appear to have taken place in the last decade in terms of the way or the degree to which productivity developments are taken into account in wage negotiations.

Turning to further elements in the determination of collective wage agreements, it appears that competitiveness issues also play a role in most countries (Question 6). In the case of smaller countries such as Belgium, Cyprus, Estonia, Finland, Greece, Ireland, Luxembourg and Norway, the average pay increases of the neighbourhood countries (competitors and trading partner) are taken into consideration. Similarly in the UK, firm profitability plays a vital role in wage negotiations.

A further important element in wage negotiations is possible changes in taxation and social contributions. Apparently, such changes are used rather commonly as arguments for wage changes, while in some cases like Slovenia significant tax changes may even result in renegotiations of contracts. Finally, fairness issues and the convergence of wages in a sector also play a role in determining wage agreements in France, Germany, Greece, Japan, Luxembourg and Lithuania.

7. Concluding cluster analysis

As a conclusion, we summarize our main findings by grouping together countries that seem to have similar wage bargaining characteristics. We then draw a general picture of the resulting broad types of bargaining systems that exist across countries, while also explaining the main remaining differences among countries within these types.

For this purpose, we run a hierarchical cluster analysis using most of the information obtained using the questionnaire. We focus on data for the year 2006 (omitting information on East Germany) for the following variables: trade union density, extension procedures, coverage of collective agreements, existing and most dominant and levels of wage bargaining, existence of opening clauses, type of coordination, government involvement in wage setting, average agreement length, existence of a minimum wage and type of indexation and proportion of workers covered by

wage indexation arrangements. The variables used in this analysis are more precisely described in Annex 4 and are either actual answers to the questionnaire or recoded values for the relevant variables based on these answers. All variables are ordinal (in line with most of the answers to the questionnaire) and thus using the same type of variables makes the distance computation more consistent. The analysis has been undertaken using SAS procedures. We use the method of Euclidian distance and run the algorithm of the most distant neighbour to clearly separate the different groups. The results of this analysis are illustrated in the dendrogram in Figure 8 below.

Three groups of countries can be identified through the cluster analysis of wage setting institutions:

1. The first group mainly consists of countries with a **broadly regulated system of wage bargaining**, which is quite typical of Western European countries. This group can be characterised by the existence of extension procedures and a high level of collective agreement coverage, a dominance of sectoral (and to a lesser extent firm-level) wage bargaining and the general absence of coordination except through minimum wages (or trend setting sectors). This group can then be further divided into four subgroups:

- a. The first subgroup consists of Austria, France, Greece, the Netherlands and Portugal. These countries present the core group of countries with a dominance of sector-level wage bargaining, the existence of statutory minimum wages and extension procedures.
- b. In the second subgroup, we find Germany and Italy; they differ from other countries in this group because there are no statutory minimum wages and coordination mechanisms are weak. This subgroup is pretty close to the first one.
- c. In Ireland, contrary to the other countries of this group, national-level bargaining is important, trade union density is higher and wage agreements are of a longer duration.
- d. In Denmark, Norway and Sweden, both trade union density and average agreement length are high, coordination mechanisms are more important and governments have a limited role.

2. In the second group, the wage bargaining system can be seen as even more regulated because **indexation and government interventions play a more important role**. This second group exhibits the same general wage setting characteristics of the previous group, except that in addition, indexation, intersectoral agreements and the role of government are all more important. In addition, trade union densities are generally higher. This group is found to include:

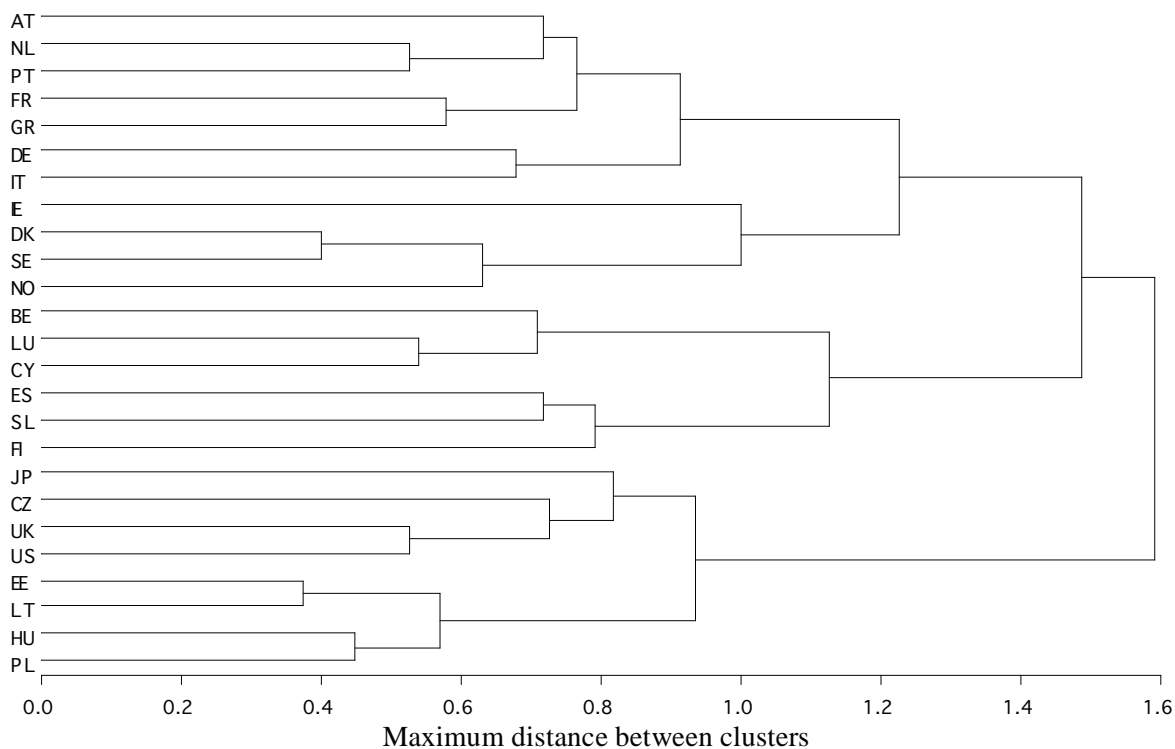
- e. Belgium, Cyprus and Luxembourg where wage indexation covers most workers.
- f. Spain, Slovenia and Finland where wage indexation operates through minimum wage or collective agreements.

