Learning Outcomes: At the end of this lecture you should understand some of the mechanisms that firms use to incentivise workers. You should also understand how these mechanisms attract the appropriate workers for the job, how they increase the effort of workers on the job, and how they reduce turnover. Finally you should understand some of the drawbacks associated with different types of contracts.

I. Introduction to Personnel Economics:

As you saw in the second lecture last term, labour is different from other commodities in a number of ways. It must be delivered in person by the seller. It also can not be contracted on over very long periods of time, due to anti-slavery laws. Another distinct feature of labour is that it is very heterogeneous in ways that may not be fully observable to the buyer (employer). Potential employees may be different in terms of their honesty, intelligence, drive, and ability. These differences are not fully observable to a firm prior to the hiring decision, and may not be observable to a third party observer such as a judge. Furthermore, the seller (worker) has the ability to change the "quality of product" after the initial hiring decision by increase or decreasing their effort level on the job. Economists refer to these two problems as "adverse selection" and "moral hazard". Personnel economics concerns the structuring of labour contracts in such a way as to reduce the problems of adverse selection and moral hazard. In other words, how do firms attract the right type of employees, how do they retain their employees, and how do they increase the supply of employee effort?

In a pure neoclassical market for goods there are large numbers of buyers and sellers and all parties possess all relevant information. In the markets for apples, a buyer may go to a fruit stand, inspect the apples, purchase a few, and then leave and never again interact with the seller. Labour contracts rarely function in such a way. As pointed out above, the assumption of perfect information is not met in labour markets. Furthermore, interactions between employer and employee have a temporal dimension that is absent in most markets. The employment relationship is almost never instantaneous like the apple transaction and is frequently very long-term; in 1980 about 17 percent of American employees and nearly a third of Japanese employees had been at their current employer for 15 or more years. This temporal dimension means that employers do not have to pay workers their "value" (i.e. marginal productivity) at any given point in time.

To illustrate the underlying problem with labour contracts, consider the following example. A worker is paid a fixed wage, £10 per hour for their job. There are many other jobs available to them at the same wage rate and it is costless to move between jobs. Under these circumstances the employee is unlikely to work hard. If she shirks and is then dismissed, she simply gets another job at the same wage. Now suppose that the employer offers the worker the same job at the same hourly wage, but with

the promise that they will be paid an additional £200 for every five weeks of satisfactory performance. In effect the worker is being paid £11 pounds an hour if they work hard, but only £10 pounds if she shirks. This contract may be better for both the worker and the firm than a contract which pays the market wage. The worker is better off because their earnings increase by 10 percent. The firm is better off if the productivity of the newly industrious worker increases by enough to offset the higher wage costs.

The above example is quite simple. It relies on a number of assumptions that are not always met in practice. First, it assumes that the firm can perfectly observe *ex post* whether the worker was industrious or lazy. This may not be true because workers are heterogeneous (a worker who appeared to be industrious was actually lazy, but sufficiently talented to compensate) or because output fluctuates due to random shocks that are beyond a worker's control (consider the effect of the weather on the productivity of a farm labourer). Secondly, it assumes that the firm will not be able to cheat the worker by with holding the bonus after the work has been performed. Consequently, many of the contracts observed in the real world are substantially more complex than the one described above. Below we consider three types of contracts.
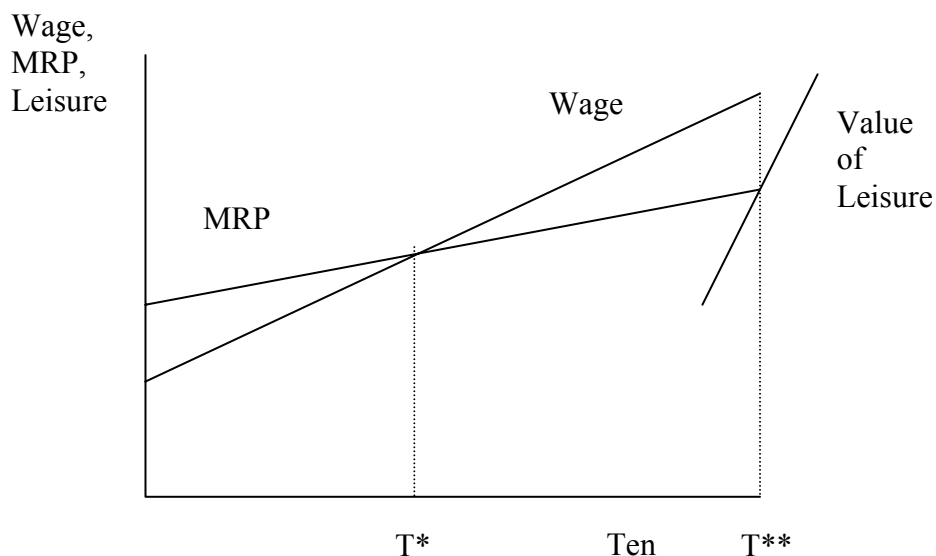
II. Piece Rates

Piece rates refer to a system where compensation is based on the amount of output that a worker produces. For example, some factory workers are paid for the number of good produced, most sales workers receive some form of a commission, and taxi drivers normally keep 100 percent of what they charge. The underlying idea behind piece rates is very simple. Workers have an incentive to work harder because higher effort leads to greater output, which, in turn, increases their pay. In addition, piece rates may be attractive to inherently high productivity workers. Suppose, from the example above, some firms offer a flat wage of £10 per hour. Other firms offer a piece rate of £1 per unit. Workers would only chose to work at the firm paying piece rates if they were able to produce more than 10 units per hour. Low ability workers will thus chose to work for the flat wage employer, while high ability workers may chose the piece rate employer. This effect is referred to as "sorting" or "selection".

