High Performance Work Systems, Industrial Relations and Pay Settings in Europe.

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Abstract

The present study uses data for ten European countries to investigate the characteristics of new regimes of work organisation and system of remuneration. In the first part we briefly outline the characteristics of the firms adopting new work practices and the main features of employees' direct participation schemes as well as their relationships with the traditional industrial relations system. The second part describes innovations that are taking place in payment systems and their determinants. We find that flexible pay schemes are more likely to be introduced where new work practices are in place, but the effect depends on the scheme considered. The pressure of workers representatives in establishment where unions are powerful is found to reduce the likelihood of flexible pay, while the effect of direct participation on its own is negligible.

1. Introduction

In recent years, a growing body of literature has been concerned with the analysis of the characteristics of "high involvement" and "high performance" work systems and of their impacts on firm's performance, wage structure and labour costs. The argument behind this area of research has been twofold: on the one side, the recognition that rigid and vertically integrated organisation of work are no longer compatible with globalised and more competitive markets, which demand to compete on the basis of quality, innovation and customisation and, as a consequence, require more flexible arrangements both of production and work; on the other side, the focus has been on the consequences of the use of new technologies which requires a more flexible and skilled workforce (Brjsholfsoon & Hitt, 1995 and 1998). In this context, firms became progressively horizontally integrated, with less hierarchical levels and more connections between different task and functions (Caroli et al., 1999; Lindbeck & Snower, 1996a and 1996b).

The importance of these changes in the organisation of work for the improvement of employment performance and working conditions has been also recognised by the European Union. In 1997 the EU published the *"Green Paper – Parthership for a new Organisation of Work"*, with the aim to "stimulate a European debate on new forms of organisation of work", which is recognised to be a "demanding change", and on its relationships with the industrial relation context and with the firm environment.

While there is no single interpretation of the term "new organisation of work", most industrial relations scholars (especially in the US) seem to stress the degree to which workers participate in decisions related to their own work, thus

increasing workers involvement and responsibility (Batt, 1999; Ichinowsky et al., 1997; Osterman, 1994 and 2000). Individual specialised work has been progressively substituted by collective work team and worker's involvement groups functions.

Following the Green Paper, the firms adopting those innovative work systems that Osterman (1994 and 2000) called the "High Performance Work Organisations" (HPWO) are characterised by "a shift from fixed systems of production to a flexible process of organisational development […] based on a more productive, participative and learning organisation of work. This new concept of a process leading to a better organisation of work at the workplace is described as the "flexible firm". This transformation can be explained by three factors, representing change: human resources, markets, and technology " (Green Paper, 1997).

For what directly concerns human resources the Green Paper states that:

"The new flexible firm is a demanding form of work organisation. That goes for the introduction of a new work organisation and the development of IR".

With regard to the core characteristics of the new work organisation, the Green Paper underlines that "workers perform a variety of tasks, rather than pass the job on from one to another. The skill structure is changing: good skills (higher and broader) in numeracy and literacy, the ability to interact with computers are becoming more and more important ".

With reference to the IR system, "IR will require, in a new organisation of work, to be built on a basis of co-operation […] and new forms of IR have to be developed, including greater participation by employees, since efficient production requires enhanced levels of both trust and commitment in firms."

With only few exceptions[1], little work has been done to understand how the industrial relation setting interacts with the new system of work organisation and how pay determination within firms is likely to be affected.

As discussed in the Green Paper, it is important to understand "how to change wage systems along to the organisational structures on which they are based"[2]. Reconciling work requirements and pay represent an important policy challenge because "is a critical issue on which social partners have to face up" (see also Kessler, 1995 on this point).

The term "pay systems" refers here to the methods used to pay employees. In contrast to the "old" pay systems, incorporating job-evaluated grade structures, payments by time and seniority, the concept of "new" pay is based on the notion of a "fit" between rewards and the strategy of the firm leading to a greater individualisation of wage, by which rewards are more based on skill, competencies and productivity (Metcalf, 1993). In this context, wages can vary by skills and according to the performance of employees.

Anecdotal evidence suggests that innovative firms have experienced significant changes in wage determination, yet little is known to the relationship between the use of new forms of work organisation and the implementation of more flexible and performance-based pay policies.

The present study aims at describing and investigating the characteristics of high-performance work practices and flexible pay methods.

Its focus is on the analysis of the determinants of new regimes of work organisation and system of remuneration. In order to provide an empirical support to the thesis outlined in the Green Paper, we shall scrutinise how and how much payment systems are changing in Europe, what innovations are taking place and

whether a single firm pay policies are determined by any particular features of both work organisation and institutional setting, as well as looking at the effects of different levels of workers participation and representation on pay flexibility.

The paper is organised as follows. In section 2 we briefly describe the structure and main features of the data used. Section 3 discusses the descriptive evidence on the diffusion of flexible pay systems, on the adoption of new work arrangements and on their interactions. Section 4 analyses in more detail the determinants of the adoption of flexible wage structure and presents the main results of the econometric analysis. The last section concludes.

2. The Epoc Survey

The data used in this study is the EPOC (Employee direct Participation in Organisational Change) survey carried out by the European Foundation for the Improvement of Living and Working Conditions in 1996.

It covers workplaces with more than 20 employees in non-agricultural sectors in ten EU countries, namely Denmark, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and UK.

The survey was administered to general managers who were asked to answer questions concerning the establishment for which they were responsible.

In larger countries (Fra, Ger, Ita, Spa, UK) the gross sample covers 5,000 workplaces while it is 2,500 in medium countries (Den, Neth, Swe) and 1,000 in the smaller ones (Irl, Port).

