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**“The effects of the wage structure on job satisfaction  
and workers’ effort: Evidence from Europe”**

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STRUCTURE ON JOB SATISFACTION AND  
WORKERS’ EFFORT:  
EVIDENCE FROM EUROPE”***

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## *Abstract*

Using data from the European Survey on Working conditions (2005), this paper examines the question of how the wage structure may affect important workplace outcomes such as workers' effort and job satisfaction. The wage structure is represented through five variables, indicating whether the company uses fixed salary, profit sharing, equity sharing, group payments and piece rates to remunerate its employees; workers' effort is expressed using data on weekly working hours and health-related leave, while job satisfaction takes the form of an ordinal variable taking values ranging from 0 to 3. The estimation results show that profit-sharing schemes raise absenteeism, which could be evidence of a free-riding behaviour of employees. Furthermore, it is found that employees who are involved in equity sharing schemes work more hours per week; this could be due to a higher feeling of involvement which is generated in the company's activities. Finally, while paying a fixed wage, or being engaged in profit sharing and equity sharing schemes tend to increase job satisfaction, piece-rates appear to have a negative effect, probably due to the risky component added to the employee's salary.

# ***Introduction***

The contractual relationship between employer and employee is based on the exchange of work, or a performance in general, for a salary. This can be formally defined as a “fixed regular payment, typically paid on a monthly basis but often expressed as an annual sum, made by an employer to an employee, especially a professional or white-collar worker” (Oxford Dictionary).

It is possible though that part of the compensation scheme of employees takes alternative forms other than a fixed sum. Firms can in fact choose to shape the payment component of the contract in such a way as to make sure the firm’s and employee’s interests are aligned; the payment in this case takes the function of incentivising workers, and going through the different stages of monitoring, evaluating and contracting, firms can choose between several mechanism to put this in practice (Prendergast, 1999). It could be the case of a piece-rate pay for example, also known as performance pay, which is a form of salary that depends on effort levels and output produced; this is sometimes employed in the hope to improve productivity and output levels, reflecting precisely an incentive effect; Lazear (2000) finds a 22 per-cent increase in productivity. Another common alternative contractual solution could be a financial participation scheme, which can take the form of profit and equity sharing programmes for example; these are generally believed to be beneficial to operational efficiency and employees’ motivation (McCartney, 2004). The threat of the emergence of a free-rider problem within the company should not be underestimated though, and may seriously harm the gain from the actualisation of a shared capitalism programme. This is also the case of any general group-reward based system. While it is best for everybody in terms of pay and the company itself in terms of performance and output levels that high effort levels are exercised, individually workers may still choose to go against the general interest and catch two birds with one stone: benefit from their peers’ hard work through the shared payment system while

not working hard themselves. Freeman (2006) finds that a shared compensation scheme increases absenteeism, which is partially supported by the findings in this paper. Monitoring systems, although expensive, are often therefore needed, but sometimes employees are clever enough to react to the shirking behaviours of colleagues, if observed, with their own means. Freeman, Kruse and Blasi (2006) find that when a shared capitalism system is implemented employees are more likely to act against shirking behaviours of their colleagues when observed. Having said all this, for the ultimate success of any employee-ownership programme a good corporate culture must be created, in which incentives, employees' participation and a supportive environment merge together (Kruse et al., 2003).

The structure and amount of payment received directly enters the utility function of workers', and has therefore an impact on their job satisfaction, which is usually treated with suspicion by economists mainly for its subjective nature; it can be quite a useful variable though to describe and predict behaviour of employees because it captures aspects and dynamics of the workplace that cannot be identified by standard objective analyses (Freeman, 1977). The agency theory and organisational psychology offer interesting arguments concerning the question of how job satisfaction is affected by effort, and how the latter enters the relationship between job satisfaction and performance. Understanding this mechanism is crucial to develop a contractual arrangement which benefits both the employee, in terms of satisfaction and utility from work, and the employer, in terms of effort exercised and performance level (Christen, Iyer and Soberman, 2006). In his theory of job satisfaction Herzberg makes a distinction between motivators, which are factors intrinsic to the job such as the need for achievement and recognition, and hygiene factors, which are instead extrinsic to the job. Salary is one of the most important examples of hygiene factor. Locke's analysis focuses on the intrinsic aspects of the workplace instead and stresses the importance of having personal values and goals; job satisfaction is then found when performance is successful and in line with personal beliefs. In this

context it is also crucial that the worker is well matched to his or her role in the company depending on his or her own capabilities, and when this fails to happen a work redesign (Hackman, 1980) is necessary. The distinction between intrinsic and extrinsic factors such as tangible rewards is also central in Porter's and Lawrence's analysis (1968), who aim to achieve a total feeling of job satisfaction in the workplace by mixing the two together. The relationship between extrinsic and intrinsic motivational factors can be controversial though; Deci (1971) finds that tangible, i.e. monetary, rewards can decrease personal motivation. This result is supported by the Cognitive Evaluation Theory (Deci, 1975; Deci and Ryan, 1980); external factors, a salary bonus for example, can create a sense of alienation from the job and be counter-productive. The Self-Determination theory makes a further distinction between autonomous and controlled motivation; monetary incentives are often needed to induce controlled motivation, and to make sure the task is accomplished when the job is not perceived as interesting by the employee (Deci, 1971). In conclusion, the issue is to create a job environment where extrinsic and intrinsic motivational tools are not conflicting, and where salary and incentives increase satisfaction keeping the other good workplace outcomes unaffected.

In the light of all this, the paper will be organised as follows.

The first part consists of a review of the main theory and literature; the wage setting process will be explained, and the main forms of alternative compensation schemes, i.e. piece rate and financial participation, will be presented; finally, an overview of the most important contributions to the theory of job satisfaction will be provided.

The second part is centred on an empirical model which aims to answer the question driving this paper: how the wage structure may impact job satisfaction and workers' effort. Summary and descriptive statistics will also be outlined in the second section.

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# PART 1: THEORY AND LITERATURE REVIEW

## *WAGE DETERMINATION THEORIES: WAGE BARGAINING AND EFFICIENCY WAGES*

In modern labour markets wages are set as the result of a bargaining process; in some countries this could be a collective bargaining activity between firms and unions. While this practice is not extremely popular nowadays in the US, where it accounts for only less than 15% of industrial relations, it is quite common in Europe and Japan, where the rules following the negotiation process may apply to all the firms and workers in the national economy (Blanchard, 2008). Workers often put their interest in the hands of trade unions in the hope that their power and expertise would increase the probability of them achieving a better wage than that they would have been able to get by carrying on negotiations on their own. When collective negotiations are successful and bring to an increase in the real wage, the firms' response is to make use of less labour-intense production techniques, causing an increase in unemployment. At the new, higher, wage level the labour supply in the economy increases, leading to an involuntary, although collectively voluntary, unemployment situation for many workers. This feature of the labour market can be found in particular in Europe because it is those who are already employed that carry on negotiations; their primary interest in fact is to achieve the highest wage possible. The outsiders on the other hand, i.e. who is looking for a job, would not discharge the offer of lower wages in exchange for more job opportunities, but they have no power whatsoever in the wage

negotiation process. The point in the economy where wages are higher, and involuntary unemployment is created, is therefore stable. Since in developed countries the majority of people have a job, political support is usually given to those institutions which promise wage increases in spite of more unemployment. The employed make up for this “social wrong” by paying taxes which are then used by the government to finance unemployment benefits. Such form of protection can be seen as a rigidity of the labour market. Excessive social protection can in fact result in less pressure on unemployed people who take more time to look for a job, which is damaging for economic efficiency (Baldwin and Wyplosz, 2009).

The wage can also be set resulting from the private bargaining between the employer and the individual prospective employee. Such process is heavily dependent on the skills requested by the type of job on offer; the higher the skills, the more complex is the bargaining, and the more there is to be discussed between the parties involved (Blanchard, 2008).

Having said all this, although it is clear how the wage determination practice can vary across countries, there are generally two sets of common factors which can be identified. Firstly, workers are paid an amount of money which exceeds that which would make them indifferent between working and not working, known as the reservation wage. Secondly, it is specific labour market conditions that ultimately determine the wage (Blanchard, 2008).

Two considerations are usually made when assessing how much bargaining power is available in the hands of the worker. Firstly, the cost that the firm would incur to search for another potential employee in the labour market, was he or she to leave the job. Secondly, how difficult it would be for him or her to find another, possibly better, job than their former employment. In the former case, the higher the cost, the less bargaining power the firm can exercise; in the second case, the more difficult the job hunt, the less bargaining power the worker can rely on. And vice versa. The consequence of this reasoning is that the



nature of the job and labour market trends have a strong influence on determining how much bargaining power a worker has at disposal. If, say, a fast food employee asks for a higher wage, the employer knows that the skills required for the job can be easily found in many applicants, let alone the fact that they can also be easily taught and learnt; hence the firm would just fire the worker and easily find another one. On the other hand, in a situation where specific skills are needed, those skills which can be rarely be found in the labour market supply, the firm is much more likely to agree to the employee's requests and be more welcoming to his or her needs (Blanchard, 2008).

Leaving the skills argument aside, the unemployment rate must also be considered. When this decreases, finding another worker to fill a job position becomes more difficult, and the firms' bargaining power decreases. When instead the unemployment rate is high enough, workers will find their quest for a new job more difficult, and hence they will be willing to accept a lower wage to keep their former employment. This means that their bargaining power would decrease (Blanchard, 2008).

Opposite to the wage bargaining argument, the efficiency wage theory stands. This states that firms may want to pay their workers in excess of their reservation wage to ensure high standards of production and performance are achieved; it is also a useful practice to reduce turnover rates. An increase in salary will make the worker happier, and a happy worker will score a better performance and therefore be more productive (Blanchard, 2008). The firm's profit function in this sense will be increasing in wage pay-outs. Econometric analyses of this theory are hard to come up with, due to difficulties in monitoring and evaluating workers' effort, motivation and ability. An early but interesting example of this practice can be found though in the introduction by management pioneer Henry Ford of the 5-dollar pay per 8-hour working day in 1914.

Workers found their wage nearly doubled, since the average salary back then was \$2.30 for 9 hours. Two possible explanations could be logically inferred from historical records behind this. Firstly, in line with the efficiency wage theory, Ford

opted for this drastic increase in salary to improve the quality of labour, boost productivity both by reducing turnover rates and absenteeism and by the strong motivating effect the high wage could have had on employees' morale. Alternatively, personal reasons such as fame and popularity or maybe altruism. Data from 1913 seems to support the former view, with turnover rates at the Ford plant reaching the impressive level of 370%, enhanced by a 10% daily absenteeism rate. The cause behind this phenomenon was likely to be poor satisfaction with workplace conditions. Hence, a higher salary was addressed to be the most direct solution to these problems. The extra pay took the form of a profit-sharing scheme; this to allow for some flexibility in the sense that the new higher salary would be dependent ultimately on the company's performance and intended as a gift rather than a promise which would have made Ford bound to pay no matter what. To determine whether Ford was simply paying wages excessively higher than the opportunity cost of labour, or actual efficiency wages, the link between the increase in wage and productivity and the profitability of the new policy must be considered.