3. Finally, the last group gathers the countries where the wage bargaining system is **largely deregulated**. The US can be considered as a role model here. This group includes countries with very low trade union densities, low levels of collective agreement coverage, the general absence of

coordination, decentralised wage bargaining frameworks and a relatively short agreement length of about one year. This group is found to include:

- a. The Czech Republic, the UK and the US: These countries form a core group, characterised by decentralised and uncoordinated wage bargaining.
- b. Estonia, Hungary, Lithuania and Poland: These countries have experienced large changes in their labour market institutions over the recent decade with generally decentralised and uncoordinated systems, but still some government involvement (mainly through tripartite agreements).
- c. In Japan, the system is less decentralised compared to the other countries of this group. The industry-level wage bargaining plays a greater role and the wage bargaining process is more coordinated.

Figure 8: Dendrogram obtained from the hierarchical cluster analysis



More generally, the wage setting institutions considered in the 25 countries considered show little sectoral and time variation in wage setting institutions over the last decade, although there is some tendency of a greater “feeling” of decentralisation through opt-out clauses and additional firm-level agreements. Very little change in the average agreement length is apparent over time. These results suggest that wage bargaining institutions have been rather stable over the last decade and that the institutional features covered and measured by our questionnaire have been relatively untouched by labour market reforms.

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Annex 1: Questionnaire on national collective wage bargaining and other wage setting institutions

Initial General Remarks:

- This questionnaire is addressed to **NCBs⁸**. It aims to collect all information on wage setting available to each NCB in a **harmonised** fashion.
- In terms of the **time period** to be covered, the target is to have information for 2006 or the most recently available year and a point of reference in or around 1995.
- Respondents are kindly requested to supply figures or ranges in the **quantitative** questions, **underline** relevant answers where indicated and provide **further explanatory/qualitative** information in the qualitative questions.
- **NO BOX SHOULD BE BLANK! PLEASE DENOTE IR FOR IRRELEVANT OR NK FOR NOT KNOWN.**

THANK YOU!

1. Trade union density

Please provide trade union membership in your country as a percentage of employees either in numbers or, if not available, by choosing from the following ranges: **Very Low** <0-25%> **Low** <26-50%> **Moderate** <51-75%> **High** <76-100%> Please respond for each column in turn, **underlining Yes or No where indicated**.

	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
2006/Most recent information (please give date)					
1995/reference point (please give date)					
Do/did extension procedures exist in your country? (link to question 2)	2006 Yes / No	2006 Yes / No	2006 Yes / No	2006 Yes / No	2006 Yes / No
	1995 Yes / No	1995 Yes / No	1995 Yes / No	1995 Yes / No	1995 Yes / No
If yes, are/were they automatic?	2006 Yes / No	2006 Yes / No	2006 Yes / No	2006 Yes / No	2006 Yes / No
	1995 Yes / No	1995 Yes / No	1995 Yes / No	1995 Yes / No	1995 Yes / No
Or do/did they alternatively need to be requested by one or by all parties?	2006 Yes / No	2006 Yes / No	2006 Yes / No	2006 Yes / No	2006 Yes / No
	1995 Yes / No	1995 Yes / No	1995 Yes / No	1995 Yes / No	1995 Yes / No
If yes, please provide details.	2006				
	1995				

⁸ The replies to the questionnaire of the representatives of the 24 national central banks do not necessarily reflect the opinion of the central banks they are affiliated to.

