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Wage Determination in the NSW Black Coal Industry

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Introduction

Major problems have confronted the NSW black coal industry in the 1980s. The NSW Coal Association (1988) reports that 15 mines closed in the past two years and 2,500 jobs were lost in the same period. The coal companies complain of losses, asset reductions and increased gearing ratios due to depressed export coal prices and a depreciating US dollar. The mining unions have faced a diminishing membership base and claim that their members have suffered real reductions in their living standard.

One pressure point where these problems emerge is the process of wage negotiation. Wage rates are critical to all in the industry: for the workers, they are a chief determinant of income and for the companies, they form a major component of costs. The pressure on wage determination is resolved at two levels in the NSW industry. The first involves a centralized wage fixing system which includes the Conciliation and Arbitration Commission and the Coal Industry Tribunal, whilst the second level is based on private negotiations between owners and miners on a site by site basis.

The question addressed in this paper is whether or not the combination of these determination processes yields a wage rate which is economically efficient. The approach taken is to consider the factors which would theoretically be expected to have an impact on wages set in an open market environment and test the strength of their influence under the current wage setting regime.

The paper begins by providing an outline of the current institutional mechanisms for wage setting. The recent history of wage determination is also detailed. Then, a review of the factors which would be expected to yield differences in the wage rates paid to workers across different mines is given. With these factors providing a theoretical base, the first stages of an empirical analysis of the wage rates paid in 40 NSW mines in the 86-87 financial year is explained. First, the degree of wage variability across mines is examined and then the relationships which exist between the causal factors and wage rates are measured. In the final section of the paper, some conclusions are drawn, particularly in terms of the policy implications for wage setting mechanisms.

Current Wage Setting Environment

The coal industry of NSW has always been plagued with difficulties. Problems became severe in the depression years when loss of markets caused a stagnation of investment and a disgruntled workforce. Even through the Second World War the industry suffered falling production and industrial disputes. Emerging from the war, the industry was not even capable of meeting the requirements of the peacetime domestic economy. As a result of the recommendations made by the Davidson Royal Commission, which was established specifically to scrutinize the industry, the Coal Industry Acts of 1946 were passed into law.

The Acts, which were joint legislation of the NSW Government and the Federal Government, established the Joint Coal Board and the Coal Industry Tribunal.

The Board was required to:

- i) ensure the production of coal sufficient for domestic and overseas trade demands;
 - ii) develop the industry in the public interest; and,
 - iii) promote the welfare of workers in the industry.
- [Australian Government, 1946]

The Tribunal was established as the industrial relations arm of the Act, and was tasked with the consideration and determination of industrial disputes (or any other matter of industrial relations deemed by the Board to be in the public interest). Under the Act it has been the role of the Tribunal to determine the award paid to workers in the industry. It therefore acts apart from the Conciliation and Arbitration Commission, yet all powers granted to the Commission are conferred on the Tribunal by the Act. Importantly, however there is no right of appeal against a Tribunal decision. The Tribunal is one of only two specialist tribunals not presently constituted by a member of the Arbitration Commission. Decisions handed down by the Commission in national wage cases cover the awards administered by the Tribunal. The Tribunal therefore acts beyond the powers of the Commission.

The Tribunal itself consists of only one person who is specified in the Act as "a practising barrister or solicitor of the High Court or of the Supreme Court of a State of not less than five years' standing" (Section 30). Under the Tribunal there are appointed people to act as Local Coal Authorities who have power to settle local industrial disputes or refer them to the Tribunal. At the individual mine level, there can also be appointed under the Act, a Mine Conciliation Committee. It is the role of such Committees to deal with industrial grievances at their own mines, and if necessary, to refer the matter on to the Local Coal Authority.

The current institutional environment for wage setting in the industry is therefore one which involves the Award being negotiated through the Tribunal with the Conciliation and Arbitration Commission having an impact through National Wage Case decisions. Disputes regarding the Award can be dealt with at the mine level, through the Mine Conciliation Committees, at the district level, through the Local Coal Authorities or at the state level through the Tribunal.

The complexities of these institutional arrangements can be appreciated by a brief analysis of two recent Tribunal decisions. The first has become known as the "Productivity Decision" and was handed down in May 1986.

