Research Memorandum

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Individual Remuneration

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1 Introduction

People in different jobs have different kinds of pay arrangements. Pay elements like bonuses, stock options and other kinds of performance related pay are often paid in addition to or instead of the base salary. In recent years, there has been much discussion in the Netherlands about 'extra' wage elements paid by employers to part of their employees. Labour unions are concerned that this introduces inequality between workers.

Why do differences in pay practices exist? Can they be explained by economic theory, and if so, what are the determinants? In this paper, we discuss some relevant theories and test those theories empirically with our data for the Netherlands.

There are several theories which give insight in what might be reasons for different pay practices. None of those theories exclude the other, and the theoretical concepts in this field are not so clear as in other fields of labour economics. Many theories fail to specify an alternative hypothesis and therefore, many empirical results are in line with more than one theory (Pendergast, 1996). Furthermore, until recently appropriate data were lacking to test the different theories.

As a general framework we start with a wage negotiation model for an individual worker with more than one method of pay. Crucial is that there is lack of information about the ability or effort of the worker. Next we discuss why employers would want to introduce individual remuneration. One approach stresses the productivity gains that are achieved by better tying pay to performance. This is in line with efficiency wage theories and principal-agent theories. Profit sharing theories, or stability theories, have taken a different approach. Following Weitzman (1984), employers have an incentive to 'share' their profits with employees, because in this way total compensation becomes more flexible. On the macro level this form of profit sharing results in lower unemployment and more stable employment (Weitzman, 1984; Jerger and Michaelis, 1999).

If workers have a choice between a job with only a base salary and a job with lower base salary and (a lot of) extra pay elements, workers with high unobserved ability will choose the job with individual remuneration. Since these are also the more productive workers, individual remuneration can lead to sorting of high and low ability workers (Lazear, 1986,1996; Booth and Frank, 1999). This selection effect is discussed in section 4.

Finally we investigate in section 5 what corporatist theories can contribute to our understanding of individual remuneration. As wage negotiations take place at a higher

level of negotiation in more corporatist economies, the link with individual performance is likely to be less important. Hence, individual remuneration is more likely to occur in a non-corporatist wage setting environment.

We can test some of the theories mentioned before on unique large micro datasets for the years 1992 to 1997. These data sets contain a large number of remuneration elements on the basis of firms' personnel files. Advantage of usig detailed wage data on the individual level is that it gives a much better description of real life events than macro or even establishment level data. Our analysis confirms the productivity/selection theories that stress the role of individual remuneration as a monitoring or selection device. Also, corporatist theory is confirmed by our estimations, indicating that corporatism leads to less use of individual remuneration. Profit sharing as advocated by Weitzman does not seem to play an important role in the Netherlands.

2 General framework

We start with a wage negotiation framework for an individual worker with imperfect information which shows the general features of wage bargaining with multiple wage components[1]. Key elements of this model are that effort can not be monitored directly, but only be approximated by performance criteria. These criteria are linked to different pay elements, where their relative importance are measured by commission rates.

An employee performs different activities during a working day. Working on several different tasks within a job can be translated into allocating effort to a number of different activities: $i = 1,...,K$, denoted by e_i. The efforts of the worker can not be monitored directly, because of information problems. Indirectly, (a part of) his or her efforts can be approximated by a set of criteria $C_j = (C_1,..., C_L)$:

$$C_j = F_j(e_i,...,e_k) \qquad j = 1,...L \tag{1}$$

Where F_i corresponds to functions relating the individual performance $e= (e_1...e_K)$ to some criterion, such as profit, revenue, costs or a more subjective performance measure. With this information at hand the employer can decide whether or not to pay the employee incentive payments. Total payments are defined as:

[1]See for a more extensive discussion of such models Holmstrom and Milgrom (1994) and Macleod and Malcomson (1998).

$$W_t = \sum_j \lambda_{j,t} C_{j,t} + S_t \quad (2)$$

The coefficients $\lambda_{j,t}$ are the 'commission rates' paid in period t, i.e. the bonuses or incentives paid for a certain task. S_t is the base salary in period t, which is independent of effort. The total number of criteria that can be used depends in general on job characteristics and firm characteristics (MacLeod and Parent, 1999)[2].
Utility for an employee is defined as:

$$U_t = W_t - \sum_i d_{i,t} e_{i,t} \quad (3)$$

where W_t is the total wage (base salary and IR) and $d > 0$. The profit for the firm per worker is defined by:

$$\Pi_t = Q(e_t) - W_t \quad (4)$$

Where Q is marginal product of the firm.
We assume that both parties maximize their current and future utility, depending on total wage W_t, efforts and production. Different theories have different things to say about the outcome of this process. These differences are caused by different assumptions about the scope and extent of monitoring, the nature of contracts and the behaviour of workers. We will discuss these different theories in the next three sections.

3 Employers' rationale for introducing performance related pay

Employers are in most cases strongly in favour of increasing the share of individual remuneration (IR) in total compensation. Presumably, they have something to gain by paying part of the wage tied to performance[3]. Three main reasons emerge from the literature. First, when employers have problems with monitoring, IR can result in more productive workers because workers will work harder or smarter. Second, when firms

[2] It is possible that there are efforts which are not related to any criteria. This will be discussed in section 3. For convenience we do not elaborate on that possibility in this section. In this model, it is sufficient to assume that the commission rates for these kinds of efforts equal zero.

[3] Performance related pay can be directed at performance at the individual level, but also at the firm level. As long as the pay element has a relation with incentives or individual circumstances, we consider it to be individual remuneration.

have high profits, they often pay workers more. Hence, IR can be a form of rent sharing. Third, wages can become more flexible if IR is paid instead of base salary. Hence, wage costs will be reduced easier when the product market slackens. This is an advantage for the firm at the micro level. Also, it can result in more stable employment and even lower unemployment at the macro level.

3.1 Enhancing productivity

Much of the recent theoretical work on pay practices focuses on how to motivate employees to work harder or smarter when it is difficult to monitor their effort (Kruse, 1993; Lazear, 1996). In general, there are two solutions possible. First, if there are no output measures and/or monitoring is too costly, an employer can pay an efficiency wage (higher base salary). In this way employees are motivated to work harder because shirking may lead to a considerable loss of income (Shapiro and Stiglitz, 1984)[4]. Second, if monitoring is not too costly, and individual output can be measured, performance related pay can be introduced. This relates to the principal-agent theory (MacLeod and Malcomson, 1989). In these theories, payments must be based on some measure of performance. If monitoring is relatively cheap compared to increasing wages, employers will choose for direct incentives (i.e. IR) instead of higher base salaries.

The costs of monitoring and the possibility to use output measures depend on job and firm characteristics. When the tasks an employee has to perform become more complex, it is more difficult to monitor the performance. Hence, when it is still possible to monitor performance, more complex jobs are expected to have more IR. However, when the job content become too complex, monitoring by IR becomes impossible. This is for instance the case with very creative jobs. Monitoring problems are more common in larger firms, because in larger establishments hierarchy lines are longer and it becomes more difficult to control workers' output. Also, peer pressure is less present[5]. The relation between the nature of the production process and IR is not that easy to ascertain. In general, when workers are unable to adjust their effort because of the nature of the production process, (e.g. assembly line work) employees would prefer to be paid the

[4]If a workers shirks, he will risk being laid off when shirking is discovered. If the difference between the outside alternative and the efficiency wage is large enough, the employee will not risk shirking, because he will loose too much.

[5]Peer pressure refers to monitoring by colleagues, also called horizontal monitoring (Jones, Kato and Pliskin, 1994; Kandel and Lazear, 1992). In larger companies this is less effective because of larger group sizes and less acquaintance with colleagues (Lazear, 1991).

base salary. If they have more control over their pace of work, IR will be used more often.