2. Collective bargaining/ trade union coverage

Please provide percentages of employees covered by collective agreements either in numbers or, if not available, by choosing from the following ranges: **Very Low** <0-25%> **Low** <26-50%> **Moderate** <51-75%> **High** <76-100%> Please respond for each column in turn, underlining Yes or No where indicated.

	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
2006/Most recent information (please give date)					
1995/reference point (please give date)					
Does/did coverage differ for different sizes of firms?	2006 Yes / No	2006 Yes / No	2006 Yes / No	2006 Yes / No	2006 Yes / No
	1995 Yes / No	1995 Yes / No	1995 Yes / No	1995 Yes / No	1995 Yes / No
If yes, please provide details.	2006				
	1995				
Does/did coverage vary across different types of workers? e. g. manual/non manual, skilled/unskilled, part-time/full-time, permanent/temporary	2006 Yes / No	2006 Yes / No	2006 Yes / No	2006 Yes / No	2006 Yes / No
	1995 Yes / No	1995 Yes / No	1995 Yes / No	1995 Yes / No	1995 Yes / No
If yes, please provide details.	2006				
	1995				

3. Level of wage bargaining

Please indicate with an **X** in the grid below the level(s) at which wage bargaining takes place in your country. Please respond for each column in turn, underlining Yes or No where indicated.

2006/Most recent information (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
National level					
Regional level					
Intersectoral level					
Sectoral level					
Occupational level					
Company level					
Which one (or more) of the above levels is (are) the most dominant?					
Please briefly explain the process through which the final bargaining outcome is reached.					
Please indicate major parties involved (e.g. major unions, major employer representatives etc.)					
Is there a legal possibility for firms to deviate from higher level agreements, via for example so-called opening clauses?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
If yes, how wide is the use of this practice?					

1995/reference point (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
National level					
Regional level					
Intersectoral level					
Sectoral level					
Occupational level					
Company level					
Which one (or more) of the above levels was (were) the most dominant?					
Please briefly explain the process through which the final bargaining outcome was reached.					
Please indicate major parties involved (e.g. major unions, major employer representatives etc.)					
Was there a legal possibility for firms to deviate from higher level agreements, via for example so-called opening clauses?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
If yes, how wide was the use of this practice?					

4. Coordination of wage bargaining

Please indicate with an **X** in the grid below the level(s) at which wage bargaining coordination takes place in your country. Please respond for each column in turn.

2006/Most recent information (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
State imposed 1 pay indexation (also see question 5)					
State imposed 2 statutory minimum wage (also see question 6)					
Inter-associational by national or cross-sectoral agreements					
Intra-associational within peak employers' and trade union organisations					
Pattern bargaining coordination by a sectoral trend-setter					
Other (please specify)					
Which one (or more) of the above levels is (are) the most dominant?					

1995/reference point (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
State imposed 1 pay indexation (also see question 5)					
State imposed 2 statutory minimum wage (also see question 6)					

Inter-associational by national or cross-sectoral agreements					
Intra-associational within peak employers' and trade union organisations					
Pattern bargaining coordination by a sectoral trend-setter					
Other (please specify)					
Which one (or more) of the above levels was (were) the most dominant?					

5. Nature of government involvement /legislation at a national level

Please provide comparative information on government involvement in the wage setting process.

Please respond for each column in turn, **underlining Yes or No** where indicated.

	<i>2006/Most recent information (please give date)</i>	<i>1995/reference point (please give date)</i>
Is/was the government involved as an intermediary between trade union and employers?	Yes / No	Yes / No
If yes, please provide details on this process.		
Is/was the government involved in tripartite agreements?	Yes / No	Yes / No
If yes, please provide details on this process.		
Is/was the government involved in the setting of public sector wages?	Yes / No	Yes / No
If yes, please provide details on this process.		

6. Determinants of/factors entering collective wage negotiations:

Please indicate with an **X** in the grid below the factor(s) which enter collective wage negotiations in your country. Please respond for each column in turn, underlining Yes or No where indicated..

2006/Most recent information (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
Prices: please specify price index used					
Labour productivity please specify if using average labour productivity of whole economy, sector, industry, firm					
Competitiveness: please specify indicator used e.g. average pay increase in neighbouring countries, other (please specify)					
Other: please specify					
Do changes in taxation or social contribution rates affect wage negotiations?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
If yes, how?					
Please provide if available the relevant formula used, on the basis of the above noted factors.					

1995/reference point (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
Prices: please specify price index used					
Labour productivity: please specify if using average labour productivity of whole economy, sector, industry, firm					
Competitiveness: please specify indicator used e.g. average pay increase in neighbouring countries, other (please specify)					
Other: please specify					
Did changes in taxation or social contribution rates affect wage negotiations?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
If yes, how?					
Please provide if available the relevant formula used, on the basis of the above noted factors.					

7. Collective bargaining agreement length

Please respond for each column in turn, underlining Yes or No where indicated.