In October 1983 the mining unions sought a flow-on of the National Wage Increase granted by the Arbitration Commission in September of the same year. The Unions agreed that in accepting the flow-on, they would agree to a set of principles almost exactly the same as the Commission's wage fixation guidelines which had been established under the Hawke Government's Accord. One of the principles agreed to was:

"Upon application and not before 1985, the Tribunal will consider whether an increase in wages and salaries or changes in conditions of employment should be awarded on account of productivity"

[Australian Government, 1985]

Hence, in late 1985 the Combined Mining Unions (CMU) served a log of claims to the Tribunal based on perceived changes in industry productivity. What resulted was a bitter industrial confrontation that was finally resolved in May 1986 when the Tribunal awarded substantial benefits to the mine workers. The decision was handed down only days after the Prime Minister had appeared on national television appealing for wage restraint and against a backdrop of mine closures and industry losses. The case does show, however, the relationship which existed between the Commission and the Tribunal: the Tribunal sought the guidance of the Commission on matters with an economy-wide background, but retained its independent, supplementary role in coal industry specific matters.

The second decision which was handed down in 1988, marked an important turning point in the history of the Tribunal, and points to its future role. The background to the decision began in 1987 when the Mine Deputies and Staff accepted the principles of the two-tiered wage system, and so gained the flow-on from the National Wage Case. The other mine unions, represented by the National Liaison Committee rejected the two-tiered system. They argued that hard won Award conditions would be lost in the negotiations over work-practices required to secure the second tier of the National Wage Case rise.

The result of this rejection was that the Unions were forced back to direct negotiations with the employers. Given the problems of low prices being faced by the mine owners, negotiations were based on the economic issues of productivity and work practice flexibilities - exactly the type of negotiations the unions had sought to avoid by rejecting the two-tiered wage increase. The negotiations were held in an environment of industry restructuring and were therefore flavoured by the need for substantial change. With the decentralization of negotiations, workers were less able to wield industrial muscle and so considerable advantage was afforded the mine owners. Importantly however, the basic conditions of the Award were not amended. It was the above-award element in a miner's wage package that was reduced. Tolerance times and production bonuses were cut. New work practices, allied with the introduction of new technologies, were begun and with them came reduced manning levels.

These changes in above-award conditions, coupled with the foregone National Wage Case benefits forced the unions back to the Tribunal in 1988. Following extensive hearings, substantial industrial disputation and a warning from the Federal and State Governments that, if the Tribunal did not bring down a decision which fell into line with the two-tiered system, it would be disbanded, major changes in work practices were introduced in to the Award.

The decision handed down in 1988 by the Tribunal marks a turning point in the Tribunal's history. It reflects the pressures

being placed on it to conform with industrial relations practices in the rest of the economy. More and more, the special circumstances supposedly evident in the coal industry, are being doubted and the need for the Tribunal's very existence is being questioned. Furthermore, the decision reflects the economic pressures being faced by the industry. The pressures for change which were being exerted on over-award payments were eventually forced back even to the Award. The next section of this paper provides some details of these pressures.

Factors Determining Wages

It is clear from the previous section that institutional factors play a key role in the formation of wages in the NSW Coal Industry. What is less clear however is whether or not the wage rates determined in that environment are those which would give rise to an economically efficient industry. In this section of the paper, the non-institutional labour market forces which would result in different wages being paid in different coal mines are analysed. They can be subdivided into demand and supply factors.

Demand factors

A profit maximizing firm's demand for any input, labour included, will "depend on the prices of inputs and the parameters of the production and output demand functions" [Gavelle and Rees, 1981, p. 368]. Specifically, mine owners will continue to employ more miners until their marginal revenue product (marginal revenue multiplied by marginal product) falls to the wage rate being paid. Because different mines will have different production characteristics and will be producing coals of differing values, it could be expected that each mine would have a distinct demand for labour function.

There are other factors which could produce differential demand functions across mines. First, the cost of other substitute and complement inputs. The most important input, which can be a substitute for or a complement to labour is capital. Because different mines will be associated with different levels of risk and their owners will have different gearing ratios, the cost of capital may differ across mines.