The possibility to use output measures, depends also on the preferences of employees, human resource policies and the nature of the production process. In non-profit organizations, the output of the production process has no relation with profits. Hence, it is more difficult to evaluate outputs of individual workers in terms of the contribution to the firms' targets, because they are not expressed as profit maximization, but as some more vaguely described goal, such as satisfying customers[6].

If we assume that employers always want to use the performance criteria that are available (depending on possibilities to monitor and costs), and at least part of the work force is risk averse, i.e. prefer a base salary above IR, the possibility to use IR depends on the relative strength of both parties. As a result we expect IR to be lower in unionized sectors, while the base salary is higher. Instead of using pay for performance as a way to overcome the monitoring problem, efficiency wages (=higher base salaries) are used.

Also human resource policies can play a role. Human resource theories predict that firms will set up their pay policies in line with their company goals. From this perspective, firms operating in a highly competitive product market with huge growth perspectives need to attract personnel which is also highly competitive and risk taking. This kind of employees in general prefer flexible performance related pay above a stable base salary. Therefore, by adopting a certain pay strategy, firms can select employees with the abilities needed in that company.

3.2 Rent sharing

Until now, we have assumed that the method of pay only depends on monitoring problems and possibilities to overcome these problems. It is however likely that the firm's ability to pay plays a crucial role as well.

There are two explanations why employees can share in the rents of firms. First, in the absence of collective bargaining, the obvious explanation for this is that workers expect to be paid more if the firm is profitable. This can explain that wages will be high when (lagged) profits per worker are high. If there is collective bargaining, the degree of rent sharing in a particular firm will vary with the level of bargaining. Estimates

[6]In many cases, also in non-profit organizations output and/or input is quantitatively measured. But to measure the relation between efforts and performance remains more difficult, as long as there is no market-based mechanism.

indicate that rent sharing will be more common with bargaining on the (decentralised) firm level than on higher levels (Kouwenberg and van Opstal, 1999).

An alternative explanation of rent sharing (i.e. the correlation of wages and profitability) is the theory of 'expense preference' (Layard *et al.*, 1991). According to this, managers do not only like profits but also a peaceful life. Peace can be bought by higher wages. Hence, when profits are high, part of them are spent on wages.

If IR is paid as a form of rent sharing, it must be paid as a complement to the base salary. Workers at rent sharing firms who are paid IR in addition to their base salaries must earn a higher total remuneration than workers in non rent sharing firms.

3.3 Enhancing micro flexibility and macro stability

According to the profit sharing theory (Weitzman, 1984, 1985) employers prefer to pay a profit or performance related pay instead of a base salary because this enhances the flexibility of labour costs. If part of the wage depends on the performance of the firm, there is less wage rigidity. When the performance of the company deteriorates, nominal wages of employees will automatically decline and firms do not have to adjust their total wage bill by reducing employment. This will give these companies a competitive advantage over firms without profit sharing. As a result, employment can level or, compared to companies without profit sharing, even increase. On the macro level this results in lower cyclical unemployment, and as shown by Jerger and Michaelis (1999) can also result in lower structural unemployment. This was exactly the argument used by the British and American government to promote profit sharing (Kruse, 1993; Booth and Frank, 1999).

This relation between wages and employment is only possible when profit related remuneration and base salary are substitutes. If this is not the case, individual remuneration is paid in addition to the wage, and not instead of the wage. Hence, no positive effects for employment emerge. On the contrary; wage levels in firms with profit-sharing will in that case be higher than in firms without profit sharing.

4 Employee's rationale for IR: sorting effects

In the previous section, we showed that employers have reasons to favour IR. The question here is, what do employees gain by it? When employers have problems measuring the input of the worker (effort), employees have an incentive to choose between jobs with IR and jobs without IR (Lazear, 1996; Parent, 1997). Their production not only depends upon their effort as in formula (4), but also on their abilities (I). Hence profits become:

$$\Pi_t = Q(I, e_{i,t}) - W_t \tag{4}$$

Ability divides in two components (Booth and Frank, 1999): freely observable ability (I^o), e.g. measured by education level and formal training, and for the firm unobservable ability (I^u). Actual ability is $I = I^o + I^u$. The distributions of unobservable and observable abilities are independent, and effort and ability are either complementary or substitute factors in production. Workers know their own observable and unobservable ability.

The base salary only depends upon observed ability $S(I^o)$ and IR depends upon output measures (production), as in equation 2. Therefore, if an employee maximizes utility, he maximizes wages with a minimum of effort (equation 3).

Suppose there are two kinds of establishments; those who pay part of the wage as IR and those who do not. We assume that always some part of the wage is paid as base salary, because workers will under normal circumstances be risk averse (Fernie and Metcalf, 1999). The choice for a firm to pay IR depends on reasons discussed in the previous section. We consider the case of monitoring costs. Firms with high monitoring costs will be less likely to consider to pay IR. These firms choose to pay efficiency wages.

At a certain salary level $S(I^o)^s$ of a salary firm (this wage can be an efficiency wage and hence higher than the market clearing wage $S(I^o)^m$), the employee will determine whether this wage is more or less than he can earn at the IR firm, which equals:

$$W_t(C_{j,t}) = \sum_j \lambda_{j,t} C_{j,t} + S_t \tag{2a}$$

While the base salary can be lower at the IR firm, workers with high unobserved ability can find it profitable to work at the IR firm, because the first term $\sum_j \lambda_{j,t} C_{j,t}$ will be higher with the same effort $d(e_i)$ than for workers with low unobserved ability. Hence U_t will be higher for these group of workers. This introduces a selection effect. Workers with high unobserved ability will always choose for the IR firm, and hence earn a higher total wage. Workers with lower unobserved ability choose for the high monitoring cost salary

firm and produce as expected according to their observed ability, but less than their colleagues in the IR- low monitoring cost-firm. The wage differential between both firms can be interpreted as the productivity differential (Booth and Frank, 1999):

$$\Delta Q(I,e_i) = \sum_j \lambda_{j,t} C_{j,t}(I^u,e_i) + (S_t(I^o)^{IR} - S_t(I^o)^s) \quad (5)$$

So, in empirical research, the effort effect *together* with the selection effect can be measured as the earnings differential between IR and salaried employees.

5 Corporatism

In a dynamic setting the model of section 2 becomes a repeated game with at least two periods. In the first period, the firm makes a wage offer to the employee (W_1), consisting of a salary (S_1) and an incentive scheme ($\sum_j \lambda_{j,1} C_{j,1}$). When the employer and employee cannot reach an agreement about an employment relation, they get their outside option, Π^{out} and U^{out}. These outside options are the market alternatives for the current employment relation, not accounting for reputation effects[7]. Both outside options can only be estimated for future periods, and can change because of random shocks, such as inflation, changes in the labour market situation, tax-changes, changes in product-prices of an entire industry, technological shocks, et cetera. Only at the end of each period, the true value of Π_t^{out} and U_t^{out}. becomes known to each of the participants (the other party does not know the true value). If a relation is expected to be profitable because profits for the firm or utility for the employee are higher than the outside options ($U_t > U_t^{out}$ and/or $\Pi_t > \Pi_t^{out}$), this gain can be divided in such a way that both parties will stick to the arrangement.