2006/Most recent information (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
Average length of new agreements					
Is there a specific timetable for wage negotiations in your country? e.g. a specific month(s) within a year (please specify)					
Are re-negotiations before normal agreement expiry common?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Are delays in agreement renewal common?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
What determines these irregularities? e.g. cyclical downturns, other (please specify)					
What kinds of measures are adopted to deal with them? e.g. one-off payments, other (please specify)					
With respect to the answers given above, are there any differences between different types of workers? e. g. manual/non manual, skilled/unskilled, part-time/full-time, permanent/temporary	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
If yes, please provide details.					

1995/reference point (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
Average length of new agreements					
Was there a specific timetable for wage negotiations in your country? e.g. a specific month(s) within a year (please specify)					
Were re-negotiations before normal agreement expiry common?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Were delays in agreement renewal common?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
What determined these irregularities? e.g. cyclical downturns, other (please specify)					
What kinds of measures were adopted to deal with them? e.g. one-off payments, other (please specify)					
With respect to the answers given above, were there any differences between different types of workers? e. g. manual/non manual,	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No

skilled/unskilled, part-time/full-time, permanent/temporary					
If yes, please provide details.					

8. Statutory/national minimum wages

For the questions requiring percentages please provide figures as percentages in numbers or, if not available, by choosing from the following ranges: **Very Low** <0-25%> **Low** <26-50%> **Moderate** <51-75%> **High** <76-100%> Please respond for each column in turn, **underlining Yes or No where indicated**.

2006/Most recent information (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
Do minimum wages exist in your country?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Where do these stem from? (please underline the relevant answer)	National legislation Collective agreements Other (please specify)	National legislation Collective agreements Other (please specify)	National legislation Collective agreements Other (please specify)	National legislation Collective agreements Other (please specify)	National legislation Collective agreements Other (please specify)
Percentage of employees paid at the minimum wage					
Level of minimum wage in euros					
Ratio of minimum to average wage					
Ratio of minimum to median wage					
Elements affecting the level of minimum wages: e.g. sector, region, manual/non-manual workers/trainees, years of experience, age, education, marital status, disabilities, other (please list all that apply)					
Does the minimum wage interact with other systems of protecting pay at the bottom of the labour market? (e.g. training schemes, wage subsidies) If yes, please explain.	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Elements affecting the rate of increase in minimum wages: e.g. sector, region, manual/non-manual workers/trainees, inflation, productivity, fairness/convergence factors, other (please list all that apply)					
Give formula for the increase, if relevant, using the elements considered, as listed above.					
Are increases in minimum wages binding?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Are increases in minimum wages taken as a basis for other wage increases?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No

If yes, how?					
1995/reference point (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
Did minimum wages exist in your country?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Where did these stem from? (please underline the relevant answer)	National legislation Collective agreements Other (please specify)	National legislation Collective agreements Other (please specify)	National legislation Collective agreements Other (please specify)	National legislation Collective agreements Other (please specify)	National legislation Collective agreements Other (please specify)
Percentage of employees paid at the minimum wage					
Level of minimum wage in euros					
Ratio of minimum to average wage					
Ratio of minimum to median wage					
Elements affecting the level of minimum wages: e.g. sector, region, manual/non-manual workers/trainees, years of experience, age, education, marital status, disabilities, other (please list all that apply)					
Did the minimum wage interact with other systems of protecting pay at the bottom of the labour market? (e.g. training schemes, wage subsidies)	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
If yes, please explain.					
Elements affecting the rate of increase in minimum wages: e.g. sector, region, manual/non-manual workers/trainees, inflation, productivity, fairness/convergence factors, other (please list all that apply)					
Give formula for the increase, if relevant, using the elements considered, as listed above.					
Were increases in minimum wages binding?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Were increases in minimum wages taken as a basis for other wage increases?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
If yes, how?					

9. Indexation mechanisms (also see/use information/updated information in Annex 1 to this questionnaire)

For the questions requiring percentages please provide figures as percentages in numbers or, if not available, by choosing from the following ranges:

Very Low <0-25%> **Low** <26-50%> **Moderate** <51-75%> **High** <76-100%>

Please respond for each column in turn, **underlining Yes or No where indicated**.

2006/Most recent information (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
Percentage of workers covered by automatic/direct indexation mechanisms					
The information below is intended to largely correspond to the information in Annex 1, but in addition allow for a sectoral view and a comparison to 1995					
Type of indexation none/automatic/only in minimum wages/part of negotiations/combination (please provide details)					
Which price index is used for reference?					
Does indexation refer to its past, expected or targeted annual rate of increase?					
Average duration of agreements					
If relevant, under what circumstances does renegotiation take place?					
If there is a retroactive element to wage indexation in your country, please provide details of the relevant process.					