Associated with the cost of labour is the reliability of the labour force. The effective cost of labour can be much increased if workers engage in lengthy periods of industrial disputation. Accordingly, the demand for labour may be differentiated across mines by the amount of time lost due to industrial action by workers.

Supply factors

The amount of labour that workers are willing to supply is firstly determined by the wage package being offered but is subject to influence from other factors. Workers' preferences between work and leisure are a chief determinant but this can be assumed constant at a particular point in time across the State's mines. However, the safety risks associated with working as a miner can vary between mines and that can influence the supply of labour.

This factor is closely allied to the working conditions existing in each mine. Also, the geographical remoteness of a mine could affect the willingness of workers to offer their services. The services provided at the residential areas close to the mine site - shops, schools, transport services etc. - would complicate a simple relationship between remoteness and labour supply.

These factors are relevant to individual mines however each mine does not have a separate supply of labour - there are interdependences across all mines resulting from the process of arbitrage.

Miners are not all immobile and can be attracted by wage differentials between mines. However, it is unlikely that arbitrage will eliminate all differences in wages across mines. The factors affecting supply and demand can leave some differences. For instance, the wage difference between a remote mine and a central mine, ceteris paribus, will represent the difference faced by miners in their costs of living, including any psychic penalty of remoteness.

Wage Differences

Whilst the above analysis suggests that wage differentials will exist between mines, the institutional environment is one of a single regime of wage rates paid across the entire industry. The first stage of the empirical study of wages in the NSW black coal industry is therefore to determine whether there are significant differentials in the wage rates paid across mines. However, before that task can be addressed, the "wage rate" needs to be examined.

The structure of wages paid in NSW coal mines is complicated, but can basically be summarized as consisting of three components:

- (i) ordinary wage;
- (ii) overtime wage; and,
- (iii) bonus payments.

The ordinary wage is that which is set out in the Award. It consists of the basic award rate and payments of special allowances for particular tasks or difficulties incurred including dirty work, erection of scaffolding, first aid, high work, longwall duties and transportation. The Award also sets out the hours to be worked.

If work is required beyond the Award specified hours, overtime is paid. The rates for overtime are also specified under the conditions of the Award but the number of hours worked is at the discretion of the mine owner.

Bonus payments have traditionally been outside the provisions of the Award, however, the Coal Industry Tribunal's productivity decision in 1986 included the requirement for bonus payments to be indexed. Despite this, payments made by companies on the basis of production have a much greater degree of autonomy for mine owners.

Data on NSW wage rates are collected by the Joint Coal Board every year over a one week period in May. The data used in this analysis were collected in May 1987. The summary statistics of these data are displayed in Table 1.

Table 1: Earnings and Rates of Pay,
New South Wales Black Coal Mines, May 1987.

Variable	Mean	Standard Deviation	Coefficient of Variation
Average Weekly Gross Earnings			
- Total (AVGE)	846.32	123.17	14.55
- Award (AVORD)	522.35	34.21	6.55
- Overtime (AVOTIME)	104.92	39.57	37.72
- Bonus (AVBON)	218.32	107.85	49.40
Average Hourly Pay Rates			
- Total (ALLRATE)	23.86	3.68	15.42
- Award (ORDRATE)	16.76	1.67	9.96
- Overtime (OVERRATE)	24.58	3.58	14.56
- Over-award (EXRATE)	9.07	2.97	32.75

Source: NSW Joint Coal Board

The first striking feature of these data is that the payments made under the award in May 1987 made up a little over 60% of total gross earnings. The over-award payments made, comprising overtime and bonus payments, were dominated by the bonus component. The implication of this is that even under the institutional regime of the Tribunal and the Arbitration Commission, there is a large proportion of the wage package paid in which the mine owners have a degree of flexibility.

The outcome of this flexibility is the second important feature of Table 1. The coefficient of variation - the ratio of standard deviation to mean as a percentage - indicates variability relative to the overall magnitude of the variable being measured. It therefore provides a means of comparing variability across different variables, the task at hand in this case. For both gross weekly earnings and hourly rates of pay, the coefficient of variation for the award component is lower than either of the other components. For gross weekly earnings, the award component's coefficient of variation is less than half that of the total earnings. The variation in overtime payments, and especially bonus payments are comparatively larger. The bonus earnings standard deviation is about 50% of its mean. Similar differences are apparent in the wage rate statistics.