How do parties agree on such a long-term agreement? A key assumption in this theory is the hold-up problem. When parties come to an agreement on an employment relation, both are rather reserved to make any investment to this relation, because this weakens their bargaining positions in the next round (MacLeod and Malcomson, 1993). For example, if an employer pays on-the-job training for the employee, the worker can in the next bargaining round claim a higher wage, because the employer has more to loose (increased productivity of the employee compared to other employees). The same

[7]Reputation effects refer to 'learning effects' on the side of the employer. If an employee shirked in his previous job and that is the reason the employment relation ends and this information is known by all agents, it is likely that his market alternative will be lower, i.e. no employer will readily offer him a job. However, only in very small local or specialized labour markets such reputation effects are likely to exist.

argument holds for the employee. For instance, if he buys a house near the establishment where he works, he commits himself to this particular job or company. Hence, he has more to loose if he doesn't accept the wage offered by the employer. So both parties have an incentive not to bargain over their future wages, as long as the sum of expected utility and profits are nonnegative[8]. This can best be achieved by determining wages and wage increases at the start of the relationship, and hence minimizing the chance for renegotiation. In this way they can make their specific investments, without the risk of undermining their bargaining positions. Only when the joint surplus becomes negative, they have a reason to end the relation.

Because the outside options are not known at the start, it is likely that the contract has to be adapted to the new circumstances. Here the problem comes in again; the contract was designed as to avoid renegotiation. The best way this can be solved, is to determine at the start of the employment relation that corporatist institutions (e.g. unions and employers' organizations)will renegotiate the contract in the case of an aggregate shock[9]. The level of negotiation must substantially differ from the situation of the individual situation of employer and employee. In that way, the negotiations are not directly linked to the hold-up problem at the micro level. Hence negotiations of corporatist institutions at an industry level give better results than at the firm level. National level bargaining is worse. Although it avoids the hold-up problem, it can in general not take account of industry specific situations and hence adjust the contract not in the right way. This is in contrast with other theories, such as Calmfors and Driffil (1988), which argue that centralised and firm-level bargaining results in the better outcomes than industry-level bargaining.

What are the implication of this corporatist model for IR? Corporatist institutions will normally only negotiate over (increases of) the base salary. If this results in optimal contracts for both employers and employees there is no need to pay IR. So in general, when corporate institutions work at best (i.e. at the industry level) IR is less needed.

In the absence of corporatist institutions, the contract will normally only be adapted to inflation (Teulings, 1995). Therefore, it is more likely that also at the micro level some adaptions to the contracts have to be made. Because individual outside options differ,

[8]If the sum of expected profits and utility is nonnegative, the gains can always be distributed in such a way that both parties earn at least as much as their outside options.

[9]Teulings and Hartog (1999) make the distinction between aggregate and idiosyncratic shocks. Aggregate shocks relate to the situation in the entire industry or even the entire economy. Idiosyncratic shocks relate only to the particular employee and particular firm: change in just the firm's product demand or only that typical worker outside alternative. Parties must be careful not to renegotiate these kinds of shocks, because that will obstruct the contract.

it is likely that an employer will only compensate those employees who want to break up the contract. This can best be done with IR.

6 Empirical evidence on IR

Empirical evidence on the determinants of IR is relatively scarce for the Netherlands. Only for profit sharing some research is done on the firm level. Mol, Meihuizen and Poutsma (1997) found that profit sharing is more common in the banking and insurance sector and in larger companies. Internationally more research is done. Studies using establishment level data, Brown (1990) for the United States and Drago and Heywood (1999) for Australia indicate that the size of the establishment and the percentage of female workers correlate with greater use of IR.

MacLeod and Parent (1999) use different micro data sets on the employee level to estimate the determinants of IR. Their estimates show that workers who have more repetitive jobs and work in a union sector are less likely to receive IR. Also, females are less likely to have IR and higher educated workers are more likely to have IR. Firm size has a slightly negative but not significant effect on IR. Booth and Frank (1999) found with their probit model on the British household panel, a relative strong positive effect of firm size on IR. Females are less likely to have IR, but union coverage has a positive impact on IR, in contrast with the results of Macleod and Parent. Managerial and sales workers have significantly more IR. They did not find any relation between IR and educational level.

There is much research done in the area of productivity effects of performance related pay. Many researchers did however not estimate the earnings differential, as we will do, but estimate a production function with an indicator for IR (see Kruse (1993) for an overview). Most of these studies indicate that IR increases productivity. Studies which estimate the productivity effect directly on micro earnings data have been carried out less frequently. Brown (1992) finds from U.S. establishment data that incentive pay raises wages by about 3%-6% relative to standard pay. This result is in line with earlier studies by Pencavel (1977) and Seiler (1984). Ewing (1996) finds on US individual data an earnings effect of 5.5%. In this study he was able to control for a set of individual and firm characteristics. Lazear (1996) studied the effects of introducing IR in a single firm. For that single US firm he finds an earnings effect of 9.6%, while production rose by 20%. Booth and Frank (1999) found on British Household panel data an earnings effect of 9.3%. This last study uses exactly the same method as we will do in section 7.2.

Weitzman's profit sharing theory can be tested by measuring the effect of profit payments on the stability of employment in a certain firm, or by assessing the relation between profit related pay elements and base salary. The first approach is followed by a lot of researchers on US, British, Japanese and German data, with mixed results (Kruse, 1993). The second approach, which we will follow, only shows whether conditions for profit sharing to have a stabilizing effect are met. Mitchell, Lewin and Lawler (1990) use a US compensation survey from 1974 and find that total wages per hour and wage per hour are higher in firms with profit sharing and bonus payments. Hart and Hübler (1991) show for Germany on individual employee data that base salary and IR are complements. For the US, Kaufman (1998) shows on longitudinal panel data for firms with a profit sharing plan, that profit related payments and base salary are not necessarily substitutes. He concludes that it is more likely that profit related payments are a way of rent sharing.

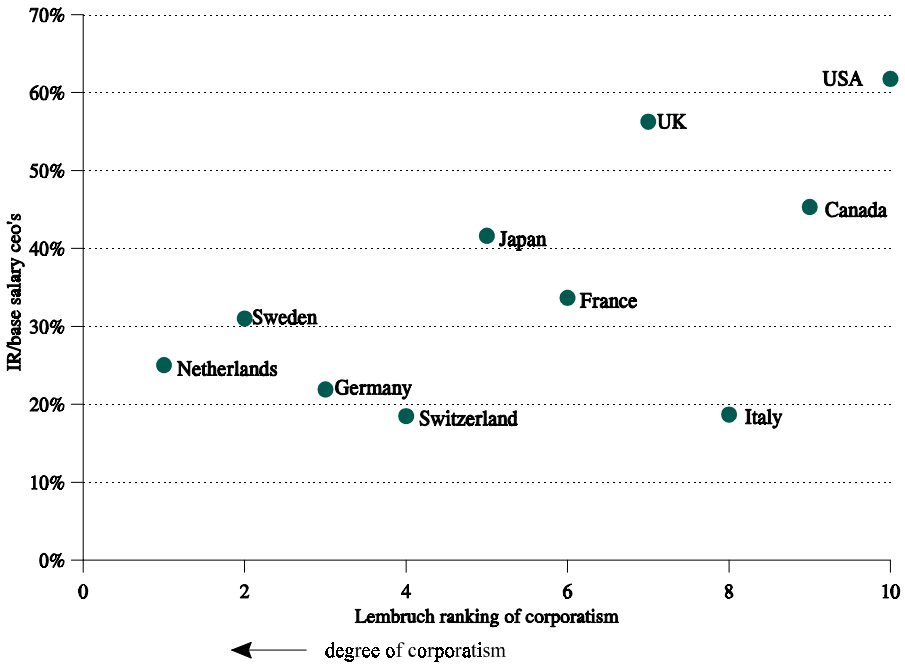
There is almost no empirical evidence on the relation between corporatism and IR in the international literature. Literature on corporatism normally focuses upon wage formation in general, and not in particular on IR. However, from the abundant literature on managerial compensation, we have a breakdown of managerial pay in different components (Abowd and Kaplan, 1999; Murphy, 1998). Combining an index of corporatism with IR of managers gives some insight in the cross-national relation between corporatism and IR.