The estimated increment in productivity was assessed between 40 and 70 per cent, without even taking into account the share of value added which was generated during the assembly process. A reason behind this is workers exerting higher effort. Evidence in this direction is strong, and could be noticed as a reduction in absenteeism rates. Ford's primary intent was not to replace the actual workforce but to reduce the quitting and improve employees' morale making up for unpleasant working conditions. The decline in turnover rates following the introduction of the 5-dollar pay was huge, with reported figures close to a 400 per-cent decrease between year 1913 and 1914. The steady increase in profits experienced by Ford in the following years give even more support for his decision, claimed by himself to be "one of the finest cost cutting moves we ever made". Having said all this, it can be concluded that Ford's experience has been a successful application of the efficiency wage theories (Raff and Summers, 1987).

## *PIECE-RATE PAY*

When deciding on the method of compensation to adopt, the most basic choice employers have to face is between a fixed salary, that is payment on the basis of input, and a piece-rate compensation, which instead focuses on output.

Workers in the agricultural sector, or other jobs which do not require particular skills, are usually paid according to the latter form. In case of a farm worker for example, he or she will get some money for each piece harvested. In mathematical terms,  $W_t=f(Q_t)$ , where  $W$  is the wage at time  $t$  and  $Q$  is the quantity produced at the same time. The function is increasing in output, so that at higher output levels correspond higher wages. Middle managers and government employees are usually instead paid a fixed salary which is outlined at the time the contract is made and is independent of output; it may lead though to the employer being sacked if his or her effort levels are not satisfactory. While the payment in the piece-rate case is contemporaneous with output, the fixed wage is contemporaneous with effort, which is considered the most important input and can be measured in terms of working hours. The main factor to take into account when choosing between these two types of remuneration is monitoring costs. As long as monitoring cost are not too high, workers are paid according to their performance. When monitoring is more difficult instead a fixed salary is the most reasonable option. Many managers are paid a wage which is composed by a fixed part and a bonus part which is instead related to performance and can be associated with a piece-rate salary (Lazear, 1986).

Performance pay adds a risky component to the wage structure; output might increase, but at the cost of higher wages, reflecting the cost of risk imposed on the workers. Firms should therefore be careful in predicting outcomes of contracts which are so dependent on workers' behaviour, and must make sure it is worth it; a common problem, which has become known as multitasking, sees the rise of a "dysfunctional behavioural response" from the employees, who

would focus only on those tasks and activities which will be rewarded, leaving aside the uncompensated activities which may still be important for the company overall. Since a measure of the effective employee's contribution to each part of the task at every moment in time is almost impossible, performance-pay is not advisable when there is large scope for the reallocation of activities (Prendergast, 1999).

Two key shortcomings of the piece-rate compensation system are the emergence of information asymmetries between workers and managers, and the opportunity that the firm has got to change the rates of payment at any point in time (Gibbons, 1987).

Information asymmetries arise because managers often have poor knowledge of the production techniques, in particular regarding the pace of work, in use; employees have then the opportunity to exploit their private information about the difficulty of their jobs. Piece rates have always been attractive in the eye of employers for providing a potential solution to the problem of transforming labour power into actual labour done; a piece rate system in fact rewards the employees only for what they do and not what they could have done (Edwards, 1979). As long as the management will depend on the worker for being informed about how fast the work can be done though, "adverse-selection" and "moral-hazard" problems will be hard to avoid (Clawson, 1980).

The second shortcoming involves a problem of commitment. In theory, under a piece-rate payment system, workers can easily achieve an increase in salary by increasing output through higher effort or improving working methods at their own discretion; there has always been an historical tendency among employers though to cut salaries eventually, despite promising at the time the contract is formed they would never do it; unless a collective action were to be taken, workers often ended up working and producing more, but benefiting from only slightly higher wages (Clawson, 1980). A contractual solution which would bind the firm to pay a fixed piece rate is complex and hard to enforce (Gibbons, 1987); there are many ways in which employers can achieve pay cuts without changing

the actual piece rate per worker who is performing his or her contractual duties in fact, for example by reallocating employees elsewhere in the range of the firm's activities (Clawson, 1980). This is a problem of commitment, since the firm must respect its initial piece-rate policy and commit to reward employees for their hard work.

Lazear (2000) studies the effect of incentives-based payment systems in the form of performance pay on productivity and output levels. Theoretically, if the workers' salary is increasing in the firm's output, production will rise. This result has been difficult to back up though due to lack of appropriate data; Lazear uses a dataset containing information about 3000 workers of a large auto-glass company who have been observed over a 19-month period in which the compensation system has been gradually changed from fixed salary to piece-rate pay. The availability of data before and after the introduction of the new payment scheme makes it possible to study the effects of the introduction of the PPP (Performance Pay Plan) very clearly. Under the new company's policy workers were not being paid for the number of hours worked anymore, but for the output they produced, in this case glass units installed. The primary reason behind the decision was to boost productivity using monetary incentives to increase effort. The piece rate pay consisted of \$20 per unit, plus a \$10 guarantee which most workers managed to receive; the mean hourly wage used to be instead \$11.48 per hour, with a standard deviation of \$2.94. The mean units produced by each worker per day went from 2.70 under the hourly wages scheme to 3.24 under piece rates, therefore registering a 20 per-cent increase. Output variance also rose, with the standard deviation of units produced going from 1.42 to 1.59. When accounting for other factors such as weather, time effects, management change and other variables which may have had an impact on company's output over the observed time period, the regression analysis shows an estimated increase in productivity of 44 per-cent. The inclusion of worker dummies in the regression brings to a drop in value of the estimated coefficient; the increase in productivity per worker is then found to be 22 per-

cent, meaning that a given worker will install roughly 22 per-cent more units after the switch to PPP, reflecting a strong incentive effect. The estimated coefficient picks up also a sorting effect, in that the least productive workers either quit or are sacked, while the highest output-producing workers stay. No role is played by the Hawthorne effect, according to which any change in the workplace would bring an increase in productivity in the short-term. Furthermore, when workers are paid according to piece-rates, they seem to learn better ways to work. It seems like the piece-rate form of payment brought benefits to both capital and labour. The increase in pay per worker is 7 per-cent; the gain in earnings per a given worker is instead 10.6 per-cent, which is approximately half the increase in productivity per worker due to the incentivising effect of piece rates. This means that the firm shares part of the benefits derived from the increase in productivity with its workers. Company's profits are likely to have also risen, since there is no reason why variable costs other than wages have covered up the safe 44 per-cent margin given by the increase in output levels. In this particular situation then applying a productivity pay system leads to a win-win scenario, bringing benefits to both the employer and employees. This does not mean that the outcome of this kind of policy will always be positive; when output cannot be easily measured in fact, which is the case of many managerial and professional jobs, the implementation of piece-rates may be difficult and counter-productive. What Lazear really wants to point out in this case is not how profitable for a company it would be to switch to a variable payment system based on productivity pay, but instead how workers react in terms of effort to a change in their compensation of this kind (Lazear, 2000).

## *FINANCIAL PARTICIPATION SCHEMES: EQUITY SHARING, PROFIT SHARING AND THE FREE-RIDER PROBLEM*

The wage structure chosen by Ford in 1914 to incorporate the salary increase took the form of a profit-sharing scheme. This is a form of financial participation which links group and collective bonuses to the profits of the firm and therefore takes into account the worker's role as an employee of the company.

Share-based schemes are also common and refer to the workers' role as stakeholders and holders of the equity capital of the organisation they work for. They therefore become owners of the firm, and benefit from good company performance through dividend pay-outs and capital gains.

In many European countries profit and share-based schemes merge together, and often the latter are funded by the former. Substantial benefits can be derived from financial participation for the organisation as a whole; the involvement of employees and managers in the ownership of the firm with equity-sharing schemes makes their interests and those of the shareholders move together, potentially resolving agency problems (McCartney, 2004). Managers do not always in fact seek to maximise the firm's value, but may pursue their own goals and self-interest, avoiding for example to embark in risky projects, exploiting corporate resources with no consideration or even trying and implement a reckless growth strategy to increase the size of the firm, which would not lead to any correspondent increase in shares' value. Stock options, which are part of the compensation plans of many top executives nowadays, are considered to be a solution to this problem because they ensure managers will work as to achieve an increase in the stock price which will be beneficial not only to shareholders but now to them as well. An excessive amount of options granted to the company's management could bring about another kind of agency problem though. Managers might in fact be incentivised to manipulate information as to raise the stock price just temporarily and cash out before the price is eventually back to normal (Bodie, Kane and Marcus, 2010).

Financial participation can be a useful tool to improve operational efficiency, as employees will be motivated to work harder by their stake in the company's profits and therefore choose to exert high effort levels, which will positively affect productivity (McCartney, 2004).

Economic theory can be used to pin down the theoretical issues concerning the relation between profit sharing schemes and productivity, and offers also some explanations which may help to predict likely outcomes of this type of variable pay policy. The most straightforward advantages that can be derived from profit sharing can be illustrated using a simple one-person case, whereby a single input consisting of working hours and effort produces a single output. A standard fixed wage system would not guarantee an efficient output level, leading therefore to a low productivity equilibrium where the marginal cost of effort is below its marginal value. This because the worker would receive the same amount of payment regardless of the effort exercised, which is also difficult to monitor. The solution to this problem is to add a variable pay component to the fixed wage which will take into account the value of the output produced. The worker will then increase effort to an optimal degree and the marginal value of an extra unit of output will equal its marginal cost of production. In this setting therefore the implementation of a profit-sharing scheme will bring about an increase in the firms' performance in terms of productivity. The one-worker framework is general and simple yet gives support to the main idea which is well rooted in common sense that output can be increased by linking high performance to a monetary reward. When people work as part of a team though, which is often the case, a free rider problem may exist which undermines the validity of the previous statement. The bonus would then have to be shared by a group, where individual contribution is hard to measure. The larger the number of members of the group, the lower the profit-sharing associated reward, which will be reduced by a factor  $1/n$ ; average effort is therefore inevitably going to shrink (Weitzman and Kruse, 1990). A one-shot game theory setting can be built whereby a team of workers has to decide what level of effort to put in performing their job. Such



effort could be either high or low, and it is privately costly. The total output produced, which will determine individual payoffs, depends on the minimum effort of all the workers. An individual worker A would then be better off by putting high effort if the others are too, and low effort vice versa. In other words, he or she would strictly prefer to play in accordance with the others. The game has two Nash equilibria; the individual worker will necessarily play an equilibrium strategy, since both high and low effort are, but it is not the same case for the group considered as a whole. A coordination failure, which would arise as a consequence of incorrect individual expectations about what the others are going to do, although excluded by the theoretical definition of Nash Equilibrium is very likely to happen in practice (Mailath, 1998). The optimal solution for the firm would be that all the workers choose high effort, although there is the strong possibility that someone will free ride. A monitor could be hired to ensure that all the workers exert high effort levels, but it would be costly. If the game is repeated though the story will be different. The workers would then in fact be bound by a long term relationship, and create norms as to punish shirkers. Different equilibrium strategies can be played, although for a sufficiently small discount rate the participants are likely to converge to a Pareto efficient outcome and exert high effort. Such result is purely theoretical though, and shirking behaviours can still happen in practice; the one-worker case result can be valid in a multi-worker setting only if certain conditions are met, which could refer to historical, cultural or institutional factors for example (Weitzman and Kruse, 1990).