As the main focus of the EPOC is on employer characteristics, it covers a wide range of personnel management and industrial relations (IR) features. It provides a vast amount of information concerning employee representation, unions presence and union behaviour, the existence of collective agreements, and schemes for direct employee participation. On the remuneration and work organisation side, information are available on pay systems (like the presence of bonus schemes, pay for skill, pay for productivity of profit sharing) and in work practices (job rotation, team work, multitasking, flattening in organisational structure) and adoption of innovative technologies (ICT). In addition to IR and human resource management variables, the survey provides additional controls for firm size, sector, skill intensity, training, firm's market structure (profit/noprofit, independent/owned), degree of competition[3].

Table 1 reports the composition of the sample (by country) by the number of establishment sampled (for which was returned a valid questionnaire) and using country weights by employment shares.

The first two columns of Table 1 report the composition of gross sample (of establishments) by country, whilst in the last column we report the result of multiplying the original percentage of workplaces with the weighting factor. It can be seen that, from the original population, some countries are over represented, other are under represented. For these reasons weights are always used in the empirical analysis.

3. Flexible pay systems and High Performance Work Organisation: some aggregate evidence

The role of new work practices and new IR in stimulating changes in the firm's wage systems is taken in great consideration by the Green Paper. In particular, it asks:

- to further analyse which firms experienced these changes in payments systems and
- if these innovations are taking place by means of IR and changes in work organisation.

From a theoretical point of view, Lindbeck & Snower (1996b) showed that in presence of organisational changes, like multitasking and job rotation, a fix grid of wages resulting from centralised bargaining becomes increasingly inefficient since it "prevents firms from offering their employees to the incentives to perform the appropriate mix of tasks".

In the following part of this section we will try to shed light on the intensity of these phenomena and on the relationships existing between them. First of all, we will investigate which are the characteristics of the "High Performance Work Organisation" and whether, as several studies seem to suggest, changes in the organisation of work are adopted jointly in clusters (Milgrom & Roberts, 1990). Then, we will analyse the main features of employees' direct participation schemes and the relationships of these schemes with the more traditional industrial relations system based on representative bodies. At the end of the section we will analyse how and how much new work arrangements, direct participation and traditional industrial relations interact with the adoption of flexible pay schemes and which is the significance of these relationships.

3.1. New work organisation practices: patterns of adoption

For what concerns the set of new work arrangements, it is difficult to find variables and indicators that describe in a single way the variety and complexity of practices effectively implemented, as well as being "highly informative" of firm's conditions (Snower, 1999). The EPOC Survey contains a rich set of information about the use of these practices, including those commonly used in recent empirical studies analysing the characteristics of HPWO and the consequence of their use on firm's performance (Black & Lynch, 1997 and 2000; Cappelli & Neumark, 2001; Osterman, 1994, 2000). In particular, the survey specifically asked to state which of the following practices were adopted at the establishment :

- flat structure of management (flat_str)
- presence of work teams (teams)
- job rotation of workers across different tasks (job_rot)
- high levels of work involvement in different task (multitask)

The analysis of work organisation issues presents a number of limitation as sectoral composition, firm size, the degree of unionisation, and also further unobservable characteristics are likely to affect the aggregate results. In table 2 we present patterns of adoption by sector and by size. The values in the first four columns are the percentages of establishments adopting the related practice. In the last row, we present the mean value, which is the percentage of establishments adopting the practice in the whole sample. In the last column, we report the value

of an index that we have created in order to capture the "intensity" in the use of these new work arrangements (int_wp). The index is obtained as the sum of the number of practices implemented, and, then, its value ranges from 0 to 4.

The sectors considered are:

- Manufacturing,
- transport&communications,
- Construction,
- Wholesale&trade,
- Bank&insurance,
- Professional services,
- other services,
- public sector[4]

while firm size ranges from 20-50 to over 1000.

For what concerns their overall diffusion, the mostly adopted practices are multitasking (64 percent of establishments adopting it), the flattening of hierarchical structure (33 percent) and the use of teams (28 percent). Less common is the introduction of job rotation (12 percent). The mean value of the index measuring the intensity of adoption is 1.35, and this means that, at least at an aggregate level, the evidence doesn't seem to suggest the existence of clusters in the adoption of these practices.

Looking at the influence of firm size on the proportion of firms adopting the set of new work practices, table 2 shows that, with the exception of multitasking (and, by some extent, of work team), there is a clear size-effect in favour of large firms both in the percentage and in the intensity of adoption of practices.

On inspection of Table 2, it appears that the diffusion of flat managerial structures is evenly distributed across sectors. Job rotation is more likely to be introduced in the manufacturing sector, where also the use of work teams plays a role. Construction seems to be less influenced by organisational changes. Wholesale&trade and private services (in general) shows intensities close to the average. However, while job rotation is poorly adopted among professionals, the opposite its true in the "other services". Public sector reforms designed to introduce additional degrees of flexibility and to foster productivity generated significant changes in the organisation of work, especially in the form of work teams (32 percent) and multitasking (71 percent)[5]. The last column of table 2 (where is reported the intensity of adoption) reveals that the existence of clusters in the implementation of new work practices doesn't seem to be a crucial feature in any sector, in particular for construction, communication and wholesale&trade, where the index ranges from 1.15 to 1.27 only.

Looking at the percentage of establishments by number of practices adopted, table 3 shows that, on average, 17 percent of workplaces don't use innovative forms of work organisation while 40 percent only one[6]. Two practices are adopted by 27 of firms and three only by 13. Only 3 percent adopt the whole set of practices. Again, the "cluster hypothesis" doesn't seem to be fully supported by this evidence. In addition, great differences emerge between sectors. For example, the manufacturing sector shows a sort of "polarisation". Wholesale&trade, the public sector and construction are at an intermediate position (but the latter performs better at the higher levels of adoption's intensity), while Transport&communication shows percentages above the mean in the lowest classes (0 and 1).