There is no unique definition of corporatism, and consequently, no unequivocal ranking of corporatism (Teulings and Hartog, 1998). We use Lembruch's scale of corporatism, which is according to Teulings and Hartog the best way to measure corporatism. The principal indicator in this ranking is the existence of tripartite concertation, assessed as the level of institutionalized participation in government policy making by organized interests. In figure 6.1 we show a scatter, with Lembruch's rank of corporatism on the horizontal axis, and the share of IR as a percentage of base salaries for managers on the vertical axis. We observe that countries with high degrees of corporatism according to this scale (Netherlands, Germany, Sweden) have indeed low IR-payments to managers. Also, countries with low degrees of corporatism (US, UK, Canada) have high IR for managers. This seems to confirm our theory that IR and corporatism have some relation[10].

[10]For our sample, the rank-order correlation coefficient amounts to 0.61. On basis of the well-known Calmfors and Driffil ranking of centralisation (1988), correlation was 0.49.

To base our claims on more solid grounds, we must perform our analysis on data covering all individual employees and not only for managers. This will be done in the next section.

Figure 6.1 Degree of corporatism and IR of managers



[a] The measure for IR for managers is based on data of Towers Perrin, as used in Abowd and Kaplan (1999). IR includes voluntary benefits (voluntarily paid by employer), perquisites and longterm compensations. Managers are defined as chief executive officers, i.e. only top management.

7 Empirical analysis

From the discussion of theories in the previous sections, we can distillate four main questions to be investigated empirically. First, what are the determinants of individual remuneration and profit related payments[11]? Do monitoring problems play an important role, or are determinants the same as for a base salaries. This plays a role in productivity theories and sorting and selection theories. We expect that there are job and firm characteristics which determine at least partly the extent to which IR and profit sharing are paid. We compare this with the determinants of base salary, to get a better insight in the differences of determinants. Second, what is the effect of IR on total pay? Do we observe an earnings differential between IR and non-IR workers? Here also, productivity and selection theories play an important role. Third, what is the relation between different pay elements and base salary? Are those pay elements complementary to each other, or are they paid instead of each other. This is extremely important in profit sharing theories (where profit related payments and base salary must be substitutes to have the positive effects of profit sharing), and also in efficiency wage theories (where a complementary relation of wages and IR or profit sharing indicates rent sharing).

Fourth, what is the effect of collective labour agreements on IR? Is there a relation between the extent of corporatism and IR. This plays a major role in corporatist theories.

The data source used for this study are the Labour Conditions Surveys 1993-1997 (LCS)[12] from the Dutch Department of Social Affairs and Employment. This data source has several advantages over other data sources. First, it registers a large number of remuneration elements distinctively on the basis of firms' personnel files. So, not only is known whether some kind of IR is given, but also the exact amount[13]. Second, we have also information on wage growth of 'stayers' (employees who work two consecutive years at the same company). This allows us to estimate the relation between base salary and IR in growth rates too, which makes it possible to control for selection effects.

[11]In our micro data sets we can distinguish a number of different pay elements (see appendix). For estimation purposes we differentiate between base salary, individual remuneration (IR) and profit related payments(profit sharing). Individual remuneration is in one way or another linked to performance of the firm *or* the individual, whereas profit related payments are only related to the performance of the firm. Hence profit related pay is a subset of IR

[12]In Dutch: ArbeidsVoorwaardenOnderzoeken 1992-1997. For a description of the surveys, see: P. Venema, en R. Spijkerman (1999), *Arbeidsvoorwaardenontwikkeling in 1997*, ministerie van SZW, The Hague.

[13]See appendix for a description of all different pay elements which are included in the LCS.

7.1 *Determinants of Base Salaries, Individual Remuneration and Profit Sharing*

To ascertain the determinants of the base salary, we estimate a wage equation using OLS. The dependent variable is the log of gross base salary per hour. The LCS-data allow us to use a rich set of independent variables. We estimated the following:

$$\ln (S) = c + \alpha Z_f + \beta X_j + \mu Y_p + \varepsilon \qquad \varepsilon \sim N(0,\sigma^2) \qquad (6)$$

where the variation is over individual workers. We leave out the employee subscript on all variables for notational convenience. Z_f are the firm characteristics (sectors of industry, firm size collective labour agreements), X_j the job characteristics (hours worked, dummy for shift work, function complexity, tenure) and Y_p are the personal characteristics (gender, age and education) and ε is the normally distributed error term.

The results for the base salary are in line with earlier estimates on the same data (Wiggers, 1995; van Opstal and Wiggers, 1996; Wiggers, 1996). In table 7.1 the estimates are shown.

Employees in the public utilities and mining sector and in construction sector receive the highest base salaries. Older workers with higher tenure get higher base salaries, indicating that earnings-experience profiles slope upward. Higher educated workers get significantly more base salary. For instance, university-educated workers have a wage premium of 43% compared with intermediate general education, while lower educated workers earn 25% less. Firm size and union coverage is positively related to the level of base salary.

To estimate the determinants of IR and profit related pay we use a Tobit model, because the dependent variable is in many cases censored (equal to zero). First we define a latent variable:

$$IR^* = c + \alpha Z_f + \beta X_j + \mu Y_p + \varepsilon \qquad \varepsilon \sim N(0,\sigma^2) \qquad (7)$$

Where IR* is the latent individual remuneration and Z_f, X_j and Y_p contain the same variables as in the base wage equation.

If IR* is greater than zero, individual remuneration is paid, otherwise IR is zero:

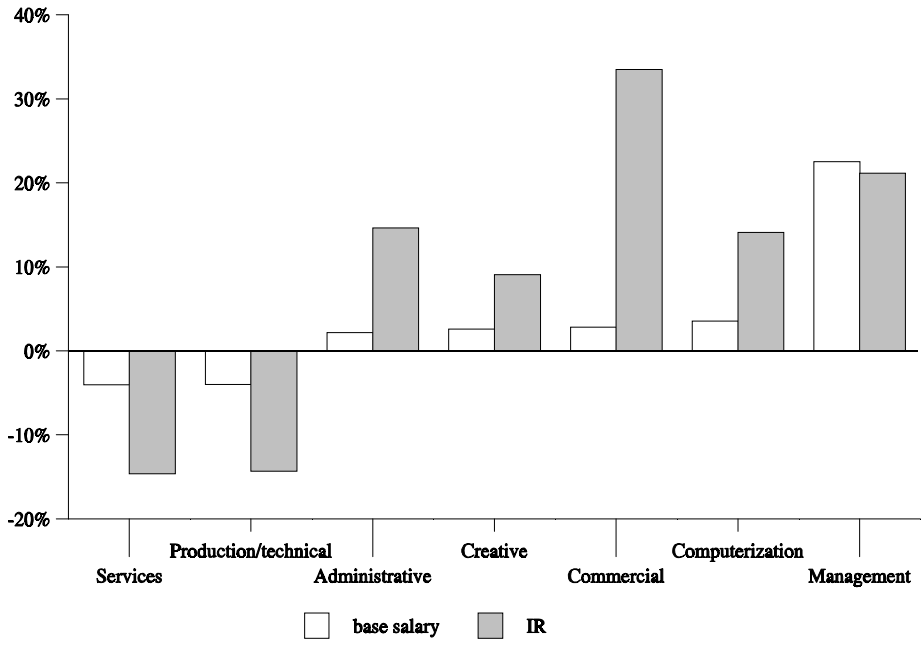
$$IR = IR^* \qquad \text{if } IR^* > 0 \qquad (8a)$$

$$IR = 0 \qquad \text{if } IR \geq 0 \qquad (8b)$$

Using maximum likelihood the probability that IR is zero is estimated along with the probability density for positive values of IR[14]. In the same way, determinants of profit sharing are estimated. The coefficients for IR and profit related pay are given in the third and fifth column of table 7.1. First, note that almost all the coefficients are significant, contrary to the Tobit estimates of Booth and Frank (1999) for IR. They found no significant education effect on IR. Their interpretation is that observed ability was picked up by base salary and unobserved ability rewarded by IR. In our estimates, education effects on IR are even bigger than on base salary, indicating that education is an important determinant of IR. With regard to sector of industry, we see that especially in the banking and insurance sector high IR and profit sharing are paid. Agriculture and public utilities and mining are sectors where it is not very common to use such pay methods.