It is clear therefore, that even though award payments are reasonably consistent across all mines, there is a substantial amount of variation in total earnings for miners across the sampled mines. The variation is brought about because of differences across mines in the over-award payments.

Explaining Wage Differentials

Given that significant differences in wage rates and levels of earnings do exist across NSW black coal mines, the next task in this analysis is to determine what factors create these differences and whether or not the determining factors are those which would give rise to differential wages in an open market.

Data relevant to the factors hypothesized to have a differentiating effect on wages discussed earlier in this paper were collected for 40 NSW mines. The primary source of data was the Joint Coal Board's 1986-87 collection of fortnightly statistical returns submitted by mine owners for each mine. Some of the data, appear in the Board's publication 'Black Coal in Australia 1986-87' whilst others were provided confidentially direct from mine returns. To preserve the confidentiality of the data, all analyses have been reported in aggregated form.

The variables used are:

- Average price received at the mine for coal output (AVGP)
- Output of saleable coal per manshift worked (PROD)
- The multiplicand of price and productivity (PBYA)
- Saleable coal output (SALCOAL)
- The capital expenditure over the period 1986-88 (ESTCAP)
- Man hours lost due to industrial disputes (MANLOST)
- Lost time injuries (LTI)
- Hours worked in the survey week, May 1987 (ALLHRS)
- Distance (Kms) from mine to closest of Sydney, Newcastle or Wollongong (DIST).

The first analysis undertaken to explain differentials between the above-award components of the wage rates and earnings across mines was to assess the simple Pearson correlation coefficients. These are presented in Table 2.

Table 2: Correlation matrix
Pearson Correlation Coefficients
(Probability >/R/ under $H_0: \rho = 0$)

	AVGP	PROD	PBYA	SALCOAL	ESTCAP	MANLOST	LTI	DIST	ALLHRS
Earnings									
AVGGE	.605 (.97)	.475 (.01)	.643 (.00)	.542 (.00)	.436 (.00)	.151 (.35)	-.311 (.05)	.202 (.22)	.231 (.15)
AVOTIME	.279 (.08)	.086 (.60)	.269 (.09)	-.092 (.57)	.107 (.504)	-.170 (.29)	-.200 (.22)	.188 (.48)	-.029 (.86)
AVBON	-.036 (.83)	.390 (.01)	.551 (.00)	.467 (.00)	.341 (.03)	.195 (.23)	-.177 (.28)	.152 (.35)	.196 (.23)
Wage rates									
ALLRATE	-.222 (.17)	.631 (.00)	.644 (.00)	.730 (.00)	.461 (.00)	.183 (.26)	-.412 (.01)	.227 (.16)	.169 (.30)
OVERATE	-.248 (.12)	.455 (.00)	.373 (.02)	.420 (.01)	.446 (.00)	.017 (.92)	-.437 (.00)	.310 (.05)	-.025 (.88)
EXRATE	-.045 (.74)	.522 (.00)	.681 (.00)	.554 (.00)	.412 (.01)	.164 (.31)	-0.303 (.06)	.207 (.21)	-.175 (.30)

Productivity is clearly a factor which influences the wages paid at the mines surveyed, as are the product of price and productivity and the output of saleable coal. However, these factors are themselves strongly correlated to each other, with rho coefficients between .60 and .80. The problem of spurious correlation is thus evident. It would appear that the true causal factor behind the relationships is the size of the mines' outputs. The larger the mine, the higher the productivity (rho = .77; p = .00). The capital investment in a mine is also related positively to wages, but again, the relationships is undoubtedly spurious to mine size.

No other clear cut simple relationships can be established (apart from an inverse relationship between mine safety - LTI - and the wage rates, which is opposite to that expected), but that does not exclude the possibility of more complex interactions. To test for that possibility, a multiple regression analysis was performed and the results of that are displayed in Table 3.