Having said all this, game theory does not offer a clear answer on the effect of a profit sharing scheme on productivity in a group-based work system. The outcome depends on the ability of the organisation to generate a common belief that working hard is best for everybody. It is therefore crucial for managers to implement policies to develop a corporate culture which promotes a sense of belonging and social cooperation (Weitzman and Kruse, 1990).

Freeman et. al (2006) study the effect that different forms of shared-compensation company policies, for which an index has been formed, may have on various important aspects of the workplace. Six variables are taken into consideration, in particular: turnover rates, i.e. the fraction of people looking for another job to those who are willing to stay; absenteeism; perceived effort of colleagues; loyalty to the firm; the extent to which workers are prepared to work hard for the firm's benefit; the interest of employees in the firm, expressed as the frequency of suggestions made aimed at improving the company's practices. Data were gathered from two samples of different-sized American companies, for a total of 41206 reported relevant observations.

Firstly, the analysis finds that financial participation reduces turnover rates, making employees not only less likely to be searching for a new job but also willing to turn down important alternative job offers; the reason behind this result could be either the additional money earned from the shared capitalism system or the growth of a deeper sense of belonging to the company. Absences were higher under the shared compensation scheme. This could be due to a free-rider problem, or more general issues involving corporate culture. A positive correlation is found between the shared capitalism and the perception of effort between co-workers: employees will think that their peers are exerting high effort levels when this variable pay component is present. Positive effects have also been found on loyalty and availability of employees to contribute in terms of ideas and suggestions to the company's business. When the shared capitalism index is considered for each of its components, it appears that profit-sharing and employee-ownership schemes are the most effective. Freeman's analysis does not stop here but carries on to consider the outcomes of the interaction between monetary incentives and other corporate policies. Firms should in fact give workers more decisional freedom in order to allow them to correct their behaviour as to benefit from the variable pay policy. An "index of high-performance work policies" was then constructed, accounting for factors such as job security, training and involvement in the company; the results of the

interaction with the high performance index shows that the outcomes of the shared-capitalism payment policy may be also due to corporate culture factors. Finally, an excessive employee supervision may have a negative influence on the effectiveness of the introduction of a financial participation programme (Freeman et. al, 2006).

The role that human resource policies have in the company has a substantial impact on the firm's performance when this is, at least partially through stock ownership plans for instance, employee-owned, as shown in a paper by Kruse et al. (2003). Although a wide amount of research shows that the implementation of a shared capitalism system brings an average increase in the company's performance with respect to rivals (estimated around 5%), the emergence of shirking problems among the employees may lead to a dispersion of outcomes, with a negative effect on the overall firm's activity. To try and overcome the free-rider problem, which commonly arises when payoff is a function of the overall group performance, a combination of incentives, participation and good workplace environment and company ethos are needed (Kruse et al., 2003). According to the complementarity hypothesis, a productive employee attitude and behaviour are generated by giving more responsibility to the employees, in the form of greater influence and participation in the decision-making process within the firm. Both ownership without participation, and vice versa, can have if any a negative effect on the company's performance (Ben-Ner and Jones, 1995). This is believed not to be enough by the "three prong hypothesis", which suggests that something more has to be done to prevent free-riding behaviours; this "something more" coincides with the implementation of human resource policies to look after the employee under many circumstances, not only giving them more decisional power but also creating a sense of participation, security and fairness which will ultimately increase cooperation among colleagues. To understand which equity sharing programmes are successful and which are flawed in terms of productivity improvement, it is necessary to examine data on productivity and effort levels gathered both from firms' and workers'

perspectives. Kruse et al. use two data sets. One is based on a OA (Ownership Associates) survey, which contains both workers and company reports on participation, effort and ownership. The second data set used focuses on the matter of how workers would react to shirking behaviours observed among their peers.

Firstly, a positive relation between the employee-reported and company measures of outcomes is found. The correlation between workers' perception of effort and actual company performance was expected and is observed to be positive, although there are high variations when considering different measures of performance such as profit margin or sales level. A human resources index was then constructed, due to the difficulty to assess the effect of each policy independently of the other. The question is now whether HR variables are linked to company's performance. The HR index is generally found to be positive related to employees' perception of effort; this supports the idea that ownership is not sufficient to guarantee an increase in company's performance, and must therefore be integrated by complementary human resources policies. The HR index is also positively correlated to workplace attitudes and feelings which may go against free-rider behaviours such as perceptions of fairness, good supervision, worker input and influence, although two results are quite surprising. Firstly, employees engaged with HR policies think that they are excessively controlled by managers. Secondly, there is no effect on the feeling of ownership, which would instead have been more likely expected to be reinforced by the creation of a good corporate culture through the implementation of efficient HR policies. The interpretation of this result is that workers only value their degree of ownership in the company by the economic incentives derived, which is supported by the estimated regression. Another issue analysed by Kruse et al. is whether workers will try to punish or do something against free-riding behaviour, if observed. Employees involved in EI (Employee Involvement) committees are more likely than others to go speak to a shirker directly, and tend also to work harder. Furthermore, trained employees, workers who take

part in many corporate activities and those who are more involved in the decision-making processes are all less likely to react with indifference. In conclusion, employee ownership has definitely a good effect on firm's performance and effort levels through the monetary incentives it provides; this is not enough though, and participative mechanisms must be set up to ensure workers can capitalise those incentives. The creation of a corporate culture is also suggested to help avoid free-riding problems (Kruse et al., 2003).

The question of how do workers generally react when they see their colleagues performing poorly is more specifically addressed in a paper by Freeman, Kruse and Blasi (2007). When the setting is a promotion tournament, or a piece rate system whereby the more is produced the less is the wage to pay, the shirker will not be a problem for the hard-working employees. When the payment system is group-based though, it is the case of a profit-sharing or stock options for example, it is in the best interest of workers to actively contrast free-riding behaviours. Since the cost of intervening falls entirely on the person who decides to act, the associated benefit is only partial. It is therefore not rational to act, for the same reasons as why in a standard prisoner's dilemma game the best strategy is to avoid cooperation. Freeman et al. asked to a sample of 41206 workers about the ease to check up on co-workers' performance and the likelihood to respond if poor performance is observed. Questions on other various aspects of the workplace were also asked such as the incentive systems in use and human resources policies. Data show that the majority of workers have a good idea regarding the performance of other workers. The distribution of answers on how people would react to shirking behaviours of their peers is more widespread, and what matters is to justify such differences in reaction. Firstly, the shared-capitalism index is associated with greater anti-shirking activity, as well as the ease of observing co-workers. Organisational and company policy variables, such as participation variables and job task variety also have a positive impact on anti-shirking activity. Furthermore, workers in small firms are more likely to act against free-riders, which is what would have also predicted by

behavioural economic theory. Interestingly employee ownership do not seem to depend on the size of one's stake in the company's ownership to affect the likelihood that action is taken against shirkers. In a company surveyed, the introduction of a profit-sharing scheme raised the percentages of people who would likely go and speak to a shirking worker and who would do something in this matter, probably fearing a decrease in the value of their bonus. Another important factor to be taken into account is the quality of the relationship with the firm's management. The analysis shows that when a shared capitalism policy is implemented in an environment where there is a trustworthy relationship between managers and employees, its effect against anti-shirking activity will be amplified. In addition, it is found that group-based payment structures work best when combined with the fixed component of salary; when the salary is good enough, i.e. equals or exceeds market levels; when supervision is kept at a reasonable level (Freeman, Kruse and Blasi, 2006).

In other words, shared capitalism will have a strong positive effect on actions taken against anti-shirking behaviours as long as it is integrated by high-performance HR policies (Freeman, Kruse and Blasi, 2006).

## *THE WORKERS' UTILITY FUNCTION AND THEORIES OF JOB SATISFACTION*

The wage paid is a major determinant of the employee's happiness with the workplace conditions; it directly enters in fact his or her utility function from work, which can be assumed to be of the kind  $U=f(Y, Y^*, H, I, J)$ . Here  $Y$  represents income, or absolute wage,  $Y^*$  the income relative to some reference point the worker sets for himself or herself, also known as comparison wage,  $H$  is the hours worked, and finally  $I$  and  $J$  represent respectively specific individual and job characteristics. The worker's utility function is increasing in the income level  $Y$ , and decreasing in the comparison income level  $Y^*$ . This is straightforward, since the higher the wage the better off the worker is, and the higher the wage offered elsewhere, in comparison with the wage the worker is paid at his or her current position, the worse off, or less happy, he or she will be (Clark and Oswald, 1995). The higher the utility derived from work, the higher the worker's satisfaction. A highly satisfied worker is then more likely to be more motivated to do the job and therefore deliver a better performance to the firm's benefit.

Satisfaction can be generally defined as the "fulfilment of one's wishes, expectations, or needs, or the pleasure derived from this" (Oxford Dictionary). It is commonly thought that the opposite of satisfaction is dissatisfaction. According to Fredrik Herzberg, this is not true in a managerial context; he finds in fact that the factors contributing to such feelings are distinct and not comparable. The opposite of job satisfaction is then logically no-job satisfaction, and similarly the opposite of job dissatisfaction is no-job dissatisfaction. The needs involved here fall into two categories: one related to the animal side of the human being, and the other to its distinctive human nature. The animal side is dominated by biological and personal-security needs such as avoiding pain from the external environment. An example of animal need is hunger; money

must be earned to buy food, which will bring to the fulfilment of the relevant need and therefore to satisfaction. The human side is instead linked to psychological growth, which is experienced through the process of goal achievement. The factors involved with such inner growth are called motivators, and they are intrinsic to the job; these are achievement, achievement recognition, the work itself, responsibility and advancement. Hygiene factors are instead extrinsic to the job and include company policy and administration, supervision, interpersonal relationships, working conditions, salary, status and security. While motivators have a role in determining job satisfaction, a lack in any hygiene factor would lead to job dissatisfaction (Herzberg, 2003).

Locke is one of the main critics of Herzberg's theory. Firstly, he writes that there is no such thing as a distinction between biological and psychological needs, which are both discovered through the mind. Secondly, these factors are not unidirectional, and neither are motivators and hygienes. Thirdly, the relation between factors and needs is not always clear, which makes it difficult to pin down the effects of new company policies. It can be finally concluded then that Herzberg's two factor model does not properly categorise the elements which concur to job satisfaction (Locke, 1976). Locke defines job satisfaction as "...a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences". The importance of having values and goals is particularly stressed, and constitutes a further point of divergence from Herzberg's analysis. Differently from needs, values are learned, specific to an individual, subjective, and can be identified as the main drivers of people's decisions. When an individual performs adequately in his job according to a determined and clear set of values, then job satisfaction is found. Furthermore, it is events such as the willingness to succeed and the fear of failure, or the extent of the responsibility assigned for a task to ultimately motivate the employee. Having said all this, job satisfaction becomes heavily dependent on the difference between actual and perceived performance, and how well this is matched with personal values. The highest job satisfaction is reached when the outcome is fully up to expectations



and values, or goals, are achieved (Locke, 1976). Both Herzberg and Locke theories agree on the fact that the greatest potential for job satisfaction attainment is to be found in the work itself. Surely, the environment and facilities available, personal life and social aspects of the workplace may help, but a good job performance stems from more intrinsic values and feelings which generate a positive attitude towards the working duties (Myers and Tietjen, 1998).