IR increases with age and tenure, where the effect of tenure is significantly larger than that of age. For profit related payments there is no relation with age or tenure. The differences between men and women on IR and profit sharing are equivalent to that on

Figure 7.1 Base salary and IR for different complexities of functions



[14]For an extensive description of Tobit models: see Maddala (1983).

Table 7.1 *Estimates for base salary (S), Individual Remuneration (IR) and Profit Sharing (PS), 1997, private sector.*

		LN(S) OLS		ln (IR) Tobit		ln (PS) Tobit	
		coefficient	*se*	coefficient	*se*	coefficient	*se*
intercept		3.152	*0.007*	-0.548	*0.041*	-3.241	*0.007*
industry	Agriculture	0.019	*0.008*	-0.465	*0.075*	-0.89	*0.162*
	Manufacturing	-0.005	*0.004*	0.209	*0.024*	0.122	*0.038*
	Public utilities and mining	0.095	*0.008*	-0.574	*0.050*	-0.512	*0.179*
	Construction	0.073	*0.005*	-0.042	*0.035*	-0.141	*0.055*
	Retail trade and catering	-0.045	*0.005*	0.143	*0.029*	0.002	*0.043*
	Transport and communication	-0.059	*0.005*	0.042	*0.033*	0.275	*0.056*
	Banking and insurance	0.028	*0.008*	0.989	*0.043*	0.255	*0.064*
	Tertiary services	-	-	-	-	-	-
Age	15-19 years	-0.341	*0.013*	-0.333	*0.122*	-0.527	*-0.262*
	20-24 years	-0.155	*0.005*	-0.232	*0.035*	-0.057	*-0.059*
	25-29 years	-	-	-	-	-	-
	30-34 years	0.101	*0.004*	0.132	*0.026*	0.058	*0.038*
	35-39 years	0.155	*0.004*	0.208	*0.028*	0.033	*0.041*
	40-44 years	0.174	*0.005*	0.187	*0.029*	0.080	*0.044*
	45-49 years	0.193	*0.005*	0.202	*0.033*	0.058	*0.052*
	50-54 years	0.194	*0.005*	0.185	*0.034*	0.124	*0.054*
	55-59 years	0.213	*0.007*	0.147	*0.043*	0.124	*0.065*
	60-64 years	0.205	*0.015*	0.291	*0.099*	0.134	*0.176*
Men		-	-	-	-	-	-
Women		-0.092	*0.004*	-0.092	*0.023*	-0.074	*0.036*
Function	Production/technical	-0.061	*0.004*	-0.289	*0.028*	-0.367	*0.040*
complexity	Administrative	-	-	-	-	-	-
	Computerization	0.014	*0.008*	-0.005	*0.046*	-0.053	*0.061*
	Commercial	0.006	*0.005*	0.189	*0.030*	-0.134	*0.045*
	Services	-0.062	*0.005*	-0.292	*0.030*	-0.227	*0.045*
	Creative	0.004	*0.010*	-0.055	*0.058*	-0.002	*0.071*
	Management	0.204	*0.006*	0.065	*0.034*	0.035	*0.049*

Table 7.1 (continued)

Educational	Lower	-0.253	*0.007*	-0.600	*0.045*	-0.121	*0.077*
level	Secondary	-0.154	*0.006*	-0.373	*0.035*	0.018	*0.053*
	Lower vocational	-0.142	*0.005*	-0.475	*0.031*	-0.13	*0.046*
	Intermediate general	-	-	-	-	-	-
	Intermediate vocational	0.015	*0.005*	-0.160	*0.030*	-0.064	*0.043*
	Higher vocational	0.253	*0.006*	0.167	*0.034*	-0.095	*0.047*
	University	0.429	*0.009*	0.404	*0.052*	-0.051	*0.066*
tenure	0-1 years	-	-	-	-	-	-
	2-4 years	0.036	*0.004*	0.299	*0.025*	0.262	*0.040*
	5-9 years	0.068	*0.004*	0.378	*0.024*	0.186	*0.038*
	10-14 years	0.097	*0.005*	0.478	*0.029*	0.233	*0.046*
	15-19 years	0.109	*0.005*	0.648	*0.033*	0.227	*0.051*
	20-24 years	0.115	*0.006*	0.610	*0.038*	0.080	*0.057*
	25-34 years	0.14	*0.006*	0.655	*0.039*	0.091	*0.059*
	more than 35 years	0.106	*0.012*	0.638	*0.072*	-0.025	*0.099*
no shift work		-	-	-	-	-	-
shift work		-0.05	*0.004*	0.253	*0.024*	0.210	*0.037*
working time	full time	-	-	-	-	-	-
	part time	-0.092	*0.004*	-0.262	*0.030*	0.050	*0.048*
	flexible	-0.165	*0.007*	-0.498	*0.056*	0.273	*0.115*
Firm size	1-10 employees	-0.026	*0.005*	-0.411	*0.039*	0.011	*0.091*
	11-99 employees	-	-	-	-	-	-
	≥ 100 employees	0.028	*0.003*	0.330	*0.017*	-0.043	*0.026*
Collective Labour Agreement		0.037	*0.003*	-0.336	*0.021*	-0.181	*0.032*
Mandatory extension		0.015	*0.007*	-0.215	*0.047*	0.312	*0.069*
No Collective Labour Agreement		-	-	-	-	-	-

R^2-adj	0.659		
standard error	0.203	1.045	0.817
N	28889	28889	28889
Left censored		16782	23666
Non censored		12107	5223

base salary. Women receive less profit related payments and IR. Firm size has also a positive relation with IR, but not with profit related payments.

Striking are the coefficients for collective labour agreements. They are of the opposite sign compared to those for base salary, and much larger. We examine this more closely in section 7.4.

Interesting is the difference in the coefficients for function complexity. In figure 7.1, these coefficient are shown recalculated as deviations from the (weighted) average. For base salaries, the differences are not very large, only management earns significantly more base salary. For IR, differences in payments are much larger. Services and production personnel get the lowest base salary and IR. Administrative, computer and commercial functions get relatively more IR and commercial personnel earn most, even more than management functions. This results support the hypothesis that monitoring does not play an important role in relatively simple functions (like production work) but is more important in more complex jobs where monitoring is possible (e..g. administrative, commercial, computerization) and relatively less important in creative functions, where monitoring is almost impossible.

7.2 Earnings differential

The model as presented in section 3.1, 3.2 and 4 implies that individuals with IR have higher earnings, ceteris paribus, for two reasons: they are self-selected as those with high unobserved ability sort themselves into IR-jobs, and they have to exert more effort, because their efforts are better monitored. To test this hypothesis, we estimate an equation for total earnings, both in levels as well as in growth rates. Using growth rates enables us to control for selection effects.