3.2. Direct Participation and the industrial relations context

As discussed at the beginning of this section, the Green Paper states that employees' direct participation (DP) is the complement of new work organisation in the management of human resources in the so-called "flexible firm".

The EPOC Survey underlines the existence of two types of DP: consultative and delegative. In the first one, workers (individually or in groups) are asked to report their opinions on a range of issues on which they are regularly consulted by the managers. In the second one, workers (individually or as a group) can make decisions concerning how their own work is performed without reference to managers. Therefore, four different forms of direct participation are recognised: individual and/or group consultation; individual and/or group delegation.

Direct participation is commonly diffused in each country (the percentages of implementation are above 50 percent for each form of DP) and consultation is more likely to occur than delegation. Almost 50 percent of workplaces adopt simultaneously the whole set (4) of forms of DP, while only 5 percent don't use any form (0)[7].

Differently from other studies (for example Bordogna & Pedersini, 2001) sector affiliation and firm size don't seem to affect in any relevant way the percentage of DP initiatives implemented.

The EPOC survey also allows to analyse in more detail the relationships between "advanced" industrial relation practices (based on consultation and involvement of employees on decision-making) and the "traditional" IR systems (based on collectivism and representative bodies).

A *priori* it is not clear whether worker representatives favour or oppose the introduction of new work practices and DP. On the one side, it could be possible that participation is more likely where representation is not, both because the first could make up for the absence of the second, and because unions in general oppose the introduction of a direct link between managers and workers (where discussing problems related to working conditions). On the other side, DP could be considered a complement of union action, in the light of an increase of the employees "control" on their working conditions.

Four different forms of employee representation (ER) are considered: The first three are the existence of union representatives, of representatives elected to a work council and of representatives to an advisory committee established by managers. The fourth is whether the establishment is covered by a collective agreement, as in pluralistic industrial relations systems is also important to take into consideration the effectiveness of the representation. Bringing together these four dimensions of collective representation, we created an index for the intensity of IR (int_ir)[8] also ranging from 0 to 4. A similar index (int_dp, i. e. intensity of adoption of DP) has been calculated adding, for each establishment, the number of direct participation schemes adopted. Using the values of these two indexes, Table 4 shows the relationships between the number of forms of collective representation and the number of forms direct participation implemented (each value is the percentage of establishments in each cell).

High levels of DP are more likely to occur where the intensity of traditional IR is higher. This evidence is in line with the results of Freeman & Lazear (1995), who show that both local unions and, especially, work councils have an incentive to create more co-operative labour relations, since by improving

communications between workers and managers, (by assuming that firms use worker-provided information to benefit labour as well as the firm) an improvement of social output results.

Therefore, the observed pattern of IR doesn't seem to impede the introduction of DP, which is more likely to be introduced in establishments where the industrial relations context is more developed and articulated.

Still, it should be recognised that this descriptive evidence impede to ascertain whether this double presence means: a conflict between the two dimensions, simple co-existence or the development of a co-operative approach to reform the IR system between firms, employees and their traditional representatives[9].

3.3. Flexible pay schemes, industrial relations and work organisation

The EPOC Survey provides detailed information on firm's pay policies. Respondents are asked to answer about the adoption of six flexible pay practices. These are:

- pay for skill (skill_pay)
- bonuses related to workers attitude (bonus)
- pay for individual output (ind_out)
- pay for team output (team_out)
- profit-sharing (prof_share)
- share of ownership (share_own)

In the literature, very different forms of individualisation of pay are often analysed jointly. Here, we separate out traditional methods (bonuses, pay for skill)

from more innovative methods (profit sharing, share of ownership, pay for individual output, pay for team output). Traditional methods group those schemes which convey a greater individualisation of pay, while innovative methods group those schemes in which the payment is conditioned by the results (Bonatti, 2001). Within the innovative methods, we can further distinguish between forms of financial participation (profit sharing and share of ownership) and productivity-related pay (pay for individual output and pay for team output)[10].

The descriptive evidence concerning the adoption of flexible pay schemes is summarised in table 5. In the first six columns we report the percentages of establishments adopting the corresponding pay practice. For a comparison, the last row reports the mean value, i. e. the percentage of establishments using each scheme in the whole sample. In the last column we look at the intensity of adoption of flexible pay methods. For this purpose, we construct a sort of index (int_pay) obtained by summing up the number of schemes adopted by each workplaces and re-arranging the scale (originally from 0 to 6) assigning the higher value (4) to those firms adopting from 4 up to 6 schemes

Table 5 shows that, as in previous studies (Millward, 1994; Poole & Jenkins, 1998), larger firms are more likely to adopt all schemes simultaneously and, in particular, those that are more innovative. If we analyse the differences between sectors, the picture however is rather mixed. In particular, it seems that skill-intensive sectors (like bank&insurance and professional services) are more likely to adopt the whole set of new pay schemes, while, there are other sectors with more specific patterns: for example, in the manufacturing sector the percentage of firms adopting flexible pay is above the average, but with the exclusion of financial participation. In addition, there are sectors, like "Other

services" and, by some extent, Transport&communications, where the introduction of more flexibility in the determination of pay isn't very diffused. For what concerns the public sector, from one side, as noted by many authors (Elliot & Duffus, 1996; Marsden & Richardson, 1994), there are many sign of increasing convergence to the private sector, from the other side some normative restrictions don't allow the development of pay for performance and financial participation schemes as in the private sector. Results from the last column shows that also the intensity increase with the plant size and that the number of innovative methods is higher in the finance and in the wholesale sector.