According to Hackman, what really makes a difference is how well the worker is matched to the role he or she is due to perform. In this sense, the term work redesign refers to the “activities that involve the alteration of specific jobs (or systems of jobs) with the intent of improving both productivity and the quality of employee work experiences”(Hackman, 1980). A common way to embark into a successful job redesign project is to provide employees with additional roles and responsibilities for their own tasks; the work experience becomes then more autonomous, and the employees will have to plan what needs to be done by themselves; set up methods and procedures, making crucial decisions when required; determine work pace; check own work, and keep in contact with clients personally. In addition, the job which had been previously divided into many small parts would be brought back together so that the employee is given full responsibility from the beginning through the development and final delivery of the product with a more meaningful role specification. Work redesign could be achieved either at individual or team level (Hackman, 1980).

The concept of job satisfaction is strictly related to that of motivation, which can instead be defined as “a reason or reasons for acting or behaving in a particular way” (Oxford Dictionary). A poorly satisfied worker cannot be motivated to perform a good job, and vice versa. Porter and Lawler suggested to distinguish intrinsic from extrinsic motivational factors affecting an employee’s performance. The former involve the feelings which arouse while taking part in the activity itself. They are therefore spontaneous, autonomous and specific to the employee, who can be interested and enjoy a particular task or not. Extrinsic motivational factors on the other hand do not put the activity itself in the first

place but the consequences which follow. Examples are monetary and tangible rewards, or avoid being told off by the employer. In their model Porter and Lawrence aim to create a job environment where not only extrinsic but also intrinsic rewards are present, generating a total feeling of satisfaction (Porter and Lawrence, 1968).

It has been often argued though that extrinsic and intrinsic factors not always get along; that is, instead of being additive, they could be either positively or negatively correlated with each other (Gagnè and Deci, 2005). Specifically, it has been found that while tangible rewards are negatively correlated with intrinsic motivation, the correlation between intrinsic motivation and verbal rewards is positive. In other words, the more the employee is complimented when he or she has done a good job or the more he or she is being supported, the better he or she will feel about the job itself (Deci, 1971). The effects which extrinsic factors of motivation could have on intrinsic motivation can be explained through the Cognitive Evaluation Theory (Deci, 1975; Deci and Ryan, 1980). The underlying assumption to this theory is that people need to feel responsible for their own work and competent with their own means; intrinsic motivation is therefore enhanced by all those factors which help generate such feelings, for example giving the employee the possibility to decide on parts of his or her assigned task and choose to use the approach he or she feels more appropriate (Zuckerman et al. 1978). External factors such as tangible, e.g. monetary, rewards, tight deadlines (Amabile, DeJong and Lepper, 1976), an excessive degree of surveillance (Lepper and Greene, 1975) and frequent performance evaluations (Smith, 1975) may instead create a sense of alienation, whereby people's behaviour will be driven by contingencies (Gagnè and Deci, 2005). It was shown by Deci's meta-analysis (1999) though that when tangible rewards, a salary bonus for example, are not correlated with performance but are given out when least expected, and when there is a supportive social environment in the workplace (Ryana, Mims and Koestner, 1983), the effect on intrinsic motivation could be non-negative and in some cases even positive.

Self-Determination theory (Deci and Ryan, 2000) takes off from CET and, using the concept of internalisation, which refers to “taking in a behavioural regulation and the value that underlies it” (Gagnè and Deci, 2005) distinguishes autonomous from controlled motivation. An example of autonomous motivation is naturally intrinsic motivation, which involves a sense of volition and freedom of choice; people do something because they want to do it themselves, not because somebody else is trying to lure them into it. Controlled motivation is based instead on external pressure and doing something because feeling like having to (Gagnè and Deci, 2005). Tangible rewards are often used to induce controlled motivation (Deci, 1971). Autonomous and controlled motivation are different yet stand on the same side opposite to a-motivation, which lacks of any form of intention (Gagnè and Deci, 2005). Extrinsic motivation is considered according to the degree of autonomous versus controlled behaviour; the more interesting an activity is perceived, the less the need of external factors such as tangible rewards to make sure the task is accomplished. If this is not the case the behaviour needs to be externally regulated. An external regulation can be sometimes transformed into internal through the process of internalisation, whereby values and attitudes are learned. The more the external regulation is internalised, the more autonomous will be the subsequent behaviour. The self-determination continuum has at its two extremes a-motivation and intrinsic motivation; between these two, the four types of extrinsic motivation stretch out, namely external, introjected, identified and integrated regulation, which differ in their degree of self-determination from the least to the most. The satisfaction of the three basic psychological needs of competence, autonomy and relatedness is essential for the process of internalisation of values and regulations to occur; the need for autonomy is particularly crucial. If the working environment supports the fulfilment of the three basic psychological needs mentioned above, then important outcomes like job satisfaction and effective performance can be achieved (Gagnè and Deci, 2005).

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# PART 2: EMPIRICAL ANALYSIS

## *DATASET DESCRIPTION*

The data which are going to be used in this analysis were gathered at the European level in the year 2005. Data from 31 countries in total, including countries belonging to the EU25, Bulgaria, Romania, Croatia, Turkey, Norway and Switzerland have been collected. The survey offers an exhaustive insight on the labour market characteristics in Europe, focusing on the employment structure, status and contract features, as well as providing an overview of individual and job-related characteristics. Out of the vast number of variables included in the dataset, amounting to a total of 29860 observations, only some were selected for practical reasons related to the purpose of this research.

Firstly, all the answers to the survey question labelled as “Q3A”, which distinguished self-employed from employed workers, other than “employed” were dropped. This because this analysis focuses on the employer-employee relationship in the context of the firm and the effects of choosing a particular form of salary. Self-employed workers cannot therefore possibly be included. The drop of this variable restricts the dataset to 24427 observations. The enormous quantity of survey questions, the majority of which not exactly relevant to the aim of this paper, brought to the decision of restricting the dataset further, keeping all those variables, included those having a strictly “controlling” function, deemed as necessary to the achievement of good estimation results. The final number of useful observations is then 14921, for 56

variables taken into consideration. The answers which took the form of a refusal, or in which no opinion has been expressed, have been dropped.

One of the most important yet difficult steps in building the empirical model at the core of this analysis has been the choice of an indicator to measure workers' effort. Incentive systems, and any kind of salary structure which is linked to workers' effort and performance, requires a method to quantify how much has actually been contributed by each employee to the success (or failure) of a company project. In the absence of specific data on work intensity or productivity levels, the first choice was to look at the available data on health-related absenteeism. This could be considered in fact a representation of shirking behaviour of workers, who decide to reduce their contribution to the firm's activities by calling themselves sick even when they are not (Vallanti and Battisti, 2011). This information is represented as a dummy variable, taking values 1 if the employee has been absent at least once from work due to health related reasons in the past 12 months, and 0 if not. The other variable used to try and quantify how much is contributed in terms of work by each employee was working hours per week, which, as suggested by Lazear (1986), can be a good measure of effort.

Furthermore, for job satisfaction and wage structure, the following variables have been used:

- The ordinal variable job satisfaction, which takes values ranging from 0 (not at all satisfied) to 3 (very satisfied).
- A set of dummies relating to the wage structure, i.e. fixed salary, piece rate or productivity payments, profit sharing schemes, payments based on the overall performance of a group, incomes from shares in the company or stock options.

Beside these main considerations which are most relevant to the question driving the aim of this paper, a set of control variables were also kept to complete the model.

These are:

- Age, taking values from 18 to 64 years old. Data on workers younger than 18 and older than 64 were dropped.
- Work Experience, taking values from 1 to 46 years. This because, considering a starting employable age of 18 years old, and a pension age of 64, one cannot possibly have gathered more than 46 years of work experience.
- Tenure, i.e. how many years the employee has been in his or her company/organisation. This variable takes observed values ranging from 0.6 to 46; again, assuming a pension age of 64 years old and a starting employable age of 18, one cannot possibly have been in their company for more than 46 years.
- ISCED, i.e. International Standard Classification of Education, which represents the highest level of training or education achieved. This variable has been represented using 3 dummies: one for low ISCED, for those who have either no education, primary education or lower secondary education (ISCED  $\leq 2$ ); one for medium ISCED, for those who have upper secondary education or post-secondary including pre-vocational (ISCED  $> 2$  and  $< 5$ ); finally a third dummy for high ISCED, including those who have achieved either a first or advanced level of tertiary education (ISCED  $> 5$ ).
- Sex. This takes the form of a dummy variable which equals 1 if the worker is male, and 0 otherwise.
- The type of contract, i.e. permanent or temporary. This is expressed as a dummy which equals 1 in the case of an indefinite time contract, and 0 otherwise.
- Whether the worker is employed in the private or public sector, represented as a binary variable which equals 1 in case the worker is employed in the private sector and 0 otherwise.

- Whether he or she is working part time or full time. Again, this information is shaped as a dummy variable which equals 1 in case of a part-time job contract, and 0 otherwise.
- The size of the firm; this information is represented as a set of three dummy variables. One for small firms (less than or equal to 50 employees), one for medium establishments (between 50 and 250 employees) and one for big organisations (more than 250 employees).
- The working time arrangement, expressed as a dummy variable which equals 1 in case of flexitime, and 0 in case the company mostly sets working hours allowed.

Furthermore, a dummy variable for each country analysed has been included.

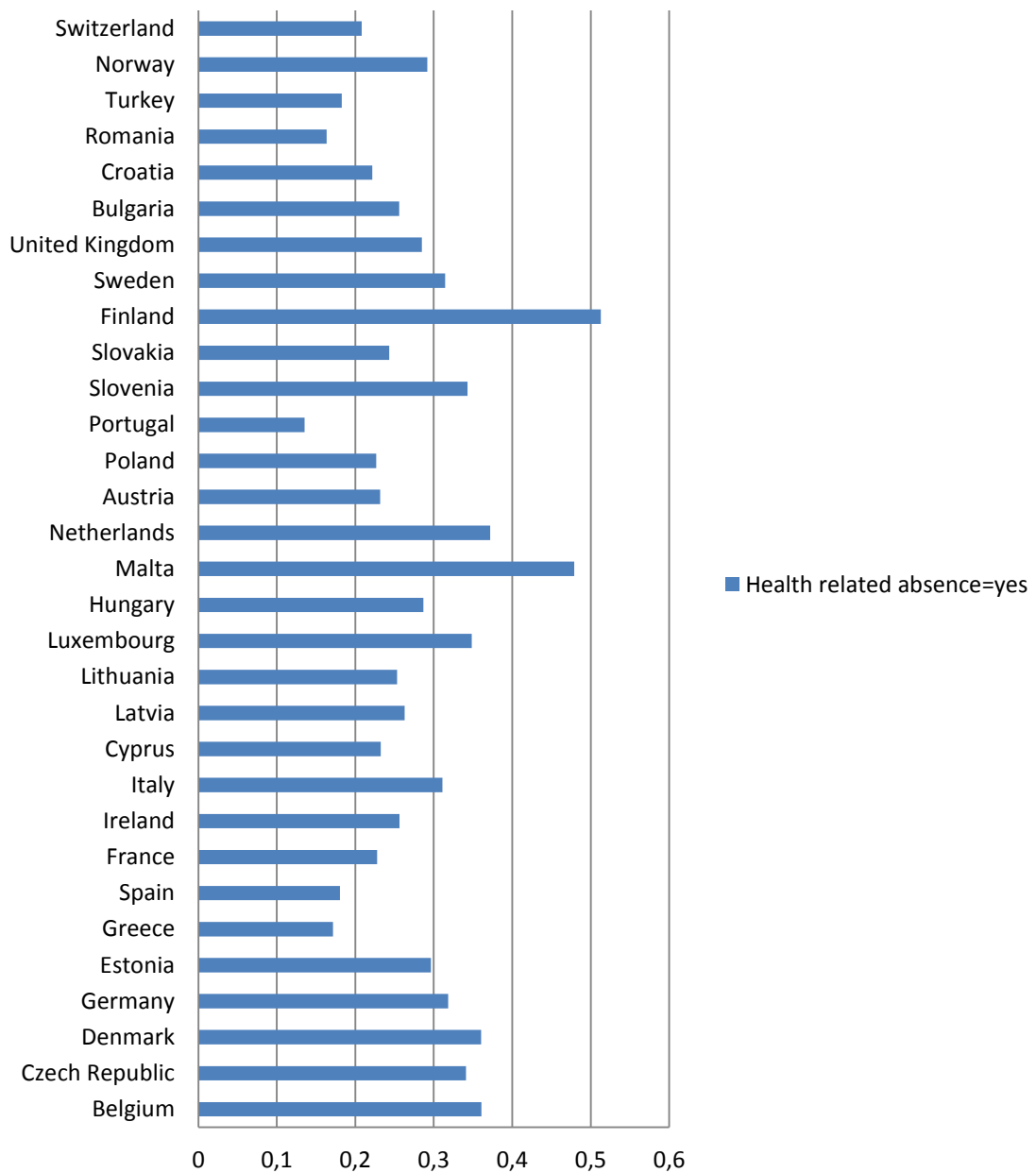
Having described the variables included in the dataset which are going to be used in this analysis, summary and descriptive statistics will now be exposed.