As dependent variable we use the natural logarithm of the total hourly wage rate consisting of both the base salary and extra pay elements. We add a dummy-variable for employees with (some form of) IR. The coefficient of this dummy gives the earnings differential between workers with and without IR. The equation estimated is equal to:

$$\ln(W) = c + \alpha Z_f + \beta X_j + \mu Y_p + \gamma D^{IR} + \varepsilon \qquad \varepsilon \sim N(0,\sigma^2) \qquad (9)$$

where all the other independent variables in the equation are equal to those in the wage equation for the base salary op section 7.1. Table 7.2 shows the estimates for the coefficient of the IR-dummy for three years[15].

In all years the productivity effect lies around 10%, which is rather large. The estimate is significant in all years. A possible problem of the methodology which we used here is that it does not take into account the fact that in the LCS data we have employees working at the same company.

Table 7.2 Estimated productivity/sorting effect of IR, wage level (including IR)

	γ	*se*	R^2-adj	N
1992	0.119	*0.004*	0.64	18091
1995	0.104	*0.004*	0.62	19699
1997	0.099	*0.003*	0.63	28888

If firms which pay wages above average also have forms of IR, this may bias the estimates. By adding dummies for every firm we can take account of this[16].

Hence, the equation becomes:

$$\ln(W) = c + \beta X_j + \mu Y_p + \gamma D^{IR} + \varepsilon \qquad \varepsilon \sim N(0,\sigma^2) \qquad (10)$$

Where $D_{f1},...,D_{fn}$ represents the firm dummies. The firm attributes, Z_f (sector of industry, firm size and collective labour agreement) are now captured by the firm dummies. On average, about 1500 firms were in the sample each year.

The estimate for the productivity effect does not change significantly (see table 7.3). So, firm effects do not disrupt our estimates of the productivity effect.

Our estimates indicate that there is a relatively strong and stable productivity and/or sorting effect of IR in the Netherlands. Compared with other (US and British) studies, they are on the upper bound.

Another way to test the productivity hypothesis is to estimate the relation in growth rates. By doing this, it is possible to separate the selection effect from the productivity effect. From the theories in section 3 and 4, it is clear that apart from productivity

[15]Results for the other years are similar.

[16]We have to delete those firms where we have only one worker in our sample, about 100 to 150 observations each year

effects, earnings differentials are caused partly by selection effects. The unobserved characteristics (such as unobserved ability) which cause this process are not likely to change very much from one year to another. So they can cancel out of the equation if we take first differences. The only thing we then pick up in our estimation is the growth in IR which reflect growth in productivity.

Table 7.3 Estimated productivity/sorting effect of IR including dummies, wage level

	γ	*se*	R^2-adj	N	number of firm dummies
1992	0.125	*0.007*	0.70	17988	1480
1995	0.106	*0.006*	0.72	19554	1247
1997	0.095	*0.005*	0.74	28763	1451

We correct the individual growth rates for general wage increases[17]. Only workers who remain at the same company for two subsequent years are included in our estimates. All characteristics that are constant over time cancel out of the wage growth equation. The only variables that do change over time are tenure and age. These give an approximation of the the effect of general and firm-specific working experience on individual wage growth[18]. Fourth-grade polynomials of tenure and age, together with dummy-variables for IR, are used to estimate the productivity effect:

$$\Delta \ln (W_c) = \alpha + \alpha_1 \Delta age + ... + \alpha_2 \Delta age^4 + \beta_1 \Delta ten + ... + \beta_1 \Delta ten^4 + \gamma_1((1-D^{IR}_{t-1})*D^{IR}_{t}) + \gamma_2((1-D^{IR}_{t})*(D^{IR}_{t-1}) + \gamma_3(-D^{IR}_{t}*D^{IR}_{t-1}) + \varepsilon \quad (11)$$

where Δage^x is the polynomial for the age-effect and Δten^x the polynomial for the effect of tenure[19]. The dummy $D^{IR}_{i,t}$ measures whether an employee receives IR in year t or not. Combining these dummies for t and t-1 divides the group of workers in four parts: those who received IR in t-1 but not in t ($D^{IR}_{i,t-1}*(1-D^{IR}_{i,t})=1$), workers who receive IR in t but not in t-1 ($D^{IR}_{i,t}*(1-D^{IR}_{i,t-1})=1$) and employees who receive IR in both years ($D^{IR}_{i,t}*D^{IR}_{i,t-}$

[17]For employees under CLA this concerns contractual wage increases, for non CLA-workers general wage increases of the firm: $\Delta \ln (w_c) = \ln (w_{t-1}) - \ln (w_{t-1}) - \ln (1 + w^{general})$

[18]In previous research into wage growth this model is also used, see Topel (1991) and van Opstal, Waaijers and Wiggers (1998).

[19] Note that α_1 and β_1 are not identified. Because $\Delta age = \Delta ten = 1$, the intercept equals $(\alpha+\alpha_1+\beta_1)$.

$_1$=1). The fourth group, who do not have IR both in t-1 and in t ((1-$D^{IR}_{i,t}$)*(1-$D^{IR}_{i,t-1}$)=1) is the reference category.

Table 7.4 Productivity effect, wage growth

	γ_1	*se*	γ_2	*se*	γ_3	*se*	R^2-adj	N
1993	-0.058	*0.003*	0.066	*0.003*	0.009	*0.001*	0.149	17942
1994	-0.037	*0.003*	0.038	*0.002*	0.004	*0.001*	0.155	24419
1995	-0.047	*0.003*	0.037	*0.002*	0.006	*0.001*	0.114	19232
1996	-0.030	*0.003*	0.046	*0.002*	0.012	*0.001*	0.140	27912
1997	-0.029	*0.003*	0.046	*0.002*	0.007	*0.001*	0.138	27680

The coefficient γ_3 is expected to be zero. Unobserved ability only affects growth rates if it *changes* between two period. As with education and other job and firm charactistics we do not consider this to happen.

γ_1 and γ_2 reflect the 'true' productivity effect corrected for selection or sorting effects. γ_1 measures the difference in earnings growth for workers who get IR only in the first period and not in the second period. We expect this to be negative. γ_2 measures the difference in earnings growth for workers who get IR in the second year but not in the base year. We expect this to be positive.

In table 7.4 the estimated coefficients are shown. γ_1 and γ_2 are significant for all years and have the expected signs. Going from no IR to IR leads to extra earnings growth of about 4.7% (average 1993-1997). From IR to no IR leads to a lower growth rate equal to -4.0%. γ_3 is significantly positive in all years, but small, on average 0.8%. This might indicate that workers with IR have a higher productivity-growth than non-IR workers.

So these estimates show that the productivity effect is only half of the combined selection/productivity effect as estimated by the earnings level equation in table 7.2.

7.3 Relation between base salary and IR

The relation between base salary and IR or Profit Sharing plays an important role in Profit Sharing theories and also in efficiency wage theories. Based on profit sharing theories we expect the pay elements to be substitutes. According to rent sharing they must be complements. We estimate our model both for IR and profit related pay elements, because for profit sharing theories, only pay elements that are related to the firm's profits are relevant. We estimate the model both in levels as well as in growth rates. If pay elements are substitutes only for a certain time period, this will show up

earlier in growth rates rather than in levels. Also, worker selection effects will be eliminated.

We estimate an equation with the base salary as dependent variable. Next to the firm, job and personal characteristics we include two variables for IR. The log of IR for workers with positive IR and a dummy variable for workers with no IR:

$$\ln(S) = c + \alpha Z_f + \beta X_j + \mu Y_p + \gamma(1-D^{IR}) + + \delta D^{IR}\ln IR + \varepsilon \qquad (12)$$

If there is substitution between base salary and IR, the coefficient of ln IR, δ, is expected to be negative (higher IR goes hand in hand with lower base salary). Moreover, γ is expected to have a positive sign (workers with no IR have higher base salaries). The individual pay elements are complementary to the base salary if γ and δ do not significantly differ from zero. In that case, IR does not distinguish itself from base salary. If γ is negative and δ positive high IR is accompanied by a relatively high base salary and low (or no) IR with a relatively low base salary.