After analysing the patterns of adoption of new pay schemes, we investigate the relationships between new forms of pay, new work practices and industrial relations system.

We investigate these interactions by looking at coefficients of correlation between the intensity of adoption of pay schemes (int_pay), of new work practices (int_wp), of direct participation (int_dp) and traditional industrial relations (int_ir). These are all indexes ranging from 0 to 4.

From the inspection of Table 6, which shows the sign and the level of significance of the correlation, we observe that, differently from what is stated in the Green Paper, DP doesn't appear necessarily a strong complement of organisational changes, as the coefficient is not statistically significant.

The relationship between the number of work practices in place and the index measuring the intensity of adoption of flexible pay practices is positive and statistically significant.

If we consider the relationships between the number of forms of DP and the number of flexible pay schemes adopted, a number of studies (most recently

Freeman et al., 2000; Conyon & Freeman, 2001), mainly for the UK, reported that the probability to adopt variable pay and pay for performance schemes (especially in the form of financial participation) increases when the workers directly participate to the decision-making process or are consulted by the management on work-related issues.

However, from table 6 we report that, at least at this aggregate level and with these indexes, the adoption of pay practices does not depend to the number of forms of DP used. Therefore, the existence of a positive relationships between these two aspects does not emerge here.

Table 6 shows also that the "traditional" IR context has a negative and (by some extent) significant relationship with number of pay practices adopted[11]. As a consequence, it seems that firms reporting high levels of flexibility in wage determination are more likely to have an "informal" system or IR[12].
Conversely, we find that traditional industrial relations are positively related to both new work practice and direct participation.

Summarising the results of the descriptive evidence, we could observe that the relationships between new pay policies and both IR systems and work organisations are not straightforward and does not always reflect the predictions of the Green Paper. On the contrary, the picture seems rather mixed and articulated. As a consequence, a further and more disaggregate investigation seems to be appropriate to shed more light on these phenomena.

4. The determinants of flexible pay schemes

We turn now to study the determinants of the pay policies introduced by the so-called "flexible firm" (see section 2 for a definition), i. e. the firm adopting HPWO.

For what concerns the dependent variable, we assume that it (called *payflex*) can take values from zero to three according to these rules:

0 = **no forms of pay flexibility** (which has been used as the **comparison group**).

1 = only **traditional forms of pay flexibility** (bonuses and/or pay-for-skill)

2 = presence of **pay-for-productivity schemes** (pay for individuals product and/or pay for team product.) but not profit-related-pay schemes (profit sharing and/or share of ownership).

3 = presence of **profit-related-pay schemes** (profit sharing and/or share of ownership)[13].

For what concerns the set of explanatory variables, the EPOC Survey provides very detailed information on firm's characteristics. In addition to controls for country, sector and size, we can use also information on the firm's structure and the adoption of new technologies. For what concerns the market structure, we can control for the ownership of the workplace (independent, domestic owner, foreign owner), for the degree of competition (no competition, only domestic, domestic and little foreign, both domestic and foreign), for the activity in the profit or in the non-profit sector, and for the use of formal training. A dummy variable controls for the introduction of ICT.

The set of HPWO practices contains five variables for new work organisation (flattening in the structure of management, job rotation, multitasking and team work and the intensity of adoption of new practices) and five for DP (individual

consultation, group consultation, individual delegation, group delegation and the intensity of DP).

The set of industrial relation variables is composed by six variables: presence of trade union representatives, a work council, an advisory committee, union density (continuous variable) and a dummy variable for coverage (that equals one if the establishment is covered by a collective agreement).

Given that the dependent variable is categorical and discrete and that the categories are unordered, to analyse the effects of our set of explanatory variables (and especially of HPWO and IR) on pay policies we use a multinomial logistic model, where cross-section data are obtained by pooling observations from different countries. In addition, we use sample weights to control (as far as possible) for sample distortions and (robust) estimates are clustered by country [i. e. observations are not independent within a single cluster (country)].

For simplicity, we report only the result for the set of variables of interest. Results are presented in table 7, col. (1), (3), (5)[14].

Firm size plays a crucial role but only for the adoption of innovative pay methods, and, as found by Poole & Jenkins (1998) for the UK and Bordogna & Pedersini (2001) for Italy, there is virtually no size effect for traditional schemes. The firm's market structure matters only for innovative methods: in particular, the probability to adopt these schemes increases along with the competitive pressure (compet). Training and the use of ICT have a positive effect for the adoption of the whole set of flexible pay schemes, and the effect is stronger when we move from traditional to innovative methods.

Looking now more closely into the effect of IR and HPWO, the adoption of bonus or pay for skill does not seem to be affected by the use of new work

practices (only multitasking (mltask) matters in some way). Conversely, when we consider innovative pay schemes, the probability to adopt pay-for-performance increases when flat managers structures (flatstr), teams and, especially, job rotation (jobrot) are in place. However, coefficients are not statistically significant at the usual level of confidence. Multitasking shows a (weakly significant) negative effect. This could reflect the fact that, when workers perform a great variety of task, it is difficult to observe their output (productivity), so schemes more related to individual characteristics or to participation at firm results may be preferred.

The analysis of the determinants of financial participation shows positive and significant coefficients for flat management structures, and, especially, job rotation and multitasking (with the higher value). The implementation of work teams has a positive effect but the coefficient is not statistically significant.

We could then argue that, in general, the use of new work practices plays a role especially in the adoption of innovative pay schemes[15].