Finally, the regression models will be presented, firstly to pin down the effect of the wage structure on workers' effort, and then on job satisfaction.

## SUMMARY AND DESCRIPTIVE STATISTICS

Firstly, it would be interesting to look at data from the survey on absenteeism for each one of the countries included in the sample. The following graph shows the percentage of workers who took at least one day off due to health reasons in the past 12 months for each of the 31 countries in the survey:

*Percentage of workers who took at least one day off due to health reasons in the past 12 months*



Note: Data elaborated from the European Working Conditions Survey (2005) by Author's Calculations

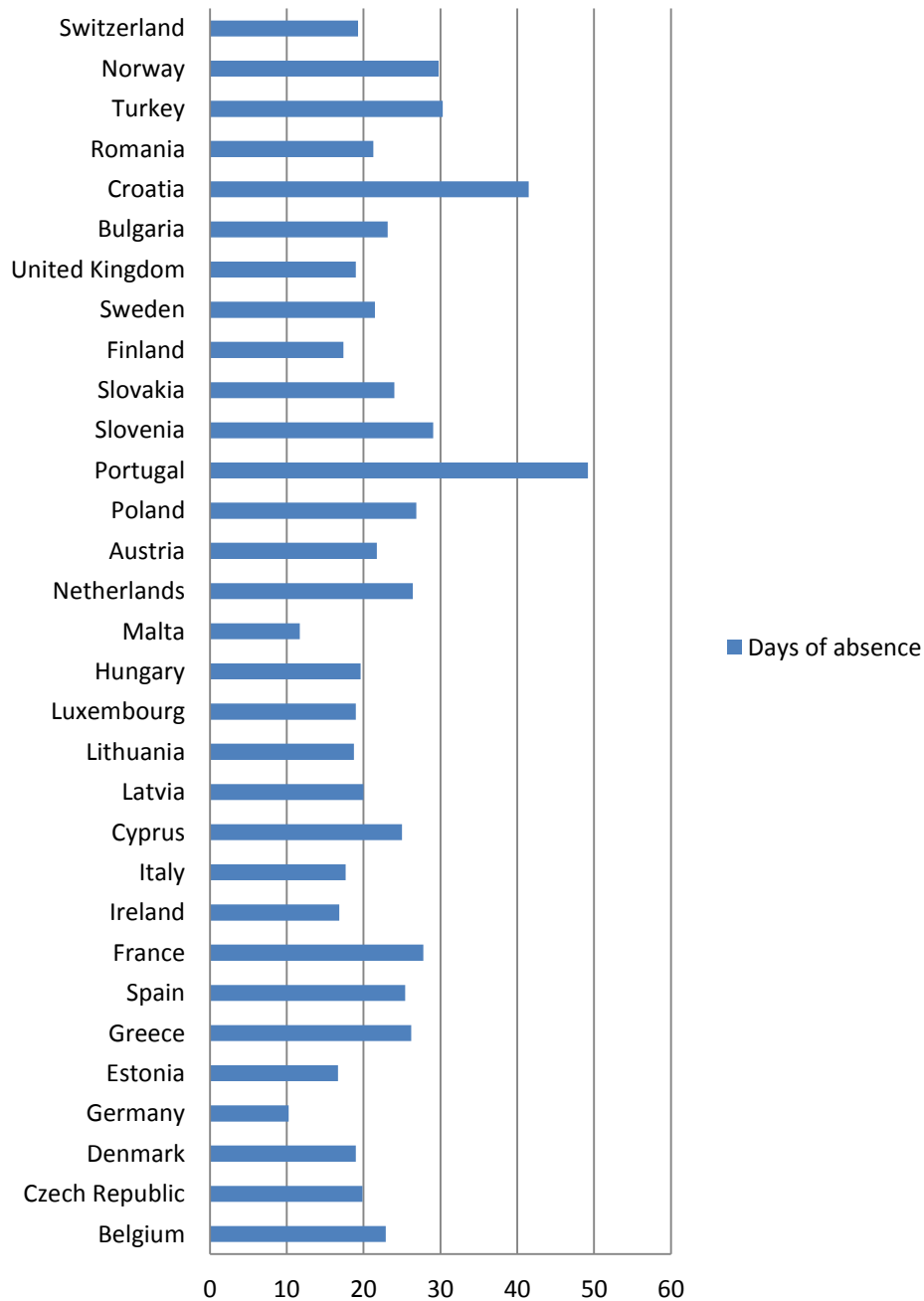


The sample average for the 31 observed countries is roughly 28%, which means 28% of the workers took at least one day of health related leave from their main paid job in the past 12 months. Finland scores the highest percentage, which is slightly above 50%. Scandinavian and Northern-Continental European countries such as The Netherlands, Belgium, Denmark, Sweden and Germany score above average, as well as Italy (31%). The UK result is in line with the average, around 28%. France, and Southern European countries like Portugal and Greece report relatively low results, Spain in particular scores only 18%. The first impression the average person looking at these data would get is that the absence rates specified on the table are surprisingly low; with only 4202 out of 14921 employees interviewed, a sample average of 28% means basically that only roughly 3 workers out of 10 have been sick and therefore absent from work in the previous 12 months. This is quite unlikely, and one possibly reason behind this is that, although feeling sick, many workers still decided not to take the day off. Otherwise, but this is an explanation which would be preferable to exclude, is that workers interviewed in the survey were not fully honest in their answers and reported not to have taken any day off due to health related matters even if they did.

The data on average days of absence per country consist of a total of 4202 observations, i.e. the number of employees who answered yes to the previous question about they had taken at least one day off work due to health related matters. The sample mean is approximately 23; this means that the average worker was absent for 23 days. In addition, the standard deviation is 7.70. The highest result, which is rather abnormal considering the sample distribution, is that of Portugal, with nearly 50 days of absence; this is distant from the sample mean in fact approximately 3.5 standard deviations. Following Portugal we find Croatia, with 41 days. Then Turkey with 30 days, and all the other countries below 30 days. Spain, France and The Netherlands are between 20 and 30 days, while The UK, Italy, and Germany are below average, with less than 20 days of absence. Germany in particular, scores the lowest result and is placed at the low end of the distribution with roughly 10 days of absence. There seems to be no correlation between the proportion of workers who took at least one day off due to sickness and the number of days of leave; the countries with the lowest

proportion of workers being absent at least once in the previous 12 months are not the same in fact as those with the lowest number of days of absence. Portugal for example registered the lowest proportion of absent workers, and the highest number of days off taken. A graphical representation is provided below:

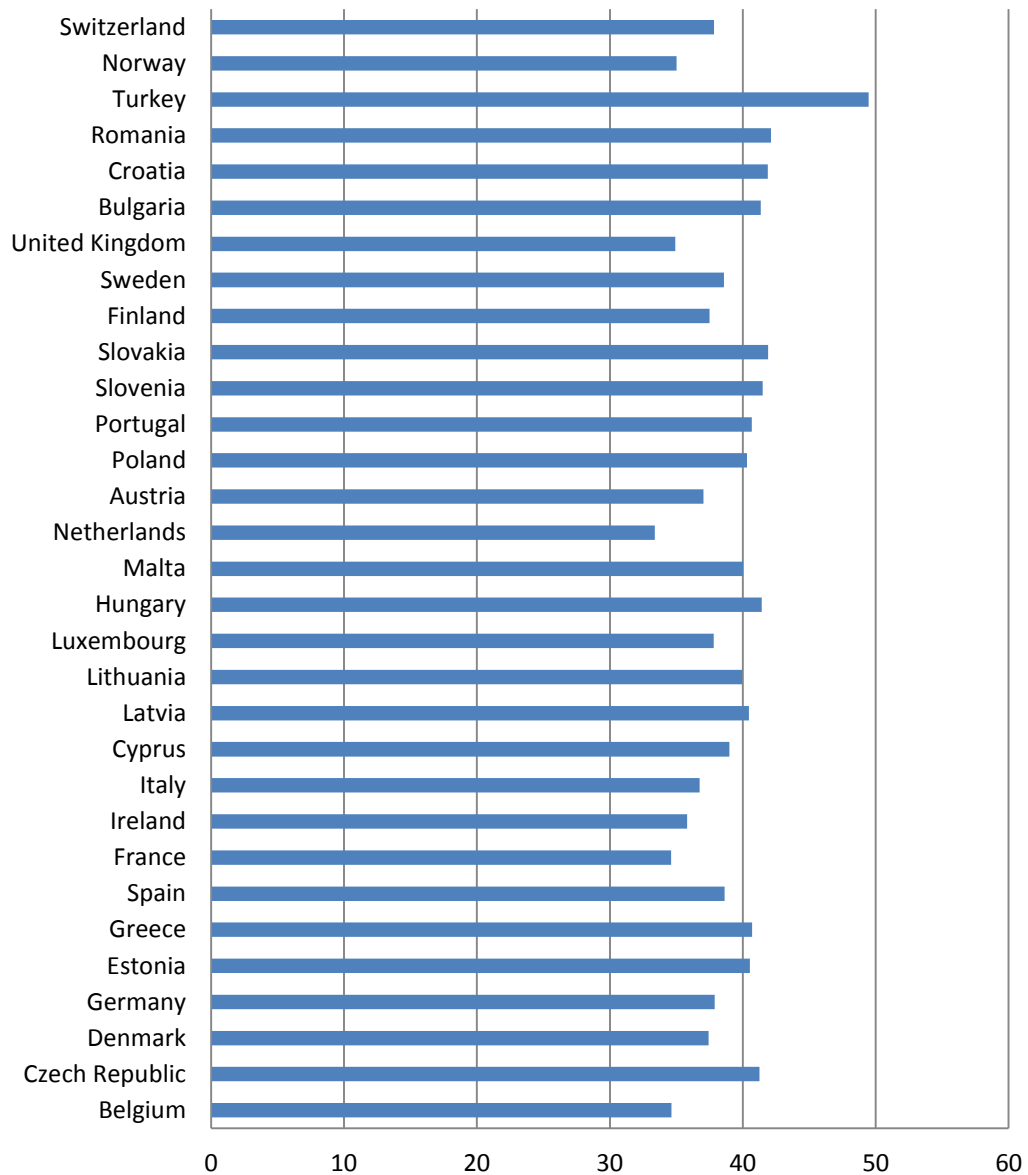
*Average days of absence in the past 12 months*