Table 3: Regression Analysis Coefficients

Dependent Variable	Independent Variables										R ²	F
	Constant	AVGP	PROD	PBYA	SALCOAL	ESTCAP	MANLOST	LTI	DIST	ALLHRS		
AVGR	624 (5.13)*	-1.22 (-0.39)	-2.01 (-.34)	0.406 (2.40)*	.001 (0.05)	.001 (1.12)	-.009 (-0.46)	-0.04 (-.19)	0.061 (.26)	.007 (0.86)	.56	4.2
AVOYIME	-28.62 (-0.66)	1.70 (1.51)	5.17 (2.48)*	-0.02 (-0.26)	-.002 (2.81)*	.001 (2.40)*	-0.01 (-1.92)*	-0.01 (-.19)	0.05 (0.61)	0.01 (2.45)*	.46	2.8
AVBOH	104.9 (0.86)	-3.41 (-1.08)	-5.42 (-0.93)	0.43 (2.56)*	0.001 (0.36)	0.031 (0.58)	0.001 (0.10)	0.12 (0.59)	-0.02 (-0.11)	0.001 (0.22)	.42	2.4
ALLRATE	22.30 (7.56)*	-0.01 (-0.18)	-0.20 (-1.44)	0.01 (1.85)*	0.001 (2.71)*	-0.001 (-0.48)	0.001 (1.31)	-0.001 (-1.20)	0.001 (0.41)	-0.001 (-1.57)	.71	7.9
OVERATE	22.87 (5.79)*	-0.01 (0.08)	-0.20 (0.89)	0.01 (-0.70)	0.001 (-0.28)	-0.001 (1.99)*	0.001 (0.60)	-0.01 (-1.23)	0.001 (1.58)	-0.00 (-0.03)	.45	2.7
KXRATE	3.87 (1.35)	-0.005 (-0.63)	-0.05 (-0.38)	0.01 (2.57)*	0.00 (0.19)	4.91 (1.02)	0.00 (0.08)	0.00 (0.28)	0.00 (0.07)	0.00 (0.39)	.57	4.3

t-statistics in brackets under coefficients

* Significant at the 10% level.

The regression equations reconfirm the simple correlation analysis. The variables which are significant in the estimated equations are predominantly those which are related to the size of the mine. The only other variable which is significant with any regularity is the constant. However the analysis is largely unsatisfactory in explaining the wage and earnings differentials, and is not improved significantly by altering the functional form of the equations or by omitting the irrelevant or multicollinear independent variables.

A possible fault with the multiple regression analysis is that it fails to account for the simultaneity in the determination of wages of the supply and demand for labour. To address this possibility, 2 two-stage least squares estimations were carried out. The simultaneous equations so estimated are:

i) Overall wage rate estimation

Demand

$$\begin{aligned} \text{ALLRATE} = & 18.36 - 0.001 \text{ ALLHRS} + 0.001 \text{ ESTCAP} + 0.001 \text{ MANLOST} \\ & (4.57)^* \quad (-0.59) \quad (1.24) \quad (0.83) \\ & + 0.05 \text{ AVGP} + 0.18 \text{ PROD} + 0.002 \text{ PBYA} \\ & (0.23) \quad (0.78) \quad (0.16) \\ & R^2 = .43 \quad F = 4.02 \end{aligned}$$

Supply

$$\begin{aligned} \text{ALLHRS} = & -16370.2 + 869.64 \text{ ALLRATE} + 27.13 \text{ LTI} - 13.08 \text{ DIST} \\ & (-2.18) \quad (3.08) \quad (3.77) \quad (-1.33) \\ & R^2 = .35 \quad F = 6.24 \end{aligned}$$

ii) Above award wage rate estimation

Demand

$$\begin{aligned} \text{EXRATE} = & 4.05 + 0.001 \text{ ALLHRS} - 0.001 \text{ MANLOST} + 0.001 \text{ ESTCAP} \\ & (1.70)^* \quad (0.37) \quad (-0.13) \quad (0.55) \\ & - 0.07 \text{ AVGP} - 0.05 \text{ PROD} + 0.01 \text{ PBYA} \\ & (-0.53) \quad (-0.39) \quad (1.75) \\ & R^2 = .55 \quad F = 6.6 \end{aligned}$$

Supply

$$\begin{aligned} \text{ALLHRS} = & -3064.6 + 910.99 \text{ EXRATE} + 22.54 \text{ LTI} - 12.55 \text{ DIST} \\ & (-0.75) \quad (2.55)^* \quad (3.26)^* \quad (-1.24) \\ & R^2 = .31 \quad F = 5.09 \end{aligned}$$

(t-statistics present in brackets under each coefficient, with

significance at the 10% level indicated by an asterisk.)