From the analysis of the influence of DP on pay flexibility, no clear patterns emerges. Differently from many other (especially UK) studies (see Conyon & Freeman (2001) for a review), we basically found no relationships between direct participation and pay policies. On the opposite, Conyon & Freeman (2001) results shows that this relationships is positive for the whole set of innovative methods they consider(team-based performance-related pay, individual-performance related pay, and profit-sharing) and particularly significant for financial participation schemes. Moreover, the authors underline that evidence of team based pay increasing the likelihood of firms using consultation and information sharing is also consistent with the prediction of the

incentive theory. Our results shows that, with specific reference to innovative pay methods, when the coefficient is statistically significant, individual DP (incons and indel) increases the probability of adoption. For what concerns group DP (grcons and grdel), the effect is generally negative but never statistically significant.

From the column (2), (4), e (6), where we introduce the variables that capture the intensity of adoption of HPWO, we see that, while an increase in the use of new work practices (Ind_wp) has a positive effect on flexible pay schemes, there aren't significant differences between firms using none as well as the whole set of DP schemes (int_DP). Therefore, we can conclude that, differently from what stated by the Green Paper, DP doesn't play a crucial role (is not "strategic") in firm's pay policies.

Interesting results emerge from the observation of IR variables. The absence of employees representatives (norepr) has, as expected, a positive effect on the probability to implement variable pay schemes, and the coefficient is higher for innovative methods. At the same time, the presence of union representatives (urepr) has a positive, and significant effect on the probability to introduce variable pay schemes, even in the form of financial participation, and in particular for what concerns the introduction of innovative pay schemes. So, in principle, unions do not seem to oppose the introduction of degrees of flexibility in the wage systems. However, when we interact the existence of union representatives with the union density (udurepr), we obtain a negative coefficient that, especially in the case of forms of financial participation, more than compensate the effect of the former. In other words, union presence by itself does not lower the probability of more flexibility in pay systems (at the opposite, the

effect is positive and significant), still unions appear to be against flexible pay schemes as bargaining power increases. Another form used by unions to express opposition to innovation in wage systems has to do with collective contracts. While there is no effect of coverage on traditional forms of flexibility, being covered by a collective agreement lower the probability to adopt innovative pay schemes, especially in the form of pay for performance.

5. Concluding remarks

In this paper we have investigated the effects of organisational changes in work patterns and industrial relations on firms' pay policies. We compare the "old" pay systems implying job-evaluated grade structures, and payments by time and seniority, to the "new" pay systems grounded on rewards and greater individualisation by skill, competencies and productivity.

Using a cross country comparable 'establishment-level' data set (the EPOC survey), we have tried to sketch the main patterns which characterise pay systems in Europe, focusing both on work organisation features as well as country's own institutional setting.

The analysis of work organisation has revealed the existence of patterns of adoption by sector and size. Furthermore mostly adopted practices appeared to be multitasking, flattening of the hierarchical structure and the use of teams, whilst less common is the introduction of job rotation. Similarly, direct participation of workers – in either forms: consultative and delegative – in the new industrial relations setting appear to be more diffused in the so-called the "High

Performance Work Organisations". The descriptive evidence concerning the adoption of flexible pay schemes seem to indicate that larger firms are more likely to adopt most schemes simultaneously and, in particular, those that are more innovative, though a significant heterogeneity across sectors is detectable.

Finally, we studied the determinants of the pay policies associated to the "flexible firm", that is firms adopting HPWO. The econometric analysis showed the importance of firm size and firm's market structure for the adoption of innovative pay methods, that is the probability to adopt these schemes increases along with the competitive pressure and market share. Conversely, there seems to be virtually no effect for traditional pay schemes. Training and the use of ICT have a positive effect on the adoption of the whole set of flexible pay schemes, and the effect is stronger when we move from traditional to innovative methods.

The analysis of the determinants of financial participation also proved to be relevant when flat management, job rotation and multitasking are in place. From the analysis of the influence of DP on pay flexibility, no clear patterns emerges, that is no significant relationships between direct participation and pay policies was detected. When the IR setting and climate is considered, it appears that the absence of employees representatives increases the probability to implement flexible pay schemes, while the presence of union representatives has a positive impact on the probability to introduce innovative pay schemes. However, while it appears that unions representatives are associated to higher degrees of flexibility in the wage systems, still union density and the interaction between the two convey the usual picture that as bargaining power increases opposition to flexible pay schemes rises too. This is also confirmed by recognition for collective agreement as it lowers the probability to adopt innovative pay schemes.

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Table 1: Composition of the sample by country

	Gross sample		Weighted sample
Country	Obs.	Percent	(*)
Netherlands	452	8.40	4.84
Germany	734	13.63	26.08
Spain	411	7.63	8.64
Denmark	641	11.91	1.99
Ireland	371	6.89	0.91
France	533	9.90	15.96
Italy	465	8.64	15.39
Portugal	270	5.01	3.30
Sweden	732	13.60	3.19
UK	775	14.39	19.71
Total	5384	100.00	100.00

Note: (*): Percentage resulting after applying to the original sample the weighting factor, which is the share of employees with respect to the total number of employees in the EU. Some countries are over represented, other are under represented. For these reasons weights are always used in the empirical analysis.