1995/reference point (please give date)	Agriculture etc. (NACE A-B)	Industry (NACE C-F)	Market Services (NACE G-K)	Non-Market Services (NACE L-P)	Total (NACE A-P)
Percentage of workers covered by automatic/direct indexation mechanisms					
The information below is intended to largely correspond to the information in Annex 1, but in addition allow for a sectoral view and a comparison to 1995					
Type of indexation none/automatic/only in minimum wages/part of negotiations/combination (please provide details)					
Which index was used?					
Did indexation refer to its past, expected or targeted annual rate of increase?					
Average duration of agreements					
If relevant, under what circumstances did renegotiation take place?					
If there was a retroactive element to wage indexation in your country, please provide details of the relevant process.					

PLEASE CHECK THAT NO BOXES HAVE BEEN LEFT BLANK
IF NEEDED PLEASE DENOTE **IR** FOR IRRELEVANT OR **NK** FOR NOT KNOWN

Annex 2: Comparison of questionnaire replies with other data sources

Table 4: Trade union density

Source	OECD 94-97		WDN	OECD 2004	WDN
	OECD 94-97	OECD 94-97	Questionnaire	OECD 2004	Questionnaire
Reference year	1990	1994	1995	2000	2006
Austria	46	42	46	36.5	35
Belgium	51	54	52	55.6	57
Czech Republic	-	-	L	27.0	L
Denmark	71	76	89	74.4	82
Finland	72	81	78	76.2	69
France	10	9	8.2	9.7	VL
Germany	33	29	28.7	25.0	21.7
Greece	34	-	L	-	VL
Hungary	-	-	19.7	19.9	16.9
Ireland	50	-	27.6	-	45.8
Italy	39	39	L	34.9	L
Japan	25	24	22.7	21.5	18.1
Luxemburg	50	-	51	33.6	48.1
Netherlands	26	26	28.4	23.2	26.8
Norway	56	58	M	54.0	M
Poland	-	-	33	14.7	15
Portugal	32	32	L	24.3	L
Spain	11	19	VL	14.9	VL
Sweden	83	91	H	81.1	H
United Kingdom	39	34	29	31.2	25.8
United States	16	16	14.9	12.8	12.5

Sources: OECD 94-97: OECD Employment Outlook 1994, p. 184 and 1997, p. 71; OECD 2004: OECD Employment Outlook 2004, Chp. 3.

Table 5: Union coverage

Source	OECD 1997 W&H (2000)			WDN	W&H 2000	OECD 2004	WDN
	OECD 1997	OECD 1997	OECD 1997	Questionnaire	W&H 2000	OECD 2004	Questionnaire
Reference Year	1990	1990	1994	1995	1996	2000*	2006
Austria	98	71	98	95+	-	95	98
Belgium	90	90	90	more than 90	-	90	more than 90
Czech Republic	-	-	-	L	-	25	M
Denmark	69	-	69	79	55	80	83
Finland	95	95	95	>90	95	90	>90
France	92	95	95	93.3	90	90	97.8
Germany	90	76	92	59	83	68	72
Greece	-	-	-	H	90	-	H
Hungary	-	-	-	45.1	45	30	38.5
Italy	83	-	82	H	90	80	H
Japan	23	-	21	20.2	-	15	16.1
Netherlands	71	60	81	81	80	80	81
Norway	75	75	74	M	66	70	M
Poland	-	-	-	M	-	40	L
Portugal	79	62	71	H	-	80	H
Spain	76	60	78	82.5	82	80	78.5
Sweden	86	83	89	H	85	90	H
United Kingdom	47	65	47	34.5	48	30	33.5
United States	18	-	18	16.7	-	14	13.6

* Lower bound estimates

Sources: OECD 1997: OECD Employment Outlook 1997; W&H (2000): Waddigton and Hoffman (2000); OECD 2004: OECD Employment Outlook 2004, Chp. 3.

Table 6: Extension procedures

Source	OECD (2004)		WDN questionnaire (2006)	
	Extension	Automatic	Extension	Automatic
Austria	N (Y)	Y	N	
Belgium	Y	N	Y	N
Denmark	N		N	
Finland	Y	N	Y	N
France	Y	N	Y	N
Germany	Y	N	Y (specific)	N
Greece	Y	N	Y	N
Hungary	Y	N	Y	N
Ireland	Y (rare)		Y	Y
Italy	Y	Y	Y	Y
Netherlands	Y	N	Y	N
Norway	N		N	
Poland	Y	N	Y	Y
Portugal	Y	N	Y	Y
Spain	Y	Y	Y	Y
Sweden	N		N	
United Kingdom	N		N	
United States	N		N	

Sources: OECD (2004): OECD Employment Outlook 2004, Chp. 3, Table 3.4 p. 148.

