

CAN ABILITY AND WORKING CONDITIONS EXPLAIN THE WAGE DIFFERENTIAL ACROSS INDUSTRIES AND FIRMS?

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Abstract: This article tries to explain the wage differentials across industries and firms by the human capital theory, the compensating wage differential theory or other reasons and also the empirical evidences.

Key words: wage differential, human capital theory, compensation wage differential, establishment wage differential, efficiency wage

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INTRODUCTION

We have noticed the wage differentials across industries and firms in the world, and always explain this by the human capital theory and the compensating wage differentials because in the perfect competitive labour market where workers accept jobs can expect to receive compensation equal to their opportunity cost. But are these the only explanations of the wage differentials? The following article deals with how well these theories account for the actual wage differentials.

THE HUMAN CAPITAL THEORY

Human capital is defined as the composite of education level, specific skill and abilities. "Abilities" is a very general term and can be defined in many ways, e. g. intelligence, physical stamina, and manual dexterity. Different industries need different people with different skills and abilities. For example, for a factory job where production combines labour and capital equipment, employers must obtain competitive returns on this equipment if they are to be able to stay in business, and so, would like to employ workers with ability to operate the equipment at the productivity level which can yield profit or at least to make enough money for the employer to stay in business. So assume the ability is normally distributed so that a worker who is unfortunate enough to be in the far lower tail of all

ability distributions that are relevant to any job will be unemployable.

Some specialized kinds of ability are economically valuable in a few occupations, and then only where their level is much above average, e. g. musician. Many children learn to play musical instruments but very few of them can use this ability to develop and support a musical career when they grow up. They may give up when they reach a certain level of competence in music and find that they are not very good in music or that there are occupations other than that of musician, which pay higher. People with great musical talent will continue to invest in training, but the actual ability, rather than the length and quality of training eventually determine their earnings. People with low musical ability find this irrelevant to earning in other careers and turn elsewhere for employment.

We have shown so far that the process of choosing a career to accommodate different talents will produce dispersion in earnings distribution, even if all abilities were normally distributed and if abilities did not need to be used in combination with any occupation. Very occupationally people's high earnings are partly to their training to which their ability gave access, partly, though, these earnings are a rent to their particular specialized ability.

Table 1 shows that white-collar workers have higher wages than blue-collar workers because the white-collar workers have higher human capital, which is linked to education level and

skills. The blue-collar workers (such as craftsmen and machinery operators) with specialized skills have higher pay than the employees in other occupations requiring low skill.

Table 1 The wages in different occupations in 1996 *

People	Occupation (1-digit)	Mean in usual gross monthly pay (£)
White collar	Managers	1890.37
	Professionals	1790.58
	Associate professionals	1428.69
	Clerical	851.76
Blue collar	Craftsmen	1190.81
	Administrative personnel	686.15
	Sales people	550.79
	Machinery operators	1090.91
	Other occupations	538.02

* Source: British household panel study

Comparison of the same education level or equally skilled workers showed that there are still wage differentials across industries and firms, so there may be other reasons for the wage differentials apart from human capital.

COMPENSATING WAGE DIFFERENTIAL THEORY

Workers may have different tastes and expectations of the jobs and have different utilities from different kinds of jobs. Jobseekers have low incentive to take the high risk or bad working conditions jobs in some industries. In order to attract workers to join in the labour force, the employers raise the wages to above the average level in order to attract the peoples to work under unpleasant conditions. For example, at a sufficiently high rate of pay even those who are appalled by the sight of blood would leave their current occupation and attempt to become butchers. Obviously, if the rate of pay is lower than that in other occupations requiring the same amount of training, even people with no distaste for unpleasant aspects of a job may be unwilling to take on the jobs.

Fig. 1 shows that combination of pay, and the extent of a disamenity that goes with the pay. Consider the market for labour in occupations characterized by a specific disincentive (some negative aspect of the job such as risk of injury, dirtiness of work, temperature at the workplace,

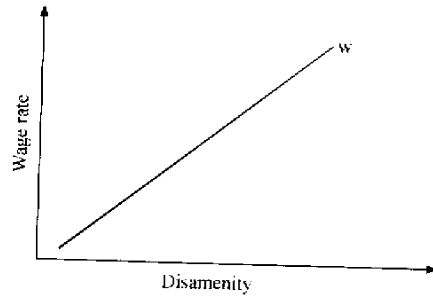


Fig. 1 Relationship between wage rate and disamenity (the wage rate rising in direct proportion to the disamenity)

risk of unemployment etc. that most workers would find unpleasant).

Table 2 also shows that the second highest pay among all the industries is energy and water that may be due to the unpleasantness of working under the sewage pipe or the danger of the job or working in abnormal shifts to reduce inconvenience to the customers. Clearly it shows the wage differential across industries. Location is also a factor in the compensation in wages. In many studies showed that employees working in the city with bad environment are generally given higher wage than those working in areas with more sunny days and less pollution.

Table 2 The average wages across the UK industries in 1996 *

Industry (1-digit)	Mean of usual gross monthly pay (£)
Agriculture	868.40
Energy and water	1737.82
Mines	1389.58
Metal manufacturing	1392.01
Other manufacturing industries	1961.23
Construction	1425.64
Distribution, hotel and catering	683.95
Transport	1327.31
Banking	1434.69
Other sector	1112.43

* Source: British household panel study

Table 3 shows some surprising results of some studies on the compensating wage differential. In the past, union power was also considered as a major influence in wage rate but in the study in table 3 suggests that wage dispersion was more likely because of the unpleasantness of the job rather than the union power.