Table 2: Establishment's adoption of innovative work practices by sector and by size

	Flat_str	Job_rot	Teams	Multitask	Int_wp
	For each practice, proportion of establishments adopting it				*Index (0-4)*
sectors					
Manufacturing	0.32	0.15	0.31	0.50	1.35
Transp&communic	0.33	0.12	0.26	0.51	1.25
Construction	0.29	0.06	0.17	0.70	1.15
wholesale&trade	0.29	0.11	0.24	0.63	1.27
Bank&insurance	0.27	0.25	0.33	0.67	1.56
Professional services	0.29	0.08	0.28	0.73	1.42
Other services	0.32	0.20	0.19	0.61	1.41
Public sector	0.27	0.09	0.29	0.71	1.43
Size (n° employees)					
20-50	0.20	0.10	0.18	0.70	1.22
50-200	0.26	0.11	0.26	0.61	1.31
200-500	0.30	0.12	0.30	0.58	1.37
500-1000	0.40	0.13	0.27	0.62	1.43
more 1000	0.43	0.13	0.35	0.66	1.55
Mean	0.30	0.12	0.28	0.62	1.35

Table 3: Number of work practices adopted by sector

	Number of new work practices adopted				
	0	1	2	3	4
Sectors					
Manufacturing	0.22	0.33	0.25	0.15	0.05
Transp&communic	0.23	0.39	0.24	0.12	0.01
Construction	0.17	0.52	0.23	0.07	0.01
wholesale&trade	0.16	0.46	0.25	0.11	0.02
Bank&insurance	0.12	0.38	0.27	0.18	0.05
Professional services	0.13	0.44	0.30	0.12	0.01
Other services	0.19	0.30	0.33	0.16	0.02
Public sector	0.13	0.40	0.29	0.15	0.02
Mean	0.17	0.40	0.27	0.13	0.03

Note: proportions of establishments adopting: none or 1 or 2 or 3 or 4 work organisation practices. Row values are shares calculated dividing the number of establishments in each cell by the number of establishments in each row. Row's total = 1.

Table 4: Direct participation and the traditional system of industrial relations

	Number of forms of DP implemented				
	0	1	2	3	4
Number of forms of collective representation					
0	0,08	0,08	0,23	0,23	0,39
1	0,07	0,09	0,20	0,22	0,42
2	0,04	0,07	0,18	0,23	0,48
3	0,03	0,05	0,15	0,23	0,53
4	0	0,03	0,10	0,25	0,62
Mean	0,05	0,07	0,18	0,23	0,46

Pearson chi2(16) = 67.5686 Pr = 0.000

Note: proportions of establishments by score. Row values are shares calculated dividing the number of establishment in each cell by the number of establishments in each row.

Table 5: The diffusion of flexible pay methods by sectors and by size

	Traditional methods		Innovative methods				
			Pay for productivity		Financial participation		Int_pay
	skill_pay	bonus	ind_out	team_out	Prof_shar	Share_own	*Index (0-4)*
	For each method, proportion of establishments adopting it						
Sectors:							
Manufacturing	0.43	0.16	0.20	0.29	0.21	0.09	1.40
Transp&communic	0.29	0.14	0.15	0.14	0.16	0.08	0.97
Construction	0.47	0.15	0.25	0.27	0.17	0.07	1.39
wholesale&trade	0.38	0.19	0.26	0.23	0.24	0.09	1.41
Bank&insurance	0.38	0.26	0.23	0.20	0.38	0.10	1.55
Professional services	0.44	0.20	0.17	0.15	0.19	0.09	1.24
Other services	0.30	0.12	0.08	0.13	0.11	0.04	0.79
Public sector	0.37	0.08	0.07	0.06	0.03	0.01	0.63
Size (n° employees)							
20-50	0.32	0.12	0.13	0.14	0.11	0.03	0.84
50-200	0.39	0.14	0.17	0.18	0.15	0.05	1.08
200-500	0.42	0.15	0.20	0.21	0.18	0.08	1.24
500-1000	0.49	0.18	0.15	0.19	0.23	0.12	1.35
more 1000	0.43	0.18	0.17	0.26	0.19	0.09	1.31
Mean	0.40	0.15	0.17	0.19	0.16	0.06	1.14

Table 6: Correlation between flexible pay schemes, new work practices, direct participation and industrial relations

	int_wp	int_dp	int_ir
int_pay	(+)**	(/)	(-)*
int_wp		(+)	(+)**
int_dp			(+)**

Note: (+) positive correlation; (-) negative correlation;

(/) no correlation.** = 5% significance level.

* = 10% significance level

Table 7: The determinants of pay flexibility

	Traditional pay flexibility		Innovative pay flexibility			
			pay for productivity		financial participation	
	(1)	(2)	(3)	(4)	(5)	(6)
size2	0.098	0.073	0.097	0,079	0.485	0,459
	(0.26)	(0.18)	(0.43)	(0.44)	(3.67)	(4.10)
size3	0.096	0.097	0.1798	0,222	1.041	0,656
	(0.70)	(0.42)	(1.17)	(1.29)	(2.99)	(2.82)
size4	0.089	0,084	0.170	0,2333	1.024	0,674
	(0.49)	(0.42)	(1.60)	(1.62)	(2.68)	(2.56)
size5	0.161	0,1437	1.009	1.073	1.265	1.278
	(0.57)	(0.47)	(3.10)	(3.04)	(7.54)	(9.02)
Indep	-0.130	-0.151	0.169	0,1520	-0.476	-0.547
	(0.39)	(0.45)	(0.84)	(0.75)	(1.88)	(2.05)
Domown	0.095	0.080	0.077	0.099	0.198	0,189
	(0.30)	(0.25)	(0.28)	(0.23)	(1.13)	(1.33)
Compet	0.1152	0,118	0.1576	0,167	0.231	0,25
	(2.41)	(2.40)	(4.70)	(5.62)	(6.76)	(7.86)
Profit	-0.171	-0.157	0.463	0,452	0.173	0,20
	(0.81)	(0.69)	(2.97)	(2.73)	(0.41)	(0.45)
ICT	0.24	0,220	0.4472	0,4409	0.391	0,331
	(3.38)	(2.64)	(3.26)	(3.23)	(4.65)	(3.57)
Train	0.4104	0,406	0.467	0,495	0.605	0,575
	(7.06)	(8.10)	(1.87)	(2.03)	(4.60)	(4.02)
Urepr	0.14	0,131	0.465	0,459	0.42	0,384
	(0.82)	(0.79)	(3.38)	(3.23)	(2.08)	(1.86)