Note: Data elaborated form the European Working Conditions Survey (2005) by Author's Calculations

Having looked at data on absenteeism rates, the average number working hours per week in each country will now be examined. The sample mean is approximately 39 hours per week, with a standard deviation of 3.17, which makes the distribution quite even and not too spread out. The country where people work more is Turkey, with nearly 50 hours per week; following we find East European countries such as Romania, Bulgaria, Slovenia, Slovakia and Hungary; the rest of the countries' reported data are between 34 and 40 hours, with Spain registering 38.6 hours, Germany close to 38, Italy 36.7, United Kingdom 35 and France 34.6. At the bottom we find Belgium and The Netherlands, with slightly more than 33 hours per week. No particular trend can be identified; for example, there is no much difference between North European and South European countries, as one could have maybe expected. Only Eastern European countries present a common feature, being almost consistently above 40 hours. Graphically (on next page):

### *Average working hours per week*



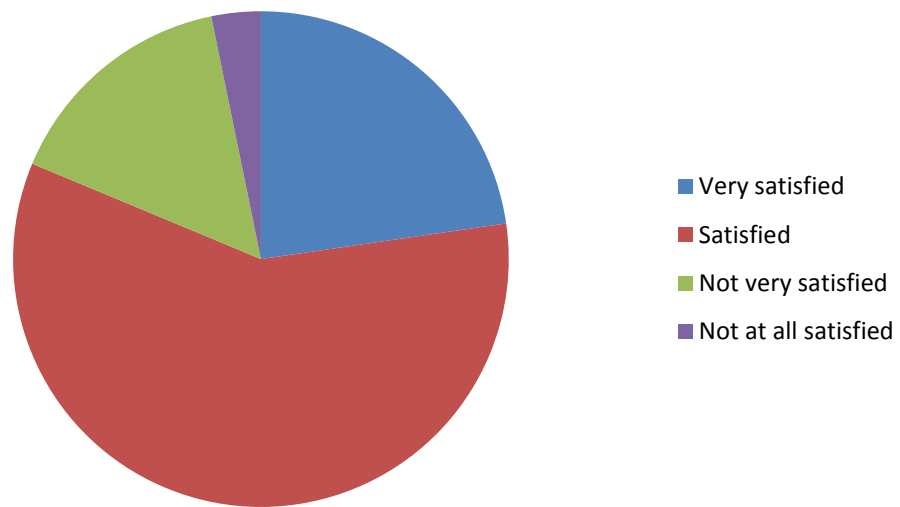
Note: Data elaborated from the European Working Conditions Survey (2005) by Author's Calculations

The next observation of interest is that regarding job satisfaction. In the sample at disposal this is represented as an ordinary variable taking values ranging from 0 to 3:

0. Not at all satisfied
1. Not very satisfied
2. Satisfied
3. Very satisfied

Overall, out of the 14921 employees questioned, 480 (3.22%) reported to be not at all satisfied, 2312 (15.49%) reported to be not very satisfied, 8742 (58.59%) are satisfied and 3387 (22.70%) are very satisfied. It is clear therefore that the distribution of data is skewed towards the “satisfaction” area.

This information can be best seen graphically as a pie chart:

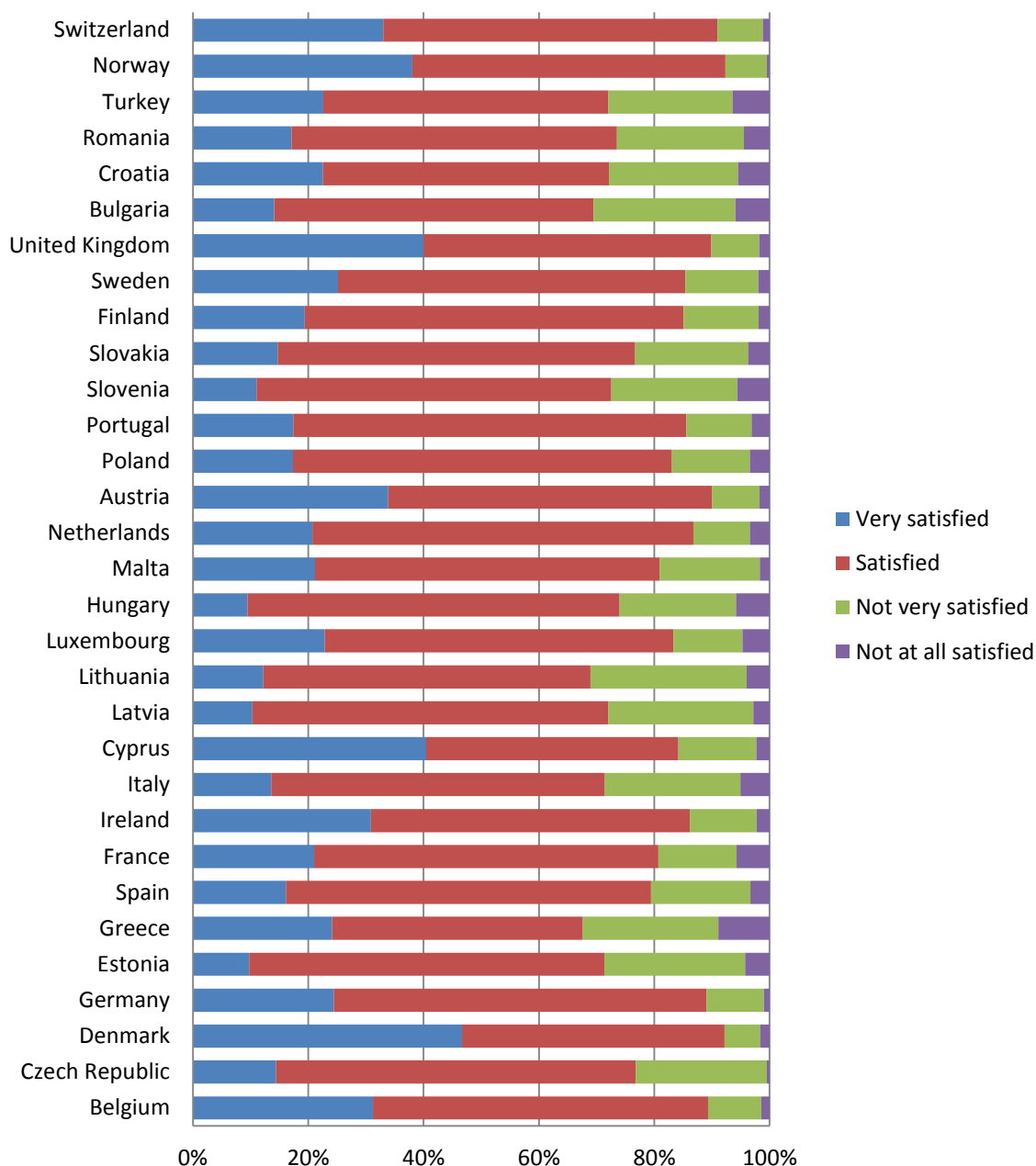


Note: Data elaborated from the European Working Conditions Survey (2005) by Author's Calculations

This graph clearly shows that the average worker in the 31 observed countries is satisfied with his or her working conditions.

Looking at data for each country, the following result comes out (on next page):

### Satisfaction with working conditions per country

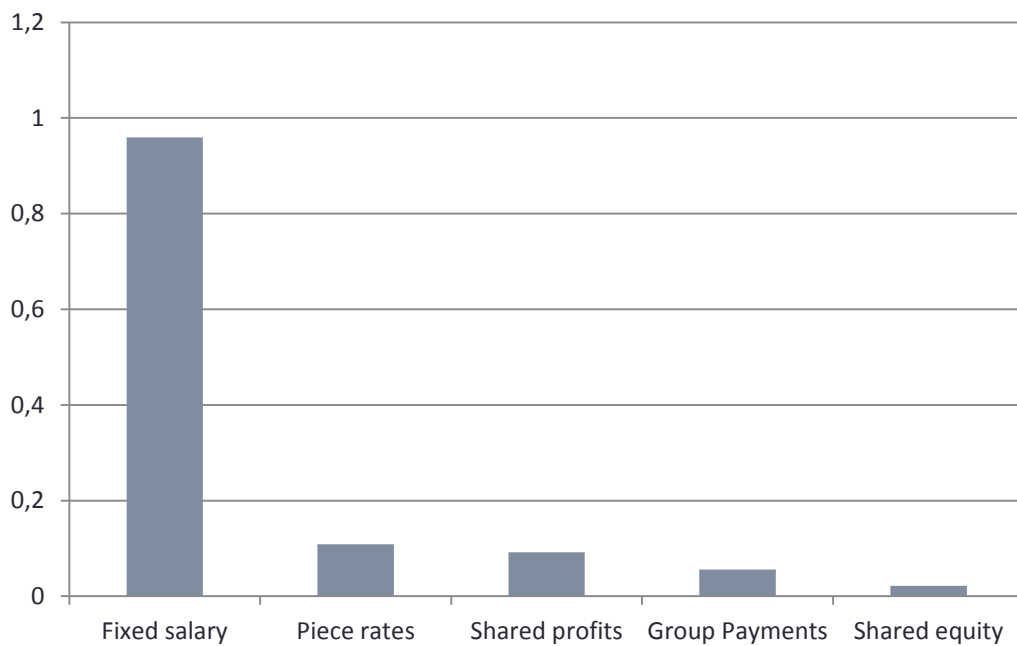


Note: Data elaborated from the European Working Conditions Survey (2005) by Author's Calculations

The countries where the level of satisfaction with working conditions is highest are, not surprisingly to many perhaps, Scandinavian countries and North European countries such as The Netherlands and Belgium. Austria and Germany also present good levels of job satisfaction. These are also the countries where GDP and economic conditions are better. The trend which can be identified is that newer member States, such as East European countries, score below

average, while the founding members do better, with the exception of South European countries Spain and Italy, where the not very satisfied and not satisfied at all components nearly reach 30%.

Data on the payment systems in use will now be analysed, firstly with a generic graphical representation of the whole sample. This histogram represents the percentages of workers who are employed with a fixed wage, piece rate, shared profits scheme, group payments or shared equity.