Piece rates do have drawbacks, and are only used in a limited number of industries and occupations. One drawback relates to what is called "risk aversion". Individuals generally prefer a certain income to one with risk. A farm labourer offered a fixed wage (e.g. £10000 per year) or a share of the harvest will normally take the former unless the expected value of the share contract is well over £10,000. This is true for two reasons: first because they will want to be compensated for the disutility associated with greater effort under the share contract and secondly, because with a share contract their income might turn out to be low for reasons beyond their control (e.g. bad weather). A second drawback is what is termed the "multi-tasking" problem. Many jobs consist of more than one task and under piece rates workers will tend to put forth inefficiently high effort on easily measured tasks and inefficiently low effort on difficult to measure tasks. Consider the following example. Suppose professional football players were paid a piece rate (£100,000 per goal scored). Players would play too far forward, would not get back on defence, and would be loath to pass the ball. In other industries, workers may devote too much attention to the quantity of output and

too little to the quality. Unless there is an easy way to measure all aspects of a workers output, piece rates are likely to create perverse incentives that may actually reduce the firm's profitability.

III. Deferred Compensation

Deferred compensation refers to the practice of paying senior workers (measured by tenure, not age) more than junior workers. In practice this may be done by paying high wages to senior workers or by giving a pension to retired workers. At first glance it may seem that this is the exact opposite of incentive pay, as the criteria for higher pay may be unrelated to productivity. However, the practice has very strong incentive effects. Consider the diagram below:

At the beginning of their career (i.e. tenure less than T*) the worker is earning less than what they produce, at the end of their career they earn more. If the worker works until T** they will exactly earned their marginal revenue product over their lifetime. The key incentive property of this contract is that it reduces turnover. At <u>any</u> level of tenure (except for newly hired employees) future pay is greater than future productivity (and thus future pay with another employer). Thus quitting or being dismissed is costly to the worker.

This type of contract is observed frequently in many occupations, though arguably not as frequently as was the case 20-30 years ago. Employers benefit from reduced turnover because many of the costs of turnover are fixed in career length (that is to say, the same for each employee regardless of whether they stay at the firm for 1 year or 30 years. Examples of this type of cost include search costs (placing advertisements in the newspaper) and training costs. The contract will also have a selection effect, as will be more attractive to future-minded potential employees.

IV. Promotion "Tournaments"

The final model of incentive contracts that I will discuss examines the use of promotions as a prize for hard work. The prize in these models is a higher wage upon promotion. Workers have an incentive to supply effort in this model because effort increases the likelihood of receiving a promotion. In other words, wages are attached to positions. When a high level position opens up, workers at the next level down compete for the promotion. The promotion must be awarded to one employee, and thus the firm always gives it to the best employee. Incentives are created by the promotion prize, i.e. the difference in salary between the two levels. The model implies that this difference will be larger further up the hierarchical ladder. Why? 1) Diminishing marginal utility implies a larger inducement will be needed to increase effort of more highly paid employees. 2) The promotion prize provides an incentive for everyone further down the hierarchy. The lowest junior may one day become CEO. Thus the salaries of high-level positions actually have an impact on the decisions of a larger number of workers than the salaries of low level positions. 3) The value of output for high-level employees may be much higher than for low-level employees. The promotion prize may be seen as a way of compensating workers for their productivity.

Promotions may be an efficient tool for providing incentives for several reasons. They may be less costly to implement than other schemes because the information requirement to rank workers is much lower than the information requirement to judge workers on some absolute scale. They may be perceived by workers to be fairer than other schemes because common shocks have no effect on output. For example, if a promotion goes to the best salesperson, the fact that product demand was low due to a recession does not influence the outcome. However, as with the other schemes, tournaments also have drawbacks. They may be costly as firms may have to pay a "losers prize" simply to encourage participation. Workers may try to be the best by sabotaging others' work, rather than by improving their own.

Discussion questions:

1. Why is there often mandatory retirement in a contract with deferred compensation?
2. Why do most sales jobs pay piece rates, but few office jobs pay piece rates?
3. Is worker morale important for effort levels and turnover? What effect would piece rates, deferred compensation, and tournaments have on morale? What else can firms do to increase worker morale?
4. If a young worker believed that their employer was likely to go bankrupt in the next 5-10 years would they agree to a deferred compensation contract?
5. You are asked by a premier league team to design contracts to help them get the most out of their workers. What advice do you give?
6. You are asked by MacDonalds team to design contracts to help them get the most out of their workers. What advice do you give?