Table 7.5 OLS base salary, variable IR

	γ	*se*	δ	*se*	R^2-adj	N
1992	-0.016	*0.004*	0.062	*0.003*	0.704	18092
1995	-0.035	*0.003*	0.056	*0.002*	0.666	19700
1997	-0.024	*0.003*	0.042	*0.002*	0.667	28889

Table 7.5 shows the results for γ and δ. Employees without IR earn a lower base salary than workers with IR and the more IR a worker receives, the higher the base salary is. These results strongly indicate that IR and base salary are complements, and hence IR can be viewed as a form of rent sharing. The same model is also estimated using fixed effects. The results do not differ significantly from those in table 7.5.

The same model is estimated for profit sharing. In this case including firm effects did make a difference[20]:

$$\ln(S) = c + \alpha Z_f + \beta X_j + \mu Y_p + \gamma(1-D^{IR}) + + \delta D^{IR}\ln IR + \varphi_1 D_{f1} \ldots \varphi_n D_{fn} + \varepsilon \qquad \varepsilon \sim N(0,\sigma^2) \qquad (12)$$

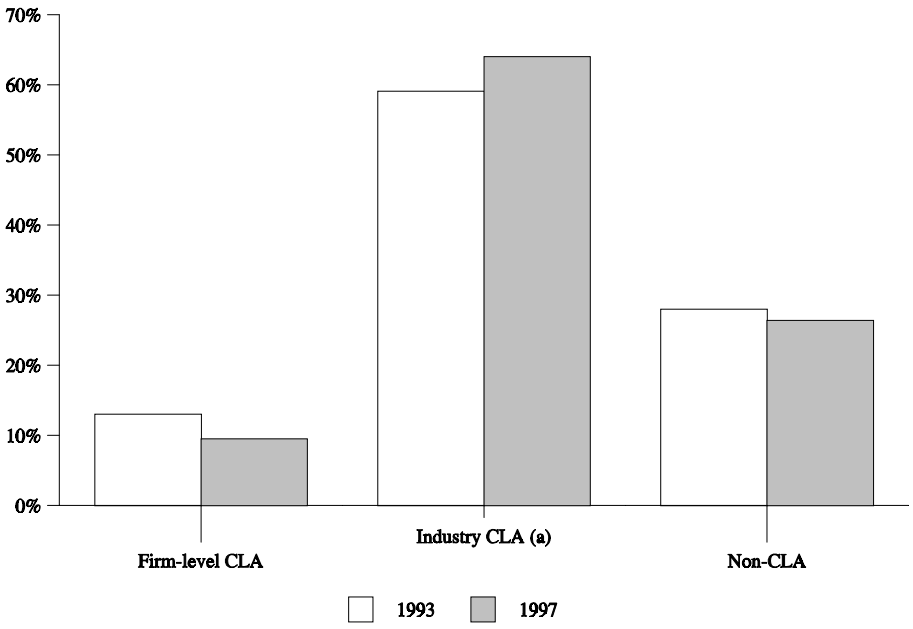
[20]Apparently, profit related payments are distributed in such a way over firms, that firm-effects interfere with the estimates. Using fixed-effects by adding dummies for all individual firms corrects this. The coefficients for profit related payments become for almost all years twice as large, with still the same sign as in the model without fixed-effects.

The estimated coefficients of this model are given in table 7.6.

Table 7.6 *OLS base salary, variable profit related payments, including fixed-effects*

	γ	*se*	δ	*se*	R^2-adj	N	number of firm dummies
1992	-0.277	*0.022*	0.074	*0.007*	0.7585	17963	1419
1995	-0.138	*0.022*	0.033	*0.006*	0.7514	19554	1247
1997	-0.163	*0.015*	0.040	*0.004*	0.7640	28763	1451

Figure 7.2 *Employees bound by Collective Labour Agreement (CLA)*



[a] including mandatory extension

The interpretation of the coefficients is the same as in table 7.5. The signs are the same as in table 7.5, but the coefficients γ and δ are much larger. This indicates that profit

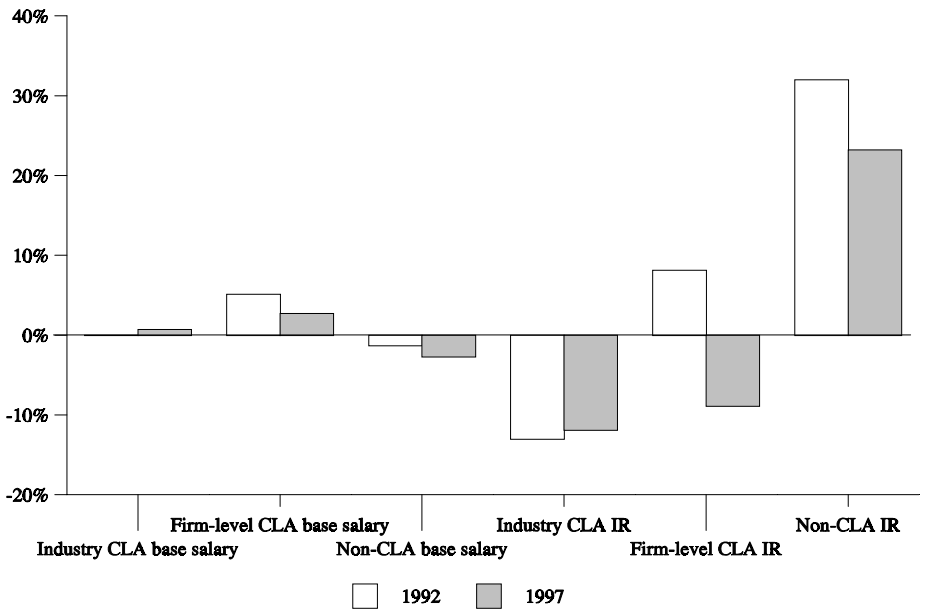
related pay and base salaries have an even stronger complementary relation than IR and base salaries. Again, the profit sharing theory has to be rejected[21].

7.4 Effect of Collective Labour Agreements on IR

From the corporatist theory of section 5, we might expect lower IR-payments for firms or workers falling under a Collective Labour Agreement (CLA) compared to those who are not under a collective arrangement. Under CLA, individual salary increases are determined by salary scales and hence IR plays a minor role.

In the Netherlands, we have a multiple staged industrial relations system. About 73.5% of all employees are under a CLA or mandatory extension. Industry level CLA's are the most important (see figure 7.2). To test differences in IR with respect to the level of wage bargaining, dummies for different levels of corporatism are included in the Tobit equation for IR and the OLS for base salary as presented in section 7.1. We expect that higher degrees of corporatism leads to lower IR and vice versa, as was clear from

Figure 7.3 Level of Collective Bargaining and differences in IR and Base salary



[21]We have also estimated wage growth equations, as to rule out possible selection effects. This leads also to the conclusion that base salary and profit related pay elements are complements.

our international comparison in section 6.

The results are shown in figure 7.3. The estimates are presented as differences from the (weighted) average of all categories for the years 1992 and 1997. Also, estimates for the base salary are shown. The differences in the levels of base salaries are rather moderate. Employees under industry-CLA get 1% more than average, firm-level CLA get 3% more and non-CLA 3% less than average. These results are in line with previous research (van Opstal and Wiggers, 1996).

As predicted by corporatist theory, IR is lowest for workers under industry level collective labour agreements and highest for workers working at non-CLA firms. Firm level bargaining has the intermediate level of IR. Striking is the much larger difference in remuneration for IR between the levels of bargaining as compared to the base salary. In 1997, IR at industry level bargaining is 12% lower than average, firm level 9% lower and non-CLA 23% higher.