Table 7: Most dominant level of wage bargaining

	OECD 2004	WDN Questionnaire	OECD 2004	WDN Questionnaire
	1990-94	1995	1995-2000	2006
Austria	I	<i>I + Occ</i>	I	<i>I + Occ</i>
Belgium	I	<i>I</i>	I	<i>I</i>
Czech Republic	Co	<i>Co</i>	Co	<i>Co</i>
Denmark	I	<i>Co/I</i>	Co/I	<i>Co/I</i>
Finland	Ce	<i>I</i>	Ce	<i>Ce</i>
France	Co/I	<i>Co/I</i>	Co/I	<i>Co/I</i>
Germany	I	<i>I + Reg</i>	I	<i>I + Reg</i>
Hungary	Co	<i>Co</i>	Co	<i>Co</i>
Ireland	I/Ce	<i>Ce</i>	I/Ce	<i>Ce</i>
Italy	Co/I	<i>I</i>	Co/I	<i>I</i>
Japan	Co	<i>I</i>	Co	<i>I</i>
Netherlands	I	<i>I</i>	I	<i>I</i>
Norway	I/Ce	<i>I</i>	I/Ce	<i>I</i>
Poland	Co	<i>Co</i>	Co	<i>Co</i>
Portugal	I/Ce	<i>I</i>	I/Ce	<i>I</i>
Spain	I	<i>I + Reg</i>	I	<i>I + Reg</i>
Sweden	I	<i>I + Occ</i>	I	<i>I + Occ</i>
United Kingdom	Co	<i>Co</i>	Co	<i>Co</i>
United States	Co	<i>Co</i>	Co	<i>Co</i>

Legend: *Co* : company level ; *Co/I* : combination of company and industry levels ; *I* : industry level ; *I/Ce* : industry level and regular central-level agreements ; *Ce* : central-level agreements.

Sources: OECD (2004): OECD Employment Outlook 2004, Chp. 3, Table 3.4 p. 148.

Annex 3:**Table 8: Trade union density (0% < Very Low < 25%, 26% < Low < 50%, 51% < Moderate < 75%, 76% < High < 100%)**

Country	Agri A-B		Indu C-F		Mkt Serv G-K		Non-Mkt Serv L-P		Total A-P			
	2006	1995	2006 vs 1995	2006	1995	2006 vs 1995	2006	1995	2006 vs 1995	2006	1995	2006 vs 1995
Austria	VL	VL		L	VL		H	L		L	L	→
Belgium	L	L		M	L		M	M		M	M	↑
Cyprus												
Czech Republic	L			L	M					L	L	→
Denmark	M	H	→	H	H		H	H		H	H	→
Estonia	VL	VL		H	M		L	L		VL	VL	→
Finland		H	↑	H	M		H	H		M	H	→
France	VL	VL		VL	VL		VL	VL		VL	VL	→
Germany (West)		L	→	L	VL		L	M		VL	L	→
Germany (East)		L		L	VL		L	L		VL	L	→
Greece												
Hungary	VL	VL	↑	VL	VL		L	L		VL	VL	→
Ireland												
Italy	H	H		L	VL		L	L		L	L	→
Japan	VL	VL		L	VL		VL	VL		VL	VL	→
Lithuania	VL	VL		VL	VL		L	L		VL	VL	→
Luxembourg												
The Netherlands	VL	VL	↓	L	VL		L	M		L	L	→
Norway	VL	VL		M	L		H	H		M	M	→
Poland	VL	L	→	L	VL		L	L		M	M	→
Portugal	VL	VL		L	M		L	L		VL	L	→
Slovenia	L	M	↓	L	M		L	M		L	M	→
Spain	VL	VL		VL	VL		VL	VL		L	M	→
Sweden	H	H		H	H		H	H		H	H	→
The United Kingdom	VL	VL	↓	L	VL		M	L		L	L	→
The United States	VL	VL		VL	VL		VL	VL		VL	VL	→
In sum - number of countries	13	11		8	13		4	4		11	6	
Very low	3	2		9	2		10	7		9	12	
Low	1	1		2	3		2	4		4	5	
Moderate	2	2		3	2		5	4		2	3	
High	19	16		22	20		21	19		26	26	

Note: 2006 refers to 2005 in Austria, 2000 in Belgium, 2004 in Germany W and E, 2000 in Denmark and 2001 in Poland

Note: Arrows refer to position in 2006 relative to 1995, if quantitative value is provided and difference is at least 1pp. A sign is also filled in if there is a change in category, even without precise figures provided.

Source: Answers provided by NCB experts to WDN wage questionnaire

Table 9: Extension procedures: existence

	Agri A-B		Ind C-F		Mkt Serv G-K		Non-Mkt Serv L-P		Total A-P	
	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995
Austria	N	N	N	N	N	N	N	N	N	N
Belgium	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cyprus	N	N	N	N	N	N	N	N	N	N
Czech Republic	N	N	Y	Y	Y	Y	N	N	N	N
Denmark	N	N	N	N	N	N	N	N	N	N
Estonia	Y	N	Y	N	Y	N	Y	N	Y	N
Finland	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
France	Y	Y	Y	Y	Y	Y	N	N	Y	Y
Germany	Y	N	Y	Y	Y	Y	N	N	N	N
Greece			Y	Y	Y	Y	Y	Y	Y	Y
Hungary	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ireland	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Italy	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Japan	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lithuania	N	N	N	N	N	N	N	N	N	N
Luxembourg			N	N	Y	Y	Y	Y	Y	Y
The Netherlands	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Norway	N	N	Y	N	N	N	N	N	N	N
Poland	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Portugal	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Slovenia	Y	N	Y	N	Y	N	Y	N	Y	N
Spain	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sweden	N	N	N	N	N	N	N	N	N	N
The United Kingdom										
The United States	N	N	Y	Y	N	N	N	N	N	N
Yes	14	11	17	15	17	15	13	11	15	13
No	8	11	6	9	7	9	10	12	10	11
Total	22	22	23	24	24	24	23	23	25	24