Ud	0.005	0.005	-0.007	0.0008	0.001	0.001
	(2.62)	(2.43)	(0.28)	(0.13)	(0.61)	(0.66)
Udurepr	0.062	0.076	-0.229	-0.206	-0.661	-0.662
	(0.13)	(0.16)	(1.73)	(1.55)	(1.94)	(1.93)
Wcounc	0.241	0,245	0.233	0,224	0.206	0,169
	(1.78)	(1.77)	(0.99)	(0.95)	(0.97)	(0.93)
adv_com	-0.189	-0.195	-0.216	-0.196	-0.313	-0.293
	(1.09)	(1.16)	(0.67)	(0.60)	(1.36)	(1.35)
Norepr	0.179	0,191	0.38	0,390	0.36	0,345
	(1.69)	(1.93)	(2.32)	(2.46)	(1.26)	(1.32)
Cover	0.071	0.081	-0.291	-0.279	-0.131	-0.164
	(0.76)	(0.93)	(2.23)	(2.10)	(0.77)	(0.92)
Flat_str	0.088		0.223		0.232	
	(0.84)		(1.50)		(2.07)	
Job_rot	0.073		0.204		0.37	
	(0.23)		(1.76)		(2.78)	
Teams	0.085		0.119		0.056	
	(0.50)		(1.41)		(0.39)	
Multiltask	0.137		-0.232		0.394	
	(1.46)		(1.36)		(2.70)	
Int_wp		0,113		0.096		0,375
		(5.88)		(0.95)		(6.50)
Indcons	-0.085		0.084		0.234	
	(0.39)		(0.61)		(2.77)	
Grcons	-0.024		-0.103		-0.159	
	(0.12)		(0.45)		(1.42)	
Inddel	0.094		0.152		0.075	
	(0.40)		(1.92)		(0.61)	
Grdel	0.181		0.024		-0.194	

	(2.48)	(0.16)	(1.34)
Int_DP	0.088	0.063	-0.001
	(0.99)	(1.03)	(0.01)

Note: The comparison group is payflex = 0. Category excluded: Portugal, public sector, size 1 (less than 50) and foreign ownership. Col (3), (7), (11): Obs 4606, R^2 0.198. Col (4), (8), (12): Obs 4606, R^2 0.195. Robust z statistics in parentheses. Each regression includes country and sector controls, and a constant term.

Appendix

Table A1: Summary statistics and data description

Variable	Description	Mean	Std. Dev.	Min	Max
Flexible pay schemes					
Skill_pay	Pay for skill	0.3998886	0.4899207	0	1
Bonus	Bonus	0.1476597	0.3547953	0	1
Ind_out	Pay for individual output	0.1706909	0.3762736	0	1
Team_out	Pay for team output	0.1922363	0.3940943	0	1
Prof_share	Profit sharing	0.1638187	0.3701454	0	1
Share_own	Share of ownership	0.0653789	0.2472162	0	1
Int_pay	Intensity of adoption of flexible pay schemes	1.602721	1.515368	0	4
payflex	Pay flexibility	1.301263	1.123554	0	3
Country dummies					
netherl	Netherlands	0.0839525	0.2773423	0	1
germany	Spain	0.1363299	0.3431704	0	1
spain	Germany	0.0763373	0.2655617	0	1
denmark	Denmark	0.1190565	0.323885	0	1
ireland	Ireland	0.0689079	0.2533209	0	1
france	France	0.098997	0.2986858	0	1
italy	Italy	0.086367	0.2809313	0	1
port	Portugal	0.0501486	0.2182717	0	1
sweden	Sweden	0.1359584	0.3427762	0	1
uk	Uk	0.143945	0.3510666	0	1
Sector dummies					
manufac	Manufacturing	0.2754926	0.4468008	0	1
transp	Transp&communication	0.0722433	0.2589128	0	1
constr	Construction	0.1038714	0.30512	0	1

sale_tr	Wholesale&trade	0.0757	0.2645403	0	1
Bankins	Bank&insurance	0.0402696	0.1966079	0	1
profser	Professional services	0.0988113	0.2984362	0	1
pubsect	Public Sector	0.2360871	0.424713	0	1
othserv	Other services	0.0349119	0.1835724	0	1
Firm size and Firm characteristics					
size1	Size 20_50	0.1582467	0.365006	0	1
size2	Size 50_200	0.3909437	0.488004	0	1
size3	Size 200_500	0.2180535	0.4129623	0	1
size4	Size 500_1000	0.0963967	0.295162	0	1
size5	Size more1000	0.1071694	0.3093572	0	1
indep	Independent	0.4573384	0.4893894	0	1
domown	Domestic ownership	0.3693674	0.4622728	0	1
forown	Foreign ownership	0.1732942	0.3554169	0	1
compet	Level of competition(*)	2.820046	1.112124	1	4
profit	Profit sector	0.6900074	0.4625331	0	1
ICT	ICT	0.4556092	0.4980718	0	1
train	Training	0.2290119	0.4202359	0	1
Employee representation and IR					
urepr	Union representatives	0.4248185	0.4943582	0	1
udurepr	Union representatives * Density (interaction)	0.2125093	0.3626403	0	1
ud	Union density	0.4633432	0.3978442	0	1
wcounc	Work council	0.3432423	0.4748326	0	1
advcom	Advisory committee	0.1261666	0.3320657	0	1
norepr	No representatives	0.2283097	0.4197795	0	1
Int_ir	N. forms of collective representation	1.167552	0.8079129	0	4
cover	Coverage	0.7786033	0.4152255	0	1