8 Concluding remarks

The theoretical framework of individual remuneration is not that clear as in other fields of economics. Different theories stress different parts of the wage formation process, and theories do not exclude one another. Therefore, in our empirical work we tested the implications of several different theories.

For our empirical work we use large sets of micro data. Advantage of using detailed wage data on the individual level is that it gives a much better description of real life events than macro or even establishment level data.

In the introduction we asked ourselves why different pay practices exist. We have answered this question along a few lines. We found empirical support for the productivity theory, where different pay practices can be used to monitor or motivate employees. The effect that we found was rather strong. Part of the effect however can be due to selection of workers with high ability in jobs which reward individual productivity. Indeed we found that half of the productivity effect can be attributed to selection.

Different pay practices can also be related to differences in institutions, like the level of corporatism. Our results indicate that in firms which are not bound by collective labour agreements, individual remuneration and profit sharing are much more important compared to firms which are bound by collective labour agreements. We consider this to be an indication that individual remuneration is used as a way to enhance a suboptimal contract. Finally, we tested whether Weitzman's profit sharing theory is important for the Netherlands. Because our estimates show that individual remunerationa and profit related payments are complementary to the base salary, we can rule out the possibility that these pay elements are used to reduce wage rigidity.

So, we found empirical support for some of the theories explaining different pay practices. Moreover, we showed that the estimates were rather stable over the period 1992-1997. No dramatic changes occurred in the determinants of individual remuneration, productivity effects or the effects of corporatism.

Elements which might be important, but which we were not able to test with our data, are the effects of labour market characteristics on the use of IR and the long run development of IR. Theoretically, it is likely that labour market shortages and job security play an important role in the use of individual remuneration. This also becomes clear from corporatist theory. In further research, it would be useful to show effects of labour market developments on IR. This could also give an explanation for wage drift and differences in wage drift between sectors. Second, longitudinal data makes it possible to estimate the incentive effect over a longer period and better assess productivity and selection effects. Finally, research on the same topic both theoretically

and empirically with micro data for different countries can give better insight in the validity of some of the theories, especially in the role of labour market institutions.

Abstract

Why do employers use different kinds of pay arrangements? Theories about this subject indicate that monitoring, suboptimal contracts, profit sharing and rent sharing might be reasons for paying performance related pay.

We test these theories empirically on Dutch data over the period 1992-1997. The data contain information on several pay elements at the individual level. Our results indicate that enhancing productivity is one of the reasons to introduce performance related pay practices. Part of the effect however is due to selection of workers with high ability in jobs which reward individual productivity. Different pay practices can also be related to differences in institutions, like the level of corporatism. In firms which are not bound by collective labour agreements, individual remuneration and profit sharing are much more important compared to firms which are bound by collective labour agreements. Finally, we test whether Weitzman's profit sharing theory is important for the Netherlands. Because our estimates show that individual remuneration and profit related payments are complementary to the base salary, we rule out the possibility that these pay elements are used to reduce wage rigidity.

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Appendix The data

The Labour Conditions Surveys (LCS) register a number of pay elements seperately. For our analysis we have the disposal of the LCS for the years 1993-1997. There are two years in every 'wave' of the LCS-data, with the first year being retrospective. Because of sample differences, corresponding years are not similar. Table A.1 shows figures based on the LCS 1997, which gives information for both 1996 and 1997.

The first two columns show the share of each pay element in total payments. Base salary is by far the largest component of total payments (about 92%)[22]. All employees in the survey receive base salary (column 3 and 4). About 19% have a one-time payment according to Collective Labour Agreement (CLA). On average these payments amount to 1.5% - 2% of total earnings for these employees (column 5 and 6).

Individual remuneration (2) amounts to 2.5% of total payment. About 24% of all employees receive one of these payments. For them the share in their wage of IR is about 7.5%. IR consists of four components, which have in common that they are paid in addition to the base salary. Allowances (2a) are paid for instance because of labour market considerations or to people with specific skills. 3% of all employees receive this kind of payment. Commissions are related to the (sales)performance of an employee. For employees receiving this payment, the share in the total wage of commission is about one fifth. Remaining extra payments (2c), like performance allowances and end of year payments are paid to about 20% of all employees. Wage in kind is an almost negligible wage component here, applying for only 1% of all employees with an average share of 0.2%[23].

Almost 30% of all employees get some bonus (3), where shift work bonuses and overtime bonuses are the most important elements.

The final group of pay element which is distinguished in the LCS concerns profit related payments (4). These amount to no more than 1% of total payments. These payments are in some way formally connected to the profit of the company[24]. For instance, payments can be related to dividend payments, return to assets, the ratio of operating profit to

[22]Base salary includes vacation allowance (8%) and one-time payments according to CLA (0.3%-0.4%)

[23]This low share of wage in kind is mainly caused by the fact that only wage in kind on the wage bill (added for fiscal reasons) are counted, and not for instance lease-cars.

[24]See for an overview: Dienst Collectieve Arbeidsvoorwaarden (1991), *Variabele beloning in cao's*, Ministerie SZW, The Hague

labour costs, et cetera. 14 to 18% of all workers receive a performance related pay in 1996 or 1997, with an average worth of 4.5% of total earnings.

Tabel A.1 Breakdown of remuneration components, 1996-1997

	Share in total payment		% of employees that gets pay element		level of payment for employees who get pay element[a]	
	1996	1997	1996	1997	1996	1997
(1) Base salary	*91.8*	*91.2*	*100*	*100*	*91.8*	*91.2*
(1a) one-time payment acc. to CLA	0.3	0.4	18.1	20.2	1.9	1.5
(2) Individual remuneration	*2.4*	*2.4*	*23.4*	*24.4*	*7.4*	*7.3*
(2a) allowance	0.2	0.3	3.2	3.4	5.6	5.9
(2b) commission	0.5	0.6	2.1	2.4	18.4	17.6
(2c) remaing extra payments	1.6	1.6	18.9	19.8	6	5.7
(2d) wage in kind	0	0	1	0.9	0.2	0.2
(3) bonuses	*4.6*	*4.9*	*28.7*	*30.1*	*13.2*	*13.5*
(3a) shift work bonus	1.4	1.4	10.1	10.2	12.3	12.1
(3b) bonus for unsocial hours	0.2	0.2	4.1	3.8	4.2	4.6
(3c) overwork bonus	2.4	2.7	15.1	17.1	13.2	13.1
(3d) remaining bonus	0.5	0.6	8.3	8.7	4.7	4.7
(4) Profit related pay	*0.9*	*1.1*	*14.4*	*17.7*	*4.4*	*4.5*
(4a) profit sharing	0.9	1	14.4	16.9	4.4	4.3
(4b) Profit sharing under regulation		0.1		3.4		1.8

Source: Arbeidsinspectie, ArbeidsVoorwaardenOnderzoek 1998

[a] as a percentage of their total remuneration

In 1997 only there is a question about non-frozen profit sharing arrangements[25]. This concerns only 3.4% of all employees with a small share in total payments. All profit related payments can be paid in money but also in stocks or stock options. Allowances in the form of stocks (options) are registered at their nominal value at the moment of issue. The value when the stocks or options are exercised, will undoubtedly be much higher, because of the booming stock market in the past. Hence, the figures used here underestimate the share of profit sharing in total wages.

For the analyses in section 7, we added (2) and (4) for total IR and for profit sharing we considered only (4). Base salary was equal to (1), while total wage also included (2), (3) and (4).

[25]This concerns a Dutch law which makes it possible (since 1994) to pay Profit related payments or stock options to a maximum worth of ƒ1638 (1997) a year without paying taxes over it (Law Vermeend/Vreugdenhil).