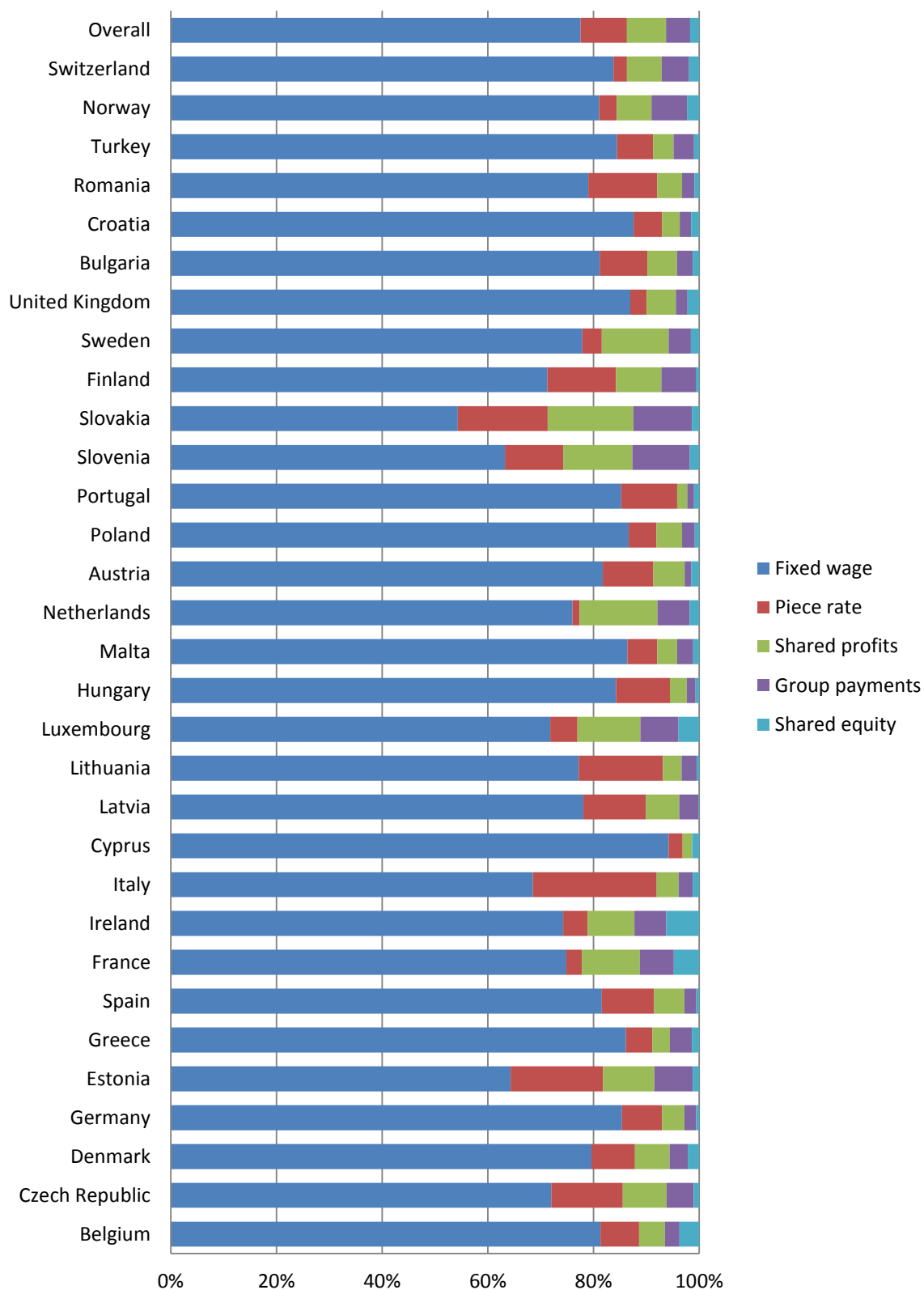


Note: Data elaborated from the European Working Conditions Survey (2005) by Author's Calculations

Fixed salary is naturally the most common form of payment; approximately 95% of the workers questioned in the 31 European countries we are looking at have a fixed component in their remuneration. The difference between the other forms of payment is striking; piece rates, which are the most used kind of alternative payments, are only employed in slightly more than 10% of the cases. Shared profit schemes, which closely follow piece rates, enter the wage equation in 9,2% of cases. Group payments characterise a percentage of workers slightly above 5%, and finally shared equity with approximately 2%.

To assess differences between countries, the following representation shows a breakdown of data. This graph shows the percentage values of contribution of each component of pay.

### Payment systems diffusion per country



Note: Data elaborated from the European Working Conditions Survey (2005) by Author's Calculations



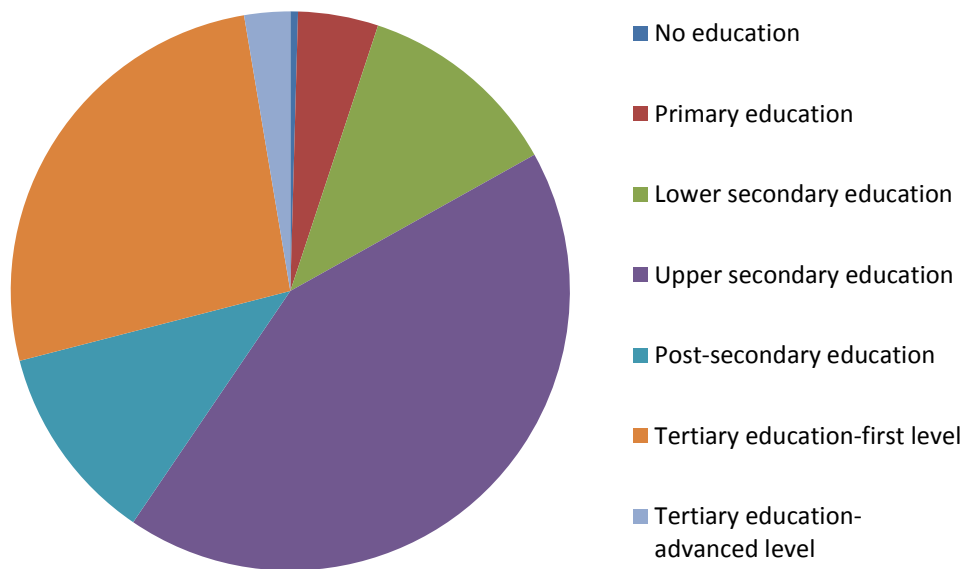
Everywhere the majority of employees have a fixed pay component in their salary; variable pay components are most common in Slovakia, where piece rates and shared profit schemes involve nearly 30% of employees alone, and Slovenia, where piece rates and group payments are employed in roughly 15% of cases, and shared profits 20% of times. Piece rates are quite common among the most industrialised countries in Italy, probably reflecting the importance of the agricultural sector in this country; 30% of the Italian workers surveyed said in fact to have a variable pay component in the form of piece rates in their salary. Group payments are most common in East European countries and partially in Norway, Finland, France and Ireland, still with percentage scores though not even reaching 10%. Shared profits are quite common in the Netherlands, where 20% of workers in the sample say to take part in such practice. Shared equity are again quite rare everywhere, with the exception of Ireland, which shows a percentage close to 10%, and France, where the percentage is slightly above 5%. The overall impression is that alternative and variable payment forms, financial participation in particular, are rarely used in Europe. Due to potential high benefits which could be derived from the employees' participation in their companies' stakes, the European Commission in 2002 has indicated as a key policy objective the promotion of financial participation policies in the Union (McCartney, 2004).

Having looked at the main summary statistics concerning the variables closest to the aim of this paper, involving data on absenteeism, working hours, job satisfaction and wage structure, we shall now briefly pin down the most important features of the other variables used in the model, specifically those which have a control function.

The mean workers' age is 41.5 years old; out of 14921 employees, 7947 (53.26%) are females, while 6974 (46.74%) are males. The mean job tenure, i.e. the number of years the subject has been in his or her job organisation is approximately 10 years; the mean experience of the workers, measured as the

number of years of paid employment since the age of leaving school, in instead nearly 20 years.

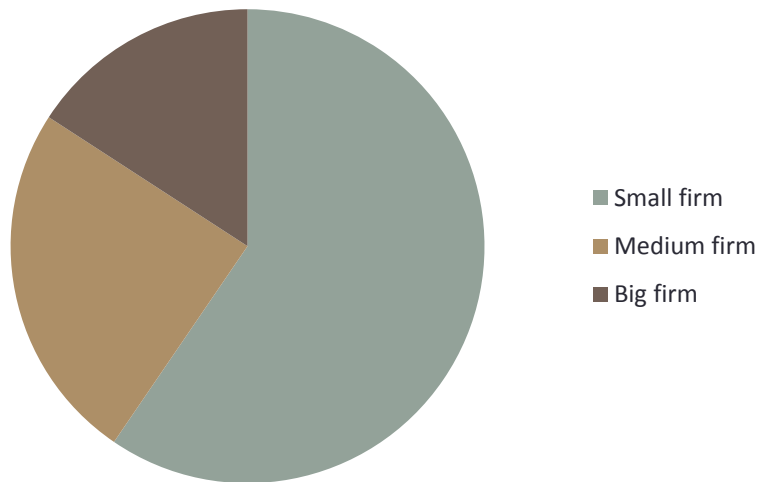
The level of education achieved by the workers in the sample, which is expressed by the ISCED (International Standard Classification of Education) classification, can be summarised by the following pie chart:



Note: Data elaborated from the European Working Conditions Survey (2005) by Author's Calculations

The majority of workers, 42.6%, dropped out of school with an upper secondary education diploma; the second biggest percentage group (approximately 26%) represented in the chart is that of workers who achieved the first level of tertiary education, which could be associated to bachelor's and master's degrees. Lower secondary education and post-secondary educational levels are present with similar percentages (approximately 12%). Furthermore, workers who left school with a primary education diploma are 5%, while those who achieved the highest level of education, associated with a PHD, are 3%. Finally, illiterate workers are less than 1%.

Looking at firm size, it can be noticed that the majority of workers (60%) are employed in small (1 to 50 employees) establishments; 25% of the employees in the sample work in medium firms, while 15% work in big firms (over 250 employees). Graphically:



Note: Data elaborated from the European Working Conditions Survey (2005) by Author's Calculations

Furthermore, 60% of the workers are employed in the private sector, 13% work part-time and 25% of workers have partial or complete autonomy in deciding their own working hours (flexitime).

Finally, the majority of workers – roughly 90% - has a permanent type of contract.

## *ESTIMATION RESULTS*

The first regression analysis tries to identify the effects of the wage structure, in terms of fixed salary, piece rate payments, group payments, shared-equity and shared-profit schemes on the effort of workers; a few more control variables were also added. Two different models have been used: the first one is a probit regression, where workers' effort is expressed in terms of absenteeism rates, i.e. a dummy variable indicating whether the employee has been absent in the previous 12 months due to health related reasons; the table 1 below shows the marginal effects for each variable observed. In the second model, the independent variable is weekly working hours, which is used as a proxy for effort. In this second regression it is important to denote the fact that the variable flexitime has been employed to control for the degree of freedom workers have in choosing their working hours arrangement.