Neither of this pair of simultaneous equations adequately estimates the variation in wage rate observed across the sampled mines. Whilst the supply equations display the anticipated signs on the rate and risk coefficients, which are both significant, only a small portion of the variation is explained. The only significant independent variable in the demand equation is the constant. No alternative formulation of the model could be devised to improve the fit. It would appear therefore that the supply and demand based variables incorporated in the models can explain less than half of the wage variability observed. This implies that other variables which are significant in explaining wage variability have been omitted from the model. Seeking these variables and establishing their significance will form the next part of this ongoing analysis.

Conclusions

The institutional arrangements for the determination of wages in the NSW Black Coal industry have an important effect in equalizing award wages across mines. However, the award component of total earnings is not dominant. Bonus and overtime payments are both significant in the composition of total earnings. Greater variation across mines is observed in the above-award components, and it would appear therefore that mine owners have greater discretion in their payment.

The attempts to explain the variation observed in these over-award payments using factors which would impact on the determination of wages in an open labour market outlined here, have met with limited success. Whilst it was established that the larger the output of saleable coal from a mine, the larger will be the extent of earnings, more complicated analysis of the relationships were less conclusive.

The analyses do however provide a good basis for further research. The hypothesis that market forces play a significant role in the determination of wage variability can be further tested in the light of these results. It has now been shown that the market forces so far incorporated in the model do not explain the majority of wage variability. But it has also been demonstrated that the institutional structure has not been successful in making wages uniform across mines.

It is clear therefore that other factors need to be incorporated in the model's specification. The direction this study will take is to examine these factors. Although difficult to establish empirically, it is hypothesized that differences between the rents earned at the various mines will have an important effect on wages: Where rents are high, workers are in a better position to extract higher above award wages than where the rents are low. Many factors complicate this seemingly straight forward relationship. For instance, rents can be captured by other parties supplying inputs to the mining process so long as competition in the input market is restricted. Hence, mine workers will compete with the State Rail Authority, Port Authorities and transport workers for any rents available. Their success will be difficult

to predict as it will depend on comparative bargaining strengths.

If it is found that rent seeking behaviour on the part of mining unions is capable of explaining the so far unexplained variability in wages across mines, then it will be possible to draw some important policy conclusions. Notably, the lack of competition between alternative suppliers of inputs will be the primary cause of economic inefficiency in the industry.

The method to be used to examine the rent seeking hypothesis will be further analysis of coal industry data. The first handle on the existence of rents of the various mines will be via an analysis of their markets and their ownership. Where a mine is subject to the rigors of international competition, it would be expected that rents would be lower than where a mine is directly supplying its owner's immediate demands (for instance, the ELCOM mines). These "tied" mines would also be less reluctant to agree to wage increases especially if cost increases can be passed on the consumers of the end product relatively easily (say a monopoly market with an inelastic demand function).

Secondly, the analysis can be extended by the analysis of data collected for other time periods. In particular, data for the 1987-88 year would provide useful information to determine if the '86 productivity decision had any impact on wage variability. Moreover, changing profitability conditions through time - contrasting say the 70's with the 80's - would provide data to enable a comparison on situations of varying rents.

Tentatively, it can be concluded from the research carried out so far that the market forces of labour supply and demand in the NSW black coal industry have not been dominant in the determination of wage rates. Further analysis, which will require a more substantial data set, will seek to establish what causal factors have so far been omitted for the model. In doing so, policy prescriptions to ensure a more economically efficient wage determination process will emerge.

BIBLIOGRAPHY

Australian Government (1946), Coal Industry Act, 1946.

(1985), Coal Industry Act, 1946-73, No.328 of 1985.

(1987), Coal Industry Act, 1946-73, No.51 of 1987.

Gravelle H. and Rees R (1981), Microeconomics, London, Longman.

Joint Coal Board (1987a), Weekly Earnings of Employees in the NSW Coal Mining Industry, Sydney, JCB.

(1987b), Loss-Time Injuries NSW Coal Mines, Sydney, JCB.

(1987c), Black Coal in Australia 1986-87, Sydney, JCB.