HPWO					
New work practices					
Flat_str	Flat structure of management	0.305958	0.4732761	0	1
Job_rot	Job rotatation	0.123328	0.3687901	0	1
teams	Team work	0.27789	0.4528217	0	1
mulitask	Multitasking	0.6235736	0.4789877	0	1
Int_wp	Intensity of adoption of new work practices	1.35208	10.021562	0	4
Direct Participation					
indcons	Individual consultation	0.8617227	0.3452212	0	1
grcons	Group consultation	0.7921519	0.4058038	0	1
inddel	Individual delegation	0.6437262	0.478941	0	1
grdel	Group delegation	0.655267	0.4753246	0	1
Int_dp	Intensity of adoption of DP	20.988199	10.183304	0	4

Note: (*): 1 = low competition; 2 = only domestic; 3 = domestic and little foreign; 4 = mainly foreign.

Notes

[1] For example the works of Poole (1990), Poole & Jenkins (1998) and Smith (1992).

[2] Traditional pay systems "provided only for payment for a specific job in a hierarchical organisation with a rigid division of labour", while innovative wage systems includes "broader job descriptions" and "higher valuation of new job requirements, such as co-operation, responsibility, decision-making, problem solving" and should be "the financial expression of organisational structures within a company" (Green Paper, 1997).

[3] The survey also provides the weights (by sector, size, country) to correct for possible distortion in the sampling procedure due to attrition and non respondent. The overall response rate was approximately 18 per cent – with a range between 9 per cent (Spain) and 39 percent (Ireland). We cannot exclude that some of the non response is systematically related to some establishment characteristics (such as size, sector, location). For more details about the Survey, see OECD (1999) and European Foundation (1997).

[4] The Public sector includes public administration, public utilities, (public) heath and social welfare, education. Therefore, the definition of Public sector includes also education as a whole, as it is impossible from the data to separate public from private schools.

[5] The dimension, the organisation and also the nature of the public sector differ a lot between countries. However, further investigations (not reported here) shows that, for each country, the pattern of the public sector follows quite closely the behaviour of the economy as a whole.

[6] Osterman (2000) find that about 15 percent of establishment adopted none of the four practices investigated (quality circles, teams, job rotation, TQM) and about 50 percent two or three.

[7] The exact percentages are: 5.3 percent for none form; 7.2 percent for one; 18.5 percent for two; 22 percent for three and 46 percent for four. These percentages are higher that those reported by Guest (1995), who find that the 31 percent of firms covered by WIRS introduced DP practices, but quite close to those reported by Freeman et al., (2000), where the 52 percent of firms with more than 25 employees use more than one program of DP and the 31 percent only one.

[8] For what concerns the distribution of the index values, only 1.2 percent of establishment adopted the full set of collective representation dimensions, in 12 percent there are three, in the 47 percent of cases two, in the 32 percent one and, finally, in the 6 percent none.

[9] Guest (1995) reports that the introduction of DP does not seem to be particularly supported or opposed by the system of firm's industrial relations or by the presence of unions, which could favour DP initiatives only as a strategy of survival and development.

[10] For what concerns financial participation, Smith (1992) and Brown & Walsh (1991) argued that changes in pay practices may be more ad hoc than strategic and, stimulated by political intervention more than by work characteristics. Nevertheless, existing studies on profit-sharing and employee participation show that the effects of work arrangements and industrial relations on pay schemes, even in the form of shared compensation, is not negligible (see Kruse, 1993).

[11] Many authors analysed the relationships between the adoption of flexible pay policies and the climate of IR. For example, Blanchflower & Oswald (1988) find no relationships between the quality of IR and the existence of share ownership, profit sharing or a bonus scheme, while, for the US, Cooke (1990) finds that the union presence lower the probability to adopt forms of financial participation.

[12] These values could be also influenced by the composition of the industrial relations' index. Indeed, compared to the classes from 0 to 3, only a small number of observation belong to the class 4 (which, with only 63 obs. out of 5384 is numerically very small). On the other hand, both qualitative and quantitative results does not change if we rescale the index from 0 to 3, adding the observations that originally were in class 4 to those in class 3.

[13] Many critics can be made on how we construct this variable. For example, one can say that this combination of answers is not consistent and do not capture what is really involved in the decision to adopt flexible pay schemes; that to address these issues we should need other question and other data; and so on. However, this is the first time that this type of analysis has been conduced, so we need a basis to begin. The big amount of preliminary analysis, where we tried a lot of specifications and test a lot of aggregation, suggest that, within the limitations due to the nature of our survey data, result are robust to changes in the specification and that the measures adopted here make most sense in data as well as conceptual framework developed here.

[14] As our HPWO and IR regressors may be correlated, the estimates may be distorted and inconsistent. To control for these potential bias, first, we estimated the model only with the set on IR regressors (in addition to the set of control). As the inclusion of both union density and

coverage in establishment-level estimates could affect the results, we tested both the joint significance and the equality of coefficients, reporting satisfactory results. Then, we introduced the work organisation variables and, at last, we included also DP. As our results don't seem to be heavily affected by the introduction of the new variables, we report only the results for the complete equation. Also the F-test for the individual and joint significance of coefficients reports satisfactory results.

[15] As underlined by Poole & Jenkins (1998) for the UK only "there are many significant relationships in the hypothesized direction (in particular for what concern profit related pay and payment by result/performance-related pay), but little of the variance can be explained by HRM variables".