Table 1

<i>Variables</i>	<i>Health-Related Absence=1</i>	<i>Weekly Working Hours</i>
<i>Fixed salary</i>	-0.00503 (0.0204)	-0.417 (0.384)
<i>Piece rate</i>	0.00858 (0.0133)	0.291 (0.228)
<i>Shared profits</i>	0.0341** (0.0150)	0.215 (0.219)
<i>Group payments</i>	-0.00963 (0.0174)	0.325 (0.271)
<i>Shared Equity</i>	-0.0152 (0.0261)	1.126** (0.537)
<i>Male worker</i>	-0.0354*** (0.00799)	2.202*** (0.134)

<i>Permanent contract</i>	0.0174 (0.0129)	-0.268 (0.260)
<i>Part time</i>	-0.00256 (0.0118)	-14.37*** (0.218)
<i>Private sector</i>	-0.0392*** (0.00841)	2.309*** (0.137)
<i>Tenure</i>	-0.00108** (0.000519)	-0.0202** (0.00851)
<i>Work experience</i>	0.00132 (0.000820)	0.0690*** (0.0134)
<i>Age</i>	-0.00162** (0.000813)	-0.0672*** (0.0128)
<i>Medium ISCED</i>	-0.0332*** (0.0114)	-2.382*** (0.511)
<i>High ISCED</i>	-0.0577** (0.0243)	2.008*** (0.5397)
<i>Small firm</i>	-0.0439*** (0.0110)	-0.351** (0.172)
<i>Medium firm</i>	0.00490 (0.0119)	-0.443** (0.188)
<i>Flexitime</i>	-0.0107 (0.00931)	1.492*** (0.161)
<i>Constant</i>		41.94*** (-1.171)
Observations	14,921	14,921
R-squared		0.398
Country dummies	Yes	Yes

Note: \* significant at 10% - \*\* significant at 5% - \*\*\* significant at 1%). Base groups: Low ISCED; Big firm.

Overall, the effect of payment systems is difficult to pin down, and significant coefficients are hard to find. In the probit model with the probability of absence as independent variable, only the coefficient on shared profits is significant at 5%, with a positive sign. The magnitude of the effect is 0.0341. This means that adopting a profit sharing scheme increases the probability of absence from work by approximately 3.4%, i.e. employees engaged in profit-sharing schemes are 3.4% more likely to take a day off work due to health reasons in a 12 month time lapse, keeping all the other variables in the model constant; this could be evidence of a shirking behaviour of employees, or more generally due to issues within corporate culture. It can be also noticed that the coefficient on male is negative and significant at any reasonable level, indicating that men are less likely than women to be absent from work due to health reasons. Furthermore, the coefficient on private sector is negative and significant at any level; a worker employed in the private sector is then roughly 4% less likely to be absent from work than someone who works in the public sector, keeping all the other variables constant. Another important observation can be made looking at the coefficient on small firm, which is negative and significant at 1%: who works in a small firm is then less likely to be absent, everything else being equal. Age and tenure both have a negative sign, and are significant at 5%. Finally, it can be noticed that the coefficient on medium ISCED and high ISCED have a significant negative sign, with a magnitude of respectively 0.0332 and 0.0577; at higher educational levels correspond therefore lower absenteeism rates.

When weekly working hours are used, the only variable of interest which could be looked at is equity sharing, which is significant at 5% with a positive sign and a coefficient equal to 1.126. Keeping all the other values constant, employees which are involved in an equity sharing scheme will therefore work 1.126 hours more per week. The coefficient on male is positive and significant at any level, and shows that men work approximately 2 hours more per week than women. Who is employed in the private sector works more, roughly 2 hours extra per week, and so does who is engaged in a flexitime working arrangement, 1.5 hours

more per week. It can be also noticed that while the coefficient on medium ISCED is negative, the one on high ISCED is positive, and both are significant at any level. Keeping everything constant, who has a medium level of education works less than someone with low education, while who has got a high ISCED level works more hours than someone with a low ISCED score.

The second regression analysis run in this paper looks at the effect of the wage structure on job satisfaction, using an ordered probit model. This is the outcome of the model, represented here in table 2:

Table 2.

<i>Variables</i>	<i>Job Satisfaction</i>
<i>Fixed salary</i>	0.129*** (0.0500)
<i>Piece rate</i>	-0.0790** (0.0313)
<i>Shared profit</i>	0.150*** (0.0358)
<i>Group payments</i>	0.0207 (0.0421)
<i>Shared equity</i>	0.295*** (0.0681)
<i>Male</i>	-0.0679*** (0.0198)
<i>Permanent contract</i>	0.0637* (0.0335)
<i>Part time</i>	-0.0130 (0.0304)
<i>Private sector</i>	-0.0941*** (0.0208)
<i>Tenure</i>	0.00298** (0.00130)

<i>Work experience</i>	-0.000922 (0.00211)
<i>Age</i>	0.00367* (0.00209)
<i>Medium ISCED</i>	0.105*** (0.0276)
<i>High ISCED</i>	0.210*** (0.0697)
<i>Small firm</i>	0.168*** (0.0274)
<i>Medium firm</i>	0.0802*** (0.0301)
<i>Flexitime</i>	0.222*** (0.0240)
<i>Constant/cut1</i>	-1.808*** (0.129)
<i>Constant/cut2</i>	-0.800*** (0.128)
<i>Constant/cut3</i>	0.934*** (0.128)
Observations	14,921
Country dummies	Yes

Note: \* significant at 10% - \*\* significant at 5% - \*\*\* significant at 1%). Base groups: Low ISCED; Big firm.

The effects of fixed salary, shared profits and shared equity are all significant at 1%; the coefficient on piece rates is significant at 5%, while the effect of group payments is not significant at any reasonable level.



To interpret the signs of the coefficients correctly, it is crucial to remember that the independent variable job satisfaction is expressed as an ordinary variable taking values from 0 to 3, and that at higher values correspond higher levels of job satisfaction. The coefficient on fixed salary for example has got a positive sign; this means that, everything being else equal, a worker with a fixed salary will be more satisfied and “happier” than someone else without a fixed salary in their compensation scheme. This is perhaps not surprising; since effort enters the workers’ utility function with a negative sign, so that working more will have a negative impact on the utility derived from doing their job, a salary structure independent of effort levels and performance such as fixed salary is generally appreciated by most employees. The coefficient on piece rates has a negative sign; someone therefore who gets paid for what he or she produces, is less satisfied with their working conditions than someone else who does not, keeping all the other factors constant. This is probably due to the fact that a person who gets paid according to the value of his or her output in the company’s overall production, will have to work more to earn more, and people generally dislike working. Shared profits and shared equity schemes also enter the equation with a significant positive sign, making workers more satisfied. It seems therefore that employees positively value their stake in the company’s activity; this could be due either due to a deeper feeling of belonging which may arouse from being active part in the company ownership, or taking a more materialistic view the positive sign could be down to enhanced profits prospects.

Some other variables included in the model also show interesting results. The coefficient on male is negative and significant at any level, which means that male workers are on average less satisfied than women. The coefficient on private sector also is negative and significant at 1%, denoting the fact that private sector employees are less happy than public sector employee for some reason. Tenure is positive and significant at 5%, so that being in the same company or organisation for many years makes the worker more satisfied. The coefficients on medium and high ISCED are positive and significant at any

reasonably level, indicating that at higher educational levels correspond higher degrees of job satisfaction. Also, both the coefficients on small and medium firm are positive and significant at 1%: who works in small to medium establishment is more satisfied than who is employed in a big firm. Finally, it is interesting to notice that the coefficient on flexitime is positive and significant at any level, so that more autonomy in choosing working hours arrangement is appreciated by the employee.

## ***CONCLUSIONS***

In the light of the analysis carried out in this paper, a few conclusions can be drawn.

The agreed wage to be paid, together with the fulfilment of the performance due, is the subject matter of any lawful employment contract; it follows that the choice of how to pay out the agreed job compensation is crucial. In other words, a wage structure must be decided, and the final amount of payment will depend on this. Salary enters the workers' utility function with a positive sign, so that the higher the wage, the higher the utility derived from work; it is in the best interest of employers naturally that workers deliver a high performance, and exert high effort levels, and it was the aim of this paper to see what could be the effect of different kinds of wage structure on workers' effort; this was represented through two variables: absenteeism, in the form of health related leave, and weekly working hours. In the model outlined it was found that the implementation of a profit-sharing scheme positively affects the probability of being absent from work, with a magnitude of around 3.5%; this result is in line with Freeman's and alt. analysis (2006), who find that a shared-compensation payment system, although not necessarily in the form of a profit-sharing scheme, will increase absences from work. This can be evidence of a free-riding behaviour of employees. When looking at working hours though, a positive correlation is found between equity-sharing programmes and the number of hours worked per week, while the coefficient on profit sharing is not significant in this case. This suggests that not every financial participation scheme is the same: while profit-sharing schemes seem to increase absences from work, on the other hand an equity sharing system will increase working hours, with a magnitude of slightly more than 1 hour per week. The difference between the two systems is that while profit-sharing schemes link collective bonuses directly to the profits of the firms, share-based schemes transfer part of the ownership of the company itself

to its employees, who benefit then from good company performance through capital gains in the stock market and dividend pay-outs. The perception of shared-capitalism payment policies therefore can vary: while profit-sharing induces free-riding behaviour, raising absences, equity-sharing makes employees work more. The other variables related to the wage structure such as fixed salary, piece rates and group payments have a non-significant effect neither on absenteeism nor on working hours.

The effect of the wage structure on job satisfaction was found in general clearer and more significant; fixed salary, equity sharing and profit sharing all have a positive significant effect on job satisfaction at any reasonable level. It is perhaps not surprising that someone with a fixed salary will be happier with their working arrangement than someone without; a fixed stream of earnings which does not depend on any specific condition is surely the safest option, and it is therefore appreciated by many workers who say to be satisfied. A different consideration must be made regarding equity sharing schemes; their positive effect on job satisfaction could in fact be due either to enhanced earning prospects, or to good workplace outcomes which often go along with this kind of payment policy. It is possible that workers value positively not only the higher overall compensation that a shared-equity system might bring to them, but also the feeling of belonging to the company which is generated, which can be picked up by the coefficient on equity-sharing. In other words, becoming part of the firm's ownership makes employees more satisfied with their working conditions because they feel more engaged in and an integrated part of the company's activities, and employees value participation and responsibility in their tasks. A guess which can be made is therefore that firms who adopt a shared-equity scheme might have a better corporate culture, which is reflected in more satisfied employees; this reasoning is also backed up by the previous result, which found that employees engaged in a shared-equity programme work more. Profit sharing schemes are also positively and significantly correlated with job satisfaction, indicating that employees are happy with receiving salary bonuses

linked to the firms' profits. The negative effect of piece rates on job satisfaction could be due to a monitoring problem; perhaps employees may feel like they are not adequately compensated according to their personal contribution in terms of output levels, and therefore are not happy. Otherwise, as already hinted previously, it may be simply the case that under a piece-rate system workers will have to work more to earn more, and that is not generally appreciated.

Having said all this, it can be concluded that monetary incentives and alternative payment solutions play an important role in the firm's environment, especially in determining important workplace outcomes such as job satisfaction. The choice of a salary structure is strongly case-sensitive: while a piece-rate system could be best in some conditions, financial participation schemes could be best in others. A wage structure which would benefit both the employee, in terms of job satisfaction and utility from work, and the employer, in terms of performance and output levels, is surely hard to come up with. The evidence provided in this paper seems to suggest though that an equity sharing programme would probably be an efficient solution, thanks to its strong positive effect both on effort levels, in terms of working hours, and employees' satisfaction.

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