Source: Answers provided by NCB experts to WDN wage questionnaire

Table 10: Extension procedures: Automatic

	Agri A-B		Ind C-F		Mkt Serv G-K		Non-Mkt Serv L-P		Total A-P	
	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995
Austria										
Belgium	N	N	N	N	N	N	N	N	N	N
Cyprus										
Czech Republic			N	N	N	N				
Denmark										
Estonia	N		N		N		N		N	
Finland	N	Y	N	Y	N	Y	N	Y	N	Y
France	N	N	N	N	N	N	N		N	N
Germany	N		N		N					
Greece			N		N		N		N	
Hungary	N	N	N	N	N	N	N	N	N	N
Ireland	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Italy	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Japan	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lithuania										
Luxembourg					N		N		N	
The Netherlands	N	N	N	N	N	N	N	N	N	N
Norway										
Poland	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Portugal	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Slovenia	N		N		N		N		N	
Spain	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sweden										
The United Kingdom										
The United States			N	N						
Yes	5	7	5	7	4	7	3	6	4	7
No	8	4	12	8	11	8	8	5	9	6
Total	13	11	17	15	15	15	11	11	13	13

Note: Hungary, 1992

Source: Answers provided by NCB experts to WDN wage questionnaire

Table 11: Minimum wage: % of employees concerned (0%<Very Low<25%, 26%<Low<50%, 51%<Moderate<75%, 76%<High<100%)

Country	Agri A-B		Ind C-F		Mkt Serv G-K		Non-Mkt Serv L-P		Total A-P	
	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995
Belgium										< 10
Cyprus									10-15	8-10
Czech Republic	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL
Estonia									5.7	
France			12.5	8.9	20.5	15.7			16.8	14.1
Hungary									8.0	3.9
Ireland									4.5	
Japan	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL
Lithuania	9.6		7.5		11.4		6.4		8.5	
Luxembourg	36		8.3		13		10		11.8	11.6
Netherlands									3.8	4.6
Poland	VL	VL	VL	VL	VL	VL	VL	VL	4.5	VL
Portugal	10	L	8	L	9	L	5	L	7	L
Slovenia	2		3.3		3.6		0.7		2.7	
Spain	1	1 to 2	1	1 to 2	1	1 to 2	1	1 to 2	1	1 to 2
United States									1.5	3.3

Source: Answers provided by NCB experts to WDN wage questionnaire.

Table 12: Average agreement length

Country	Agri A-B		Ind C-F		Mkt Serv G-K		Non-Mkt Serv L-P		Total A-P	
	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995
Austria	1	1	1	1	1	1	1	1	1	1
Belgium	2	2	2	2	2	2	2	2	2	2
Cyprus	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Czech Republic	1.5	1.5	1.5	1.5	1.5	1.5	1	1	3	2
Denmark	3	2	3	3	3	2	3	2	1	1
Estonia		1	1	1	2	2	1.5	1.5	1	1
Finland	2.5		2.5		2.5		2.5		2.5	1-2
France									1.5	1.5
Germany									2.2	1.25
Greece	2	2	2	2	2	2	1	1	2	2
Hungary									1	1
Ireland	3	3	3	3	3	3	3	3	3	3
Italy	2	2	2	2	2	2	2	2	2	2
Japan	1	1	1	1	1	1	1	1	1	1
Luxembourg									2	2
The Netherlands	1	1	1	1	1	1	1	1	1	1
Norway	2	2	2	2	2	2	2	2	2	2
Poland	1		1		1		1		1	
Portugal	1	1	1	1	1	1	1	1	1	1
Slovenia	2		2		2		2		2	
Spain	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5
Sweden	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
The United Kingdom									1	1

Source: Answers provided by NCB experts to WDN wage questionnaire.