Table 3 Results of study on various types of compensating differential

	Sample	Nature of differential	Remarks
1. King, 1974	Professional workers, 1960	Dispersion of income in respondent's occupation	Wages rise with dispersion; wealthier family background associated with riskier occupation.
2. Duncan and Stafford, 1980	Blue collar employees	Poor working conditions	Wages rise with poor conditions; union wage advantage diminished when work conditions included.
3. McNabb, 1989	Manual workers male, UK 1975	Poor working conditions	Wage rise with poor conditions; no higher for worker in industries with high unionism.

* Source: Polachek, S.W. and Siebert, W.S.(1993): The Economics of Earning.

But if competitive theories fully could explain the wage differentials, we would not see job queues for higher paid jobs, nor quitting from the lower paid job, since employers would only just compensate the undesirable characteristics of those jobs in pay, or would only compensate workers on the basis of their ability.

OTHER EVIDENCES ON THE CAUSES OF WAGE DIFFERENTIALS

In the 1988 study of Krueger and Summer, they controlled the variables of education level, skill level, demographic factors, location, etc. to see if the standard competitive theories could explain the full story of wage differentials.

They results found that there were sufficient wage differentials across industries after controlling the factors of human capital and demographic background. The coefficient for mining industries in 1984 for instance, implies that the average employee in the mining industries earns wages 24% higher than that of average employee in all industries. In 1984 the industries differentials ranged from a high 37% above mean in the petroleum industry to a low of 37% below the mean in private household services. These large wage differentials suggest that other factors besides opportunity cost are important in explaining wages. The industry variables are very important in explaining the variations. There was a 4.3% percentage points drop in the standard error of the regression once the industry controls were added to the regression. It means that an identical worker working in different industries will receive different wages. Some general observations can be made about the industry wage structure. Industries producing durable goods and chemical

industries tend to be high wage industries while wholesale, retail and service industries tend to be low wage industries. There is evidence that technology is important because it determines the responsibility of workers, i.e. their importance to their firm.

If industry wage differentials were due to measurable and unmeasurable labour quality differences across industries, we would expect a substantial fall in dispersion of industry wage once we control the measure of human capital. However, the addition of human capital controls (education, tenure, age) results in only a one percentage point drop in the standard deviation of wage differential in the K-S report.

Furthermore in the K-S study, they controlled the working condition in order to find the sufficiency of compensating differentials. Their comparison of the results of with and without controls for working condition showed working condition variables do not substantially alter the pattern of industries wages.

Another suggestion obtained in the K-S study was that the firm's size affects wages. Groshen (1991) reported that in the BLS Industry Wage Survey, establishment-based wage differentials account for 20.7% of intra-industry wage variation; that establishment wage differentials (EWDs) comprised a large proportion of wage variation. Controlling for detailed occupation, EWDs varied almost as much as industry wage differentials. In her study, the strongest coefficients are on establishment size, union affiliation and pay policy. Because in a large firm, the employer cannot easily monitor the workers' ability, importance and productivity to his firm, and also union power in a large establishment is stronger than that in a small firm since it is very expensive to negotiate wages with all workers in-

dividually. Therefore the firm must have a pay policy for all workers based on their length of service in the firm, or negotiate with union at certain times. Also, multiproduct plants and varied technologies are often associated with higher wages.

Efficiency wage may be also an explanation for wage dispersion. If the firm wants to increase its profits by increasing the workers' productivity, then increasing wages would increase the incentive of workers under the assumption of competitive theories suggesting that workers would only work for what they are paid for. Increasing wages also increase the loyalty of workers.

If workers were have high bargaining power to share in rent or share in rent in proportion to their skill because of the firm is highly profitable and willing to share rent with workers, who are important in the firm production. There are not many evidences to prove that shared rents are sufficient enough to explain the wage differentials. Union threats can also raise wages if the union is powerful enough to push union members' wages above the market level. But many studies showed that unions do not have much effect on wages paid out by firms with and without unions.

The scant direct evidence on the bargaining hypothesis (Solow, 1985) here comes from the coefficients in the union affiliation's bargaining power model. Within this model, if unions are concentrated by industry sector and if union varies by sector, then rents captured will vary by sector. Indeed, coefficients for union affiliation suggest differentials of up to 20% (in chemical industries) between the highest and lowest-wage unions. However, wages paid by non-union employers also vary by sector and product (Groschen, 1988).

The main results of the 1991 Groschen study on investigated the wage trade-off being made by 350,000 establishments in the U.S. the manufacturing sector are summarized as follows: (1) Among production workers in six manufacturing industries, the standard deviation of EWDs was 14% of the mean wages (20 to 70% of intra-in-

dustry wage effects, and a major portion of economywide wages had standard deviation of about 50%). (2) Internal labour market variations generate under 10% of wage variance in these samples. (3) Characteristics of establishments can account for about one-half of EWDs.

Conclusion

Different ability and working condition cannot explain fully the wage differentials across industries and firms. Empirical evidences showed that there are more variables of explaining wage differentials, such as firm's size, union threat, bargaining theory and shared profit, etc., explaining wage differentials.

Wage differentials may also be due to psychological and social reasons, such as different employers may have different personal preferences in adjusting the wage level for their employees and the value of workers may be different for individual employers, e.g. the taste of employers, tenure and experience in job or what the workers did for the firm in the past etc. These reasons cannot be measured by the variables in the above paragraphs.

Logically more competent people should have higher pay because of their higher productivity; and bad working conditions would be less attractive than a job with good working condition but there are also many hidden reasons, so economic theories alone cannot be used to explain the wage differentials.

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