Table 13: Common renegotiations before expiration

	Agri A-B		Ind C-F		Mkt Serv G-K		Non-Mkt Serv L-P		Total A-P	
	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995
Austria	N	N	N	N	N	N	N	N	N	N
Belgium	N	N	N	N	N	N	N	N	N	N
Cyprus	N	N	N	N	N	N	N	N	N	N
Czech Republic	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Denmark	N	N	N	N	N	N	N	N	N	N
Estonia		Y	Y	Y	Y	Y	Y	Y	Y	Y
Finland	N	N	N	N	N	N	N	N	N	N
France	N	N	N	N	N	N	N	N	N	N
Germany	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Greece	N	N	N	N	N	N	N	N	N	N
Hungary										
Ireland	N	N	N	N	N	N	N	N	N	N
Italy	N	N	N	N	N	N	N	N	N	N
Japan	N	N	N	N	N	N	N	N	N	N
Lithuania										
Luxembourg	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
The Netherlands	N	N	N	N	N	N	N	N	N	N
Norway										
Poland										
Portugal	N	N	N	N	N	N	N	N	N	N
Slovenia	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Spain	N	N	N	N	N	N	N	N	N	N
Sweden	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
The United Kingdom										
The United States	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Source: Answers provided by NCB experts to WDN wage questionnaire.

Table 14: Common delays in agreement renewals

	Agri A-B		Ind C-F		Mkt Serv G-K		Non-Mkt Serv L-P		Total A-P	
	2006	1995	2006	1995	2006	1995	2006	1995	2006	1995
Austria	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Belgium	N	N	N	N	N	N	N	N	N	N
Cyprus	N	N	N	N	N	N	N	N	N	N
Czech Republic	N	N	N	N	N	N	N	N	N	N
Denmark	N	N	N	N	N	N	N	N	N	N
Estonia	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Finland	N	N	N	N	N	N	N	N	N	N
France	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Germany	Y	N	Y	N	Y	N	Y	N	Y	N
Greece	Y	Y	Y	Y	Y	Y	N	N	Y	Y
Hungary										
Ireland	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Italy	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Japan	N	N	N	N	N	N	N	N	N	N
Lithuania										
Luxembourg			Y		Y		Y		Y	
The Netherlands	N	N	N	N	N	N	N	N	N	N
Norway	N	N	N	N	N	N	N	N	N	N
Poland										
Portugal	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Slovenia	N	N	N	N	N	N	N	N	N	N
Spain	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sweden	N	N	N	N	N	N	N	N	N	N
The United Kingdom										
The United States	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Source: Answers provided by NCB experts to WDN wage questionnaire.

Annex 4: Variables included in the hierarchical analysis

1. Trade union density (question 1) (VL, L, M, H (coded 1-4));
2. Extension procedures (question 1) (none, requested, automatic (coded 1-3))
3. Coverage of collective agreements (question 2) (VL, L, M, H (coded 1-4))
4. Most dominant level of wage bargaining (question 3) (national, regional, sectoral, company (coded 1-4))
5. Level of wage bargaining – company, occupational, sectoral, intersectoral, regional, national (all question 3) (all coded 0-1)
6. Existence of opening clauses (question 3) (coded 0-1)
7. Coordination - pay indexation, inter-associational, intra-associational, statutory minimum wage, pattern bargaining (all question 4) (all coded 0-1)
8. Government involvement (question 5) (none, public sector wages, intermediary, tripartite agreements (coded 0-3))
9. Average length of wage agreements (question 7) (coded 1-3)
10. Minimum wage (question 8) (none, collective agreements, statutory (coded 1-3))
11. % of workers covered by indexation mechanisms (question 9) (0, VL, L, M, H (coded 0-4))
12. Type of indexation (question 9) (none, minimum wage, collective agreements, automatic (coded 1-4)).

Acknowledgement

We would like to thank an anonymous referee from the ECB Working Paper Series, G. Bertola, L. Christofides, S. Holden and F. Smets for their helpful remarks. We are also grateful to participants of the SOLE annual meeting in New York, 2008; the Wage Dynamics Network (WDN) meetings; the WDN conference in Frankfurt, 2008; the conference “Industrial Relations: Practices, Outcomes and Prospects” in Nicosia, 2008; a Banque de France seminar, 2008; and to our colleagues for fruitful discussions. The opinions expressed in this paper are solely our own and do not necessarily reflect the opinion of the central banks we are affiliated to. The same holds for the replies to the questionnaire from the following representatives of 25 national central banks and ministries of labour, whom we wish to thank for providing us with invaluable country information and expertise: A. Dabusinskas, A. De Michelis, Ph. Du Caju, K. Dybczak, K. Friberg, E. Gautier, J. Grobovsec, G. Hebbink, M. Higo, H. Ichiue, M. Izquierdo, G. Kátay, J. Kilponen, D. Kosma, M. Lawless, K. Nakamura, T. Nakashima, D. Nicolitsas, C. Olsommer, A. Paabut, M. Papageorghiou, P. Portugal, D. Radowski, R. Rodzko, A. Rosolia, K. Saczuk, K. Shiotani, T. Shirota, G. Sterne, A. Stiglbauer, T. Stokke, P. Storgaard, K. Turnbull, J. Vanhala, E. Virbickas, F. Wulfsberg. The questionnaire and data on which this paper is based were designed/collected within the framework of the Wage Dynamics Network (WDN).

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